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SRI LANKA National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2017

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 15/02, final scientific data for the previous year was provided to the IOTC Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National Report submitted to the IOTC Secretariat in 2017, final data for the 2016 calendar year must be provided to the Secretariat by 30 June 2017)	YES 29/06/2017
In accordance with IOTC Resolution 15/02, provisional **longline data** for the previous year was provided to the IOTC Secretariat by 30 June of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2017, preliminary data for the 2016 calendar year was provided to the IOTC Secretariat by 30 June 2017). **REMINDER:** Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2017, final data for the 2016 calendar year must be provided to the Secretariat by 30 December 2017).	YES 29/06/2017
If no, please indicate the reason(s) and intended actions:	

Executive Summary

The total production of tuna and tuna like species of Sri Lanka in year 2016 was 85,295t . The catch shows 5% decline than that of 2015. 84% of the catch was from the EEZ and 16% was from the high seas. Skipjack tuna dominated the catch amounting to 35,512t and was 11% decline than that of 2015. 22% of the catch is Yellow fin tuna (26,240t) and 5% was bigeye tuna. The bill fish were the second most group which contributed 13% to the catch and sword fish dominate in the catch. The shark catch was 1507t. The new regulations on catch prohibition of certain shark species was enforced. Over 4000 multi day boats engaged in large pelagic fishing and 1461 boats operated at high seas. All high seas boats are less than 24m in length and almost all are in length range of 10- 15m. Long line and gill net are the major fishing gears used. 25% of vessel operated for tuna are dedicated long liners and 40% are gillnetters. Rest of the boats use different gears in a seasonal pattern one at a time. New trend of operating ring nets targeting mackerel scads is observed with the reduction of the neritic tuna catches.1461 numbers of high seas operating vessels fitted with VMS and monitored by FMC. The VMS data are being used to crosscheck the accuracy of position data provided in the logbooks. Electronic data recording log book has been developed and the prototype tested, the results were successful. Trials are being conducted. It was impossible to deploy observers on board in the small boats due to lack of space and safety.

BACKGROUND/GENERAL FISHERY INFORMATION

Tuna fishery in Sri Lanka occurs broadly within the EEZ and limited amount in high-seas. The traditional coastal fishing remain operating mainly targeting neritic tuna and associated fish such as carangids within continental shelf and slope areas of 40km distance from the shore. The offshore fisheries are confined to the area beyond the shelf up to the 200nm within EEZ.

The tuna fishing fleet consists in array of size but as a whole all are small scale fishing boats of 5-15m length and few are 15-24m. More than 99% crafts are below 15m and do not have the line or net hauling devices. Limited deck space and the manual operation of fishing gears limit the fishing capacity of most boats. About 833 boats were engaged in one day fishing and about 2184 boats conducted multiday fishing within the EEZ of Sri Lanka. Only the vessels >10.3m in length were permitted to engage in high-seas fishing. Thereby 1576 boats were authorized for high-seas fishing in year 2016 and only 1461 boats were active.

40% of the total effort in large pelagic fisheries is large-mesh drift gill nets (GN), targeting skipjack tuna. About 25% are dedicated long liners mainly targeting yellow fin tuna. The gill nets are made of 20-25 pieces and 5" or 6" stretched mesh. Around 200 -1200 hooks are used in long lines. About 10 % of fishing fleets exclusively employed for longline, with a larger number of hooks per set (1000 hooks), and reach the depth o 70m-100m hauled by mechanized hauling devices.

However, the number of pieces of nets and the number of hooks varied depending on the size of the boat Ring net is recently developed for catching of mackerel scads *(Decapterus ruselli)* with the decline of neritic tuna. Ring nets gained popularity among coastal fishermen in south, southwest and east and sometimes among offshore fishermen during poor fishing months. Ring nets contributed 20% to the total effort in 2016. The other fishing gears being used in lesser extent were hand line and trolling.

The use of fishing gear is determined based on the availability of fish, climate condition, the availability of the bait, skill of the crew etc. The Indian mackerel, flying fish, milkfish and frozen squid are generally used as the bait in long lines. Offshore and the high-seas catch dominated by skipjack tuna (*Katsuwonuspelamis*), yellowfin tuna (*Thunnus albacores*), neritic tuna species and followed by billfish, seerfish and sharks and other bony fish.

Fishing activities within EEZ are seasonal depending on the monsoon pattern. Fishing in coastal and offshore area are more success in just before and after monsoon. coastal fishing is conducts mainly with 6-7meters FRP boats/ out board motor boats and 7-10 meters 3.5GT in board motor boats. The trip length of offshore fishing multiday boats varies from 5-30 days or sometimes more. If successful long line operations took place, the catch landed early targeting the export market. They carry block ice in storing of the catch. The boats use gillnets under take long trips sometimes up to 30 days or more and preserve the early catch by salting and sun drying and the late catch in ice. The weather conditions, small size of the boat and inadequate safety measures on board also influences the trip duration.

Development of offshore and high seas fishing and improve the on board fish handling practice to reduce the post harvest loss, is the main fishery policy in the recent past. The legal frame work has been strengthen to expand the high seas fisheries. As such entry of more larger vessels with necessary technological inputs such as chilled seawater (CSW) or refrigerated sea water (RSW) systems, line haulers fish finders and other equipment, other facilities onboard are being encouraged. This would be achieved through expanding and upgrading the structure of fishing fleet in both the numbers and in size within the capacities of the proposed fleet development plan.

However, there is an issue in the industry regarding the high operating cost due to the fuel price, and the poor catch. As a result substantial number of vessels did make limited trips and most of the time the boats are being anchored in harbours although they have obtained an operation license in high sea. According to the fishers the fuel cost represent more than 40% of the operational costs fishing in the offshore and high seas.

1. FLEET STRUCTURE

Table 1 (a) National Tuna fleet structure by gear type , including vessel size for year 2016

Boat Type	Vessels operated within EEZ	Vessels operated High seas +EEZ		Gears used	Duration of Operation
		Number Authorized at IOTC	Active		
5m-10.3m	2400	No	No	40%- GI only 25% - LL only 20% - PSRN 15%- Multi gear (LL/GI,PSRN,HL,TS)	About 18% small boats operates one day while rest operates 5-30 or more days
10.3m - 15m	545	1552	1447		
15m-24m	-	14	14		
	2945	**1536**	**1461**		
Total registered for tuna and tuna like fisheries = 4511 (2945+1536)					

Source: Vessel Registry- DFAR

Out of the registered 4511 number of large pelagic fishing boats around 800 boats engaged in one day fishing operations and the rest conducted multiday fishing within the EEZ and high seas. Only the vessels >10.3m in length were permitted to engage in high-seas fishing combined with offshore limits of the EEZ.Although1536 boats have been obtained high-seas fishing operation license for year 2016 and only 1461 boats operated at high seas.

Table 1(b) Number of vessels operating in the IOTC area of competence, by gear type and size

Boat Type	2012		2013		2014		2015		2016	
	Total	Active in high seas	Total	Active in high seas	Total	Active in high seas	Total	Active in high seas	Total	Active in high seas
5-15m	4234	2460	4271	2218	4273	1594	4466	1558	4497	1447
15m-24m	23	23	14	14	14	14	18	18	14	14
>2 4m	00	00	09	09	07	07	01	01	00	00
Total	4257	**2483**	4294	**2241**	4294	**1615**	4485	**1577**	4511	**1461**

Source: Vessel Registry- DFAR

(i) Until 2012 there was no system to identify the actively operating boats for tuna fishery in high seas . All vessels those renew the annual registration was taken as active. With the commencement of logbook system in 2012 it is enable to identify the active boats correctly.

(ii) From year 2013 Sri Lanka restricted the vessels authorized for tuna fishing in high seas only for the vessels >10.3m (34 feet). As a result from the total 4294 multiday vessels operated in Sri Lanka, 2463 vessels obtained authorization or licence to operate in high seas and only 2241 vessels were detected fish in high seas from Log book returns .

(iii) With the enforcement of High seas fishing operation regulations only 1615 boats were active in Year 2014 out of the total 2470 boats obtained high sea operation licence.

(iv) In 2015 out of the 1603 authorized to operate in high seas and only 1557 vessels were active. Active

(v) In 2016 out of the 1536 authorized to operate in high seas and only 1461 vessels were active.

2. CATCH AND EFFORT (BY SPECIES AND GEAR)

Table 2(a) Annual catch and effort by gear and primary species in the IOTC area of competence.

Species	FAO codes	2012	2013		GEARS
Thunnus albacores	YFT	28,376	23,993		*GI,LLGI,LLTS,HL,PSRN,PSFS,TL*
Katsuwonuspelamis	SKJ	47,449	54,430		*GI,LLGI,LLTS,HL,PSRN,PSFS,TL*
Euthynnusaffinis	KAW	2,919	2,012		*GI,LLGI,LLTS,HL,PSRN,TL GN,HL*
Auxisthazard	FRI	5,096	4,630		*GI,LLGI,LLTS,HL,PSRN,TLGN,H*
Auxisrochei	BLT	4,538	4,434		*GI,LLGI,HL,PSRN,TL GN,HL GN*
Thunnusobesus	BET	1,691	1,573		GI, LLGI, LLTS,
Other tuna	TUX		-		GN
Total tuna		**90,069**	**91,072**		
Scomberomoruscommerson	COM	235	529		GI, LLGI, LLTS, HL, PSRN, TL
Acanthocybiumsolandri	WAH	872	499		GI, LLGI, LLTS, HL, PSRN, TL
Scomberomorusguttatus	GUT	14	19		GI, LLTS,HL,TL
Total seer		**1121**	**1,047**		
Blue marlin	MAR	1,818	653		GI, LLGI, LLTS
Black marlin	MAR	3,052	2,288		GI, LLGI, LLTS, TL
Tetrapturusaudax	-	-	54		**GI, LLGI, LLTS,**
Sail fish	SFA	3,078	4,152		GI, LLGI, LLTS, HL, PSRN, TL
Sword fish	SWO	3,843	5,534		GI,LLGI, LLTS, HL, PSRN
Bill fish unidentified	-	-	120		
Total Billfish		**11,791**	**12,800**		
Carcharhinusfalciformis	FAL	1,138	1247		GI, LLGI, LLTS, PSRN
Prionaceglauca	BSH	284	183		GI, LLGI, LLTS, HL, PSRN
Carcharhinuslongimanus	OCS	149	41		GI, LLGI, LLTS
Isuruspaucus	LAM	52	70		GI, LLGI, LLTS
Isurusoxyrinchus		63	56		GI, LLGI, LLTS
Alopiassupercilliosus		465	00		-
Alopiaspelagicus	ALO	328	00		-
Sphyrnalewini	HAM	71	119		GI, LLGI, LLTS, PSRN
Other sharks	SKA	31	00		GI, LLGI, LLTS,
Carcharhinussorrah	-	-	19		GI, LLGI, LLTS,
Sphyrnazygaena	-	-	61		GI, LLGI, LLTS,
Spyrnamokarran	-	-	8		GI, LLGI, LLTS,
Total shark		**2581**	**1804**		
Manta birosrtis	MNT	744	669		GI, LLGI, LLTS, HL,
Devil ray	RMM	-	759		GI, LLGI, LLTS, HL
Eagle ray	EGR	-	3		GI, LLGI, LLTS
Total rays		**744**	**1431**		
Other bony fish(NEI)		28,8974	00		*GI,LLGI,LLTS,HL,PSRN,TL*
Common dolphin fish	DOX	Included to other fish	1,204		
Carangids (NEI)	CGX		292		
Trigger fish (NEI)			13,917		
Indian mackerel (NEI)			24		PSRN
Total NEI*		**00**	**15,436**		
Total Catch		**135,203**	**123,896**		

Source: PELAGOS database(NARA), land based sampling database (DFAR/MFARD)

Note: The gear used or the combination of gear used to exploit large pelagic species are summarized in Table 2 (a) for recent three years up to 2013. As it is a multi-species and multi-gear fishery and the gear/the combination of gear used vary seasonally and opportunistic manner, it is difficult to standardize fishing effort to a standard gear. Although the log book contains three separate data recording sheets for longline, gillnet and for any other type of gears, the completed data sheets returned were not up to the standard for clear demarcation of gear related catch identification up to year 2013.DFAR field officers worked together to improve the log book data entry by conducting numerous workshops. As a result after the year2014 it was able to provide the fishing information separately by gear by analyzing a sample of properly filled log book data. The data reporting has been further improved in 2015. The catch and effort data by species for year 2014,2015 & 2016 are as follows..

The fishing information separately by gear and area (within EEZ and High sea)s by analyzing data recorded of boats sampled at port through sampling programme and same boats submitted properly filled log book data and the results given in Table 2(b) ,2(c) and 2(d).

Table 2(b) CATCH **BEYOND EEZ (High seas)** BY SPECIES AND GEAR FOR YEAR 2015 & 2016(MT)

Code	Species	GI			LLTS			PSRN			Total		
		2016	2015	2014	2016	2015	2014	2016	2015	2014	2016	2015	2014
SKJ	Skipjack Tuna	4,200	6,320	9144	40	191	222.2	1,223	751	570	5,462	7,262	9936
YFT	Yellowfin Tuna	407	1,131	1589	3,937	5,934	8624	215	109	167	4,560	7,174	10381
BET	Bigeye Tuna	8	51	11	940	1,763	1731	8	37	0	956	1,851	1742
ALB	Albacore	9	4	2	6	41	0	23	13	0	38	58	2
	Tropical Tuna	**4,623**	**7,506**	**10,942**	**4,923**	**7,929**	**10,603**	**1,470**	**910**	**1,287**	**11,016**	**16,345**	**22,832**
FRI	Frigate Tuna	17	46	36	0	**0.2**	**0**	368	266	25	386	312	61
BLT	Bullet Tuna	1	6	42	3	**8**	**0**	307	25	519	311	39	561
KAW	Kawakawa	27	46	117	0	**1.3**	**24**	70	51	6	97	98	147
	Neritic Tuna	**46**	**98**	**195**	**4**	**10**	**24**	**745**	**342**	**550**	**794**	**449**	**769**
MAR	Marlin nei	9	24	17	24	3		3	2	0	36	28	17
BLM	Black Marlin	65	51	169	357	432	968	0	0	2	422	483	1137
BUM	Blue Marlin	2	2	47	265	233	34	13	0	0	280	235	83
MLS	Striped Marlin	1	0	3	3	3	11	0	0	0	4	3	14
SFA	Sail Fish	122	81	208	148	151	378	1	0	0	270	232	588
SWO	Sword Fish	103	69	136	561	760	1615	2	5	0	666	834	1751
	Bill Fish Total	**301**	**226**	**580**	**1,358**	**1,581**	**3006**	**19**	**7**	**2**	**1,678**	**1,814**	**3590**
WAH	Wahoo	1	260	421	3	7	1	2	11	0	6	278	428
COM	Spanish Mackrel	0	2	21	0	0	3.2	0	2	0	1	3	24
KGX	Other Seer	0	0	2	0	0	0	22	0	0	22	0	0
	Seer Fish	**1**	**262**	**444**	**3**	**7**	**4.2**	**24**	**13**	**0**	**29**	**281**	**448**
BSH	Blue Shark	27	25	48	36	42	74	0	0	0	63	67	122
FAL	Silky Shark	39	114	15	54	106	187	0	1	2	93	221	204
OCS	Oceanic Whitetip	0	0	0	0	0	42	0	0	0	0	0	42
SKH	Other Sharks	0	13	51	0	2	1	2	2	0	2	16	52
SMA	Shortfin Mako	1	7	05	7	12	27	0	0	0	8	19	32
LAM	Longfin Macko	0	2	02	0	0	0	0	0	0	0	2	2
SPZ	Smooth Hammerhead	0	16	0	0	9	11	9	0	0	9	25	11
SPL	Scalloped Hammerhead	2	10	10	7	10	10	0	0	0	9	20	20
	Sharks	**69**	**185**	**131**	**105**	**182**	**352**	**11**	**3**	**2**	**185**	**370**	**485**
	Mantas and Devil Rays	20	20	147	0	0		0	0	116	20	21	263
MAN	Skates	0	0	26	0	0	0	0	0	0	0		26
Rays and Skates		**20**	**20**	**173**	**0**	**0**		**0**	**0**	**116**	**20**	**21**	**289**
DOX	Dolphin Fish	0	19	42	0	19	40	10	114	144	11	152	226
MSD	Mackeral Scad	36	184	140	0	0	0	10,222	5,604	1516	10,258	5,788	1656
RRU	Rainbow Runner	1	4	5	0	0	0	381	570	0	382	574	0
MZZ	Other Bony Fishes	1	9	148	165	0	1	645	930	833.5	811	939	981
	Other Total	**38**	**216**	**335**	**165**	**19**	**41**	**11,258**	**7,218**	**2493**	**11,461**	**7,453**	**2863**
	Grand Total	**5,099**	**8,512**	**12,800**	**6,557**	**9,727**	**14,030**	**13,527**	**8,493**	**4450**	**25,182**	**26,733**	**31,276**

Source: PELAGOS database(NARA), log book database-(DFAR) & land based sampling database (DFAR/MFARD**)**

Table 2(c)CATCH **WITHIN EEZ** BY SPECIES AND GEAR FOR YEAR 2015 &2016(MT)

Species/Code		Gillnet			Longline			Ringnet			Handline			Trolling			Total		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Skipjack	SKJ	32,185	21,909	18,327	588	1,072	2,972	5,915	9,578	6,898	7	42	729	20	137	1,123	38715	32,739	30,049
Yellowfin	YFT	6,789	5,074	2,710	8360	8,924	13,363	2,455	3,424	1,751	484	208	913	58	204	2,944	18146	17,834	21,681
Bigeye	BET	75	18	165	687	2,664	2,332	56	2	38	38	77	22	-	-	726	856	2,761	3283
TROPICAL TUNA TOTAL		**39,049**	27,001	**21,202**	**9,635**	**12,660**	**18,667**	**8,426**	**13,004**	**8,687**	**529**	**327**	**1,664**	**78**	**341**	**4,793**	**57,717**	**53,333**	**55,013**
Frigate tuna / FRI		2,232	141	612	-	-	97	1933	520	994	0.2	7	67	12	-	65	4177	668	1834
Bullet	BLT	1,684	764	167	169	10	52	1474	1,910	451	0.2	0.2	20	-	0.2	98	3327	2,683	787
Kawakawa	KAW	853	557	263	13	6	175	270	409	259	4	6	76	6	5	60	1146	984	833
Other tuna	TUX	5	9	0	7	9-	0	25	-	0	-	0.2	0	-	-	11.6	37	105	11.6
NERITIC TUNA TOTAL		**4,774**	**1,471**	**1042**	**189**	**25**	**324**	**3667**	**2839**	**1,706**	**4**	**13**	**164**	**18**	**5**	**233**	**8,687**	**4,440**	**3,465**
Sword fish	SWO	434	447	797	2087	3,739	2,391	7	6	23	9	45	39	0	-	461	2537	4,238	3,711
Sailfish	SFA	1013	1,124	839	685	579	390	3	3	3	24	7	36	19	4	69	1745	1,717	1,337
Black Marlin	BLM	510	419	1299	1277	2,447	1,711	-	4	3	32	38	35	-	5	284	1819	2,914	3,332
Blue Marlin	BUM	106	198	413	124	280	202		4	3	0.1	5	27	-	-	26	230	488	672
Marlin(unidentified)	MAR	50	51	0	247	159	70	-	-	0	0.2	-	49	-	-	0	297	211	119
Striped marlin	MLS	1	2	6	4	2	0	-	-	0	1	-	0	-	-	0	6	5	7
Short-billed spearfish	SSP	i	-		-	-	0	-	-	0	-	-	0	-	-	0	1.3	-	0
BILLFISH TOTAL		**2,115**	**2,241**	**3,354**	**4,424**	**7,207**	**4,764**	**10**	**17**	**32**	**67**	**96**	**186**	**19**	**9**	**840**	**6635**	**9,573**	**9,178**
Wahoo	WAH	415	92	132	24	27	48	-	149	33	72	2	45	1	1.0	8	512	272	258
Spanish Mackerel	COM	253	990	1,282	9	32	38	2	0.2	28	52	10	20	2	0.3	0	318	1,032	1375
Other Seer	KGX	68	108	190		-	5	1	-	1	22	3	8	-	-	0	91	219	204
SEERFISH TOTAL		**736**	**1,190**	**1,603**	**33**	**59**	**92**	**3**	**149**	**62**	**146**	**15**	**73**	**3**	**1.3**	**8**	**922**	**1523**	**1,837**
Silky Shark	FAL	254	135	309	613	348	140	36	45	9	15	0.8	9	-	-	67	918	534	554
Blue Shark	BSH	35	15	128	46	124	195	-	-	22	-	-	22.5	-	-	158	81	129	505
Oceanic Whitetip shark	OCS	23	46	0	13	41	0	-	-	0	-	-	0	-	-	0	36	46	0
Shortfinmacko	SMA	6.2	6.1	26	3	23	15	-	-	0	-	-	0	-	-	0	9	29	45
Scallop hammerhead	SPL	4	5	40	9	17	23	-	-	0	-	-	0	-	-	3	13	22	66
Smooth hammerhead	SPZ	7	4	8	-	16	2	-	-	0	-	-	0	-	-	0	7	20	13
Spot tail	SPT	10	-	0	-	-	0	-	-	0	-	-	0	-	-	0	10	0	0
Longfinmacko	LAM	4.2	3.6	12	8	4.5	3	-	-	1	-	-	0	-	-	0	12	8	16
Great hammerhead	GRH	2.4	4.7	0	2	-	0	-	-	0	-	-	0	-	-	0	4.4	4.7	0
Other sharks	SKA	22.2	1.0	0	13	3.0	123	-	-	0	0.5	0.2	0.8	-	-	0	35.6	4.2	124
Whale shark	RHN	-	2.4	0	-	-	0	-	-	0	-	-	0	-	-	0	-	2.4	0
SHARKS		**368**	177	**523**	**697**	**535.5**	**501**	**36**	**45**	**37**	**15.5**	**1.0**	**33**	**0**	**0**	**228**	**1126**	**800**	**1323**
Manta Ray	MNT	256	278	169	61	15.2	21	-	-	2	0.9	--	20.3	-	-	5.5	318	294	217
Devil Ray	RMM	399	563	260	39	101	115	-	1.1	3	2.8	2.4	27.6	0	-	28.2	441	667	433
Eagle Ray	EGR	1	2	0	-	-	52	-	-	0	0	-	0.4	-	-	0	1.2	1.6	52
Other skates	SKA	95	17	17	-	-	10	-	-	8	1.1	3.1	5	-	-	4.2	96	20	44
Rays /Skates		**751**	**860**	**446**	**100**	**116**	**198**	**0**	**1.1**	**12**	**4.8**	**5.6**	**53.4**	**0**	**-**	**38**	**856.4**	**982**	**747**
Mackerel scad	MSD	312	8	513	75	0	28	7041	6,873	12,854	218	-	152	-	-	10	7646	6,881	13,628
Dolfin fish	DOX	60	125	213	206	239	64	1970	1,721	588	54	3.2	63	15	-	16	2305	2,090	943
BarracudasR	BAR	0	0	0	0	0	15			0	6.6		1			46	6.6		62
Indian mackerels	RAX	72	0	0	-	-		614	-		-	-		-	-		686	-	
Rainbow runner	RWA	0.2	-		-	-		1232	-	19	-	-	0	-	-		1232	-	19
Other bony fish (NEI)	MZZ	438	1,435	1003	94	243	875	4636	13,591	11,623	712	192	1,107	40	0.1	201	5921	15,169	14,720
OTHER		**882**	**1,568**	**1799**	**374**	**484**	**982**	**15493**	**22,186**	**25,084**	**992**	**195**	**1233**	**55**	**1.1**	**273**	**17797**	**24,432**	**29,372**
Grand total		**48,677**	**34,508**	**29,969**	**15,463**	**21,084**	**25,528**	**27,669**	**38,241**	**35,620**	**1,759**	**652**	**3406**	**173**	**356**	**6414**	**93,743**	**95,084**	**100,935**

Source: PELAGOS database(NARA), log book database-(DFAR) & land based sampling database (DFAR/MFARD)

Table 2 (d) TOTAL CATCH (EEZ+High seas) BY SPECIES AND GEAR FOR YEAR 2015 &2016 (MT)

Code	Sp.Name	GI		LL		PSRN		HL		TL		Total	
		2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2016	2015
SKJ	Skipjack	28,229	22,527	1,263	3,012	10,330	8,121	42	729	137	1,123	35,512	40,001
YFT	Yellowfin	6,205	3,117	14,858	17,300	3,533	1,966	208	913	204	2,944	26,240	25,008
BET	Bigeye	69	173	4,427	3,272	39	46	77	22	0	726	4,239	4,612
	Albacore	4	9	41	6	13	23	0	0	0	0	38	58
	Total	**34,507**	**25,826**	**20,589**	**23,590**	**13,915**	**10,156**	**327**	**1,664**	**341**	**4,793**	**66,029**	**69,679**
FRI	Frigate Tuna	187	629	0	**97**	786	1,362	7	67	0	65	2,220	980
BLT	Bullet Tuna	770	168	18	55	1,935	758	0	20	0	98	1,098	2,723
KAW	Kawakawa	603	290	7	175	460	329	6	76	5	60	930	1,081
TUX	Tuna-like Fishes nei	9	0	9	5	0	2	0	2	0	12	21	18
	Total	**1569**	**1087**	**34**	**332**	**3181**	**2451**	**13**	**164**	**5**	**235**	**4,269**	**4,802**
MAR	Marlin (nei)	75	9	162	94	2	3	0	49	0	0	155	239
BLM	Black Marlin	470	1,364	2,879	2,068	4	3	38	35	5	284	3,754	3,396
BUM	Blue Marlin	200	415	513	467	4	16	5	27	0	26	951	722
MLS	Striped Marlin	3	7.0	5	3	0	0	0	0	0	0	10	8
SFA	Sail Fish	1,205	961	730	538	3	4	7	36	4	69	1,608	1,949
SWO	Sword Fish	516	900	4,499	2,952	11	25	45	39	0	461	4,377	5,071
		2,469	**3,656**	**8,788**	**6,122**	**24**	**51**	**95**	**188**	**9**	**839**	**10,856**	**11,385**
COM	Spanish Mackerel	992	1,282	32	38	2	28	10	20	0	8	1,375	1,036
KGX	Seerfishes nei	108	190	0	5	0	23	3	8	0	0	226	111
WAH	Wahoo	352	133	34	51	160	36	2	45	1	0	265	549
		1,452	**1,605**	**66**	**94**	**162**	**87**	**16**	**72**	**1**	**8**	**1,866**	**1,697**
BSH	Blue Shark	40	155	166	231	0	2	0	22	0	158	568	206
FAL	Silky Shark	249	348	454	195	46	28	1	9	0	67	647	750
LMA	Longfin Mako	6	12	5	3	0	0	0	1	0	0	16	11
SKH	Various Sharks nei	14	0	5	123	2	3	0	0	0	0	126	21
SMA	Shortfin Mako	13	27	35	22	0	4	0	0	0	0	53	48
SPL	Scalloped Hammerhead	15	42	27	30	0	0	0	0	0	3	75	42
GRH	Great Hammerhead	5	0	0	0	0	0	0	0	0	0	0	5
SPZ	Smooth Hammerhead	20	8	25	2	0	11	0	1	0	0	22	45
RHN	Whale Shark	2	0	0	0	0	0	0	0	0	0	0	2
		364	**592**	**717**	**606**	**48**	**48**	**1**	**33**	**0**	**228**	**1,507**	**1,130**
RMM	Devil ray	583	280	101	115	1	3	2	28		28	454	687
EGR	Eagle rays nei	2	0	0	52	0	0	0	0	0	0	52	2
MNT	Manta Ray	278	169	15	21	0	2	0	20	0	6	218	293
SKH	Rays and skates nei	17	17	0	10	0	8	3	5	0	4	44	20
		880	**466**	**116**	**198**	**1**	**13**	**6**	**53**	**0**	**38**	**768**	**1,003**
BAR	Barracudas	0	0	0	15	0	0		1	0	46	62	0
DOX	Dolphin fish	144	213	258	64	1,835	598		63	0	16	954	2,237
MSD	Mackerel scad	192	620	0	28	12,477	23,076		152	0	10	23,886	12,669
RRU	Rainbow Runner	4	1	0	0	570	381	0	0	0	0	382	574
RWA	Rainbow sardines nei	0	0	0	0	0	19	0	0	0	0	19	0
MZZ	Other Bony Fishes	1,444	1,004	243	1,040	14,521	12,268	192	1,017	0	201	15,530	16,400
		1,784	**1,838**	**501**	**1,147**	**29,403**	**36,342**	**192**	**1,233**	**0**	**273**	**40,833**	**31,881**
		43,025	**35,070**	**30,811**	**32,089**	**46,734**	**49,148**	**649**	**3,407**	**357**	**6,414**	**126,127**	**121,577**

Source: PELAGOS database(NARA), log book database-(DFAR) & land based sampling database (DFAR/MFARD)

Figure 1. Historical annual catch for the national fleet, by gear and primary species, for the IOTC area of competence for the entire history of the fishery/fleet

The catch trends by the main fishing gears (Figure 1) and the species compositions (**Figure 1a-1e**).

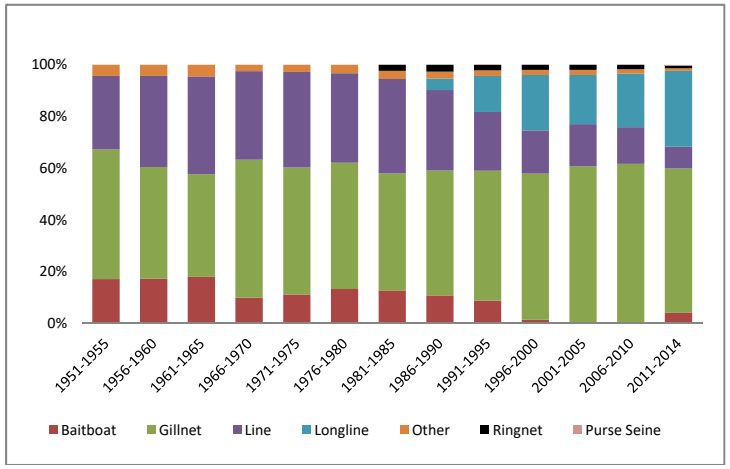


Figure 1a: Relative contribution of fishing gear in Tuna fish production in Sri Lanka 1950-2014

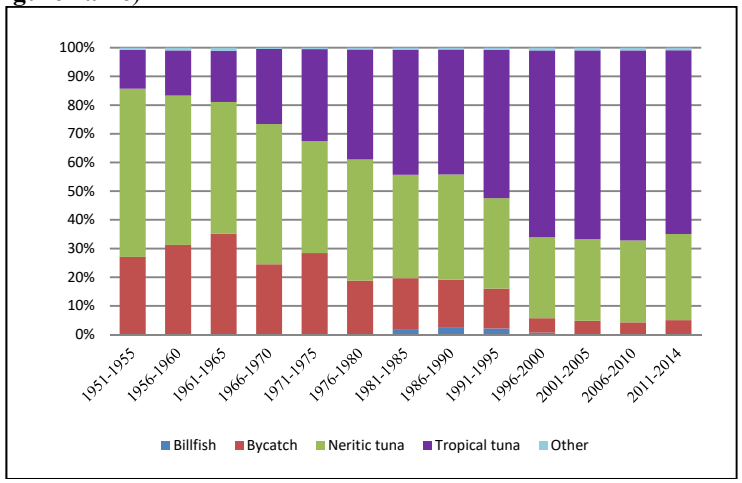


Figure 1b: Catch composition long line and gill net fishery Sri Lanka 1950-2014

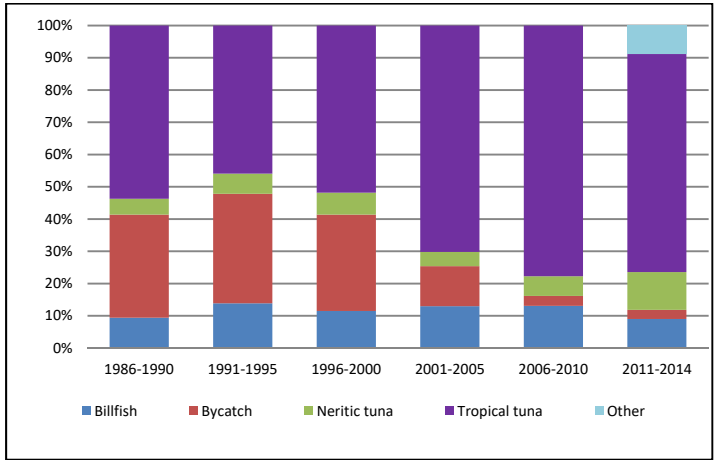


Figure 1c: Catch proportions gill net cum Long line

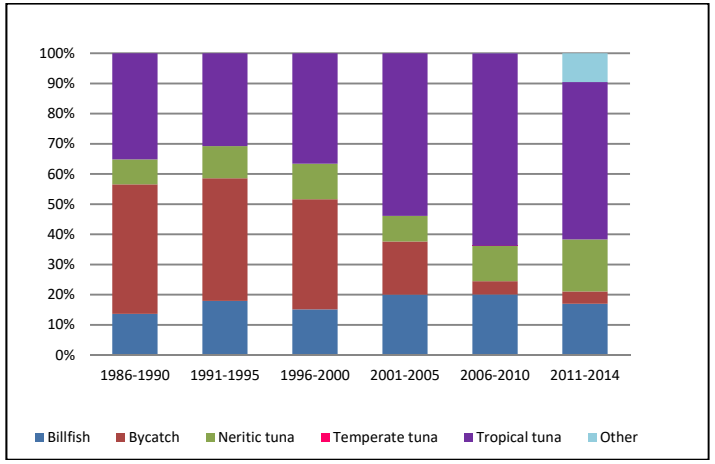


Figure 1d: Catch proportions long line fishery *(including Long line attached to gill net)*In Sri Lanka 1950-2014

Source: IOTC data base

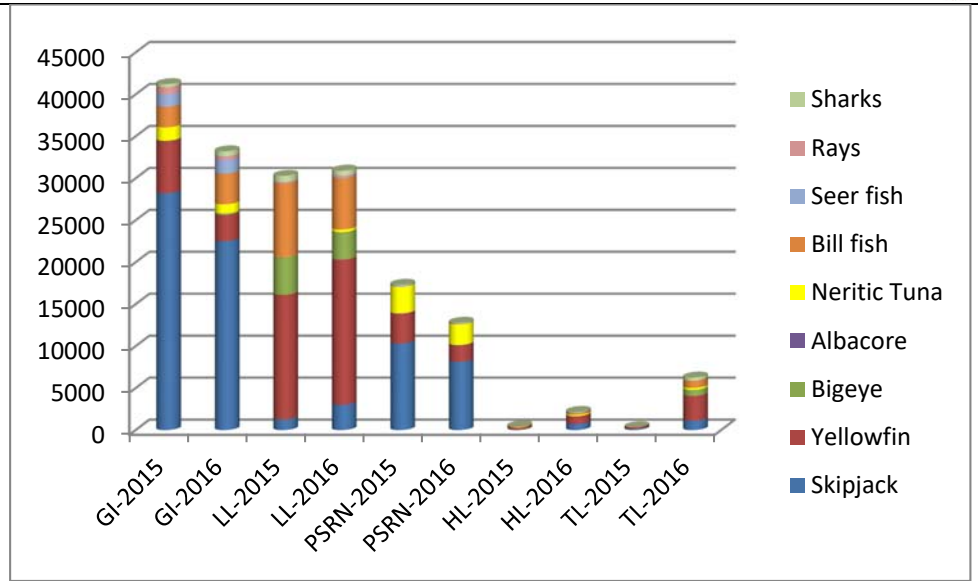
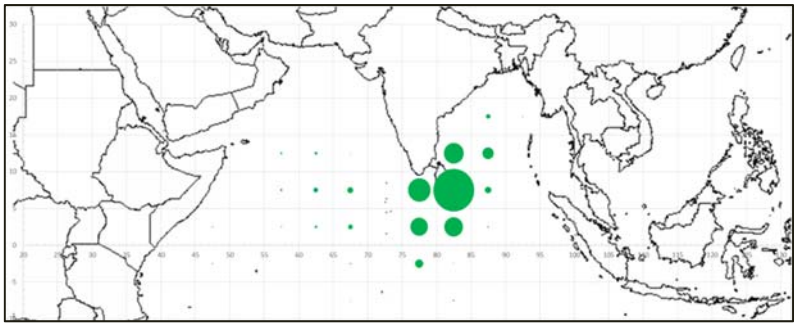


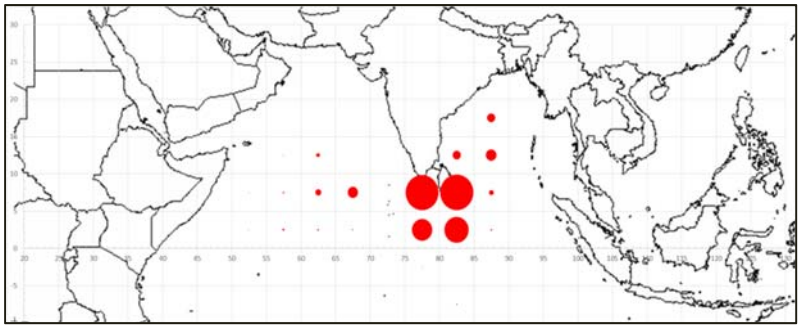
Figure 1e: Total Catch composition of Tuna and tuna like species by gear for the year 2015 and 2016.

Source: PELAGOS database(NARA), log book database-(DFAR) & land based sampling database (DFAR/MFARD)

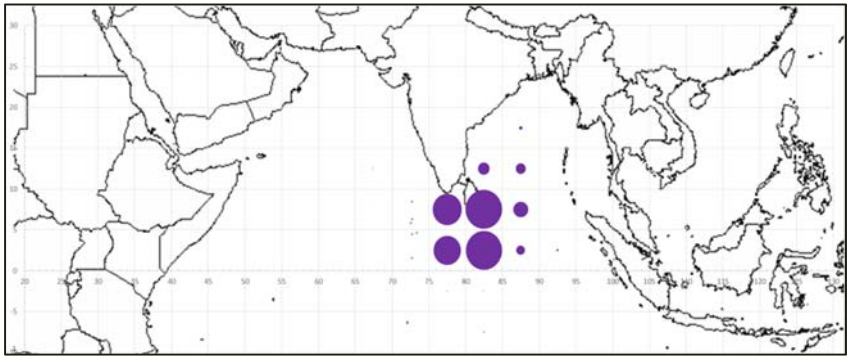
Figure 2a. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (most recent year e.g. 2016



2a (i) long lines



2a (ii) Gillnets



2a (iii) Ring Nets

Figure 2b. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (average of the 5 previous years e.g. 2012–2016

Sri Lanka provided the catch and fishing effort estimates based on port sampling. Catch recording log books introduced in 2012. There were not properly recorded log sheet returns until 2015. Therefore no data to produce a map to show the distribution of fishing effort by gear type for the national fleets from 2012.

Figure 3a. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (most recent year e.g. 2016

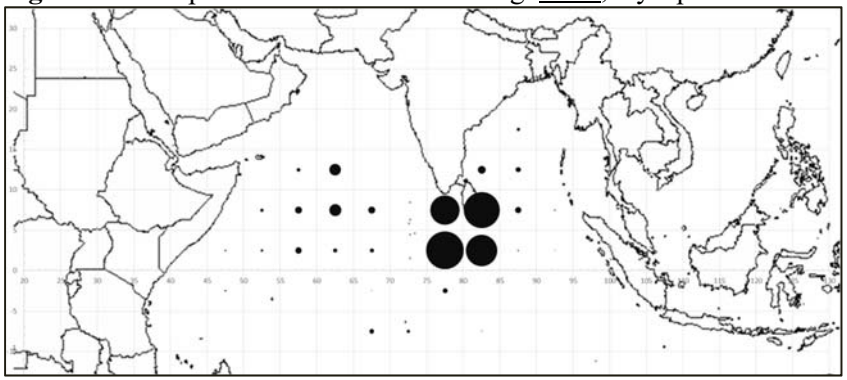


Figure 3a.(i) Tuna

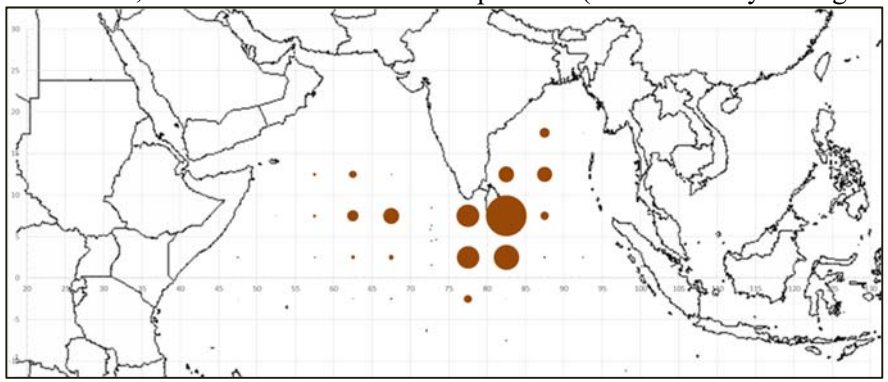


Figure 3a.(ii) Bill Fish

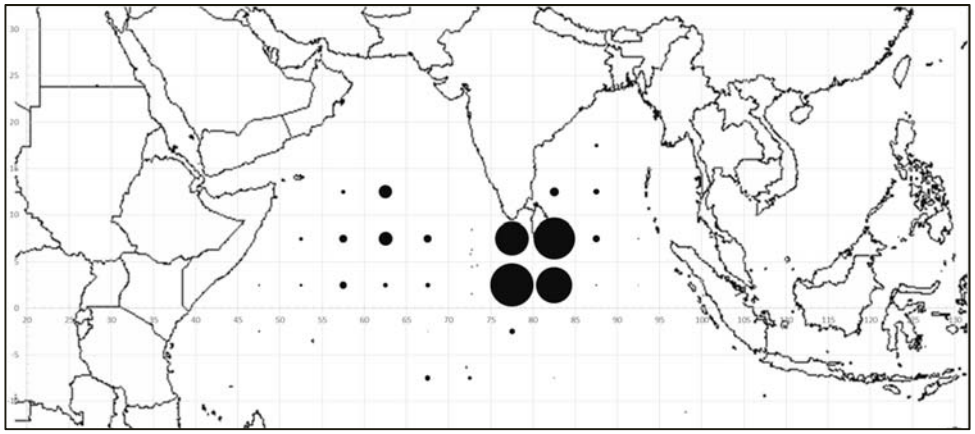


Figure 3a.(iii) Shark

Figure 3b. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (average of the 5 previous years e.g. 2012–2016

Sri Lanka provided the catch and fishing effort estimates based on port sampling. Catch recording log books introduced in 2012. There were not properly recorded log sheet returns until 2015. Therefore no data to produce a map to show the distribution of catch by species for the national fleets from 2012.

3. RECREATIONAL FISHERY

Recreational fishery for tuna and tuna like species is not a popular or the widely spread event in Sri Lanka, However sport fishing take place sporadic manner in associated with tourist industry. In recent, Department of Fisheries initiated drafting of a regulation for recreational fishery.rie Stake holder consultations conducted. Prohibited species and recommended gear types for recreational fishery was identified and listed. A data reporting sheet is formulated to record the position and fish species caught. The regulation is in the drafting stage.

5. ECOSYSTEM AND BYCATCH ISSUES

5.1 Sharks

- High Seas Fishing Operations Regulations 2014 (Fisheries and Aquatic Resources Act /FARA)

  (i) The masters/skippers of the vessels have been legally ordered to prompt release of mammals, sharks, turtles and seabirds in live form at minimum harm caused to them if caught incidentally.
  (ii) Carry and use of the line cutters and de-hookers on board to release sharks/turtles is mandatory.
  (iii) Departure and arrival boat inspections at port.
  (iv) Prohibition of intentional surrounding of whale sharks by purse seiners. Mandatory to carry dip nets on board for purse seines to release whale sharks in live form.
  (v) Deployment of onboard observer for Scientific data collection in the vessels>24m.
  (vi) Prohibition of use of drift gill nets> 2.5km in high seas.FARA

- Shark Fisheries Management Regulation 2015 (FARA)
  (i) Prohobition of finning onoard and prohibition of , catching,retaining , transshipment , and sale of Thresher shark,Ocean white tip shark and whale shak.
  (ii) Provisions to collect biological samples for research studies.

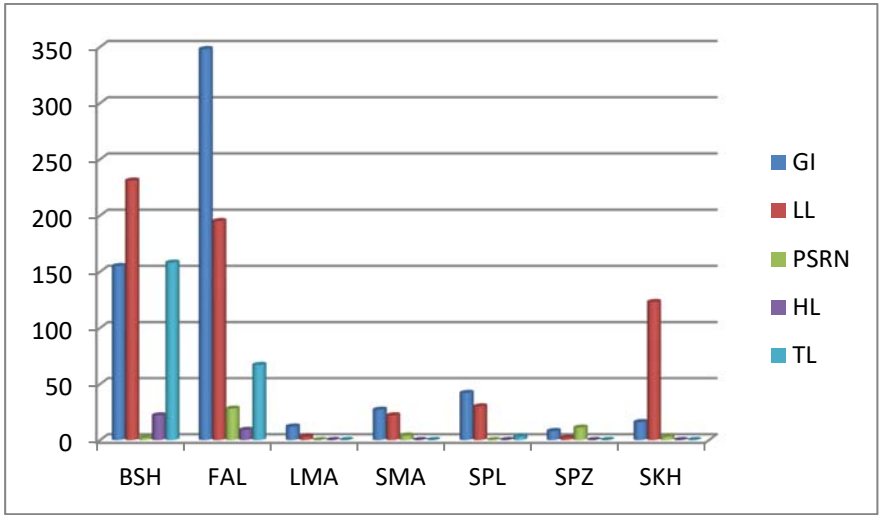
- Fish Catch data recording regulations 2014 (Log book)
  (i) Keeping the records of any incidental catches, release/discard in live or dead ones of sharks,mammals, turtles and sea birds is legally mandatory.

- Regulation on prohibition of use of poisonous, explosives or stupefying substances in fishing (FARA amendment 2004)
- Prohibition of monofilament net. 2006, FARA
- Mesh size restrictions for specified fisheries.FARA
- Prohibition of fishing dredging and bottom trawling damaging the sea bottoms and breeding and nursery grounds FARA
- Sri Lanka is a signatory to Convention on International Trade in Endangered Species(CITES) The hammer head ,white tip and porbeagal sharks are subjected to CITES and Sri Lanka has proposed Thresher shark for listing.
- Declaration of endangered marine species as protected species under Fauna & Flora Protection Act.
- Prohibition of coral mining removal and transport by the regulations under Coast conservation Act.
- Promoting the use of circle hooks to the longlines rather than "J hooks.
- *Marine* Pollution Prevention Act *No 59* of 1981(amended 2008) has legal provisions against pollutions affecting to marine animals and ecosystems such as actions on Sea accidents leading to oil pollution and cause harm to the environment and fauna and flora any to Sea.
- National Environment Act, has published "The National Red List 2012" of Sri Lanka revealing the National and Global conservation status of the fauna and flora of Sri Lanka. Special attention has been drawn to corals and marine fish species mammals and holoturians etc .
- The National Plan of Actions for Sharks- Sri Lanka**(NPOA-Sharks)** is under implementation from October 2014.
- Species identification guides and posters for shark identification has been prepared and published in 2015.
- Improve the onsite sampling program to cover all species of shark as per the IOTC resolution 12/03 to collect required catch and size data and data submitted to IOTC on June 2016.
- Awareness programs are being conducted on the banning of thresher sharks, white tip sharks and whale sharks and recording of the incidental catches and prompt release in an unharmed condition.
- The sanction on violations has been increased to a adequate severity up to Rupees one million under the provisions of the Amended Act for High Seas Fishing in 2013.
- Shark fin sample has to be identified to species level obtain CITES clearance from Department of Wildlife to get the clearance for export of the fins of the sharks that are not prohibited to catch in Sri Lanka. The identifications are done both physically and genetically by the National Research Agency (NARA).

Table 3: Total number and weight of sharks, by species, retained by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2012–2016).

Species		FAO codes	Total weight (t)				
	Common name		2012	2013	2014	2015	2016
Carcharhinusfalciformis	Silky Shark	FAL	1,138	1,247	1122	750	647
Prionaceglauca	Blue Shark	BSH	284	183	213	207	568
Carcharhinuslongimanus	Oceanic Whitetip shark	OCS	149	41	78	87	-
Isuruspaucus	Longfinmacko	LAM	52	70	14	9.6	16
Isurusoxyrinchus	Short fin macko	SMA	63	56	41	49	53
Alopiassupercilliosus	Big eye thresher	BTH	465	00	00	00	00
Alopiaspelagicus	Pelagic thresher	PTH	328	00	00	00	00
Sphyrnalewini	Scallop hammerhead	SPL	71	119	33	42	75
Carcharhinussorrah		-	Included in other sharks	19	00	00	
Sphyrnazygaena	Smooth hammerhead	SPZ		61	18	44	22
Spyrnamokarran	Great hammerhead	GRH		8	04	04	0
	Whale Shark	RHN		00	00	2	00
-	Other sharks	SKA	31	00	88	19	126
Total shark			4382.3	2581	1612	1214	1507

Source : PELAGOS-NARA/MFARD



The shark catch trends by the main fishing gears in year 2016 (Figure 2)

Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2012–2016). Where available, include life status upon released/discard.

Species	2014				2015						2016					
	GN		LL		GN		LL		PSRN		GN		LL		PSRN	
	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead
Thresher shark	2	2	10	6	02	-	18	14	37	08	07	-	02	-	-	-
Whale shark	-	-	-	-	-	04	-	-	-	-	02	-	-	-	-	-
Oceanic white tip	-	-	-	-	-	-	-	-	-	-	4	-	10	-	-	-

Discard levels monitored by the skipper of the vessel/ fishing master (Log book records)

5.2 Seabirds

Sea bird catches are not reported in Sri Lanka due to the nature of the fishery and less availability of sea birds species in the high seas around Sri Lanka. Seabirds are not interacting with long liners either line is setting or line hauling mostly due to the low height of the small boats without sophisticated super structure. The National Aquatic Resources and Research Development Agency (NARA) has done two short-term studies on sea birds through comprehensive port sampling and onboard observation study made in research vessels in the high seas of Bay of Bengal. The findings were present at the WPEB in 2014. Thus there is no mitigation measures in applied to prevent seabird interactions and Sri Lanka and has not developed the NPOA-Sea birds. Observers are not deployed in the small vessels due to space and safety restrictions.

Observer seabird interaction data sheet for the IOTC longline fleet[Desirable]

Name of member state: _____;

Reporting period* or calendar year_____

Species _____

Fishery		Observed					Estimate
Area[1]	Total effort[2]	Total observed effort[2]	Observer coverage[3]	Captures (number)	Mortalities (number)	Live releases (number)	Mortality estimate (number)
Total							

*This field can be used to specify a temporal stratification to the data e.g. season

[1]Spatial stratification (5x5, 10x10 or other – to be determined)

[2]Number of hooks observed hauled

[3]Percentage of all hooks set that were observed hauled

1. How many vessels operated south of 25˚S in the period covered by this report?
2. How many of those vessels used bird scaring lines (as a proportion of total effort)?
3. How many of those vessels used line weighting (as a proportion of total effort)?
4. How many of those vessels used night setting (as a proportion of total effort)?

5.3 Marine Turtles

Marine turtles are legally protected under Fauna and Flora Protection Act (FFPA) and Fisheries and Aquatic Resources Act no.2 of 1996. In 1979, Sri Lanka has signed the CITES agreement and therefore trading of turtles and their parts and products are completely prohibited. The sanctions have been increased in amended FFPA,2008 and FARA, 2013for the violation of laws. Further, large-scale drift net fishing in the high seas is restricted to maximum 2.5km in length reducing the entangling of turtles and other non-target species. In the longline fishery most of the vessels use the circle hook s. ("J" hooks are not in use).Trawling is completely prohibited in Sri Lanka.

The logbook data collection system allows the fisherman to report the interaction of turtles to the fishing gear. Out of the completed log sheets received following data is extracted but the position data has not clearly mentioned. By-catch data recording has been improved towards 2016 as a result of regular awareness programs.

Species	2014				2015						2016					
	GN		LL		GN		LL		PSRN		GN		LL		PSRN	
	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead
1.Olive ridley turtle	3	-	01-	-	-	-	- -	-	-	-	-	-	-	-	-	-
2. Green turtle	-	-	01	-	16	9	5	3	45	0	99	18	93	06	92	0

Discard levels monitored by the skipper of the vessel/ fishing master (Log book records)

There are two major NGOs working on turtle conservation in south coast of Sri Lanka. In addition NARA and Department of Wild Life Conservation (DWLC) working on turtle conservation. DWLC is running *in-situ* conservation activities at Bundala while NARA is running hatchery and refuge centre at Kalpitiya. The conservation mostly *in-situ* conditions, Mainly nest protection, hatching rearing and safe releasing. Eco tourism is one of the main advantage of these projects. This has provided alternative livelihood for the people those engaged in poaching of turtle eggs and there of protected the turtles. These projects conduct turtle rescue programs with fisher community.

5.4 Other ecologically related species (e.g. marine mammals, whale sharks)

Catching of marine mammals is legally prohibited Under the Fisheries and Aquatic Resources Act No.2 of 1996 and the Fauna and Flora protection (amendment) Act 1937 ,(amended 1993 and 2008). Sri Lanka do not operate large purse seines at present. The fishermen are made aware by conducting regular awareness programs by NARA and DFAR to releasing dolphins, turtles and whale sharks if incidentally caught to a fishing gear. The Log books facilitate reporting of incidental catches of marine mammals. The log book data recordings is not satisfactory and unbelievable on this regard. Deployment of an observer in small boats is also has an issue in space and safety aspects.

Table 5. Observed annual catches of species of special interest by species (seabirds, marine turtles and marine mammals) by gear for the national fleet, in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2012–2016 or to the extent available).**[Mandatory]**

Sri Lanka commenced reporting of by-catch in 2014. Refer table under point 5.3 of this report for turtle by-catch data. Sea bird catches are not reported in Sri Lanka fish catch data. The incidental marine mammal catches from 2014 are as follows.

Species	2015						2016					
	GN		LL		PSRN		GN		LL		PSRN	
	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead	Live	Dead
1. Bottle nose dolphin	09	07-	- -	-	-	-	17	-	03	-	01	-
2. Blue whale	06	01	-	-	-	-	-	01	-	01	-	-

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

6.1. Log sheet data collection and verification (including date commenced and status of implementation)

The log book data recording system is legally mandatory by Fish Catch Data Collection Regulations, 2012 (Gazette, No. 1878/11 amended in 01 September 2014)for multiday fishing vessels > 34 feet (10.3m) in length operate basically in catching large pelagic fish within EEZ and high seas. It has been mandated to submit log sheet after every fishing trip. They provide detail data on the spatial and temporal distribution of catch and effort by individual gear, which satisfy the need of rectifying the shortcomings of obtaining special information on catch and effort by individual gear through port sampling programme.
Thereby information received in 2015 through logbooks has been utilized for the first time in verification and also to overcome inherent inefficiencies of port sampling data as per the IOTC requirement. Procedures for comparing logbook data with data on fish landings obtained from the Large Pelagic fishery survey has been completed and pre-tested with a sample of boats.

The vessels that were sampled at ports and the same vessels submitted log sheets were sorted by month referencing to their registration number. The landed catch records were separated by gear and area based on the catch and effort reported as in log sheets since submission of log sheets is a mandatory requirement for multiday fleet of > 10.3m. Majority of sampled boats at ports have been regularly submitted the log sheet after every fishing trip. The assumption made during the multi-gear separation process was that each boat made two fishing trips instead of one; longline and gillnet separately. 15% to 18% landings is sampled jointly by NARA and DFAR officials at 18 major landing sites (fishery harbours) and 14 minor landing centers. Total of 32 data collectors (27 from DFAR and 15 from NARA) are involved in this field data collection.

6.2. Vessel Monitoring System (including date commenced and status of implementation)

Installation of Vessel Monitoring devices commenced on November 2013 and the first batch completed in March 2015. In the second phase another 1500 Vessel Monitoring devices installed for multiday boats > 10.3m. By mid of 2016 Total 1538 vessels of multiday boats >10.3m have been installed a VMS on board. All high seas operating boats are equipped with VMS since January 2016.

The annual report on VMS for year 2016 was submitted to IOTC on June 2017. The regulation on "Implementation of Satellite based Vessel Monitoring System (VMS) for fishing boats operating in High Seas 2015" is being under implementation.

The vessel monitoring centre is established in a separate building in the Fisheries Department Head office Colombo. The Fisheries Management Centre (FMC) is well equipped. Officials have been trained. The (FMC) is fully functioning and the monitoring is initiated. The following reports and alarms are now being generated at FMC.

- Position data once 4 hrs intervals
- Any incident of tampering, power off or crossing of MBLs.
- Indicate the entry to buffer zone before arrive to the harbor.
- Final report of the cruise track (map) of the vessel

The cruise tracks data of VMS are being manually cross checked with the Log sheet data submitted on the arrival and results of reconciliation is reported in a standard format. This helps to validate the information submitted in the logbooks. Sri Lanka developed a software of electronic catch data recording (E-logbook) and the pilot project run in 2016. It was successful and facilitate the data collection with accurate position data and leads towards better monitoring. This e-log book is scheduled to be implement in mid 2017.

6.3. Observer programme (including date commenced and status; number of observer, include percentage coverage by gear type)

Sri Lankan fishing fleet consists of vessels in the ranges from 10-18 m in length without the minimum requirements viz: safety, accommodation and space for deploying the observers. Therefore Sri Lanka could not implement the national observer program in terms of Indian Ocean Tuna Commission (IOTC) Resolution 11/04 On a Regional Observer Scheme. However Sri Lanka initiated implementing the national observer programme (NOP) in September 2014 on a pilot basis. This programme was implemented with the support from Fisheries Improvement Project of Sri Lanka.

Twenty fisheries officers of DFAR with experience and capability for the duty were selected and trained for days. A Memorandum of Understating (MOU) was signed between DFAR and Fisheries improvement Project to carried out the programme.

- Basic Training on Safety at Sea
- Scientific data collection
- IOTC Observer Manual and its application
- Documentation – forms, agreements, Appointment, Insurance
- Practical training on species identification, sampling methods, scientific data collection and reporting
- Pilot observer trips (7 pilot trips) to get practical experience by observers

The observer manual provides reference material along with instructions detailing observer tasks, observational requirements, sampling protocols, log book entry protocols and reporting procedures in the long line, purse seine and other artisanal fisheries in the Indian Ocean. Two training programme were conducted on handling of GPS, Communication and Navigation at CINEC Maritime University and Species Identification at NARA.

Three pilot trips were covered under the Pilot Observer Programme. A team of IOTC experts carried out an assessment of the pilot observer programme during the mission in Sri Lanka 2015. The team of experts interviewed the observers to identify key gaps on data reporting, collecting information and for other matters. Special trainings were conducted for identification of fish species and the way of collecting best scientific information during the observer trips. Many gaps on data recording were identified and the mission findings are given in the back to office report on "capacity building mission in support of the Regional Observer Scheme. Sri Lanka's Observer Programme needs much more assistance and training . Only one long line vessel >24m operated at high seas in 2015. The observer reports for the all fishing trips of this vessel were submitted to IOTC. The Final observer report for this vessel is submitted in 2016. Rrenewal of the observer contract with Observers and other administrative work carried out under the pilot observer programme even though there were no vessels over 24m operated in 2016.

Table 6. Annual observer coverage by operation, e.g. longline hooks, purse seine sets (for the most recent five years at a minimum, e.g. 2012–2016 or to the extent available).**[Mandatory]**

Observer program and reports are at primary stage and only did for single long line vessel.

Figure 4. Map showing the spatial distribution of observer coverage.

Observer program and reports are at primary stage and only did for single long line vessel.

6.4. Port sampling programme [including date commenced and status of implementation]

Large pelagic fisheries statistics in Sri Lanka mainly collect through comprehensive Port Sampling Programme, which has been initially put in place by the National Aquatic Resources Research and Development Agency (NARA) in 1987. Although over the past decades, the methodology of fisheries monitoring, sampling strategy, data collection, data storage, data handling and also reporting has been improved and updated in number of occasions with broader institutional participation with the technical supporting of IOTC. Over 40 enumerators both from the Department of Fisheries and NARA are currently engaged in collecting large pelagic fisheries data covering all major fish landing centers. The present coverage is exceeding 15% - 18% of the total landings. Information of catch, effort by gear or gear combination and length by species are recorded through port sampling programme.

Design of the survey

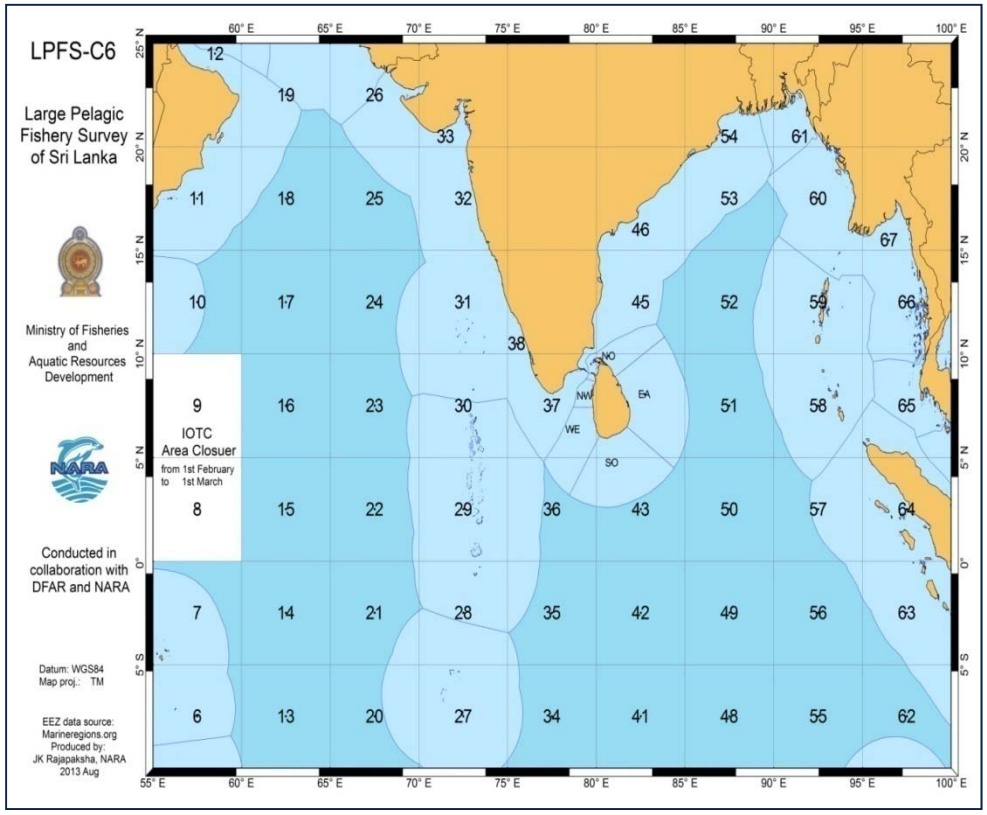
The revised sampling system is basically designed to cover the large pelagic fishery. Therefore, the offshore multiday boats and tuna targeting coastal day boats are focused. In the present context sampling range is extended covering thirteen coastal fisheries districts out of fifteen; except Mannar and Jaffna. The data collection is done in all the major fishery harbours and anchorages where offshore multiday boats are landed and in few cases coastal landing sites where the large pelagic fish species land from the coastal day boats. Accordingly 23 major fishing ports and 10 minor landing sites are covered.

Number of field data collectors have increased since 2013. A total of 28 FIs and Fishery Resources Management Assistance (FRMA) of DFAR are newly apportioned for this task. They were trained on sampling and species identification, assigned for data collection at the harbours/ landing centers in addition to the 12 Samplers/ Research Assistance of NARA. Since NARA samplers have long experience in field sampling and fish identification they are made trainers of the trainees at field level so that the programme is supported internally and therefore sustained. Special training was given on fish identification specially identification of billfish, bigeye and yellowfin tuna and sharks. Identification materials are developed (shark poster, field guild).

Vessels operating in the large pelagic fishery are categorized in to six types considering the LOA, structure of the vessel, fishing trip duration/ area of fishing activities undertaken. The fishing gears mainly used in large pelagic fishing activities in Sri Lanka are considered.

Since there is limited option in getting spatial data the new sampling strategy has introduced a map to identify the fishing area in large by interviewing the skippers of the vessels. The map reflects the area within 10^0 S to 25^0 N and 55^0 E to 100^0 E. Area within the EEZ has been divided in to five statistical zones to denote North, South, East, West and Northwest areas. The area beyond the EEZ has been divided in to five degree grids and coded (Figure 2).

The map reflects the area within 10^0 S to 25^0 N and 55^0 E to 100^0 E. Area within the EEZ has been divided in to five statistical zones to denote North, South, East, West and Northwest areas. The area beyond the EEZ has been divided in to five degree grids and coded.



Data collection

Data collectors are supposed to collect daily effort, catch and length weight data at the landing sites. The three data collection forms used to collect the relevant information has been revised considering the present data requirements.

Daily effort - Form – A, the Daily Effort Form is used to list the fish landed vessels/crafts with the relevant information (boat registration number, length overall, last port of call, date of departure and the catch on board) on each category in a particular sampling site on a particular sampling day. After the total landings are listed, the total number of landings and total number of sampled boats are identified according to the boat categories in the

Form – A.

Catch –The total catch unloaded by the sampled boat is recorded either by weight or numbers in the Form – B,.At the same time information on the fishing operation of the sampled boats such as fishing gears used, fishing area, etc., are also recorded in the same form. Catch composition is recorded for33 species, bill fish (6), neritic tuna (3), tropical tuna (3), sharks (13), seer fish (2) skates (4) and other bonny fish (2)

Length and weight – Form – C, the Length weight frequency data sheet is used to collect individual length and weight measurements of the catches in sampling boats. Curve length of the fish is taken using the measuring tapes while eye estimate or the scale measurement of the individual weight is recorded.

Data storage The PELAGOS database was modified and upgraded to MS Access 2007 by the IOTC and installed at NARA and at SU separately for test data entry. The database is modified to fit with the updated sampling scheme and data collection forms.

Table 7. Number of individuals measured, by species and gear]

Fish Species	Within EEZ			Beyond EEZ			Grand Total
	Gillnet	Longline	Ringnet	Gillnet	Longline	Ringnet	
Skipjack tuna	18654	2996	7279	4611	565	991	27817
Yellowfin tuna	3425	15323	4258	860	4864	605	25077
Bullet tuna	1167	120	662			324	2273
Frigate tuna	1016	18	1198		21	413	2627
Kawakawa	1672	293	348	36		188	2537
Blue Shark	236	365	23	38	51	3	716
Longfinmacko	41	13	-	-	-	-	54
Shortfinmacko	44	31	11	13	36	-	135
Silky shark	763	236	110	86	121	2	1318
Scallop hammerhead	62	16	-	11	18	-	107
Smooth hammerhead	18	9	4	-	-	-	31
Blue marlin	176	82	6	4	18	3	289
Black marlin	809	224	7	6	24		1070
Sailfish	721	109	5	104	86	4	1029
Swordfish	654	1852	8	142	246	11	2913

6.4. Unloading/Transhipment [including date commenced and status of implementation]

The Port State Measures (PSM) regulation is being under implementation with effect from 26th March 2015. Four commercial ports and one fishery harbour designated. All Foreign fishing vessels enter to Sri Lanka designated ports for offloading, transhipment (at port), packing or processing, obtaining services, provisioning of personnel (crew,security) fuel, water, food etc, maintenance and dry docking are subject to this regulation. 24 hrs minimum advance request for port entry was followed. Port inspections are conducted and 15 inspection reports submitted to IOTC. No fish unloading took place at Sri Lanka designated harbours in year 2016. Only at port transhipment, crew and security personnel exchange, provision of supplies, maintenance refuelling and resupply was carried out. The summary of implementation status is as follows.

Nationality of vessels	No of vessels do port entry	Purpose of port call	No.of vessels inspected		No. of reports submitted to IOTC
			Basic	Full	
Taiwan	26	Crew and security personnel exchange (17) Refuelling Maintenance (6) Transhipment and services (3)	17	09	09
Seychelles	07	Crew and security personnel exchange (06) Refuelling Maintenance (1)	07	01	01
Indonesia	02	Repairs (02)	02	02	02
China	03	Security personnel exchange (01) Maintenance (02)	03	01	02
Korea	02	Security personnel exchange ,Services and provisions (02)	02	-	-
Tanzania	02	Security personnel exchange (02)	02	-	-
Maldives	01	Bunkering and resupply (01)	01	01	01

7. NATIONAL RESEARCH PROGRAMS

Table 8. Summary table of national research programs, including dates. [currently underway]

Project title	**Period**	**Countries involved**	**Budget total**	**Funding source**	**Objectives**	**Short description**
Assessment and monitoring of small pelagic and large pelagic fishery resources via port sampling	Ongoing	Sri Lanka	2.8 LKR million	SL Treasury	Collection of large pelagic fisheries statistics-catch species Effort –by craft and gear Length by species, craft, gear	Information sent to FAO, IOTC and also utilize for fishery management (locally)
Gear and seasonal effects on entanglement of sea turtles	2017	Sri Lanka	0.3 LKR million	SL Treasury	Collect information on the incidental catch of sea turtles by species, gear and gear specification, area, status when catching (live or dead) and fate (released, discard, consume)	Information feed to PELAGOS database
Molecular and biological studies on common neritic tuna species found in Sri Lanka waters	2016-2017	Sri Lanka	2.0 LKR million	SL Treasury	Stock identification by morphormetric and molecular methods	Information recorded in separate database
Molecular identification of whales, dolphins, dugongs. (stranded),	2010 continued	Sri Lanka	-	SL Treasury	Species identification	Information recorded in separate database

Genetic population structure of five species of Billfish in the Indian Ocean	2015-2017	Sri Lanka Australia USA and Indian Ocean CPCs	No funds involved with the activities carryout within Sri Lanka		Identification of the stock structure of five Billfish species in the Indian Ocean	Sri Lanka (NARA) collected and provided tissue samples of five species
Fishery and biological aspects of Manta Ray	2017	Sri Lanka	0.6 LKR million	SL Treasury	Biological aspects and conservation and management	Information recorded separately
Spatial and temporal distribution and abundance of Whales	2017	Sri Lanka	1.2 LKR	SL Treasury	conservation and management	Information recorded separately
"Sri Lanka – Norway Bilateral project" to improve the management of the fish resources of Sri Lanka	2016-2018	Sri Lanka Norway	14 LKR million 3.637 NOK	SL Treasury funds & Norwegian technical assistance	- upgrade existing fisheries dependent data collection to generate scientific data and information for sustainable management of the fisheries resources - Fish stock assessments including resources surveys with RV. Dr. Fridtjof Nansen and provide assistance to NARA on assessment of fisheries resources using their own R/V Samuddrika.	upgrade existing fisheries dependent data collection to generate scientific data and information for sustainable management of the fisheries resources

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	• Paper Log book onboard is made legally mandatory (catch data collection regulation 2012 (amended 2014) • The log books for year 2016 are printed as per resolution 15/01 and to be distributed • The Log book templates are provided to Secretariat to display on IOTC website.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	• Data collection sheets have been introduced and the port samplers were trained, sampling procedures introduced, Log book has been improved in a way that enabling the calculation of total catch as per the resolution. • .Marine mammals and turtles are protected under Fauna and Flora Protection (amendment) Act 1937(FFPA) (amended 1993 and 2008); Fisheries and Aquatic Resources Act No. 2 of 1996 (FARA)(amended 2004, 2013) • Sea bird catches are not reported in Sri Lanka due to the nature of the fishery. There is a separate cage to report incidental catchesof sea birds if any and release of them dead/alive from. . • Electronic software for catch and effort data recording (E-logbook/tab) with autonomy geo- positions is being developed and a tested for better data collection and generation of reports.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	• Data collection of bill fish is being strengthen. • Landing bill fish, cut into pieces is an issue for the length data collection. • Study on length weight relationship is used to overcome this issue.
13/04	On the conservation of cetaceans	Paragraphs 7– 9	• Marine mammals (cetaceans) and turtles are protected under Fauna and Flora Protection (amendment) Act 1937(FFPA) (amended 1993 and 2008); Fisheries and Aquatic Resources Act No. 2 of 1996 (FARA)(amended 2004, 2013 • There is a separate box in the log book to report incidental catches of cetaceans (if any) and release of them dead/alive form. This has been incorporated to the e-log book/tab by giving pictures and drop down selection of species making easy the fisher to enter data. The observer on board also will provide the tab for scienticic data recording.
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	• Catch of whale shark is prohibited by the amended shark fishery management regulation 2015 • Fishers are being aware recording of the incidental catches and prompt release in an unharmed condition. • The sanction on violations has been increased up to Rupees one million under the provisions of the Amended Act for High Seas Fishing in 2013. • Prohibition of intentional surrounding of whale sharks by purse seiners. Mandatory to carry dip nets on board for purse seines to release whale sharks in live form.(High Seas Fishing Operations Regulations 2014)
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	• Catch, retain onboard, tranship, land,store or sell of thresher sharks species, oceanic white tip shark, whale shark and shark finning on board and landing sharks fins detached both within EEZ and high seas **areas** is prohibited in the consolidated regulation drafted by integrating already promulgated regulations on sharks which is is ready to publish in November 2015. See the information given under 13/05 above.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Refer 5.1.1 National initiatives on conservation and management of sharks.
12/06	On reducing the incidental bycatch of seabirds	Paragraphs 3–7	-

	in longline fisheries.		
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Reffer 5.3 above. Carry the line cutters and de-hookers on board by long liners and dip nets by purse seiners has made legally mandatory for the high seas operating vessels under high seas fishing regulation 2014
11/04	On a regional observer scheme	Paragraph 9	-
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	(i)The data for catches of sharks for 2016 was submitted on June 2016. (ii)The fishers have been aware to release of live sharks, especially juveniles and pregnant sharks, to the extent possible, that are caught incidentally and are not used for food and/or subsistence. (iii)Fishing vessels are prohibited from retaining on board, transhipping or landing of any shark fins removed from the shark body.
16/06	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraph 1	With the progress of log book data submission by the fishermen Sri Lanka complying with the reporting obligations for all IOTC fisheries as per the IOTC standard , including shark species caught in association with Tuna fishing. Steps taken to improve data collection for direct and incidental catches. Electronic software for catch and effort data recording (E-logbook) with autonomy geo- positions is tested and to be implemented for better data collection and generation of reports.

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2005 and 2017.

9. LITERATURE CITED [Mandatory]