Indian Ocean Tuna Commission
Commission des Thons de l'Ocean Indien
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Sri Lanka National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2019

Authors

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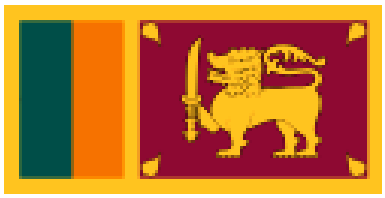


INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

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 2019, final data for the 2018 calendar year must be provided to the Secretariat by 30 June 2019)	YES 30/06/2019
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 2019, preliminary data for the 2018 calendar year was provided to the IOTC Secretariat by 30 June 2019). **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 2019, final data for the 2018 calendar year must be provided to the Secretariat by 30 December 2019).	YES 30/06/2019
If no, please indicate the reason(s) and intended actions:	

Executive Summary [Mandatory]

The total production of tuna and tuna like species of Sri Lanka in year 2018 was 114,374t. 82% of the catch was from the EEZ. 70% of the total catch was Skipjack tuna and Yellow fin tuna in equal shares, the catch amounting to 40,000t each. 3% of the catch was bigeye tuna. The bill fish were the second most group and it was 15% to the catch. Sword fish dominate in the bill fish catch. The shark catch was 1804t. Enforcement of shark management regulations and discouraging of gill net operations has drop the shark catches. Over 4000 multi day boats engaged in large pelagic fishing both high seas and within EEZ. 1337 vessels were authorised for high seas and only 1164 vessels active in 2018. 99% of the high seas operating vessels are less than 24m. VMS is mandatory for high seas operating vessels. Major fishing gears are long line and gill net. In 2018, 28%, 14% and 16% of vessels exclusively operated for longline, gill net and for Ring nets. 42% of the vessels used multi-gear of more or less combinations of these gears. Multi-gear vessels are being promoted to long line by introducing mechanised line haulers and the upgrading of vessel conditions to accommodate better cooling systems to improve the quality of the fish and reduce the post economic loss. High fuel cost has restricted the year round vessel operations and most vessels are being kept anchored. Electronic means of fish catch data collection is being implemented and carried out parallel to the paper log books. On board observers were deployed in all large vessels. Port State Measures are being implemented and E-PSM application is followed. Coastal data collection system is being improved by introducing better sampling techniques.

1. BACKGROUND/GENERAL FISHERY INFORMATION [MANDATORY]

Tuna fishery in Sri Lanka occurs mainly within the offshore EEZ area and in high-seas. The traditional coastal fishing remain operating mainly targeting neritic tuna and associated fish such as carangids, scades, barracuda and rainbow runner within continental shelf and slope areas. The offshore fisheries are confined to the area beyond the 40km up to the 200nm and beyond in high seas . Majority of offshore and high seas operating vessels target for Tuna and tuna like species.

The tuna fishing fleet consists in array of size but as a whole all are small scale. More than 99% crafts are below 24m and do not have mechanized haul. Limited deck space and the manual operation of fishing gears limit the fishing capacity of most boats. About 900 boats were engaged in one day fishing and about 2500 boats conducted multiday fishing within the EEZ of Sri Lanka. 02 long line vessels > 24m operated only in high seas. Only the Vessels > 10.3m, fitted with VMS were permitted to engage high-seas fishing combined with offshore areas of EEZ Thereby 1337 boats were authorized for high-seas fishing in year 2018 and only 1164-vessels were active.

27% are dedicated long liners mainly targeting yellow fin tuna and 14% of the total effort in large pelagic fisheries is large-mesh drift gillnets(GN), targeting skipjack tuna. The High seas gill nets are made of 20-25 pieces and 5" or 6" stretched mesh. Around 200 -1200 hooks are used in longlines depending on the vessel size. The exclusive longliners fish with a larger number of hooks per set (1000/1200 hooks), and reach the depth of 70m-100m hauled by mechanized winch.

Gillnets are being discouraged. 6 number of upgraded longline vessels with mechanized longliners and better cooling facilities introduced for high seas tuna fishing. Ring net is become popular for catching of mackerel scads *(Decapterusruselli)*and trigger fish etc. This net operates s in coastal areas of south, southwest and east and offshore areas in lesser extent. The other fishing gears being used in lesser extent for tuna were hand-line and trolling.

Beach seine is a traditional method of near coastal fishery in Sri Lanka. The target species are near coastal small pelagic and demersal fish. It has proper management practices from the history and those has been regularized and number of licence is freeze. Beach seine catch data is included to the coastal data submission from 2017 onwards.

The use of fishing gear in multipurpose vessels 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 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 6-7 meters length 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. 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 influence the trip duration.

Improve the on board fish quality to reduce the post economic loss, is the main fishery policy in the recent past. To achieve this target offshore and high seas fishing vessels are being upgraded with advanced cooling systems such as chilled seawater (CSW) or refrigerated sea water (RSW). The legal frame work has been strengthen to expand the high seas fisheries as per the international conventions and regional obligations..

There is no tuna fishing grounds close to Sri Lanka and the small size boats travel far away to find fish. Hence, there is an issue of unbearable operating cost due to the high 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.

2. FLEET STRUCTURE [MANDATORY]

Table 1(a) National fleet structure, by gear type, including vessel size and duration of fishing operations

Boat Type	Vessels operated within EEZ	Vessels operated High seas +EEZ		Gears used	Trip length
		Number Authorized at IOTC	Active		
8m-10.3m (1-5 days)	2280	No	No	28% LL only 14% GI only 16% PSRN 42% Multi gear (more or less combination of all above gears)	About 18% of the 8-10.3m length boats operates one day while rest operates 5-30 or more days
10.3m-15m	1157	1322	1149		
15m-24m	0	13	13		
>24m	-	02	02		
	3437	1337	1164		
Total vessels engaged in tuna and tuna like fisheries = 3437+1164 =4601					

Out of the registered 4601 number of large pelagic fishing vessels around 900 boats engaged in one day fishing operations and the rest conducted 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. Although 1337 number of vessels obtained the high-seas fishing operation license for year 2018 only 1164 vessels >10.3m operated at high seas

Table 1(b): Number of vessels operating in the IOTC area of competence, [minimum – most recent five years: 2014–2018;

Year	Total Number of Vessels Operated	
	Total	Active
2014	4294	2241
2015	4294	1615
2016	4485	1577
2017	4572	1374
2018	4601	1164

Source: Vessel Registry- DFAR

3. CATCH AND EFFORT (BY SPECIES AND GEAR) [Mandatory]

Table 2. Annual catch and effort by gear and primary species in the IOTC area of competence. Include a 'not elsewhere indicated – NEI' category for all other catches combined. [Note: Multiple tables may be required e.g. **Table 2a, 2b, 2c). [Mandatory]**

Tables 2a. 2b. 2c

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

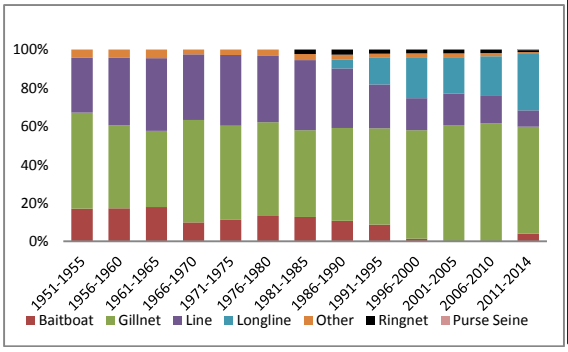


Figure 1a: Relative contribution of fishing gear in Tuna fish gill net fishery production in Sri Lanka 1950-2014

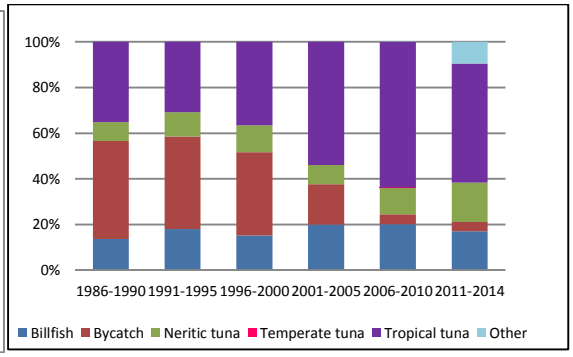


Figure 1b: Catch composition long line and production in Sri Lanka 1950-2014

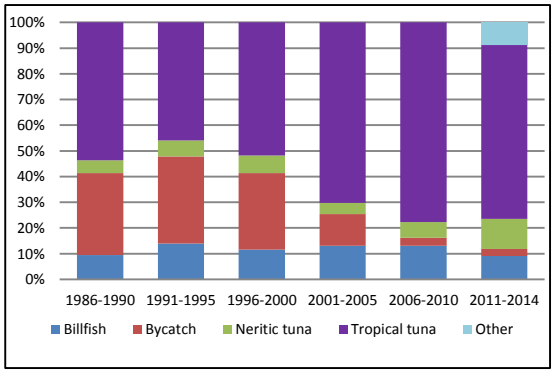


Figure 1c: Catch proportions gill net cum Long line Sri Lanka 1950-2014

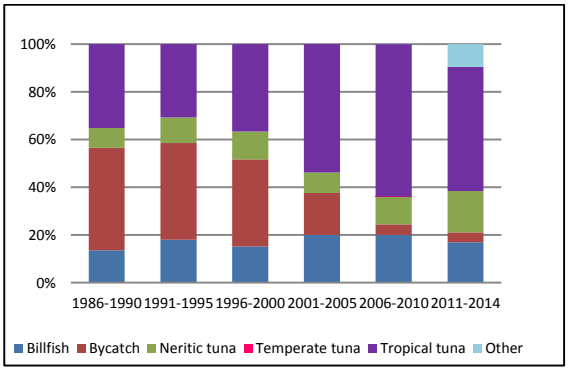


Figure 1d: Catch proportions long line fishery *(including Long line attached to gill net)*In Sri Lanka 1950-2014

Source: IOTC data base

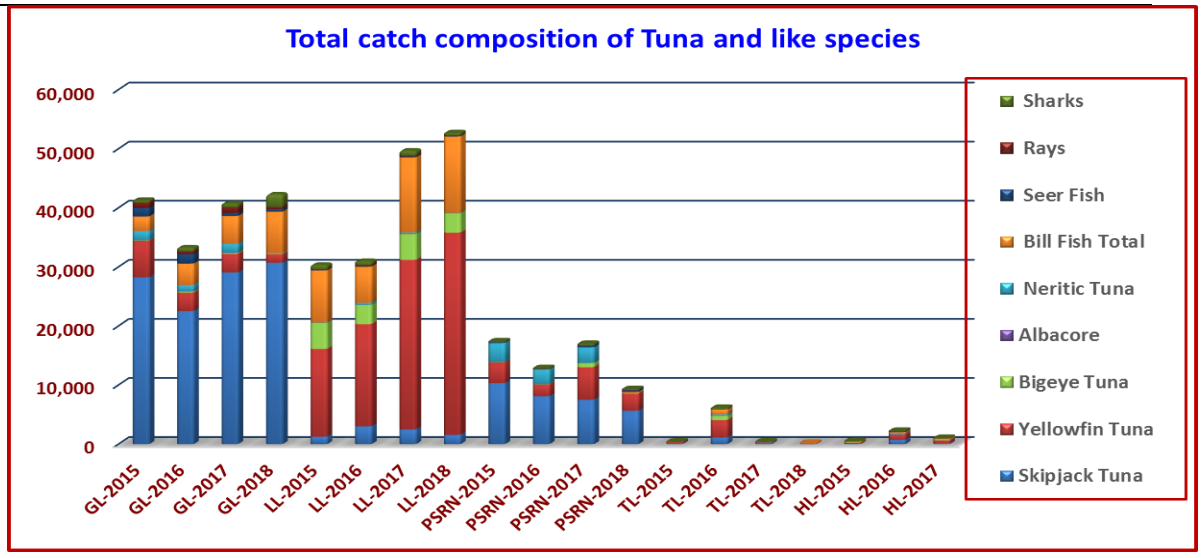
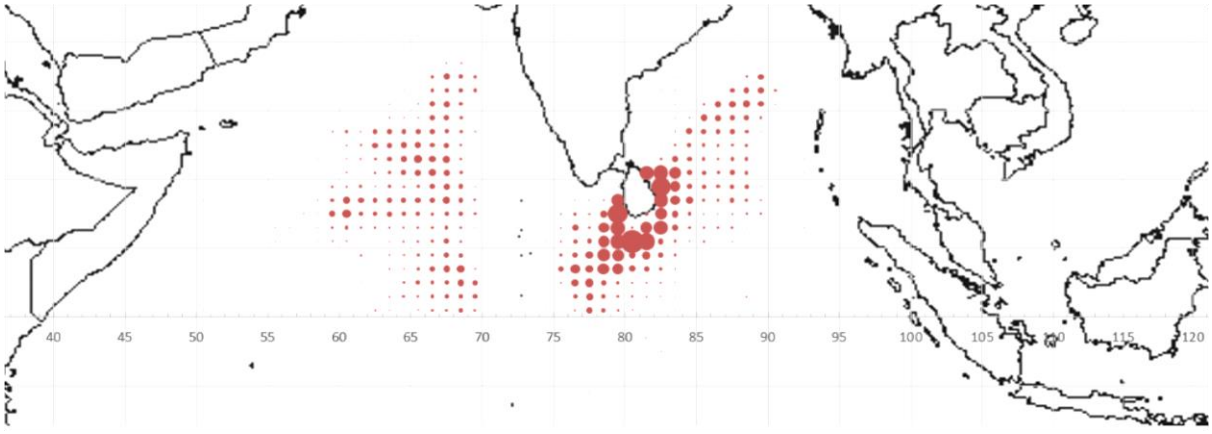
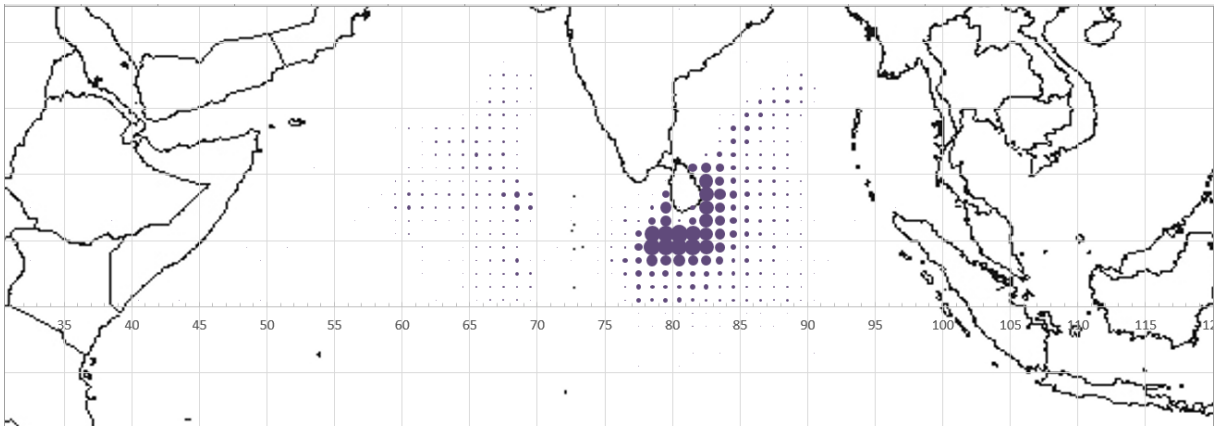


Figure 1e: Total Catch composition of Tuna and tuna like species by gear for the years 2015 to 2018.
Source: PELAGOS database(NARA), log book database-(DFAR) & land based sampling database (DFAR/MFARD)

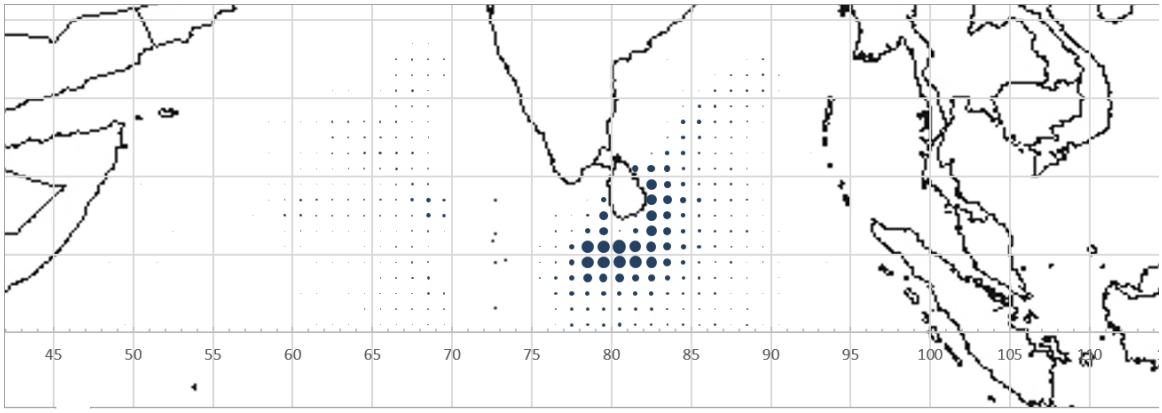
Figure 2a. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (most recent year e.g. 2018). **[Mandatory]**



2a.(i) Long Line

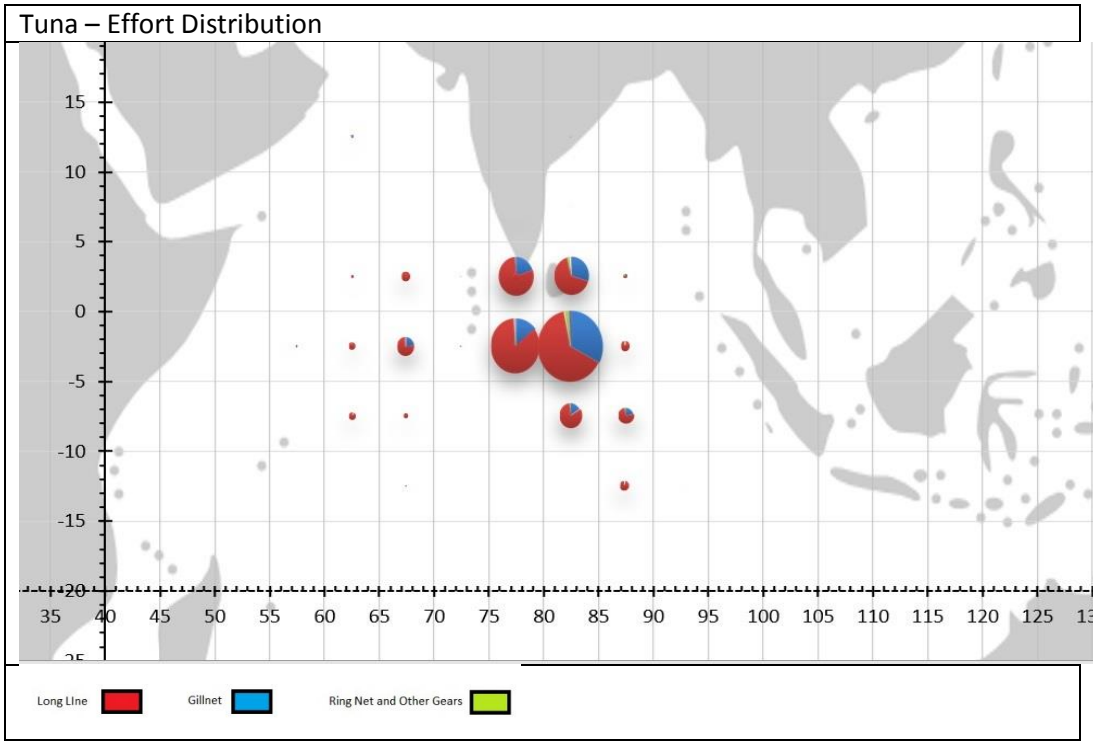


2a.(ii) Gill Net

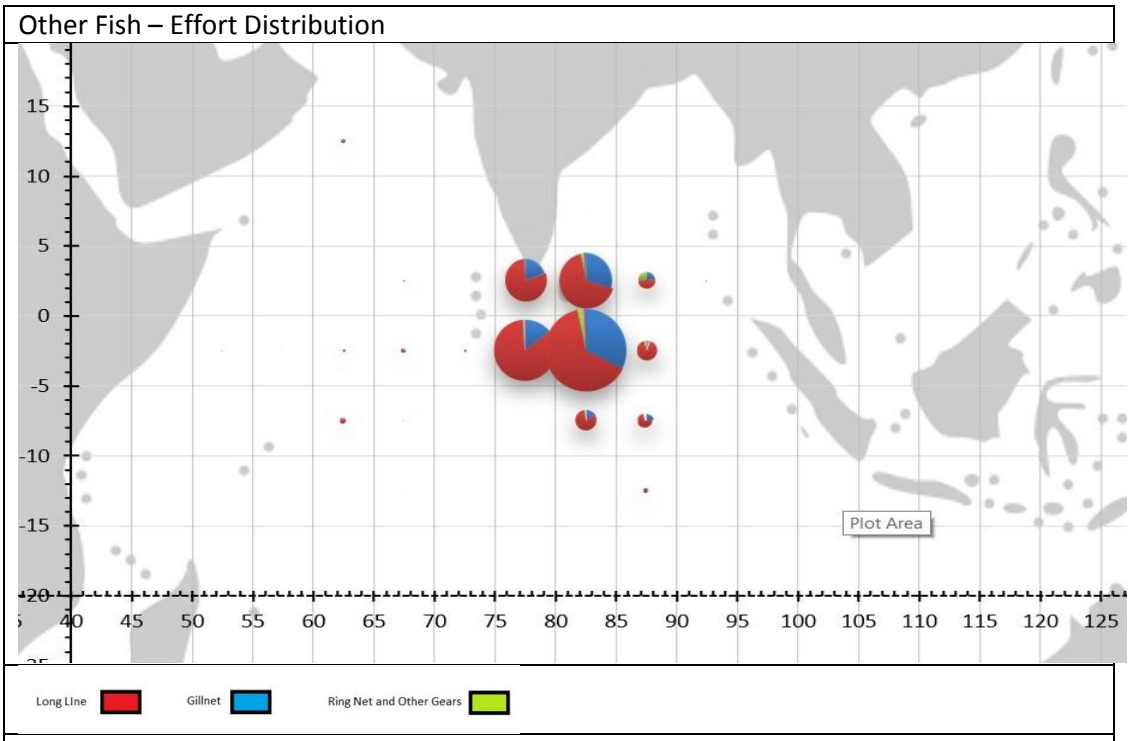


2a.(iii) Ring Net

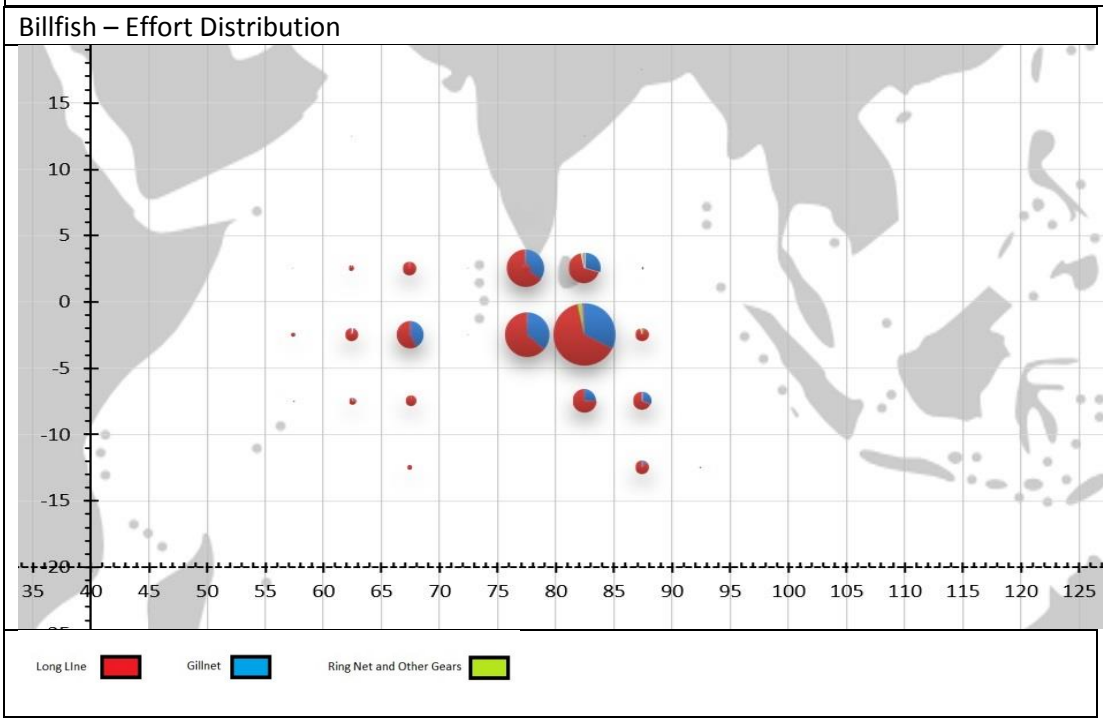
Figure 2b. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (average of the 5 previous years e.g. 2014–2018). **[Mandatory]**



2b.(i) Tuna

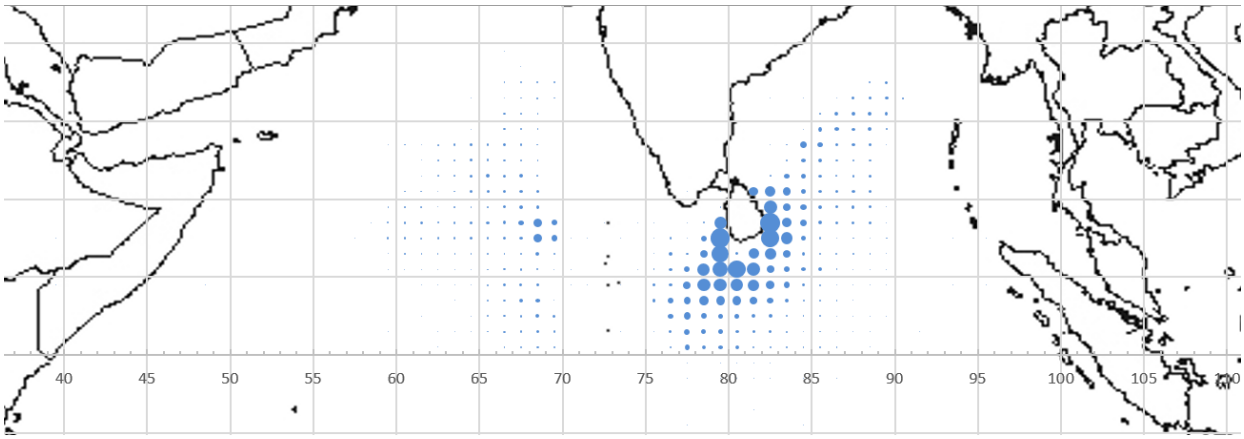


2b.(ii) Other Fish

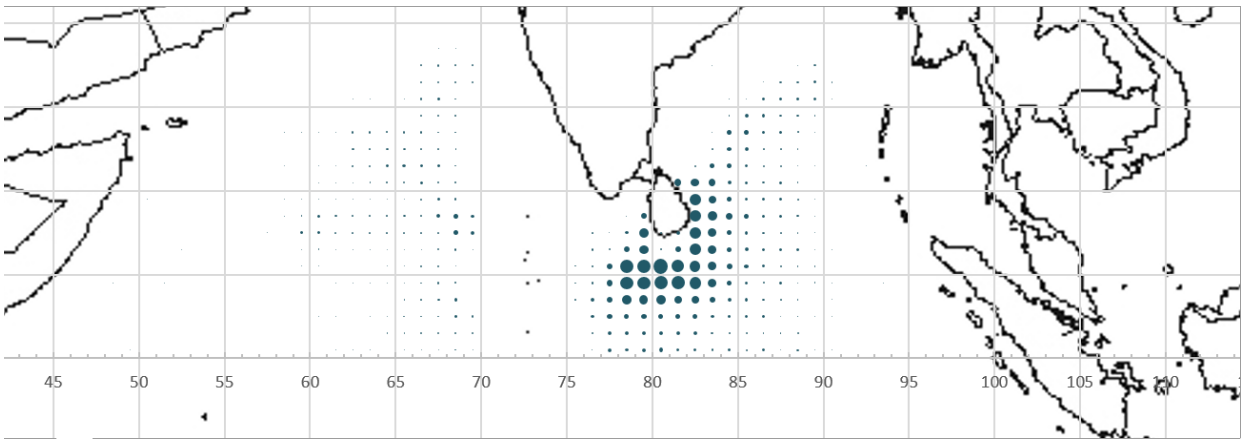


2b.(iii) Bill Fish

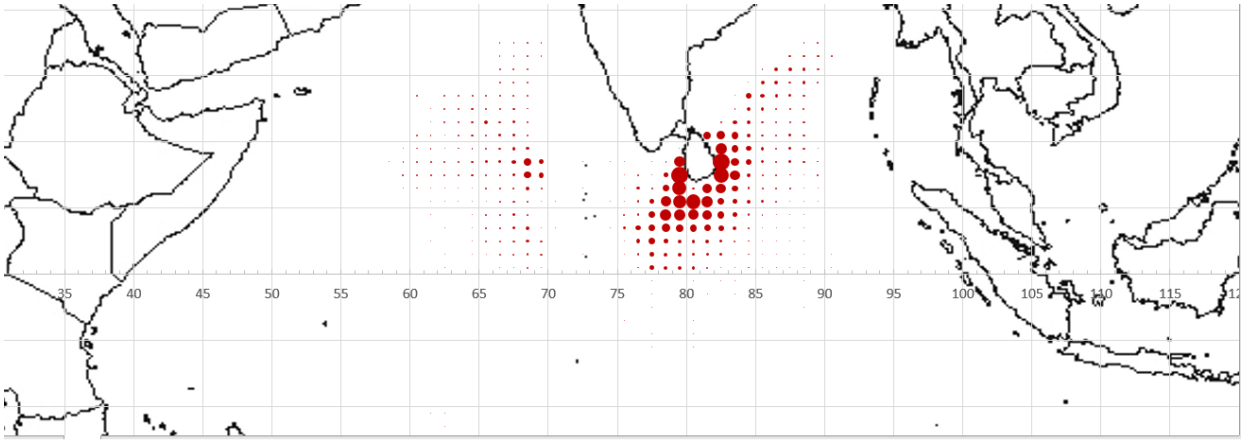
Figure 3a. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (most recent year e.g. 2018). **[Mandatory]**



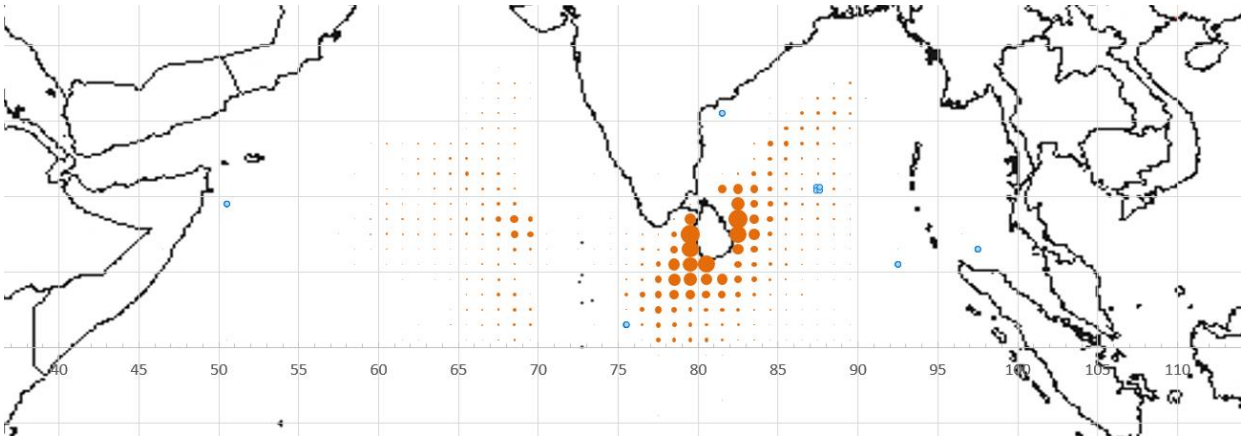
3a.(i) Tuna



3a.(ii) Sharks and Rays

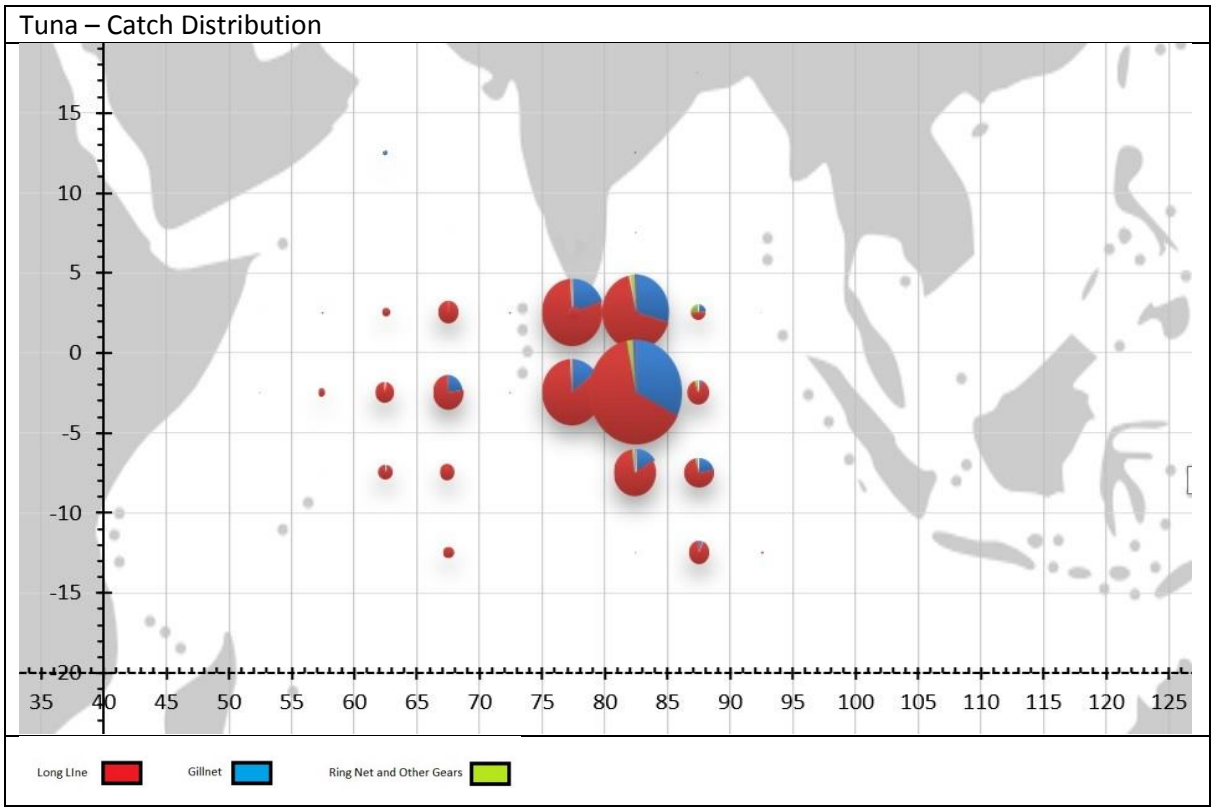


3a.(iii) Bill Fish

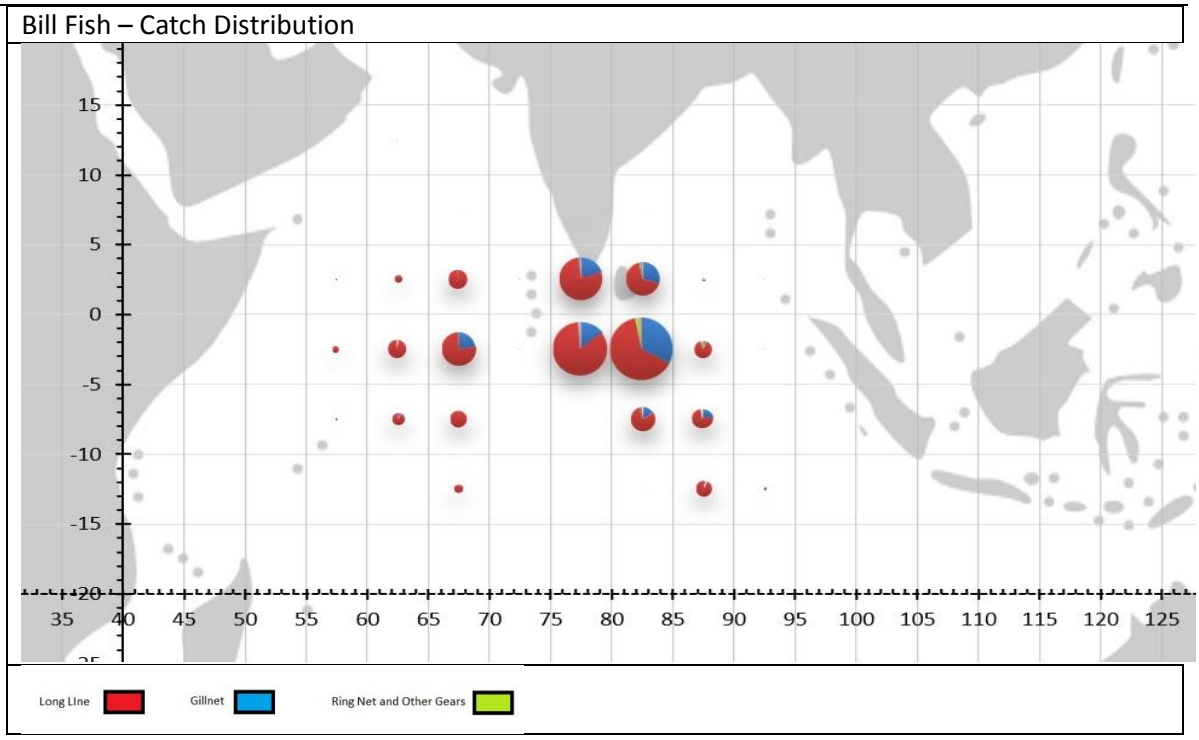


3a.(iv) Other Fish

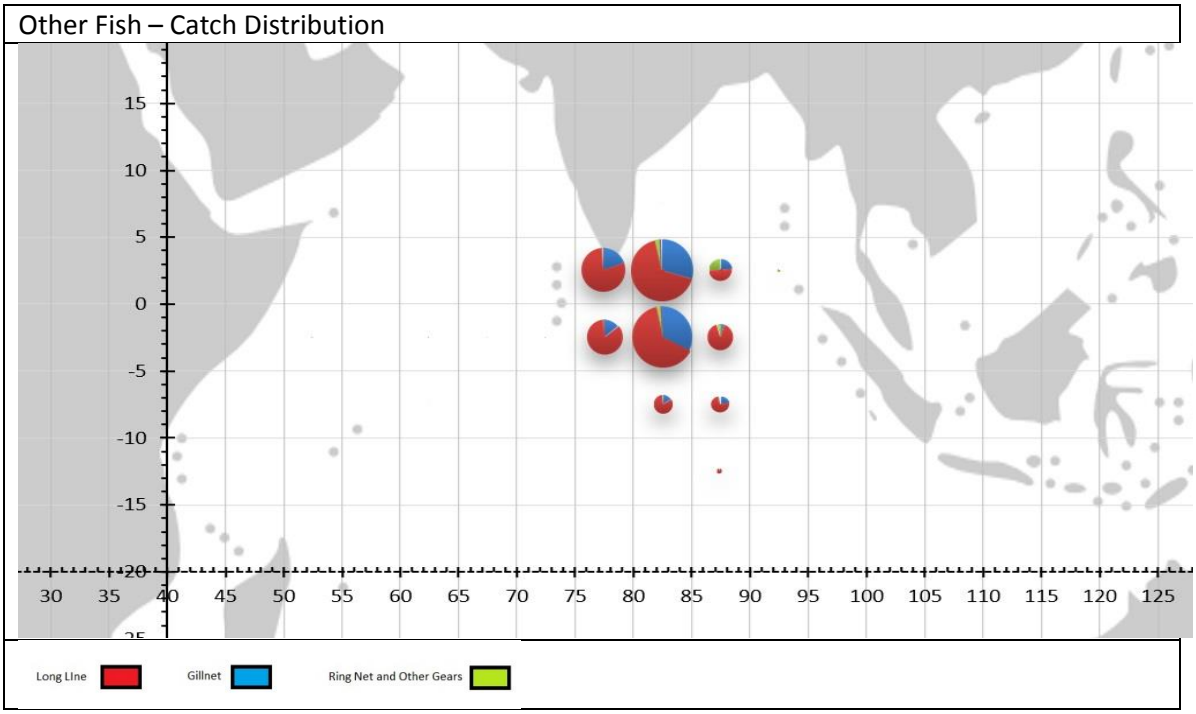
Figure 3b. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (average of the 5 previous years e.g. 2014–2018). **[Mandatory]**



3b.(i) Tuna



3b.(ii) Bill Fish



3b.(iii) Other Fish

4. RECREATIONAL FISHERY [Mandatory]

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 mostly for coral associated fish. In recent, Department of Fisheries drafted a regulation for recreational fishery consultation with relevant stake holders and processing at Legal Draftsman Department. Prohibited species and recommended gear types , for recreational fishery was identified and listed as a schedule in the draft regulation. The safe release of the fish caught by recreational fishery is ensured under this regulation and a catch data recording sheet is incorporated to record the position and fish species caught

5. ECOSYSTEM AND BYCATCH ISSUES [Mandatory]

5.1 Sharks [Mandatory]

(A)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 all mammals, turtles and seabirds and prohibited and unwanted sharks in live form at minimum harm caused to them if caught incidentally.
(ii) It is mandatory to carry and use of the line cutters and de-hookers on board to release sharks/turtles.
(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

(B) Shark Fisheries Management Regulation 2015 (FARA)

(i) Prohibition of finning on board 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.

C) 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 trawlingdamaging the sea bottoms and breeding and nursery groundsFARA

- 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 holoturiansetc .
- The National Plan of Actions for Sharks- Sri Lanka(NPOA-Sharks) is under implementation from October 2014 being amended to publish amendment in 2020. Banning of the use /carry on-board the wire trace/shark lines in High Seas fishing is to be inclluded to the amendments.
- 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 2019.
- 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. 2014–2018**[Mandatory]**

Species		FAO codes	Total weight (t)				
	Common name		2014	2015	2016	2017	2018
Carcharhinusfalciformis	Silky Shark	FAL	1122	750	647	622.6	704.4
Prionaceglauca	Blue Shark	BSH	213	207	568	740	1028
Carcharhinuslongimanus	Oceanic Whitetip shark	OCS	78	87	0	0	5.2
Isuruspaucus	Longfinmacko	LAM+SMA	55	58.6	69	83.7	14.1
Isurusoxyrinchus	Short fin macko						
Alopiassupercilliosus	Big eye thresher	BTH	00	00	00	00	0
Alopiaspelagicus	Pelagic thresher	PTH	00	00	00	00	0
Sphyrnalewini	Scallop hammerhead	SPL	33	42	75	117.6	16
Carcharhinussorrah	Spot tail	-	00	00	00	02	
Sphyrnazygaena	Smooth hammerhead	SPZ	18	44	22	11.4	1.4
Spyrnamokarran	Great hammerhead	GRH	04	04	00	00	01
	Whale Shark	RHN	00	2	00	00	0
-	Other sharks	SKA	88	19	126	187	32.1
Total shark			1612	1214	1507	1764.3	1802.2

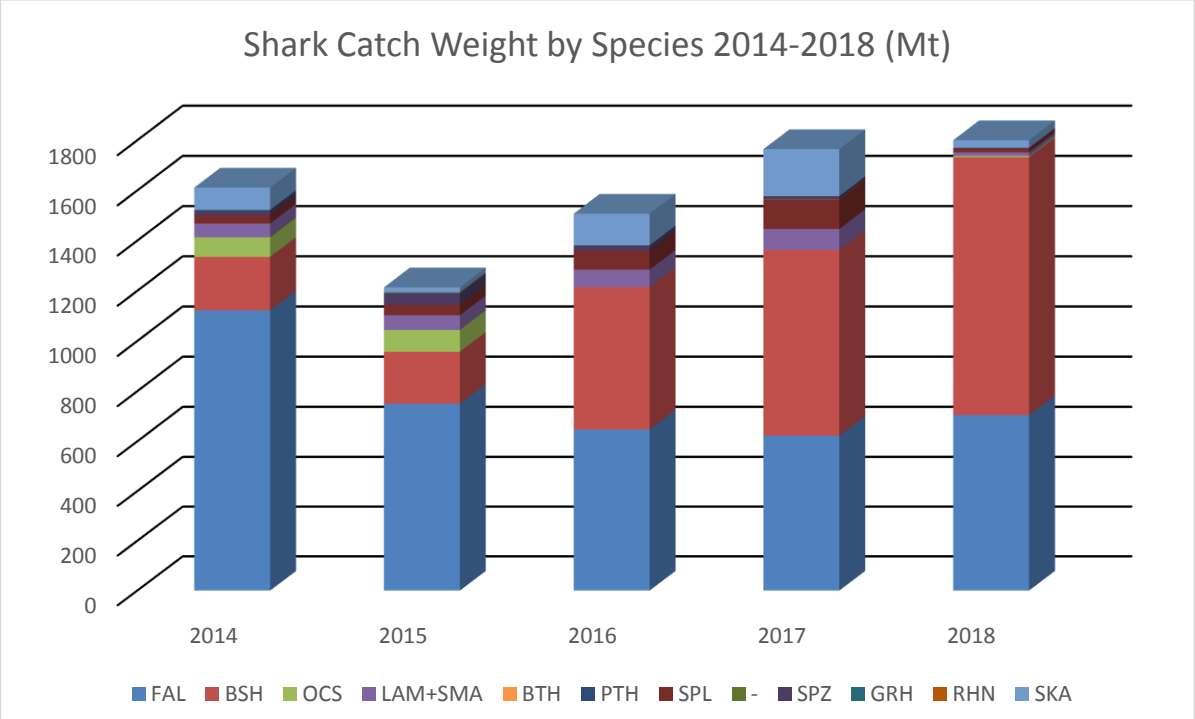


Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2014–2018). Where available, include life status upon released/discard. **[Desirable]**

Year	status	Thresher Shark			Whale Shark			Oceanic whitetip			Silky Shark		
		GN	LL	PSRN	GN	LL	PSRN	GN	LL	PSRN	GN	LL	PSRN
2014	Live	2	10	0	0	0	0	0	0	0	0	0	0
	Dead	2	6	0	0	0	0	0	0	0	0	0	0
2015	Live	2	18	37	0	0	0	0	0	0	0	0	0
	Dead	0	14	8	4	0	0	0	0	0	0	0	0
2016	Live	7	2	0	2	0	0	4	10	0	0	0	0
	Dead	0	0	0	0	0	0	0	0	0	0	0	0
2017	Live	0	29	0	1	0	0	1	23	1	0	0	0
	Dead	0	0	0	0	0	0	0	0	0	0	0	0
2018	Live	0	174	115	3	0	0	0	53	0	0	1	0
	Dead	5	0	0	12	0	0	9	10	0	0	4	0

5.2 Seabirds [Mandatory]

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 . No vessels operated south of 25˚S.

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 [Mandatory]

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 2018 as a result of regular awareness programs.

10	status	Olive ridley turtle			Green turtle			Log head turtle			Howkbil turtle			Leatherback Turtle		
		GN	LL	PSRN	GN	LL	PSRN	GN	LL	PSRN	GN	LL	PSRN	GN	LL	PSRN
2014	Live	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0
	Dead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Live	0	0	0	16	5	45	0	0	0	0	0	0	0	0	0
	Dead	0	0	0	9	3	0	0	0	0	0	0	0	0	0	0
2016	Live	0	0	0	99	93	92	0	0	0	0	0	0	0	0	0
	Dead	0	0	0	18	6	0	0	0	0	0	0	0	0	0	0
2017	Live	316	30	0	533	40	33	34	0	2	96	5	8	12	8	1
	Dead	13	4	0	16	5	0	5	0	0	8	2	2	3	2	0
2018	Live	326	5	26	735	82	3	8	0	3	178	0	151	16	28	8
	Dead	48	0	0	119	6	0	4	0	0	34	0	0	6	14	0

Discard levels monitored by the skipper of the vessel/ fishing master (Log book records) L – Live, D-Dead. 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) [Desirable]

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. 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. 2014–2018 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.

Year	status	Blue Whale			Dolphin		
		GN	LL	PSRN	GN	LL	PSRN
2014	Live						
	Dead						
2015	Live	6	0	0	9	0	0
	Dead	1	0	0	7	0	0
2016	Live	0	0	0	17	3	1
	Dead	1	1	0	0	0	0
2017	Live	25	8	0	0	0	0
	Dead	0	0	0	0	0	0
2018	Live	0	0	0	124	1	0
	Dead	0	0	0	24	0	0

Discard levels monitored by the skipper of the vessel/ fishing master (Log book records)
L – Live, D- Dead

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [Mandatory]

6.1. Logsheet 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. Around 15% landings are sampled jointly by NARA and DFAR officials at 18 major landing sites (fishery harbours) and 14 minor landing centres. 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)

First batch of Vessel Monitoring devices installation was completed in March 2015 for 50 high sea operating vessels. In the second phase another 1500 Vessel Monitoring devices were installed covering all multiday boats operating in high seas. As a result all high seas operating vessels of Sri Lanka equipped with on board Vessel Monitoring Device since January 2016.

The annual report on VMS for year 2018 was submitted to IOTC on June 2019. 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 and 2017. It was successful and facilitate the data collection with accurate position data and leads towards better monitoring.

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.

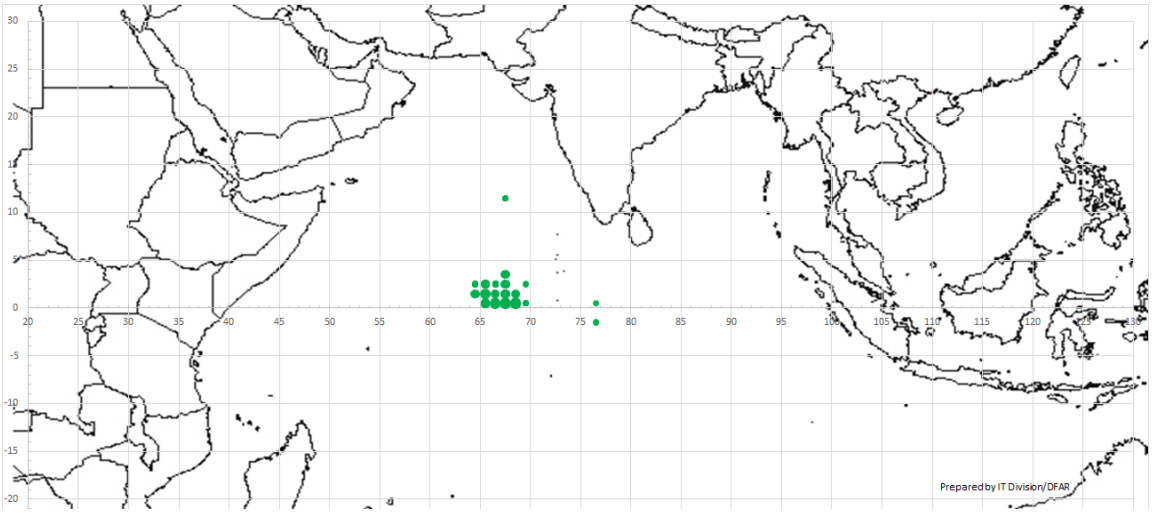
Three pilot trips were covered under the Pilot Observer Programme. A team of IOTC experts carried out an assessment of the pilot observer programme during the mission in Sri Lanka 2015. The team of experts interviewed the observers to identify key gaps on data reporting, collecting information and for 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 .

Two long liners >24m were operated during the years 2017 and 2018 and reports of observer coverage 13% and 22.22% submitted to the IOTC respectively. Two weeks training programme from 12 to 23 February 2018 were conducted by the FAO for 30 Officer including Observers (26) under supervision of the IOTC. The training covered basic theoretical background to support observers at sea operating in fishing sector, theory on fishing operations, gear and species caught in sector specific fisheries, and data recording forms and electronic data capture systems.

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. 2014–2018 or to the extent available). **[Mandatory]**

Year	Number of Vessel – 24m<	Number of fishing operations	Number of observer coverage	% of Observer coverage
2014	Purse Seine - 08	10	02	20
2015	Long line - 02	02	02	100
2016	0	0	0	0
2017	Long line - 02	15	02	13
2018	Long line - 02	09	02	22.22

Figure 4. Map showing the spatial distribution of observer coverage 2018. **[Mandatory]**



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

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

Fish Name	Within EEZ			Beyond EEZ			Grand Total
	Gillnet	Longline	Ringnet	Gillnet	Longline	Ringnet	
Skipjack tuna	24,518	1,654	5,452	4,470	1,212	1,389	38,695
Yellowfin tuna	1,380	23,107	2,877	702	8,716	534	37,316
Bigeye tuna	110	675	51	30	1,107	76	2,049
Albacore	-	-	-				0
Bullet tuna	238	-	1,488			220	1,946
Frigate tuna	673		2,482	69		659	3,883
Kawakawa	1,505		930	44	21	163	2,663
Blue Shark	814	301		15	92		1,222
Silky shark	624	14	63	79	82		862
Scallop hammerhead	8			18	-	-	26
Blue marlin				117	183		300
Black marlin	176	-	-	47	166	7	396
Sailfish	745	446	-	131	246	16	1,584
Swordfish	60	154	-	35	549	4	802

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

Nationality of Fishing Vessels	No of Fishing Vessels do Port entry	Purpose of Port Call	No of Fishing Vessels inspected	No of Inspection report submitted to the IOTC
Taiwan	60	Transshipment (38)	23	23
		Maintenance / refueling/ resupplying/ dry docking (12)	2	2
		Exchange of security personnel & crew members (10)	0	0
China	02	Exchange of security personnel & crew members (02)	0	0
Seychelles	26	Transshipment (08)	4	4
		Maintenance / refueling/ resupplying/ dry docking (02)	0	0
		Exchange of security personnel & crew members (16)	0	0
Panama	13	Maintenance (13)	9	9
Vanuatu	04	Maintenance (04)	1	1
Total	105		39	39

7. NATIONAL RESEARCH PROGRAMS [Desirable]

Table 8. Summary table of national research programs, including dates.

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	2.5 LKR million	Treasury	Collection of large pelagic and small 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)
Molecular based studies on feeding predation in commercially important fish species	2018/ 2019	Sri Lanka	0.775 LKR million (for 2019)	Treasury	Molecular identification of prey items found in stomachs of commercially important fish species such as yellowfin tuna, neritic tunas and sharks using appropriate primer/primer combinations. *Determination of the pray-predator relationships of the species studies.*	Identification of fish and invertebrate prey items of neritic tuna species using molecular methods completed.
Assessment of the blue whale population living in south coast of Sri Lanka and studying the interactions of marine mammals with fisheries.	Ongoing	Sri Lanka	1 LKR Million (for 2019)	Treasury	Photo identification of the blue whale for studying the individual seasonal migration pattern and estimate the stock size.Study the interaction of fisheries with marine mammals	All the individual species were separately recorded. Strandings are also recorded. Information are also being used to address US fisheries export issue.
Biological, fisheries and other aspects in shark fishery with a special reference to shark fin trade in Sri Lanka	2019	Sri Lanka	0.716 LKR Million	Treasury	To study biological aspects and fisheries aspects in shark fishery, to study the emerging trends in shark fishery and local & international trade, to study the interactions of protected sharks with commercial fishing, to study about the directed fishery for catching sharks	Biological and fisheries data on shark landings are being collecting in major landing sites. Locally and internationally trends in the shark fishery will be analysed by using import-export statistics and literature review.
Sri Lanka – Norway Bilateral project to improve the management of the fish resources of Sri Lanka.	On going (up to 2021)	Sri Lanka and Norway	10 LKR million (for 2019)	Sri Lanka and Norway	Upgrade of NARA port sampling procedure, Fish stock assessments including resources surveys with RV. Dr. Fridtjof Nansen Incorporate findings to management of the resource in the country	Development and establishment of a robust fisheries information system is essential for sustainable management of coastal fisheries. To achieve above targets, "Sri Lanka-Norway" bilateral project for fisheries sector is being conducted by NARA and Institute of Marine Research (MRI), Bergen, Norway. Since this is a joint project both countries are involved in

						financing. Sri Lanka has to contribute for the project
Genetic study of marine biological resources in Sri Lankan waters	2019	Sri Lanka	0.75 LKR million	Treasury	Study the genetic stock structure of key species distributed in Sri Lankan marine watersIdentification species structure of fish populations Study the polygenetic relationship of fish species Identification of sequence variations of fish species due to natural mutations	*Decapturus sp and Lethrinus sp* stock identification is completed. DNA barcoding is being conducting to identify species where morphological identification is impossible. Discover 5 novel species from Sri Lankan Waters. Phylogenetic analysis and sequencing is being conducting for important fish species.

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

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2011 and 2018.

Res. No.	Resolution	Scientific requirement	CPC progress
11/04	On a regional observer scheme	Paragraph 9	- Sri Lanka deployed on-board observers for the vessels >24m (100%) - Sri Lanka is selected for the pilot project on introduction of Electronic Monitoring system in the small vessels operating at high seas by IOTC. The project is being implemented and Sri Lanka fully support for this project. - Sri Lanka seeks a cost effective solution for on-board scientific data collection and therefore conducted crew based on-board observer program at trial basis and presented to WPDCS 2018. Refer 6.3 for more information
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	- Refer 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
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	• There is a separate box in the log book to report incidental catches in the logbook. • Currentlly there is are no recordes of Sri Lanka vessels fish in the area of south of 25 degrees South latitude • Sri Lanka will apply , mitigation measures with the development of fishing activities in this area.
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 Refer 5.1.1 National initiatives on conservation and management of sharks
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 •Vessels >24m are deployed with observers and data reported . •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

Res. No.	Resolution	Scientific requirement	CPC progress
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. • There is a separate box in the log book to report incidental catches •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 A regulation. published in March 2015 • submited data for sharks, as required by IOTC data reporting procedures.
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 2019 are printed as per resolution 15/01 and 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.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	• the removal of shark fins on board, landing, retention on-board, transhipment and carrying of detached shark fins and • Landing of carcasses of sharks which are not having fins naturally attached to the body at the point of landing is prohibited by law published in March 2015 . • Release of live sharks, especially juveniles and pregnant sharks that are caught incidentally is made lagally mandatory by the above regulation. • Fishers and the data collectors law enforcement officers have made aware and the species identification guides are provided. • Data recorded as per IOTC data reporting requirements and procedures in Resolution 15/02. • The NPOA-Sharks is being amended to ban use /carry on-board the wire trace/shark lines in High Seas fishing vessels and to be published in 2020.

Res. No.	Resolution	Scientific requirement	CPC progress
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	• record Blue shark catch in accordance with the requirements set out in the Resolution 15/01. • The data collection programme has been improved to report accurate blue shark catch, effort, size and discard data to IOTC in accordance with the Resolution 15/02. • The domestic catch data to collection and monitor system is given under point (6) this report..
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	• Data recording of catch and effort data is practised by using a log book prepared as per the standards given in the resolution 15/02 in the IOTC area. • Use of species identification cards for proper identification of fish species specially to ensure accurate reporting of Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	Nominal catches were submitted to IOTC as per the IOTC 1RC electronic form covering the most commonly caught elasmobranch species according to records of catches and incidents as established in Resolution 15/01 including zero (0) catches.

9. LITERATURE CITED [Mandatory]