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Title: Iran's Measures to Improve Catch & Effort Data in 2022

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Abstract

This document presents summary information about fisheries statistical data in Iran, according to IOTC resolutions and recommendations concerning mandatory minimum data submit to IOTC and basic actions to improving Data collection system with approvals and recommendations of the Scientific Committee and WPDCS.

In 2022 total fish production in Iran was 1,352,264 tonnes, including 601,435 tonnes, aquaculture and 750,829 tonnes, catch which comprised 718,315 tonnes (96%) from southern waters, and 32,514 tonnes (4%) from northern waters. Total catch in southern waters, which can be distribute as tonnes (78%) attributed to Persian Gulf and Oman Sea as coastal fisheries, tonnes (24%) from High seas (outside of Iran EEZ in western Indian Ocean). More than 10000 artisanal fishing vessels are active.For better collaboration with IOTC, much effort has been carried out to extract all necessary outputs required to meet the concerned IOTC, Resolutions. Developing our data collection system and software is in progress to meet mandatory minimum statistics requirements and reporting catch and effort data by gear, coastal fishing ground and high seas fishery to IOTC. We have taken various actions to implement the Scientific Committee and IOTC Resolutions and recommendations.

In complying with IOTC regulations, we are decreasing the fishing pressure on coastal species by substituting a number of gillnetters with logline fishery to meet IOTC mandates. Also data collection for highseas fishery is ongoing, to this end we are collecting and filling the data through logbooks. In addition, the species for which the size data is reported include 6 tuna species comprised of: YFT, SKJ, BET, KAW, COM & LOT at 17 landing places. Size data collected by type of fishery including: Gillnet Purse seine and Hook or Troll fishery. Tuna and tuna-like Species identification was improved by holding training courses to differentiate BET from YFT, KAW from Bullet and frigate tuna, to identify billfishes, shark species and so forth. Historical catch & effort data (2011-2021) have been reviewed and modified to determine the exact catch of vessels with > 24 meters length. We have carried out many actions for reporting of gillnet fishery by-catch and discard species such as sharks, dolphins, sea turtles, etc.

Every year, efforts are made to adapt and implement the recommendations of the Indian Ocean Tuna Commission (IOTC) in Iran, with a focus on finding suitable areas for implementation that will involve the cooperation and participation of the fishing community. Strengthening fisheries education and training programs to enhance fishing conditions is considered a crucial approach in managing the sustainable exploitation of neritic tuna stocks, as well as catch & effort data collection in the country.

1-Background/General Fishery Information

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. There are 4 coastal provinces in that areas about 11 thousand vessels consist of fishing boat, dhows and vessel which are engaged in fishing in the coastal and high seas. Gillnet, trolling, coastal artisanal longline, purse seine and trolling are four main fishing methods used by Iranian vessels to target tuna and tuna-like species in the IOTC area competency and some of small boats used trolling in coastal fisheries. Iran has taken various actions to implement the Scientific Committee recommendations and IOTC Resolutions.

One of them is national actions to improve data collection system for Tuna fishery since 2012 until now. We have implemented modification of logbook template for Iranian industrial purse seiners and artisanal gillnets(which have not be used until now) to meet mandatory minimum statistic requirement, particularly concerning data recording of vessel position in IOTC area for target species, By-catch including 9 species of sharks and 5 species of billfish, non-targeted, associated and dependent species and discard.

In 2022, total fish catch & aquaculture production in Iran was 1,352,000 tons, which has distributed as 53% from Persian Gulf, Oman Sea and overseas, 2% from Caspian Sea and 44% through Aquaculture. The total catch in 2022 was 751,000 tons; out of which about 274,000 tons was of Tuna &Tuna like Species; however, in the year 2006, the tuna and tuna-like species catch was 207,000 tons, that around 50 percent belonged to skipjack. Resultantly After this year due to Tsunami and phenomenon of piracy in the IOTC region, the vessels changed the fishing grounds and operated in coastal areas. This caused extreme decrease of skipjack catch at the ratio of 103,000 tons, in 2006 and 78,598 tons, in 2022 and inverse increase of longtail tuna catch at the ratio of 25,000 tons in 2006 and 48,388 tons, in 2022 and . The effort in coastal areas increased; as a result, an increase of longtail tuna in 2022, as compared with the data of 2006. As I mentioned before Tuna and tuna-like species fisheries is one of the most important activities in the Persian Gulf & Oman Sea. Those catch consist of Yellowfin tuna 38,821 tons, Skipjack tuna 78,598 tons, Bigeye tuna 1,016 tons, Longtail tuna 48,388 tons, Kawakawa 35,985 tons, Frigate tuna 9,579 tons, Billfish(contain 4 species)34,809 tons, Indo-pacific king mackerel 9,896 tons, Narrow- barred Spanish mackerel 25,284 tons, Sharks 3,031 tons, and other species 19,809 tons.

Figure1.1. Annual total production from 2013 to 2022 (metric tonnes)

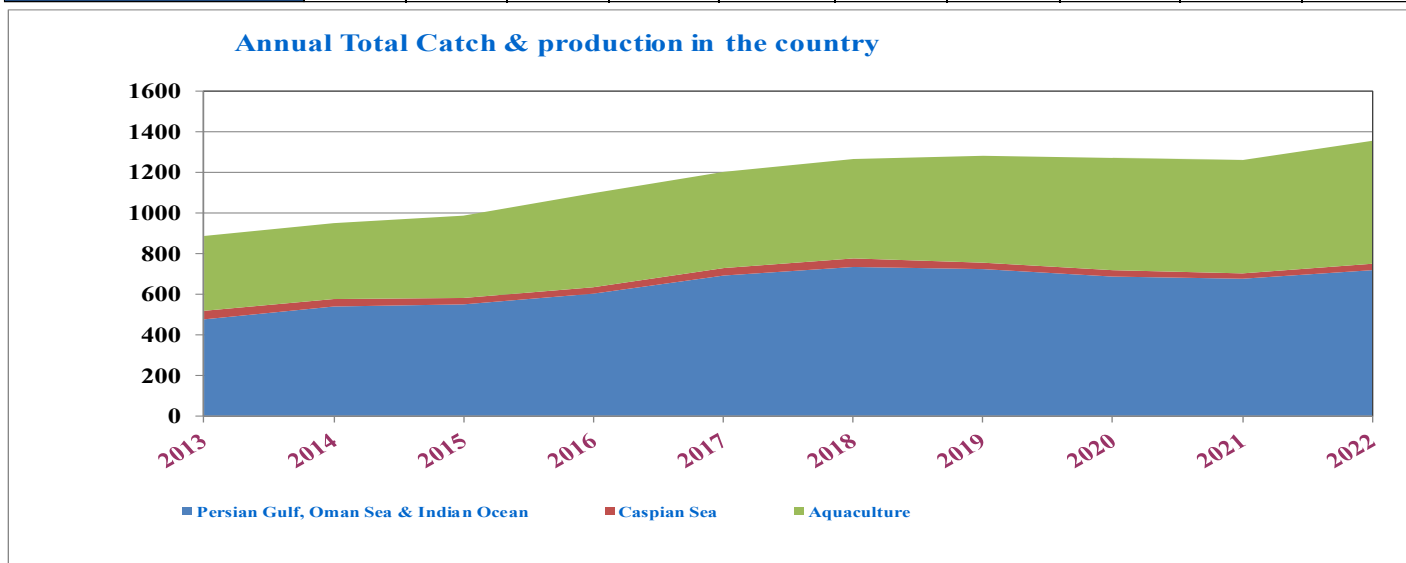| Area	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Persian Gulf, Oman Sea & Indian Ocean	474	536	550	601	691	731	720	684	673	718
Caspian Sea	40	40	33	33	34	42	36	31	30	33
Aquaculture	371	372	402	460	477	489	527	553	556	601
TOTAL	885	947	984	1,094	1,202	1,262	1,282	1,269	1,259	1,352

Figure1.2. a Comparison of total production between 2013 and 2022(metric tonnes)
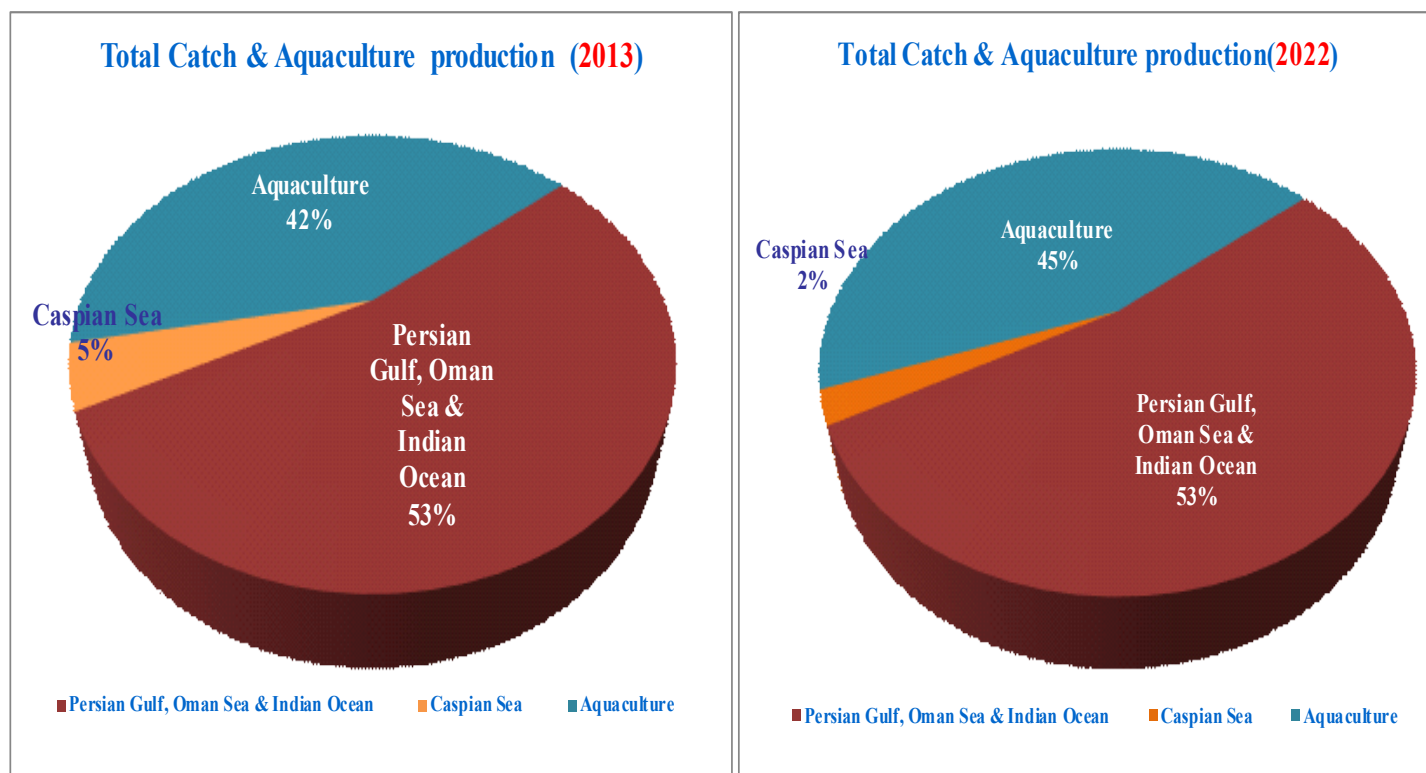
Figure1.3. Annual Catch by 5 species groups from 2013 to 2022(metric tons)

GEAR GROUP	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Neritic Species	127,704	138,910	128,661	130,565	142,632	142,160	125,358	142,280	135,230	129,132
Tropical Species	67,378	88,213	83,763	87,337	113,008	112,314	99,968	94,356	113,008	118,435
Billfish	14,058	21,456	19,532	14,585	18,794	20,476	17,679	20,512	26,530	34,809
Sharks	6,940	7,132	7,135	4,797	3,770	2,967	3,432	3,632	4,140	3,031
Others	6,945	8,552	9,840	10,815	15,574	33,323	27,205	22,692	29,323	30,844
TOTAL	223,025	264,264	248,931	248,099	293,778	311,240	273,641	283,472	308,231	316,252
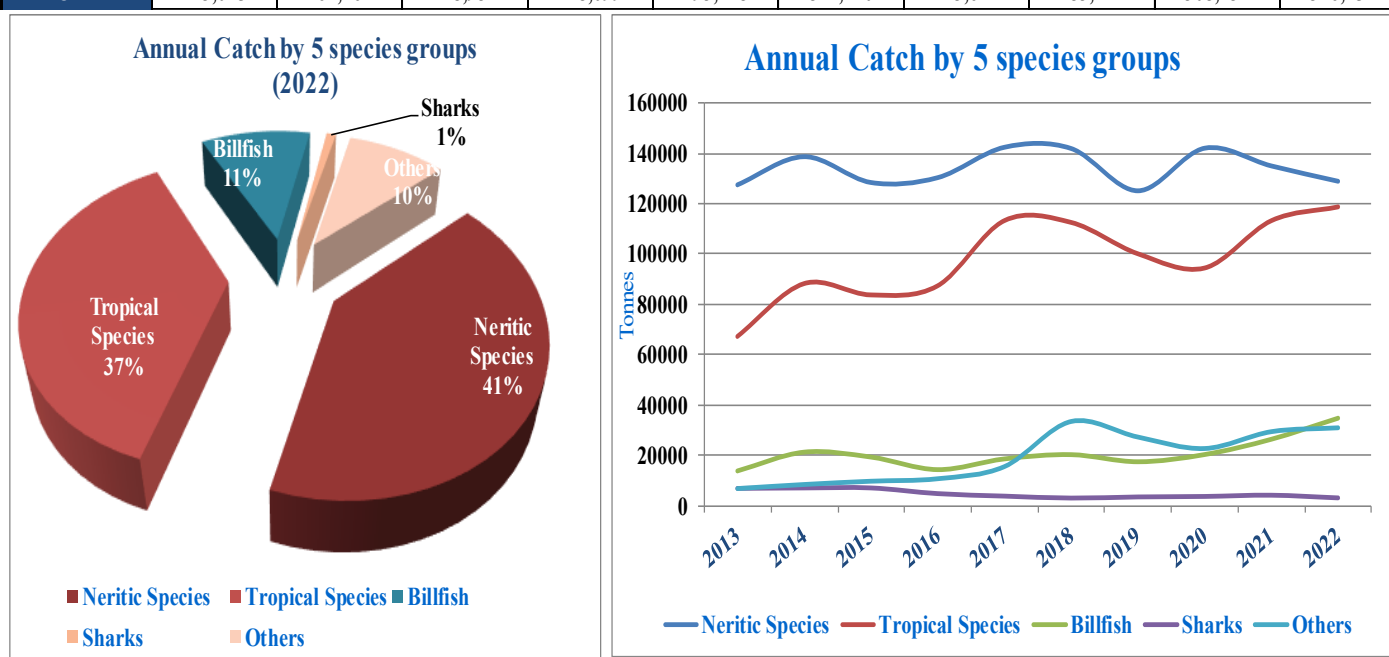
2-Fleet Structure

Fisheries activities in the southern waters of Iran by 10,797, vessels are ongoing. Around 6,500 vessels of this fleet are engaged in large pelagic species fishing in 2022, which no catch and effort data for industrial purse seine methode have been recorded(only one purse seiner vessel (ParsianShila) was active for a few days for a research work in Persian Gulf and Oman sea due to sanctions and related difficulties in accessing satellite-based FADS data. Therefore, FADs were used by fishing vessels, 3,381 Artisanal vessels (Dhows) and 7,294 fishing boats. Around 1200 vessels are active in tuna and tuna-like fishing in the Oman Sea, and high seas. This means close to 90 percent of crafts operate in the coastal areas and about 10% of the fishing vessels operating in high seas (outside of Iran EEZ in western Indian Ocean). GT of purse seiners is up to1000 t and GT of Gillnetters ranges from less than 3 t to more than 100 t. Gillnet and purse seine are two main fishing gears for catching tuna and tuna-like species in the IOTC area, as well as some of small boats used trolling method in coastal fishery and a few vessels operate artisanal longline for catching yellowfin tuna in coastal area of Oman sea. Table 2.1 shows the fishing fleet disaggregated into the following (GT) categories during 2013 to 2022.

Table 2.1: Number of vessels operating in the IOTC area of competence, by gear type and size (2013-2022)

GEAR GROUP	Capacity GT	No. Crafts by year									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Purse seine	500 to 1000 t	2	3	3	2	2	2	2	2	2	0
	>1000 t	2	3	4	5	5	5	5	5	5	0
Total Purse seine fishing Craft		4	6	7	7	7	7	7	7	7	0
Coastal_Artisanal_ Longline **	< 3 t	0	0	0	300	324	324	400	250	280	492
	51 to 100 t	0	0	0	80	165	165	184	70	70	85
	100 to 200 t	0	0	0	14	14	14	20	0	0	0
	>1000 t	1	1	1	1	1	1	1	1	1	1
Total Coastal_Artisanal_Longline ** fishing Craft		1	1	1	395	504	504	605	321	351	578
Gillnet	< 3 t	3,340	3,784	3,741	3,319	2,758	3,168	3,097	3,752	2,694	3,416
	3 to 20 t	586	282	270	258	239	226	207	230	437	247
	21 to 50 t	941	1,021	1,060	391	318	271	248	216	254	303
	51 to 100 t	479	527	534	171	316	297	249	246	506	477
	>100 t	260	329	338	283	326	377	448	487	246	248
Total Gillnet fishing Craft		5,606	5,943	5,943	4,422	3,957	4,339	4,248	4,930	4,138	4,691
Trolling	< 3 t	854	810	805	2,190	1,820	1,645	1,748	1,901	1,771	1,808
Total Trolling fishing Craft		854	810	805	2,190	1,820	1,645	1,748	1,901	1,771	1,808
Total all Gear fishing Craft		6,465	6,760	6,756	6,620	5,785	5,992	6,004	6,839	5,917	6,500

3- Catch and Effort (by Species and Gear)

Table 2.1 and figure 3.1 to figure 3.4 shows the total annual catch and effort by gear type and species reported for the all fleet. The Catch quantity of tuna and tuna-like species in 2022 was equal to 274,000 tons, of which 114,572 tons, belongs to coastal waters and the rest (159,663 tons) belongs to high seas fishery. In 2005 and 2006, the amount of catch from high seas fishery were exceeded the coastal waters catch, but after those years due to the piracy and insecurity related to this issue, the trend has completely reversed and Since 2007, the tropical tuna catch declined and the neritic tuna catch has increased. This decline of tropical tuna catch which has caused by the phenomenon of piracy; fishermen relocate their fishing grounds from High seas to coastal areas in Persian Gulf and Oman Sea and concentrate on traditional coastal fishing grounds. This shift of fishing grounds caused fishing effort increasing in coastal areas, as a result increasing in longtail catch from 25,000 tons, in 2006, to 48,388 tons, in 2022 (107%). Figure3.1. shows the amount of catch for different fishing methods of purse seine, coastal artisanal longline, gillnet and trolling was estimated tons, 9,434 tons, 287,564 tons and 19,254 tons, respectively.

The total catch recorded by the purse seine fleet during 2022, the amount of catch for purse-seiners showed a descending trend in 2019 to 2022, comparing to recent 10 years. Only one purse seiner vessel (ParsianShila) was active for a few days for a research work. Therefore, no catch and effort data of purse seine fishery collected for 2022.

Figure3.1. Annual Catch by Gear Type (2013-2022)

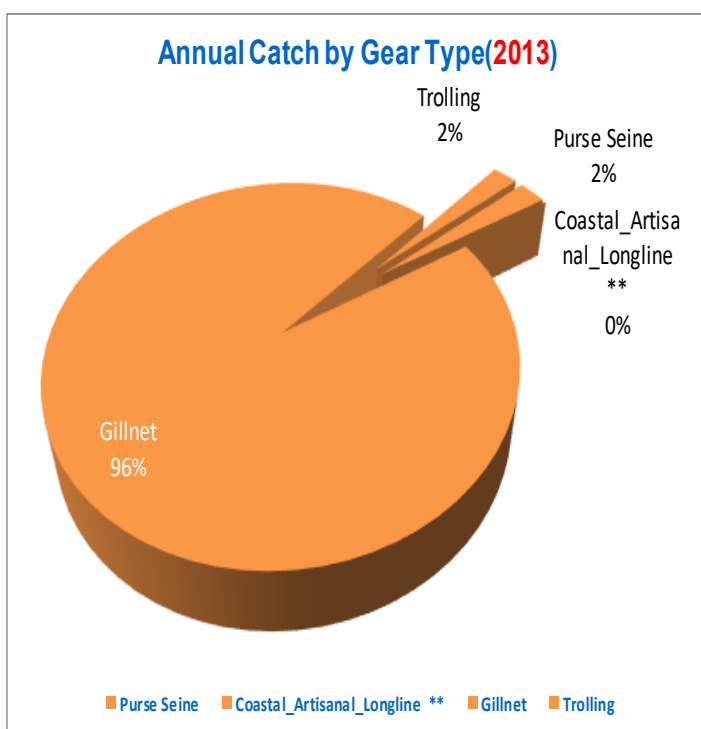| GEAR GROUP	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Purse Seine	5,285	5,794	5,308	4,879	6,206	5,292	4,046	1,026	531	0
Coastal_Artisanal_Longline *	0	0	0	5,760	8,574	11,975	8,441	8,839	5,660	9,434
Gillnet	212,857	250,470	238,500	232,809	274,567	289,283	248,472	253,675	283,351	287,564
Trolling	4,882	8,000	5,123	4,651	4,432	4,690	12,681	19,932	15,701	19,254
TOTAL	223,025	264,264	248,931	248,099	293,778	311,240	273,641	283,472	305,244	316,252
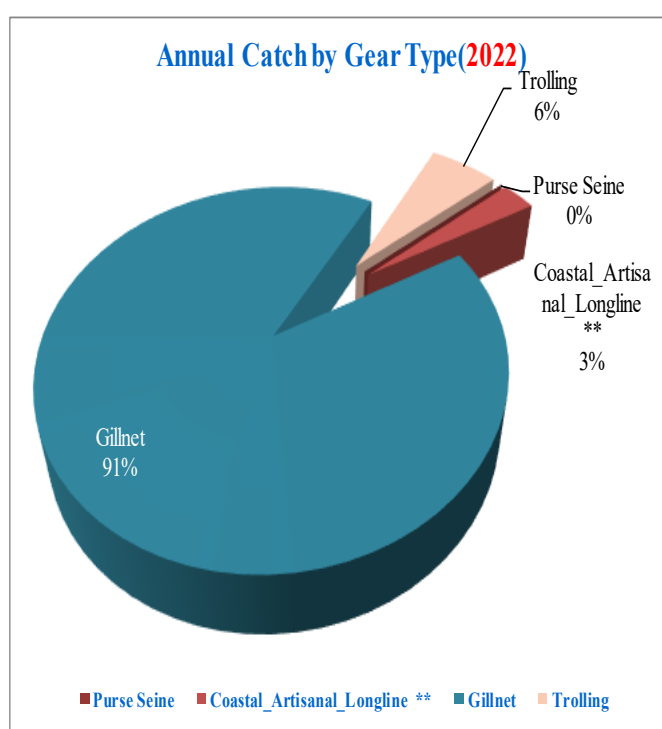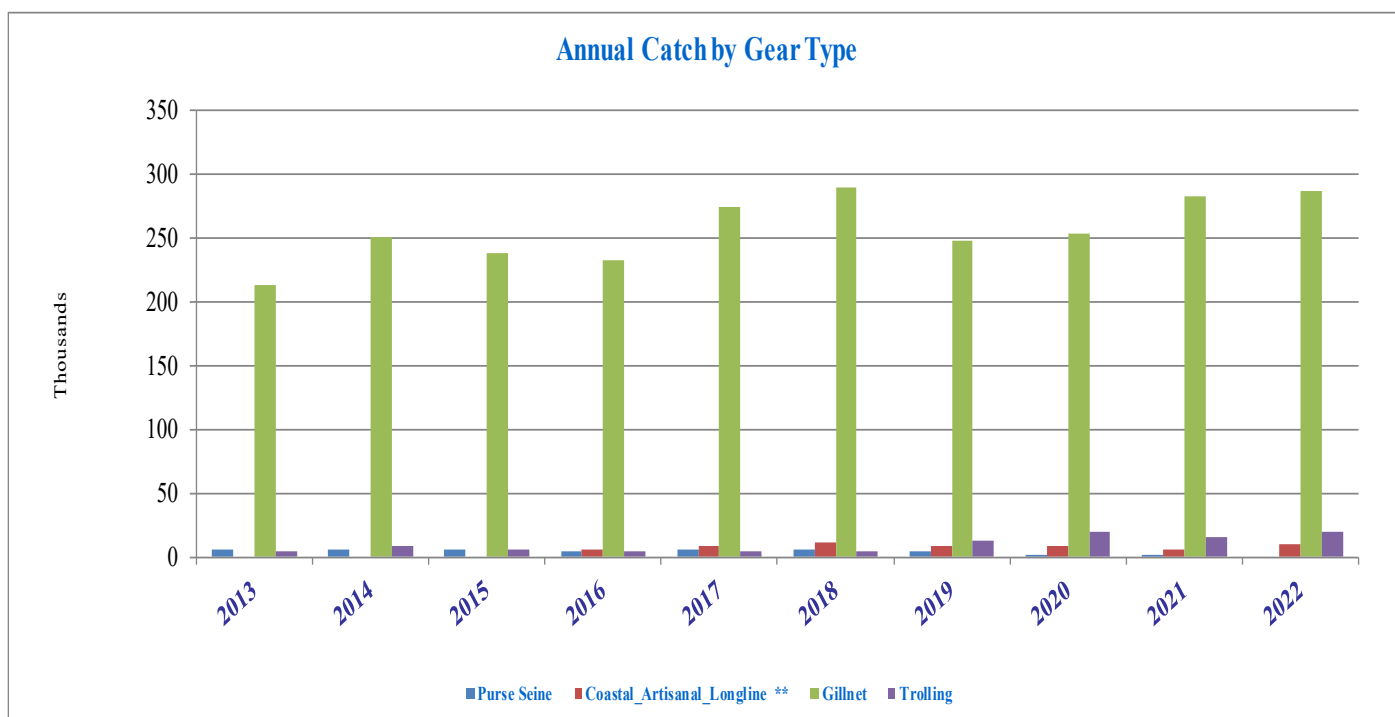
Figure3.2. Annual Catch of Purse Seiners by Species (2013-2022)

SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
KAW	0	11	0	0	5	0	0	0	0	0
LOT	1,520	140	814	50	1,891	998	467	416	220	0
SKJ	1,605	798	489	1,202	2,477	356	190	0	59	0
YFT	1,980	4,832	3,842	3,465	1,764	3,898	3,361	610	247	0
BET	100	10	135	138	29	0	0	0	0	0
Others	80	3	29	24	39	40	28	0	6	0
TOTAL	5,285	5,794	5,308	4,879	6,206	5,292	4,046	1,026	531	0

Annual Catch of Purse Seiners by Species (2013)

YFT 37%
KAW 0%
BET 2%
Others 2%
LOT 29%
SKJ 30%

KAW LOT SKJ YFT BET Others

Annual Catch of Purse Seiners by Species (2022)

BET 0%
Others 0%
KAW 0%
No activity
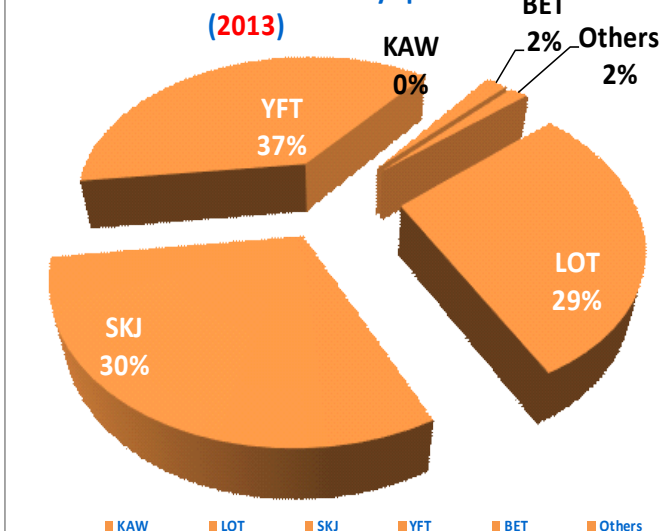
KAW LOT SKJ YFT BET Others
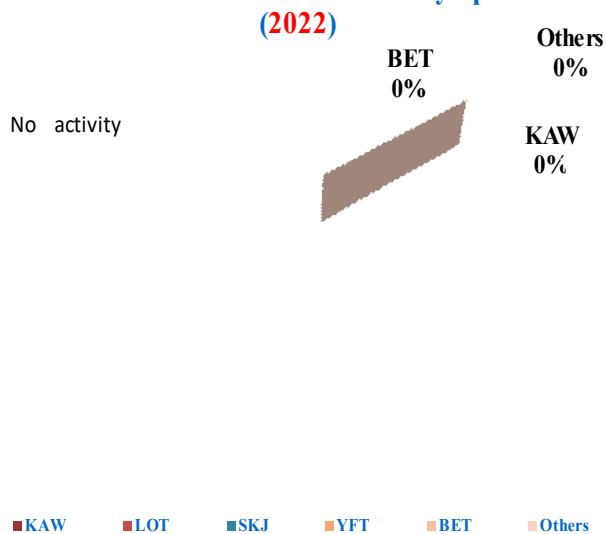
Note: only one purse seiner vessel (ParsianShila) was active for a few days for a research work in Persian Gulf and Oman seas due to sanctions and related difficulties in accessing satellite-based FADS data. Therefore, no Catch and effort has been recorded of this fishing method for 2022.

Figure3.3. Annual Catch of Gillnet by Species (2013-2022)

SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
FRI	6,847	13,263	10,422	10,238	10,251	9,135	8,860	12,218	6,902	8,971
KAW	28,131	28,885	27,805	33,640	38,253	35,551	32,706	34,341	39,109	34,930
LOT	62,677	60,754	57,555	54,560	56,654	59,436	46,435	51,482	49,527	44,353
SKJ	31,722	38,931	38,232	37,956	50,822	49,608	39,782	44,516	68,049	78,598
YFT	30,421	41,326	38,412	35,110	45,551	42,071	40,459	33,757	35,235	26,492
BET	1,549	2,259	2,309	2,931	3,577	3,700	1,949	1,526	620	1,016
COM	18,326	21,218	20,617	20,759	22,529	23,675	20,949	21,210	24,508	20,827
GUT	5,640	6,705	6,997	7,501	9,326	9,581	10,035	10,237	9,871	8,785
BillFish	14,056	21,455	19,479	14,585	18,747	20,473	17,179	18,370	26,077	31,470
Sharks	6,623	7,132	6,930	4,737	3,443	2,772	3,281	3,442	4,085	2,779
Others	5,812	6,708	6,567	6,852	7,674	23,492	18,047	14,175	19,833	18,308
TOTAL	212,857	250,470	238,500	232,809	274,567	289,283	248,472	253,675	293,053	287,564
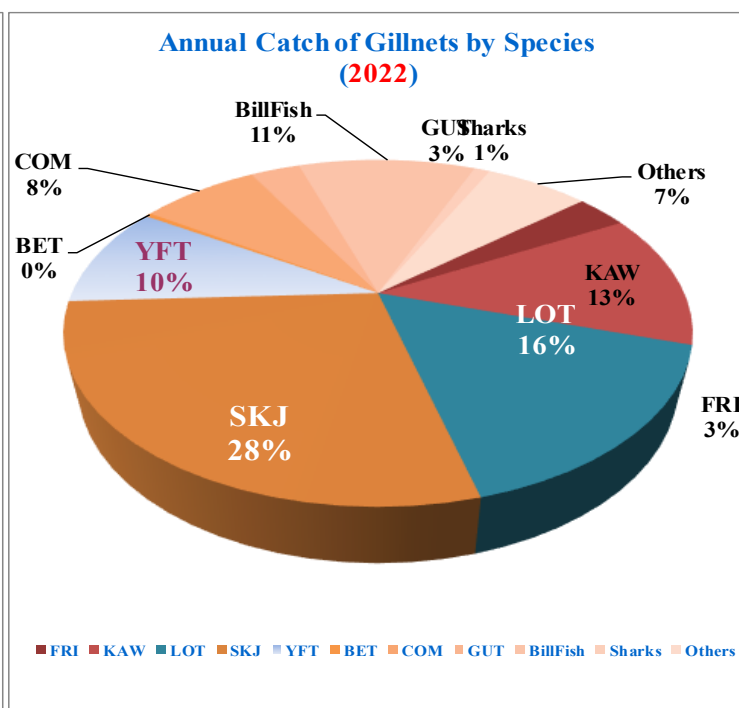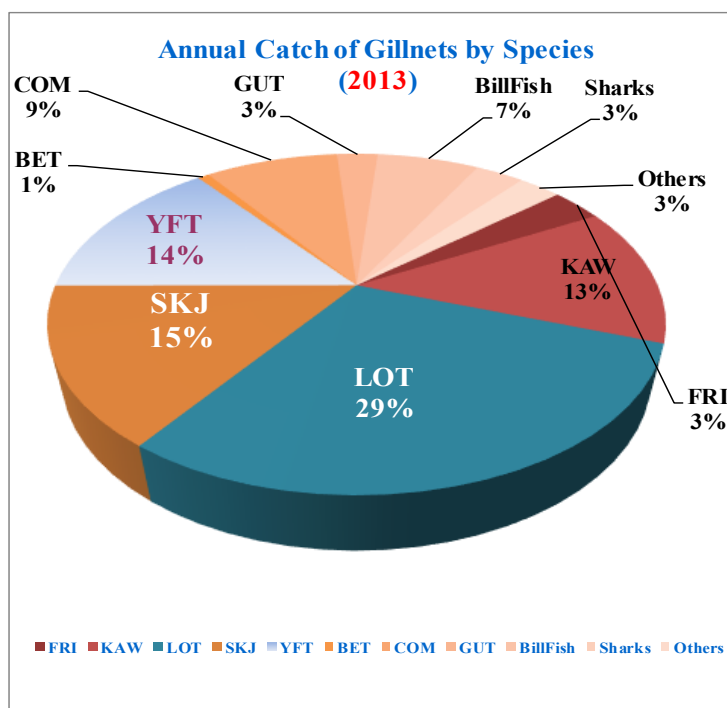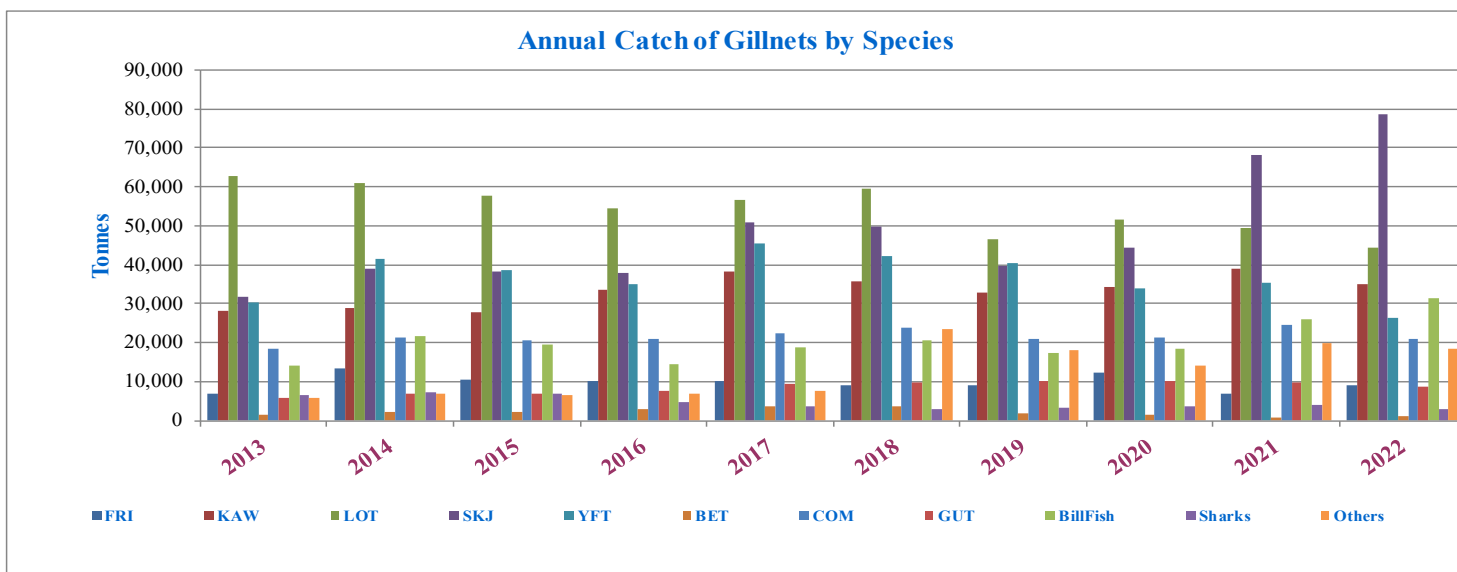
Figure3.4. Annual Catch of Trolling Method by Species (2013-2022)

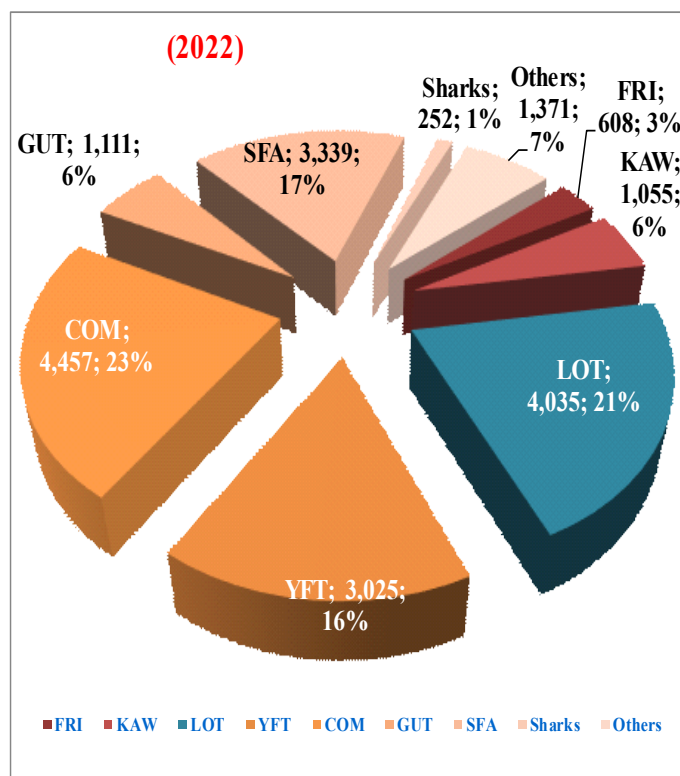| SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
FRI	25	228	233	6	14	45	98	8	250	608
KAW	387	452	516	231	457	1,105	554	2,215	914	1,055
LOT	2,349	4,672	1,278	501	1,605	667	2,119	4,655	3,841	4,035
YFT	2	57	345	775	335	707	5,787	5,109	4,128	3,025
COM	1,687	2,420	2,181	2,922	1,532	1,519	2,822	5,078	4,608	4,457
GUT	114	162	245	158	116	448	312	419	568	1,111
SFA	2	2	53	0	47	3	499	2,142	905	3,339
Sharks	317	0	205	59	327	195	151	190	111	252
Others	0	7	68	0	0	0	340	115	376	1,371
TOTAL	4,882	8,000	5,123	4,651	4,432	4,690	12,681	19,932	15,701	19,254
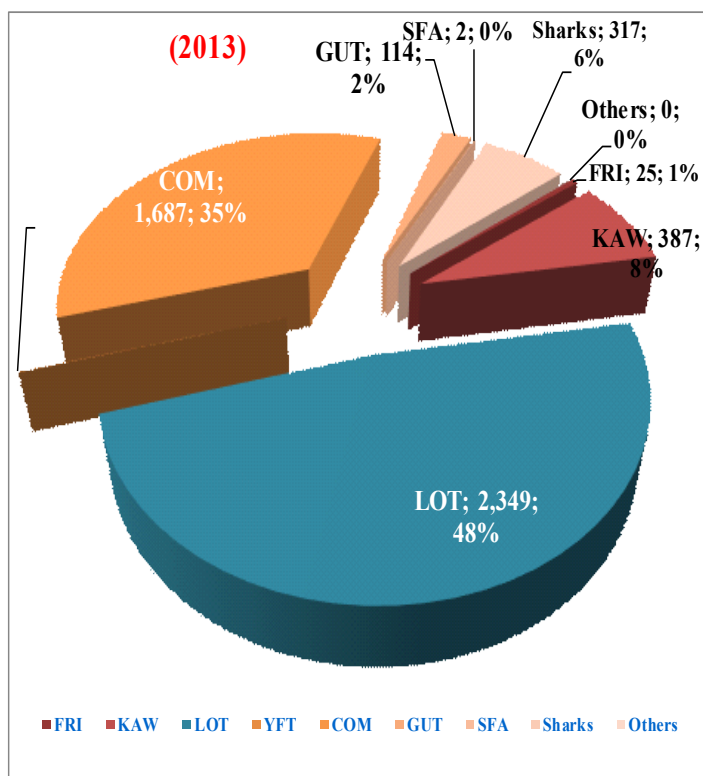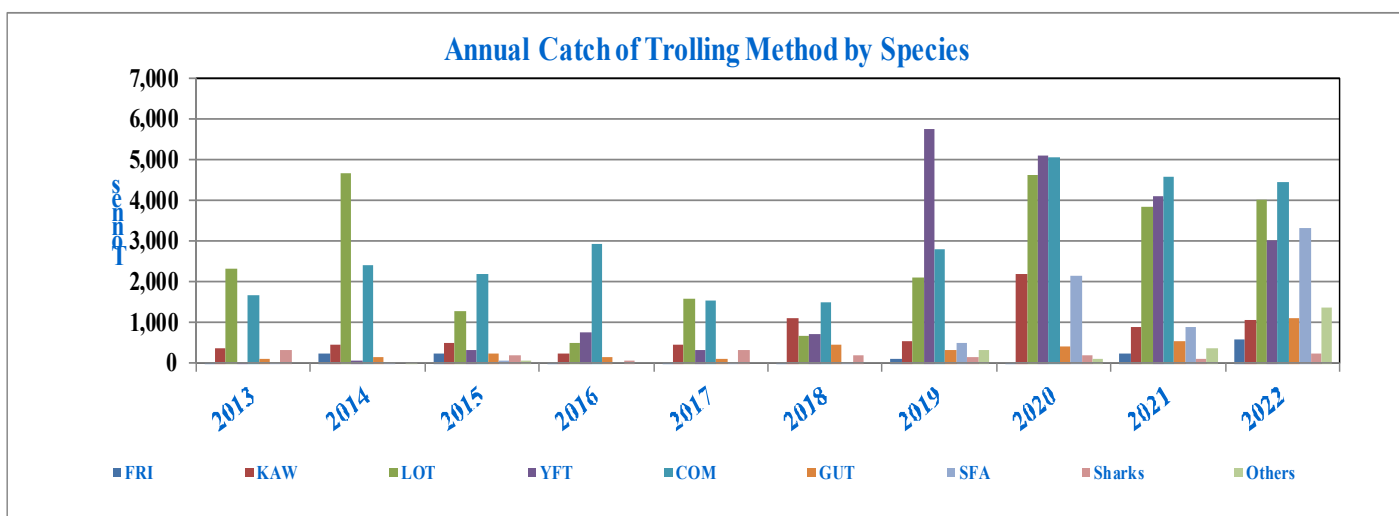
Figure3.5. Annual Catch of Coastal_Artisanal_Longline Method by Species (2013-2022)

SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
YFT						11,974	8,441	8,839	5,600	9,304
BET						0	0	0	0	0
SFA						0	0	0	0	0
BLM						0	0	0	0	0
SWO						0	0	0	0	0
DOL						0	0	0	60	130
TOTAL	0	0	0	0	0	11,975	8,441	8,839	5,660	9,434
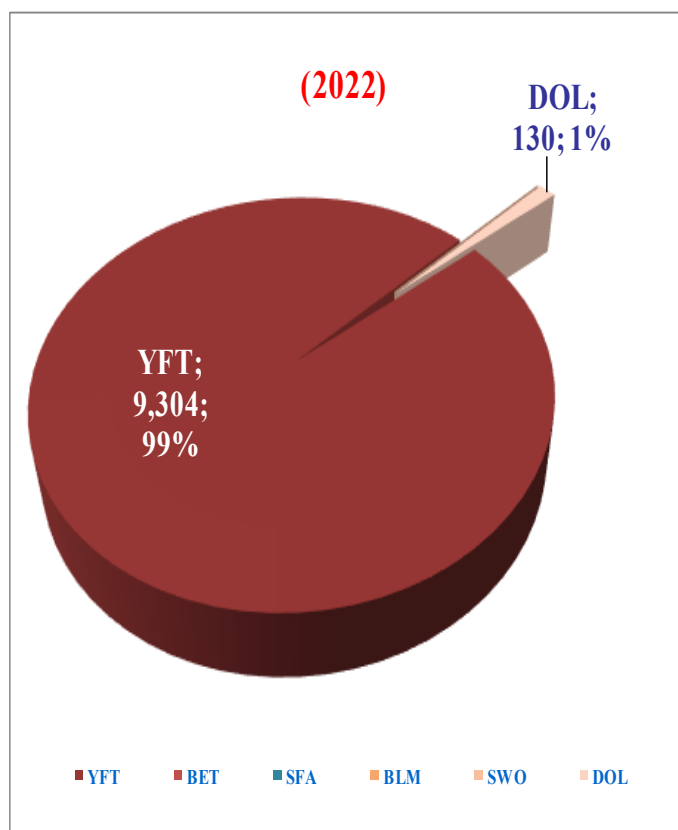
Table.3.6.Annual fishing effort by different vessel categories per days (2013-2022)

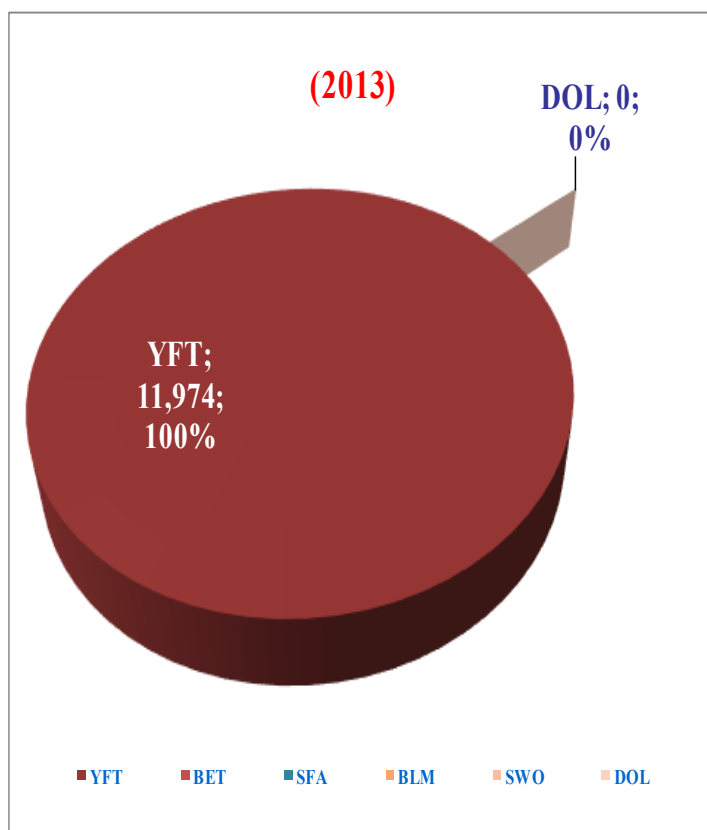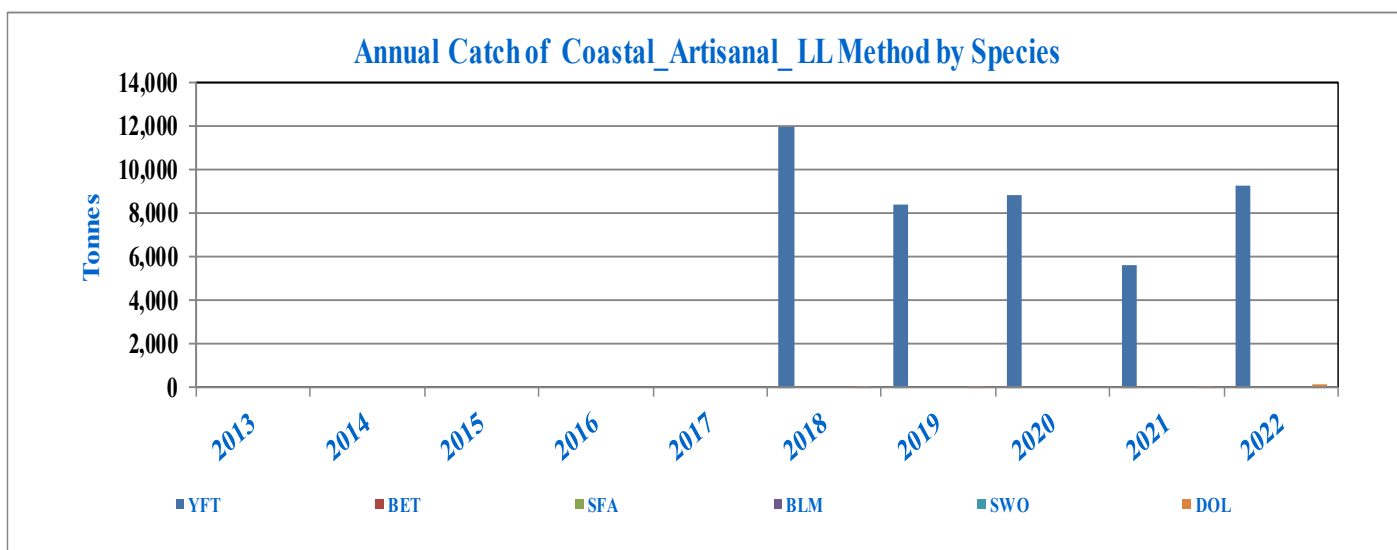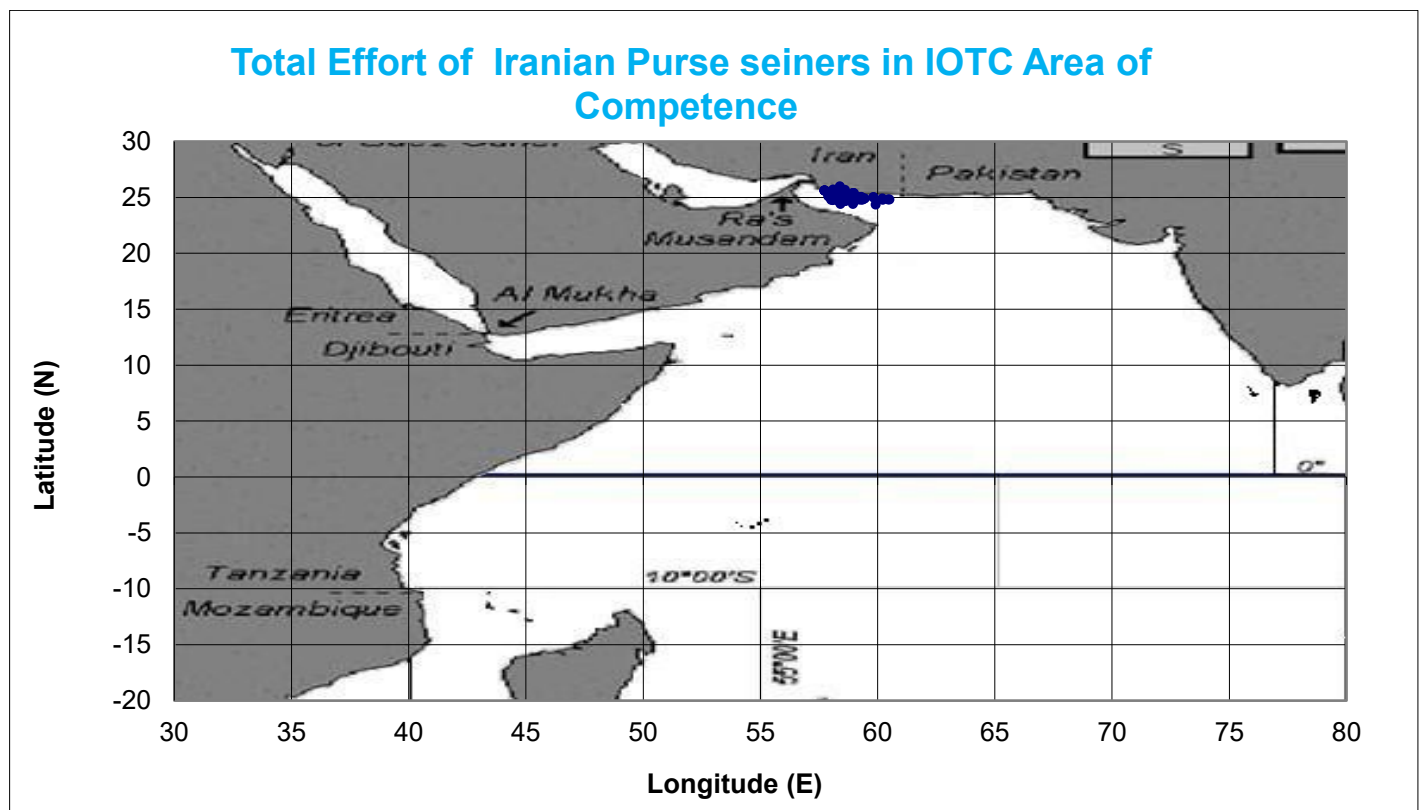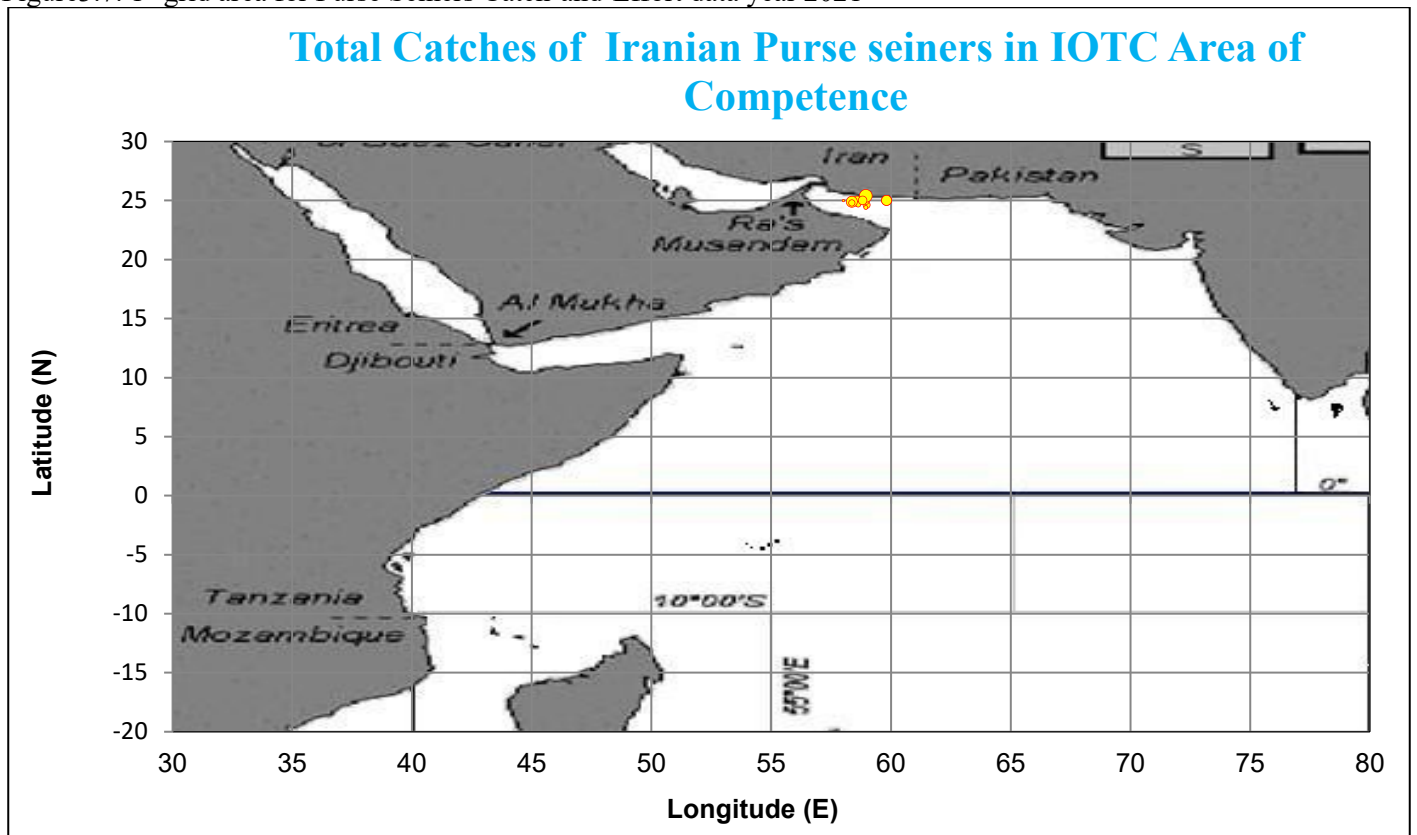| GEAR GROUP	Capacity GT	Fishing effort by gear(days)									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Purse seine	500 to 1000 t	0	0	0	0	0	0	0	0	0	0
	>1000 t	450	981	727	1,164	1,085	715	811	401	376	0
Total Purse seine fishing effort		**450**	**981**	**727**	**1,164**	**1,085**	**715**	**811**	**401**	**376**	**0**
Coastal_Artisanal_Longline **	<3	0	0	0	18,000	19,440	24,300	20,000	34,000	45,000	49,200
	51 to 100	0	0	0	3,200	6,600	14,025	11,040	9,520	16,800	29,520
	100 to 200	0	0	0	560	560	1,190	1,200	0	0	0
	>1000	0	0	0	0	0	0	0	0	0	0
Coastal_Artisanal_Longline ** fishing		**0**	**0**	**0**	**21,760**	**26,600**	**39,515**	**32,240**	**43,520**	**61,800**	**78,720**
Gillnet	<3 t	515,372	557,434	538,550	487,646	438,046	516,149	496,736	764,432	541,066	568,892
	3 to 20 t	100,809	43,303	40,985	41,682	43,035	44,779	37,392	43,369	77,334	46,606
	21 to 50 t	176,132	195,643	184,070	74,870	58,114	51,045	47,178	44,594	60,629	63,268
	51 to 100 t	82,637	91,293	91,790	30,337	54,873	52,410	40,029	36,904	93,199	100,245
	>100 t	45,020	57,662	60,400	50,530	59,746	69,535	75,343	72,941	46,197	52,129
Total Gillnet fishing effort		**919,970**	**945,335**	**915,795**	**685,064**	**653,815**	**733,918**	**696,677**	**962,241**	**818,425**	**831,140**
Trolling	<3 t	139,161	125,446	123,450	229,190	196,440	224,708	258,713	133,500	127,260	135,740
Total Trolling fishing effort		**139,161**	**125,446**	**123,450**	**229,190**	**196,440**	**224,708**	**258,713**	**133,500**	**127,260**	**135,740**
Total all Gear fishing effort		**1,059,581**	**1,071,762**	**1,039,972**	**937,178**	**877,940**	**998,856**	**988,441**	**1,139,662**	**1,007,861**	**1,045,600**

Figure3.7. 1° grid area for Purse Seiners Catch-and-Effort data year 2021

Total Catches of Iranian Purse seiners in IOTC Area of Competence

Total Effort of Iranian Purse seiners in IOTC Area of Competence

4. National Data Collection and Processing System

Iran's fisheries activities consists two parts that their fishing methods and fishing geographical features are quite distinct from each other:

1-Northern coastal provinces (Caspian Sea)

2- Southern coastal provinces (Persian Gulf & Oman Sea & Overseas)

4.1. Caspian Sea

There are three coastal provinces in northern waters, which are fishing in their territorial waters with around 32,514 tonnes and 787 vessels and with three different fishing methods (Figure 4.1.1, 4.1.2.):

4.1.1. Sturgeon Fishing

Around 533 fishermen with 150 fishing boats in 33 fishing ground by gill net method are engaged in sturgeon fishing (five major species)

Note: Iran voluntarily has banned commercial fishing of sturgeon species since March 2012.

4.1.2. Kilka (anchovy) Fishing

Around 523 fishermen with 74 fishing vessels in 4 fishing ground by Light-Conical Nets (funnel-shaped net) are engaged in anchovy fishing. (Three major species)

4.1.3. Bony Fishing

Around 8,506 fishermen within 111 fishing cooperatives in 111 sites by beach seine method are engaged in 15 bony species fishing.

The statistical method employed in the Caspian Sea for all three specified aquatic groups utilizes a total enumeration approach. This entails the port samplers stationed at the fishing ports collecting the unloaded catch of Kilka (anchovy) fish from fishing vessels, as well as gathering information on the catch and size of bony fish and sturgeon. These data are collected through designated fishing stations associated with each respective aquatic group and recorded in fishing statistics questionnaires.

Figure4.1.1.Caspian Sea Fishing Method & Active Fleet (2022)

FISHERIES-- CASPIAN SEA

Kilka
3 species
FISHING METHOD : Light-Conical Nets
Active Fleet : 74 Vessels

Bony Fish
14 species (3 main species)
FISHING METHOD : Beach Seine
Active Fleet : 123 fishing cooperation

Sturgeon
5   Main SPECIES
FISHING METHOD : Gillnet
Active Fleet : 150 small boats

Iran voluntarily has banned commercial fishing of sturgeon species.

Figure4.1.1.Caspian Sea Catch by Categories (2022)

Caspian Sea Catch for year 2022(Mt)

Sturgeon; 11; 0%

Bony fish; 13,395; 41%

Kilka; 19,108; 59%
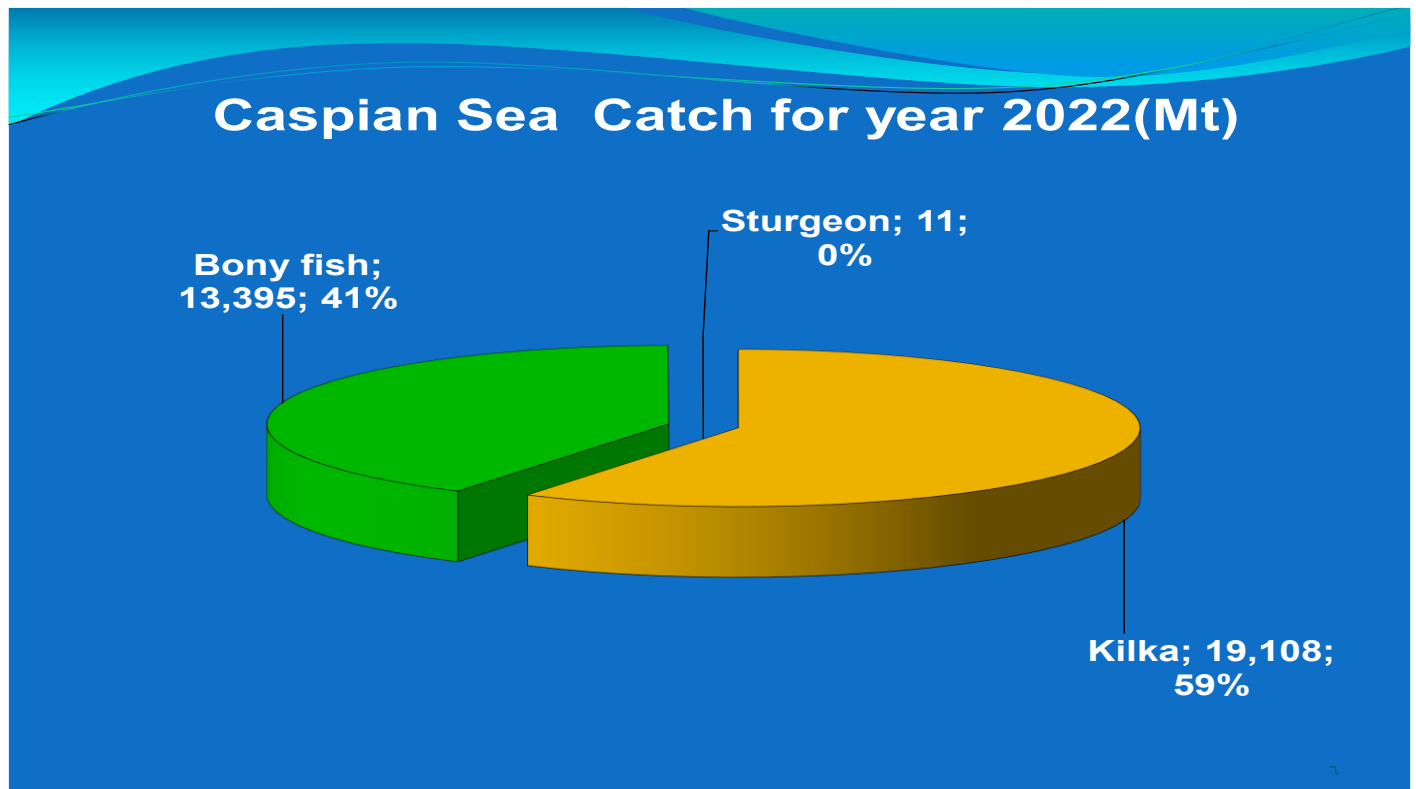
4.2. Persian Gulf & Oman Sea & High Seas

There are four coastal provinces in southern waters, which are fishing in their territorial waters with about 10,797 vessels.

- **Gillnet fishing** method is used by fishing Boats and Dhows for Large Pelagic.
- **Mid-Water Trawl fishing** method is used by ship for Cuttlefish, lantern fish (mictophids) and Hair tail (Ribbon) in time-area closure.
- **Shrimp Trawl fishing** method is used by Artisanal boats, dhows, and industrial vessels for Shrimp in time-area closure.
- **Trap** (Gargoor) **fishing** method is used by boats and Dhows for Grouper, Cuttlefish and other Demersal species.
- **Trolling, pole & line fishing** method is used by boats for Tuna species, Mackerel, Long tail Tuna, yellowfin Tuna and some Demersal species.
- **Coastal Artisanal Longline** method is used by boats and Dhows for Tuna species, especially yellowfin Tuna.
- **Purse-seine(pair-boats) fishing** method is used by boats for Sardine and Industrial vessels Tuna

All of them needs fish license (permit) when they are going to sea for fishing operation. There are 67 basic landing centers in southern coastal waters. All of 67 basic landing, issue, fishing permit for vessels. Fishing permits form, also used for total enumeration in all landing sites for statistics on total effort of active fleet. As well as following fishing, methods and total enumeration carried out by fishermen fishing cooperatives:

- **Beach-seine fishing** method is used by fishermen in limited area of Hormozgan province for Sardine
- **Set net** fishing method is used In tidal regions of Hormozgan province for shrimp, crap, …

4.3. Logbook program for artisanal gillnets and industrial purse seiners

In 2011, logbook program has implemented for Iranian artisanal gillnets and industrial purse seiners and designed a new logbook template according to IOTC Resolutions and Four Iranian purse seiners were active in 2021, their fishing operations reported in logbook format for 2021 but they weren't active in 2022.

In complying with IOTC regulations, we are decreasing the fishing pressure on coastal species by substituting a number of gillnetters with longline fishery to meet IOTC mandates. A lot of effort carried out to complete logbook but there are still a number weak points in some recorded data of logbooks. Unfortunately, we have not yet succeeded in implementing the Logbook program for gillnet fisheries in spite of the follow up actions and training courses held for fishermen.

Figure4.1. Logbook template for Gillnet vessels (active in Highseas for tuna and tuna-like species)

LOGBOOK TEMPLATE FOR GILLNET VESSELS				لاگ بوک شناورهای گوشگیر
شماره سفر .No. trip	بندر ورود(Port Arrival)	بندر خروج(Port Departure)	۱۳۹۹۵	شماره سریال(Serial No):
نام و نام خانوادگی ناخدا Capt. Name	تاریخ ورود(Date Arrival)	تاریخ خروج(Date Deprture)		شماره ثبت (Reg No):
نام و امضای تکمیل کننده فرم Name&Sign	طول تور به آب انداخته شده - متر :(Length net set)			کد IOTC(IOTC No):

تاریخ Date	شروع تورریزی Start set			خاتمه تورکشی End set			وزن و تعداد Weigh&quantity	Tuna & Tuna Like fishes تون و شبه تون ماهیان							منقار/ نیزه ماهیان Billfishes			کوسه ماهیان Sharks					سایر گونه ها Other Species			صید دورریز از قبیل لاک پشت ، دلفین و.... Discards	
	lat عرض جغرافیایی	Long طول جغرافیایی	Time زمان	lat عرض جغرافیایی	Long طول جغرافیایی	Time زمان		Bigeye tuna تون چشم درشت	Yellowfin tuna گیدر	Skipjack tuna هوور مسقطی	Longtail tuna هوور دم دراز	Kawakawa زرده	Frigate tuna تون منقوزی	commersonScomberomorous شیر	Sword fish شمشیر ماهی	marlin مارلین	Sailfish بادبان ماهی	Blue shark کوسه آبی	Mako shark کوسه ماکو	Porbeagle Shark کوسه پوریگل	Thresher Shark کوسه دم دراز	Hammerhead shark کوسه سرچکشی					
							No. تعداد																				
							kg- وزن																				
							No. تعداد																				
							kg- وزن																				
							No. تعداد																				
							kg- وزن																				
							No. تعداد																				
							kg- وزن																				
							No. تعداد																				
							kg- وزن																				

5- Size Data

There are 12 important commercial species in Iranian southern waters, which their size frequency data compiled. The species comprised of,

1. Tigertooth croaker (*Otolithes ruber*),
2. Silver pomfret (*Pampus argenteus*),
3. Black pomfret (*Parastromateus niger*),
4. Javelin grunter (*Pomadasys kaakan*),
5. Fourfinger threadfin (*Eleutheronema tetradactylum*),
6. Grouper(serranidae)
7. Longtail tuna (*Thunnus tonggol*),
8. Narrow-barred Spanish mackerel (*Scomberomorus Commerson*),
9. Kawakawa (*Euthynnus affinis*),
10. Yellowfin tuna (*Thunnus albacores*),
11. Skipjack tuna (*Katsuwonus pelamis*),
12. Bigeye tuna (*Thunnus obesus*

One of the major national actions taken to improve data collection system is to collect "***length frequency data***" for Tuna fisheries. The length frequency data for each tuna species has been provided for all available gears and for all major tropical tuna species according to the guideline. Sampling has been carried out through random sampling procedure by the field samplers at the designated landing centers.

Size data for tuna species has been compiled since 2001. Sampling in southern waters carried out in 17 landing centers consist of: Choebdeh and Hendijan in Khozestan Province, Daylam, Dayer, Jofreh & Bandargah in Bushehr Province, Bandar abbass, Jask, Javad'el'aemeh, Salakh ,Bostaneh, Kong & Gogsar in Hormozgan Province, - Ramin, Pozm, Beris & Pasabandar in Sistan & Bluchestan Province.

At each landing center, there is a fish measuring board and precise Balance (scales). A number of biometry equipments have been provided by the IOTC-OFCF project and disseminated among the nominated landing centers and size data compilation is in progress.

Port samplers are trained necessary courses regarding the fish identification and measurement of length and weight and these training courses will be updated every year based on time and area. Fishing vessels catches were irregular for all species, but fish measurement carried out on-board from time to time to get precise data.

In 2022, around 157,223 tuna fish measured. In this way, fork length frequency for 7 economically important tuna species has been measured. These species include Longtail tuna (*Thunnus tonggol*) (LOT) dominated the other tuna species with [40,197 (25.6%)] followed by Kawakawa *(Euthynnus affinis)* (KAW) [32,295 (20.5%)], Narrow-barred Spanish mackerel (*Scomberomorus commerson*) (COM) [29,908 (19.0%)], Yellowfin tuna (*Thunnus albacores*) (YFT) [35,227(22.4%)], Skipjack tuna (*Katsuwonus pelamis*) (SKJ) [18,809 (12.0%)], Bigeye tuna (*Thunnus obesus*) (BET) [615(0.4%)] and Frigate tuna (*Auxis thazard*) (FRI) [172 (0.1%)].

Major share of the size data was realized in gillnets (95%) and the other fishing gears including purse seine and trolling/hook & line share and with (0.1%) and (5%) respectively. Neritic tunas (Coastal species) are abundant and commonly found in the waters throughout the Persian Gulf and Oman Sea, while tropical tunas (Oceanic species) are found mainly in Oman Sea and Indian Ocean. Neritic tunas contributed to 65% of total tuna fish measured. However, tropical tunas contributed to 35% of the whole size data compiled in 2022.

Figure 5.1 to figure 5.3 shows the total annual size data by gear type and species reported for all fleet including length frequencies, Mean for Tuna and Tuna-like species from 2013 until 2022. These figures show an increase in the number of fish measure, during 2015-2019; however, there are fluctuations in the last two years due to the Corona virus pandemic.

Figure5.1.Length Frequency of Tuna species by Gillnet fishery (2013-2022)

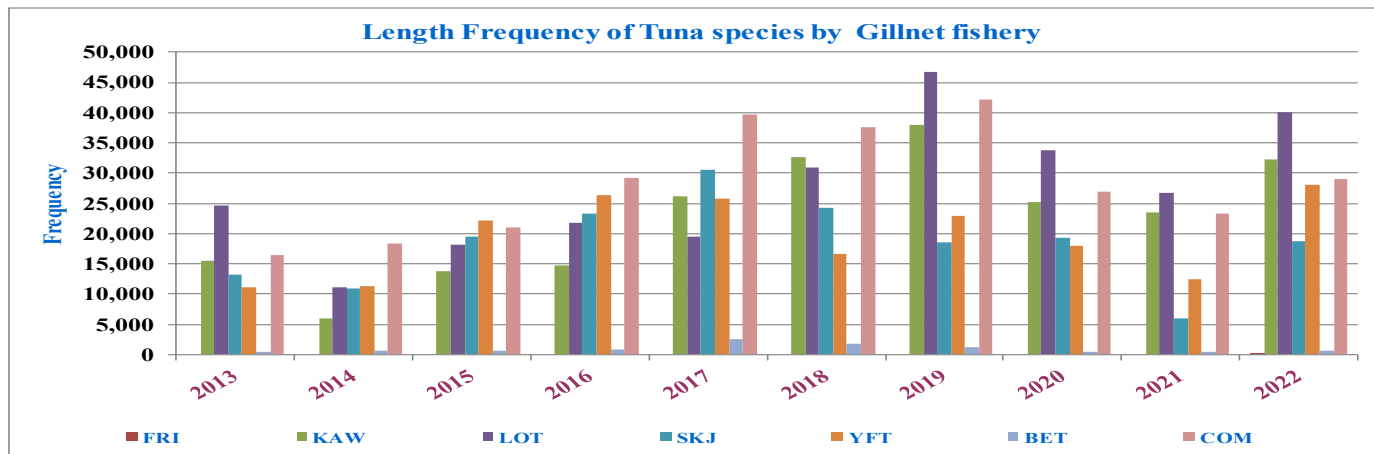| SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
FRI	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	172
KAW	15,467	6,036	13,765	14,678	26,088	32,721	37,985	25,230	23,448	32,295
LOT	24,680	11,174	18,116	21,889	19,449	30,985	46,811	33,735	26,839	40,008
SKJ	13,212	10,857	19,574	23,410	30,577	24,177	18,474	19,398	5,959	18,809
YFT	11,146	11,261	22,161	26,287	25,885	16,684	22,970	18,063	12,470	27,994
BET	435	630	724	888	2,639	1,782	1,256	502	465	615
COM	16,435	18,283	21,087	29,315	39,753	37,591	42,115	26,946	23,254	29,068
TOTAL	81,375	58,241	95,427	116,467	144,391	143,940	169,611	123,874	92,435	148,961

Figure5.2. Length Frequency of Tuna species by Purse seine fishery (2013-2022)

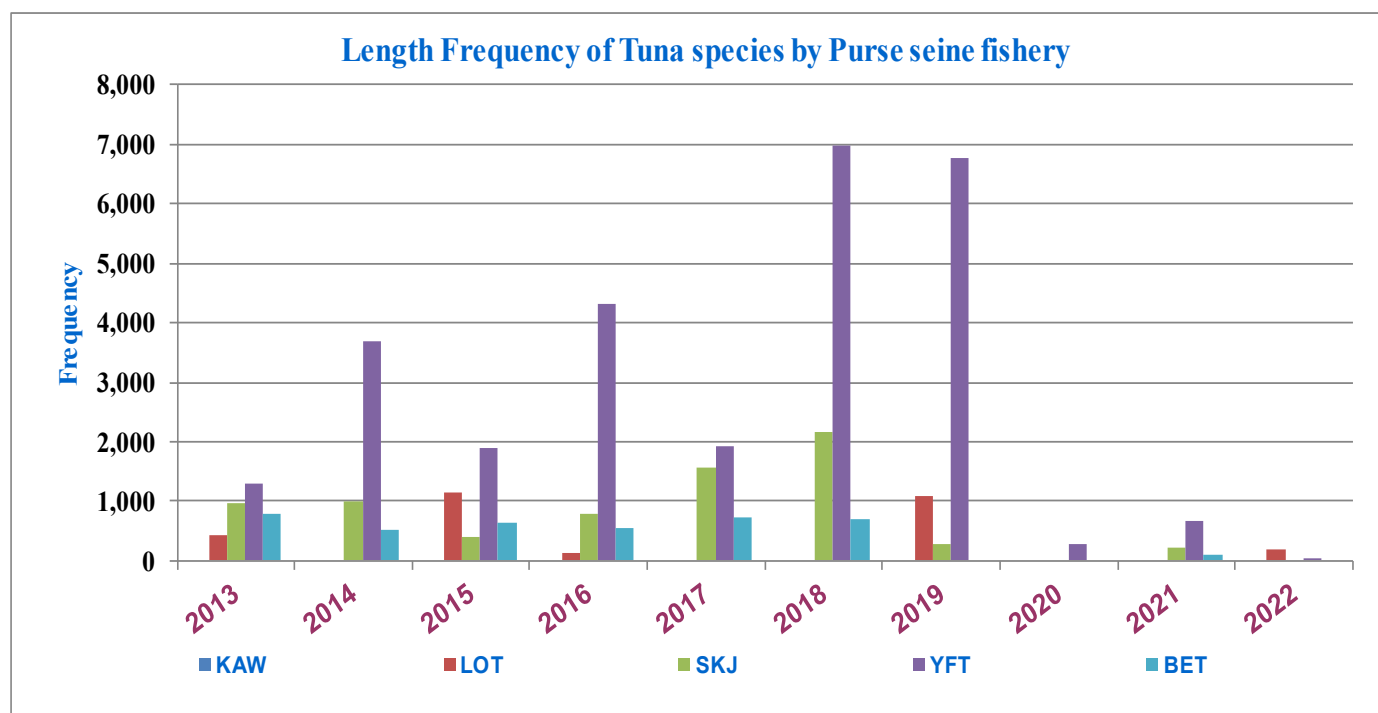| SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
KAW	0	0	0	0	0	0	0	0	0	0
LOT	433	0	1,158	125	0	0	1,097	0	0	189
SKJ	957	1,010	416	797	1,576	2,152	278	0	224	0
YFT	1,296	3,682	1,892	4,333	1,923	6,995	6,786	285	659	45
BET	777	523	629	560	716	708	0	0	103	0
TOTAL	3,463	5,215	4,095	5,815	4,215	9,855	8,161	285	986	234

Figure5.3. Length Frequency of Tuna species by Trolling & LL fishery (2013-2022)

SPECIES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
COM	407	2,808	4,416	2,511	980	335	2,059	2,428	0	840
LOT	Nil	1,289	0	0	0	0	0	0	0	0
YFT(by Coastal_LL_Method)	0	0	0	0	18,457	9,813	7,371	7,712	2,084	5,503
YFT(by Hook & Line_Method)	0	0	0	0	2,485	3,371	0	0	0	1,685
TOTAL	407	4,097	4,416	2,511	21,922	13,519	9,430	10,140	2,084	8,028
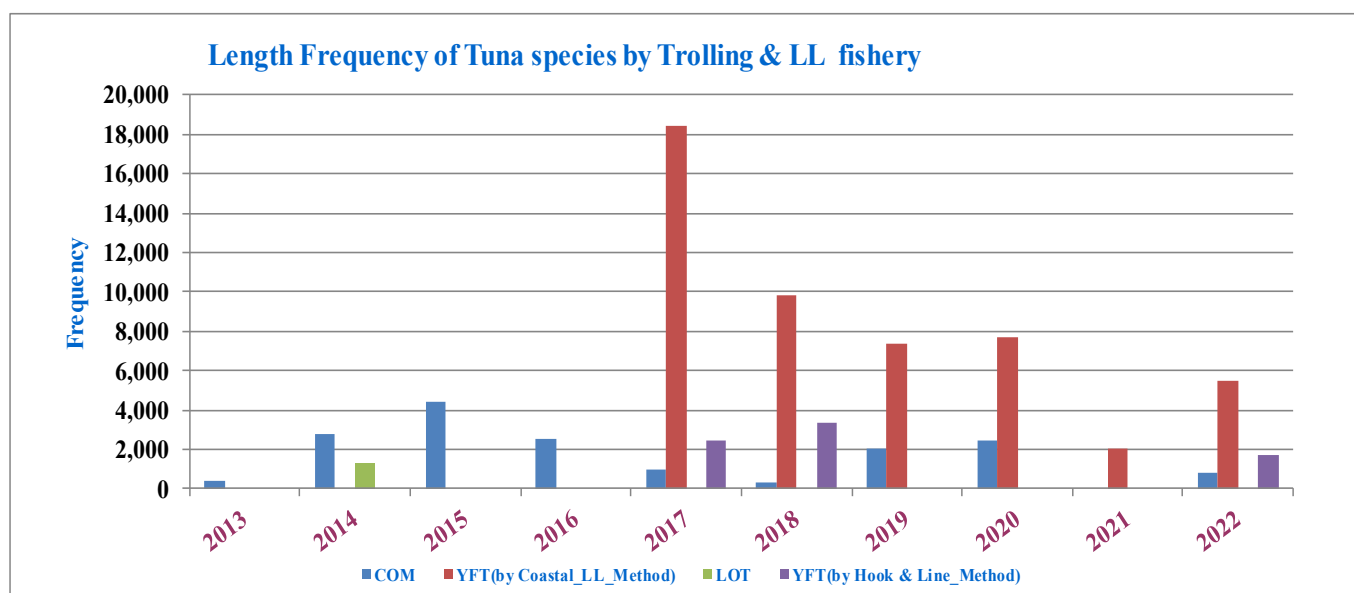
6. Fishing Dhows Catch Composition

We have collected fishery data since 2012 for a few fishing dhows in sample fishing port by total enumeration to determine catch composition for tuna and tuna-like species and identify by-catch species. In the way we could identify bigeye tuna in yellowfin catch composition, of course, identification of small bigeye tunas (BET) of size below 50 cm was very difficult but we could enumerate a number of bigeye tuna (BET) in whole catch. In addition, we could differentiate between various species of sharks and billfishes in total catch.

The identified species are as follows:

Billfish species comprised of Swordfish (SWO), Black marlin (BLM), Indo-Pacific Sailfish (SFA), Striped marlin (MLS), Shortbill spearfish

Main shark species: Silky shark (FAL), Mako sharks, Oceanic whitetip shark (OCS), Hammerhead shark…

Discards information has been collected by self-declaration by interviewing the caption of fishing vessels.

Discard species: Manta ray, Stingray, Dolphins, Sea turtle (release to sea – some alive and some dead)

This pilot plan will be continued in future to improve and enhance the data collection on port by field samples.

7. to Promote Coastal Tuna Longline Fishing

Iran is the largest fishery producer in the region, with over 3,100 km of coastline. Sistan and Baluchestan due to the wide range of water resources has two fisheries departments in the north and south of the province. The Sistan and Baluchestan Fisheries Department (Inland waters) based in Zabul, north of the province, is responsible for controlling and protecting domestic water resources, Sistan, and Baluchistan Fishery Department located in Chabahar Port, south of the province is active in Oman Sea and Indian Ocean.

There are 11 fishing ports, including Tis, Konarak, Pozm, Tang, Zarabad (Galak), Chabahar, Ramin, Bris, Pasabandar, and Govatr, are active in fishing.Also six industrial districts and over 100 fishery production/processing units are active in Sistan and Baluchestan.

Sistan and Bluchestan province is of a prominent fishing area with 40% of the country's southern catch and 38% of total country catch, made it rank second in the Indian Ocean after Indonesia, rank first in the western Indian Ocean and supplies over 60 percent of the country's tuna & tuna-like catch (2022).

During recent years, Chabahar is ranked last in terms of human development index in comparison with other provinces of Iran. It is characterized by high unemployment, lack of investment and economic opportunities, scattered population centers, and a shortage of skilled workforce and infrastructure. It is with a view to overcoming the challenges that the United Nations Industrial Development Organization (UNIDO) and Japan have collaborated to develop the fishery value chain in Chabahar, Iran's only port on the Indian Ocean coast.

In accordance with the predetermined objectives, the aim is to collaborate and leverage the experience of well-regarded countries in the field of hook fishing. In this context, with the endorsement of the UNIDO office in Vienna and the UNIDO office in Iran, the plan for promoting the sustainable development of the yellowfin tuna fish value chain in Chabahar, which was ratified in 2017, has received special attention. In addition, various programs have been executed since the start of the project with the assistance of Japan to enable resource-conserving and optimized fishing through the longline method with a view to enhancing the worth of sushi and sashimi.

In accordance with the agreed-upon plans, we have acquired a permit to import a Japanese longliner ship, in a bid to accomplish the aforementioned objectives. Additionally, in the near future, there is an anticipated possibility of having a vessel with a Japanese and Iranian crew. Evidently, the ultimate target of the Iranian Fisheries Organization is to leverage this variable as a catalyst to expedite the transition of gillnet fishing to longline fishing with the collaborative efforts of UNIDO and Japan.

8. Implementation of IOTC Recommendation & Resolution Relevant to Data Collection System

1. Submission of historical catch and effort data by fishing ground, gear, vessel, and species for each trip based on all questionnaires and license permits since 2007.

2. Submission of historical catch and effort data for neritic tuna by gear and species since 2008

3. Submission of historical catch and effort data for high seas by gear and species since 2011.

4. Planning to reduce fishing pressure on coastal species by replacing some gillnet fisheries with longline fisheries will continue for the coming years to meet IOTC mandates.

5. We have carried out many actions for reporting of gillnet fishery by-catch and discards such as sharks, Cetaceans, sea turtles, etc. as well as in fishing licenses for tuna fishing vessels we have mentioned the necessity of releasing shark after accidental by-catch to the sea.

6. Data collection system including species identification for Bigeye tuna (BET), Wahoo tuna (WAH), Sharks, Billfish has been carried out.

7. Holding training courses for port samplers(in this way Identification cards for billfishes, sharks and Bigeye tuna (BET), Wahoo tuna (WAH), have been translated in Persian language and disseminated among port samplers and fishermen to identify different fish species).

8. In the recent fishing activity of some fishermen in the Iranian waters of the Oman Sea, Bullet tuna and Frigate tuna have been identified. Consequently, we are currently engaging in the development of the capacity of our field samplers to identify this species and record their respective size data.
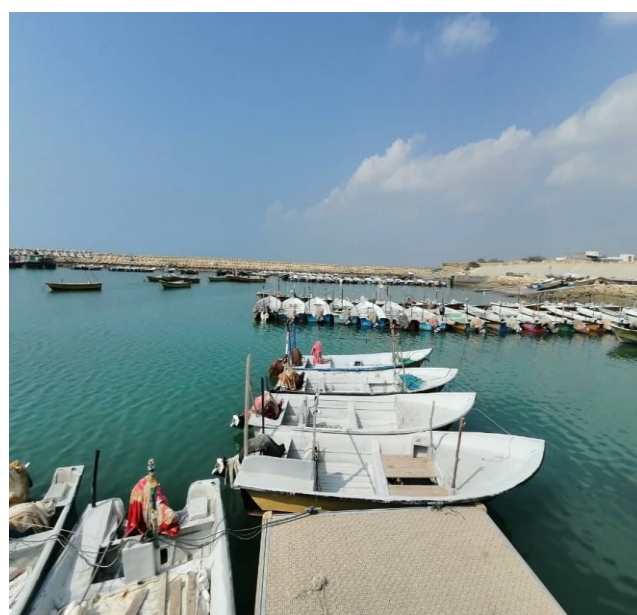
9. Actions related to SDG 14.4.1 indicator to protect marine resources

1. Control the level of the fishing efforts and preventing an increase in the effort in the Persian Gulf and Oman Sea.

2. Prohibition of periodic catch of species (for some fishing methods & commercial species such as silver pomfret, otolithes ruber (tigertooth croaker), shrimp, and Spanish makerel and ...) to protect the aquatic resources.

3. Implementation of a plan for all fishing vessels to cease their fishing activities before shrimp season for two weeks.

4. Establishing artificial habitats to protect the aquatic resources. (20 sites completed and 3 sites in progress)

5. Conservation of mangrove forests and natural aquatic habitats.

6. Taking action to shift from gillnet fishing method to longline and selective method to decline by-catch and discard and encouraging the fishermen in this direction

7. Ban on trawling for industrial fishing vessels in the Persian Gulf and Oman Sea since two years ago

8. Reducing fishing activity around coral islands such as Kish Island.

9. Conducting training and promotional courses for fishermen in order to release endangered and protected species such as sea turtle, cetaceans, whale sharks and ...

10. Prohibition of fishing by barrier nets during the spawning season of aquatic stocks to protect endangered aquatic resources for 45 days every year. (April and May)

10. Main Issues
1. Small scale fisheries,Multi-species,Multi-gear in the region.
2. IUU fishing activities, non-standardized fishing tackles. (Unauthorized or Illegally modified fishing gear)
3. Bycatch of non-target species and illegal fishing practices.
4. The socio-economic factors that contribute to overfishing.
5. Species identification for some oceanic, neritic species such as billfish, BLT and BET.
6. UnImplementation of fishing logbook template, VMS for gillnet vessels and on-board observers scheme for both gillnet and purse seine fishing methods.
7. Accessing to EMARIS system issue.

10. Suggestions

1. Coordinating measures to exchange necessary technical and expertise consultation among member countries by IOTC secretariat.

2. Preparing workshops and training courses regarding tuna & tuna-like species, billfish, sharks, and marine mammals for member countries observers & field samplers (as well as species identification and releasing method for protected animals caught in fishing gear)

3. To conduct research projects and studies related to the state of marine fish stocks and conservation and management of tuna fishery in member coastal countries.