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Title: Present status of Billfish fishery in Iran

BY

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Abstract

Iran fishing grounds in southern waters of the country are located in the Persian Gulf and Oman Sea. There are 4 coastal provinces in those area with about 12000 vessels consist of fishing boat, dhows and vessel which are engaged in fishing in the coastal and non- coastal waters. Iran has well-established non-coastal water targeting tuna and like-Tuna species. The annual production of large pelagic in Iran was 412,000 t in 2011 and 183 000 tones belongs to tuna and tuna-like fishes in the Indian Ocean areas. Although there is no target fishery for Billfish, Iran makes considerable contribution to the Billfish production in the Indian Ocean. Billfishes make up to 3% 0f the total large pelagic landings in Iran that is for gillnet catch of Indian Ocean. Billfish production in Iran is at increasing trend during a period of 6 years i.e. from 2006 to 2011 shows a sustainable increase. Gillnet is the dominant gear in all areas. Majority of the production come from the Gillnet coastal and non-coastal waters. More Billfish's are caught as incidental catch in non-coastal waters targeting other species. In terms of area, more Billfishes are caught in northwestern areas. In coastal area there aren't any catch for Billfish. Length data are very poor for Billfish. Maximum recorded length for sailfish is 230cm (cut length).

General Fishery Information

Fishery for tuna and tuna-like species is a major component in large pelagic fisheries in Iran. There are many fishing methods targeting tuna and tuna- like species which includes Gillnet, purse seiner and trolling. The catch of Billfish is generally a by-catch from Gill nets. The coastal and non-coastal production of tuna and tuna-like species has increased continuously according to the recent statistics. The total catch in 2011 was estimated 183100 t belongs to tuna and tuna-like fishes in the Indian Ocean areas. Those catch consist of Yellowfin tuna: 28800 t, Skipjack tuna: 22285 t, Longtail tuna: 64450 t, Kawakawa: 22266 t, Frigate tuna: 6013 t, Indo-pacific king mackerel: 3900 t, Narrow- barred Spanish mackerel: 14794 t. The catch of Billfish (Sailfish and black Marlin) from Iran fishing vessels has increased from zero in 2005 to 9,000 t in 2011 in the Indian Ocean. Billfishes make up to 3% of the total catch landings in Iran.

Fishing gear and fleet structure

There are 4 coastal provinces in Iranian southern waters with about 11000 vessels consist of 5 industrial purse- seiners and 7855fishing boats and 3087 Artisanal vessels (Dhows) operating in the IOTC area. GRT of purse seiners is >1000 t and GRT of Gillnetters ranges from less than 3 t to more than 100 t. There size ranges and number if vessels descriptions are given in *figure 1*.

Figure1. Number of vessels operating in the IOTC area of competence, by gear type and size, for the history of the fleet (2006-2011)

GEAR	GRT	No. of vessels by year					
		2006	2007	2008	2009	2010	2011
No. of Active Purse Seiners	1000-2000	7	7	7	6	5	5
Gillnet	<3	4125	3966	3974	3828	3444	3340
	3-20	733	731	761	753	702	586
	20-50	715	725	730	667	911	941
	51-100	805	794	669	534	580	479
	>101	130	147	208	278	283	260
Trolling		214	397	417	426	634	854

Catch and Effort data

Fish landed were sampled at 43 basic landing centers scattered along the coast in southern coastal waters consist of: 10 landing centers in KHOZESTAN Province, 23 in BUSHEHR Province, 21 in HORMOZGAN Province, 10 landing centers SISTAN-BLUCHESTAN Province. Map of principal landing centers considered in figure1. Catch and Effort data were collected in all the above centers by stratified random sampling by the samplers, In this way, 10% of fishing vessels are randomly selected and the sample data are raised to all active fishing vessels and total catches are maintained by vessel categories, gear types and species composition, landing site and each month. All of the operations are fulfilled by Iran Fisheries Organization fish statistic software called AMAR software. Considering these points for each landing center, 43 out of 63 were chosen and can be used to raise information to other landing sites. In each landing site, there is one enumerator who is responsible to collect data. The capacity of vessels is measured in GRT and they are classified in four categories for sampling purposes and fishing effort by different vessel categories shown in figure2.

Figure1: Map of principal landing centers

Figure2: Fishing effort by different vessel categories (days)

Gear	GRT	Fishing effort by gear(days)					
		2006	2007	2008	2009	2010	2011
Purse seine	1000-2000			728	675	880	450
Gill net	<3	482625	563172	520594	486156	501402	515372
	3-20	96023	103071	115672	118974	113740	100809
	21-50	115115	115275	118990	116058	165640	176132
	51-100	134435	106396	90984	81168	83754	82837
	>101	19630	17346	34528	50040	38810	45020
Total fishing effort (Gill net)		847828	905260	880768	852396	903346	919970
Trolling	Non-mechanised	25038	56374	54627	54102	96822	139161

51 categories of species/families are identified in the landings of artisanal vessels. 9 species of tuna, tuna-like and Billfish species are identified in the large pelagic category landing surveys are undertaken to obtain data on catches in the artisanal fisheries. Control of fishing license and Questionnaire carry out by the Head of Statistical Unit in the relevant city .This kind of control will then be done in province centre through computer Again this will be repeated in Headquarter in Tehran Cross Check by total census in one or two landing site. Annual catch of Iranian fishing vessels shown in figure3.1 and Annual catch by gear type and species shown figure3.2.

Figure3.1 : Annual catch of Iranian fishing vessels (tons)

Species	2006	2007	2008	2009	2010	2011
Bigeye tuna	1	55	23	0	0	105
Yellowfin tuna	40722	16283	19482	22596	31485	28800
Longtail tuna	25143	28596	32620	47719	64450	80883
Skipjack tuna	102668	68068	43900	46563	22285	17473
Frigate tuna	2444	5197	7164	5178	6172	6013
Kawakawa	12596	15556	20439	17827	16336	22266
Narrow-barred Spanish mackerel	8779	9395	10292	7691	10884	14794

Indo-pacific king mackerel	4049	3782	4078	2669	3170	3900
Billfish*	10578	6243	5634	7976	9209	8866
Total	206980	153175	143632	158219	163991	183100

*Contain Sailfish and black Marlin

Figure3.2: Annual catch by gear type and species (tons)

Gear Group	Species Group	2006	2007	2008	2009	2010	2011
Purse Seine	Bigeye tuna	1	55	23	0	0	105
	Longtail tuna	2303	2321	1205	994	220	2280
	Skipjack tuna	3909	450	1489	1159	628	1336
	Yellowfin tuna	8353	2330	2141	1693	2529	876
Total Purse Seine catch		14566	5156	4858	3846	3377	4621
Gill net	Frigate tuna	2444	5197	7164	5178	6172	5969
	Kawakawa	12596	15556	20439	17827	16336	22208
	Longtail tuna	22840	25900	31186	46486	63762	78080
	Skipjack tuna	98759	67618	42411	45404	21657	16137
	Yellowfin tuna	32064	13615	17085	20585	28522	27647
	Narrow- Barred Spanish mackerel	8339	8860	9975	7279	10556	14248
	Indo-Pacific King mackerel	4049	3747	4026	2633	3106	3801
	Billfish*	10578	6243	5634	7976	9209	8866
Total Gillnet catch		191669	146736	137920	153368	159320	176956
Trolling	Longtail tuna	-	375	229	239	469	523
	Yellowfin tuna	305	338	256	318	434	277
	Narrow- Barred Spanish mackerel	440	535	317	412	361	546
	Indo-Pacific King mackerel	-	35	52	36	64	99
Total Trolling catch		745	1283	854	1005	1294	1522

*Contain Sailfish and black Marlin

Figure3.3: Annual catches of Tuna&Tunalike Species IOTC Area (2002-2011)

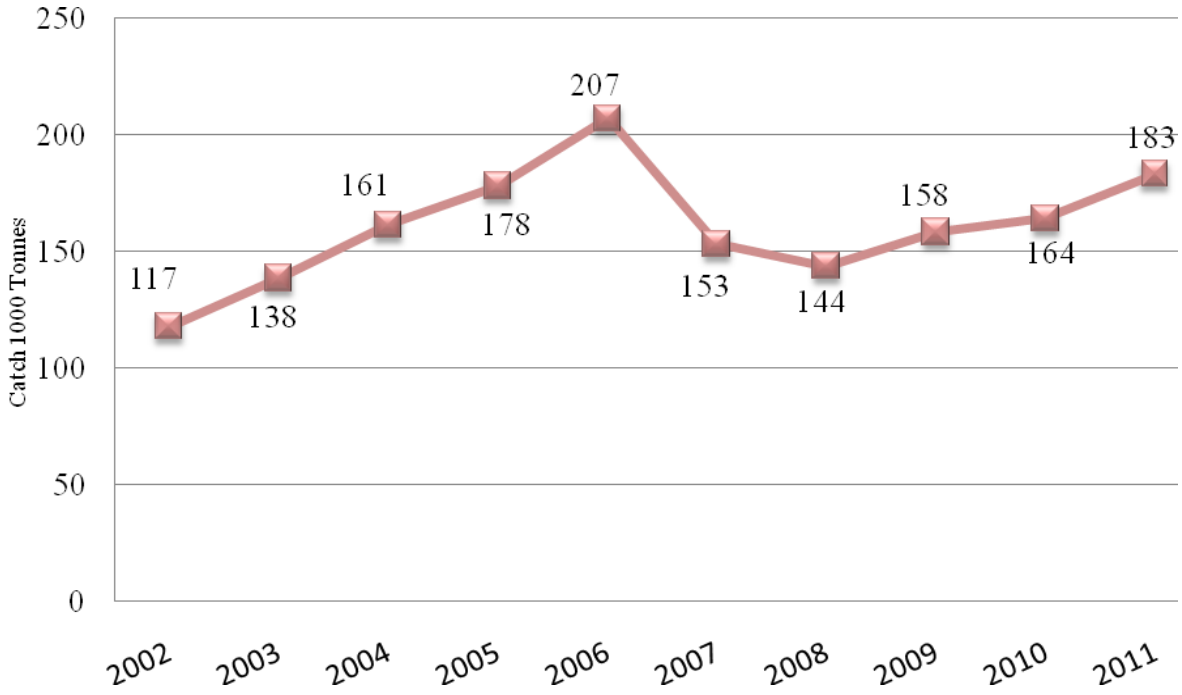
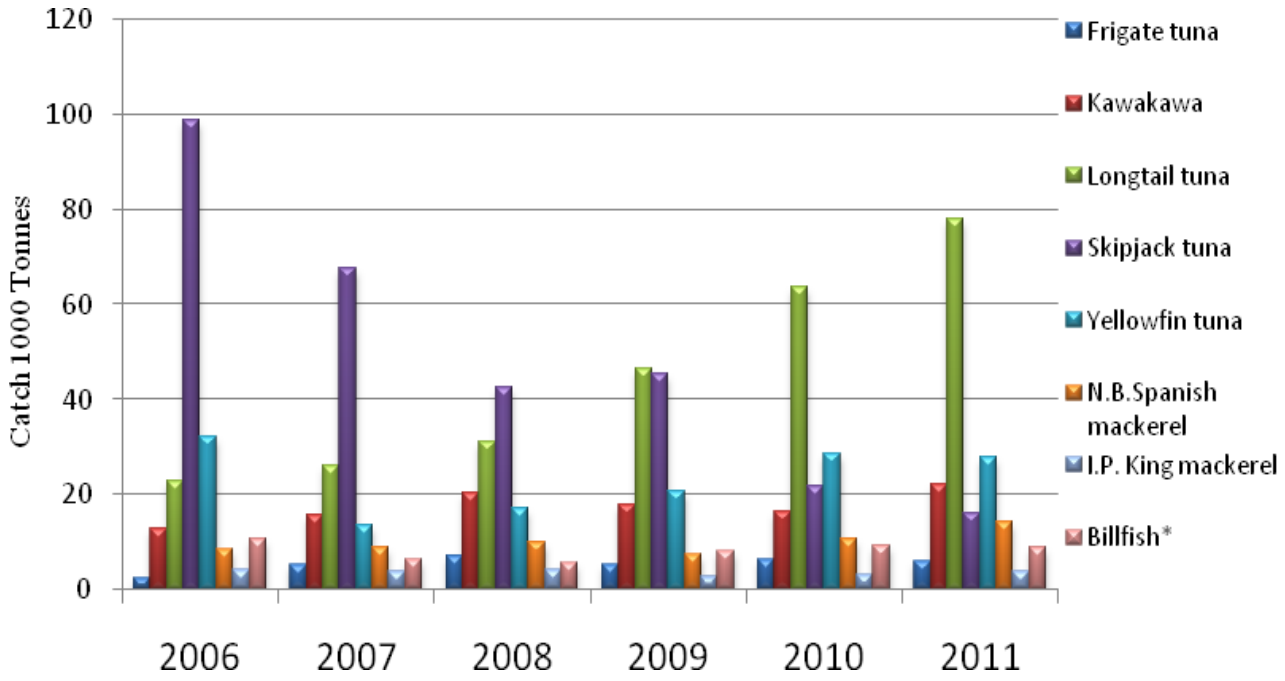
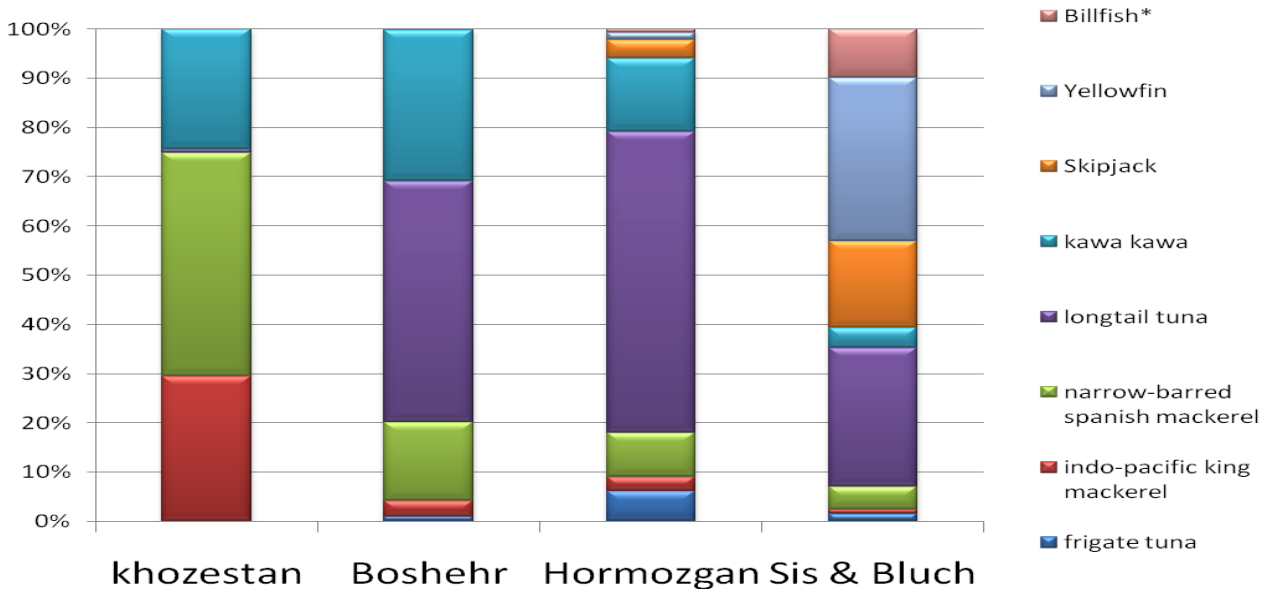


Figure3.4: Gillnet Annual Catch by specie



f igure3.5: Species Composition (in percent) of tuna Catches by province in 2011



Logbook program was implemented for Iranian artisanal gillnets and industrial purse seiners as follows:

We have implemented logbook program for gillnet fishery and designed a template. We firstly distributed the logbook in between 50 fishing Dhows as a pilot plan in the Sistan-Bluchestan provinces and received some completed logbooks from fishermen. There are some mistakes during filling the forms by captain of dhows. For this problem Iran Fisheries Organization

implemented the training courses for gillnet fishery to train fishermen on how to collect and fill out the logbooks, identify and report by-catch and discards species specifically for those fishermen operating in IOTC area of competence. In future we can collect and report artisanal fishery catch according to vessel position in IOTC area for target species, By-catch, and discard. The figure below shown logbook template for gillnet fishery in 2011.

Figure: Logbook Template For Gillnet Vessels

Submitted by (name and position):نام و سمت ارسال کننده	Date Logbook Submitted :تاریخ ارسال لوگ بوک	Logbook Serial No:شماره سریال لوگ بوک	
تناژ ناخالص GT:	شناسه ارتباطی Call Sign :	شماره ثبت: Reg No.	کد IOTC.(IOTC No.)	نام شناور Vessels Name :
	تاریخ ورود Date Arrival:	بندر ورود Port Arrival:	تاریخ خروج Date Departure :	بندر خروج Port Departure :
		جنس تور : (Net material):	ارتفاع تور (متر): Net height (m)	اندازه چشمه تور (متر): Gear Mesh Size (mm)

Date تاریخ	زمان و موقعیت جغرافیایی Time & Position start set			زمان و موقعیت جغرافیایی Time & Position End set			زمان شروع تورکشی Time Start Haul	طول تور Length net set	تون و شبه تون ماهیان Tunas & Tuna fishes										ماهیان نیزه/ Billfishes				کوسه ماهیان Sharks				سایر گونه Other			صید دورریز Discards		
	عرض جغرافیایی LAT.	طول جغرافیایی LONG.	زمان Time	عرض جغرافیایی LAT.	طول جغرافیایی LONG.	زمان Time			تون چشم درشت Bigeye	گیدر Yellowfin	هوور مستطیل kipjack	هوور Longtail	زرده Kawakawa	تون متقوش Frigate	شیر Scomberomorous commerson	سایر گونه ها Other	شمشیر ماه Sword fish	مارلین سیاه Black marlin	بادبان ماهی Sailfish	سایر گونه ها (نام گونه و صید) Other (Name & catch)	کوسه آبی Blue shark	Thresher shark	کوسه ... Shark...	سایر گونه ها (نام گونه و صید) Other (Name & catch)	-1	-2	-3	-1	-2	-3
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We have implemented logbook program for Industrial purse seine fishery and designed a new logbook template according to IOTC Resolutions and it was submitted for all ships and they started to record the data in new logbooks template. All purse seiners filled the forms as a figure below.

Figure: Logbook program for purse seiners

N.Sheet / شماره صفحه	Master / ناخدا	Vessel / نام و شماره ثبت شناور	Arrival / ورود	Departure / خروج
			نام بندر/Port تاریخ /Date ساعت /Hour لنگرگاه / Loch	نام بندر/Port تاریخ /Date ساعت /Hour لنگرگاه / Loch

تاریخ Date	۱*- موقعیت تورریزی Position	تورریزی set ۲۵ - TES	۲۵ - TSS	Estimated Catch صید تخمینی														صید از طریق این تجهیزات انجام شده است Association					۵* - توضیحات Comment	درجه حرارت دریا T Sea	جریان آب Current	
		موفق Successful	ناموفق Nil	۴* - زمان تورریزی specify time	شمارهٔ مخزن ماهی Well	گیدر yellowfin		هوور مستطیل Skipjack		چشم درشت Bigeye		هوور دم دراز Longtail		سایر گونه ها (غالب) Other Species			گونه های هدف در صید دورریز Discards			گله آزاد Free school	لگ Log	پشتیبانی کننده، کشتی Supply	بویه Beacon	کوسه نهنگ Shark wale	نهنگ Whale			Degree/Direction ۶۰ - جهت	Speed (ثبت) سرعت
						متوسط Size	وزن Catch	متوسط Size	وزن Catch	متوسط Size	وزن Catch	متوسط Size	وزن Catch	نام گونه Name	متوسط Size	وزن Catch	نام گونه Name	متوسط Size	وزن Catch										
One set by line هر تورریزی در یک خط نوشته شود																													

Distribution pattern of tuna fishes based on fishing Catch and effort of *purse seiners* shown figure1 and 2

Figure1: Total Effort (Tons)

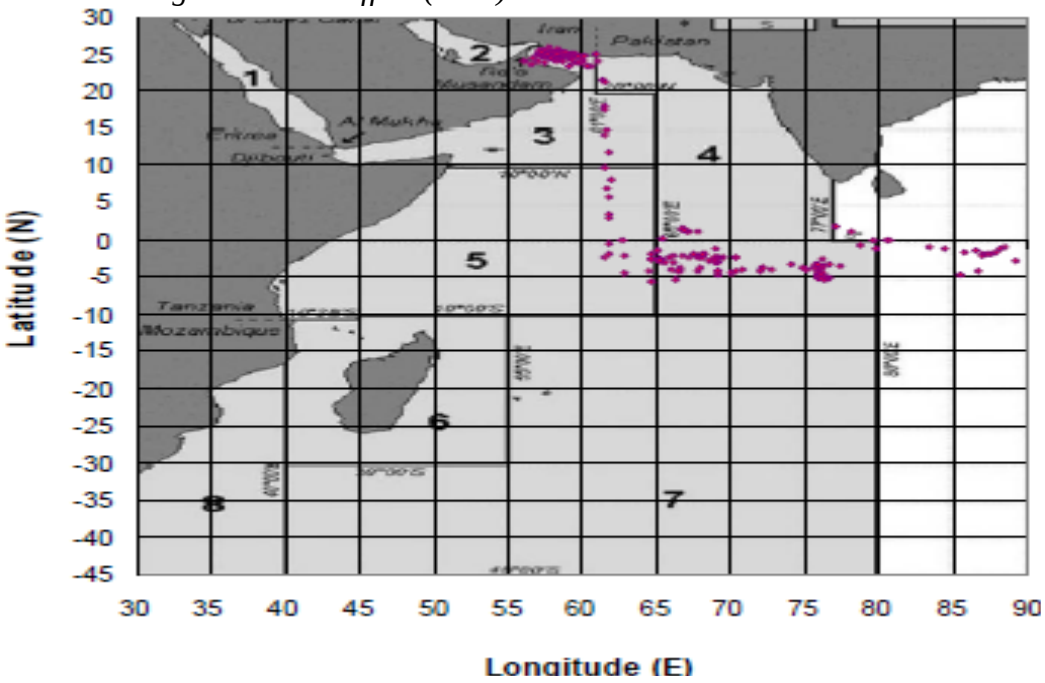
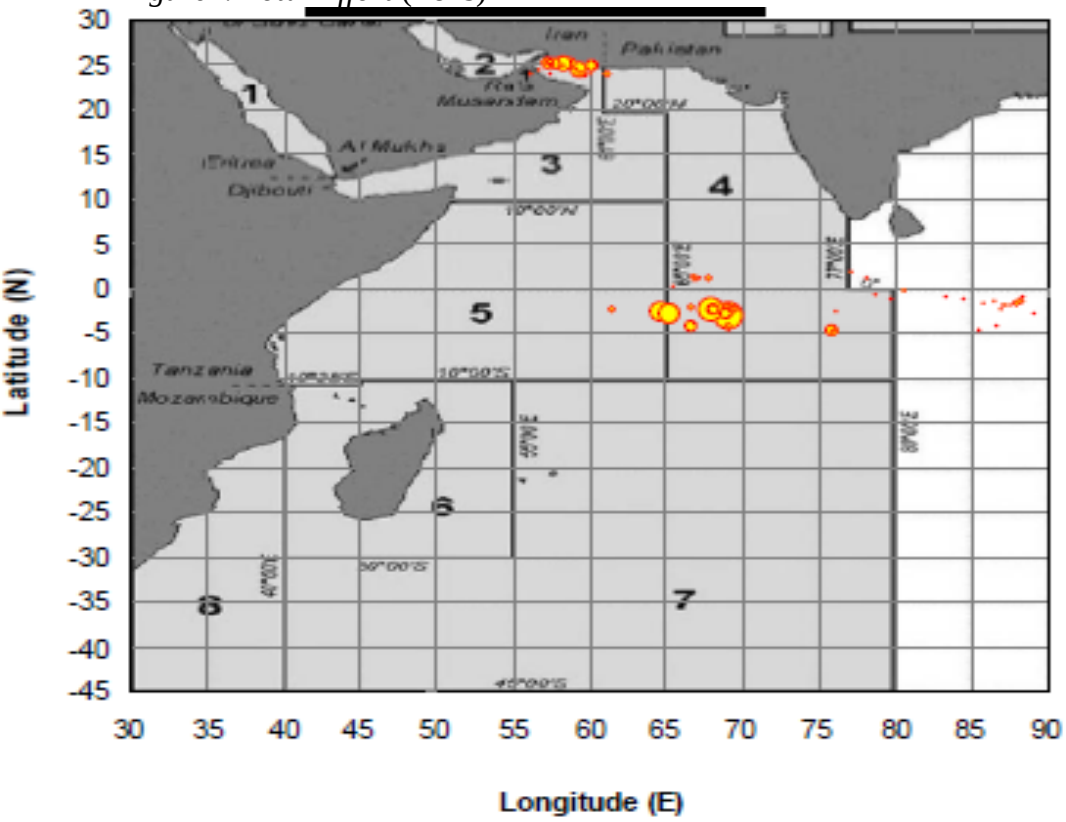


Figure2: Total Effort (Tons)



Vessel Monitoring System

Regarding Vessel Monitoring System (VMS) Iran has some experiences from 2006. IFO has been equipped 50 vessels by on line VMS system. Also at this time we equipped 300 vessels by offline system which all of them are active in the Persian Gulf and Oman Sea. In order to develop these experiences in 2010 we started a study to choose the best available system in our country. According to the results we are going to equip all the vessels to On-line or Off-line VMS. We also have done feasibility study on some cases to remove the probability problems. Base on our plan all the active vessels in Tuna fishing activities must will equipped from 2013.

Observer programme

In order to implement a responsible fishing activities and based on different fishing activities, IFO have had a vessel monitoring system which one of the most important activities is on board observation. Base on 2010 observer reports the coverage of the program on board has been low but in landing places the coverage of control is near to 10%. Regarding on board observer program there are some problem which Iran has tried to solve them. Also Iran has expected a technical and financial supports for solving this problem. The main problem of Iran is the number of our vessels and coverage of 5% for on-board observers. In fact 5% on-board monitoring imposes a huge amount of costs and needs a huge number of experts as observers. For this issue, Iran proposed his recommendation as follows:

Coverage of on-board observers for countries which has less than 100 vessels equal to 5%, from100 up to 500 vessels equal to 3% and more than 500 equal to 1%. Iran believes that this quantity of the mentioned recommendation will cover all the related aspects and does not put the country under financial pressures.

The other problem for implementation of observer program is the condition of Iran artisanal fishing vessels. As we know these vessels are not enough large and have not the minimum requirements for accommodation of observers as a ship officer which has mentioned in related resolutions. According to current situation most of IFO monitoring plans has focused on port state controls and logbooks of vessels.