Sri Lanka National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2013

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National report submitted to the Secretariat in 2013 final data for the 2012 calendar year must be provided to the Secretariat by 30 June 2013)	YES

30/06/2013 |
| In accordance with IOTC Resolution 10/02, provisional **longline data** for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2013, preliminary data for the 2012 calendar year was provided to the Secretariat by 30 June 2013).

REMINDER: Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2013, final data for the 2012 calendar year must be provided to the Secretariat by 30 December 2013). | YES

30/06/2013 |
| If no, please indicate the reason(s) and intended actions: | |

Executive Summary

The total production of tuna and tuna like species (TPTT) was 79% of the total large pelagic fish catch. It was 106,305t, in 2012, which shows a 5% increase than that of 2011. Skipjack tuna dominated the catches and amounted to 45% followed by yellowfin tuna represented 27%. Catch of bigeye tuna is relatively low and accounted for 2%. There was an 8% increment in yellowfin tuna yield than in 2011. This depicts the development of the longline fleet targeting the deep sea tuna.

Billfish is the second most group; consisting three species of marlin; black marlin, blue marlin and striped marlin, and sail fish and sword fish, makes up 12% of the TPTT. The species identification is somewhat difficult due to nature of landing, sometimes beheading and cut in to pieces. A slight decrease in the billfish catch was observed in 2012 than in 2011. The total shark production of 2581t in 2012 shows 3% decline than in 2011.Silky shark dominated (44%) the incidental shark catch. The shifting of the gear targeting deep sea tuna employing tuna long line has influenced reducing of both billfish and sharks in 2012.

Out of 4000 boats of length between 10- 15m LOA, only 2483 were actively operated in the year 2012. Since majority of them do not equipped with fishing aids; line or net haulers the number of hooks or the pieces of nets deployed is limited due to manual operation and also the restricted deck space.

The gear used is mainly gill net, long line, longline or gill net one at a time in a single operation and ring net. The use of gill net and long line joined together as a combined gear in a single operation shows a decline in practice. Skipjack mainly caught with gill net while yellowfin tuna with gillnet or long line. The development of a lucrative market for large tuna, there is a tendency of increasing longline fisheries by reducing the use of gill net and the gill net longline combination. This has led to reduction of incidental catches of non-target specie such as sharks, rays and of turtles etc.

1. Background/General fishery information

Marine fisheries of Sri Lanka has the two main subsectors; coastal fisheries and the offshore and high-sea fisheries. The coastal fisheries take place within the continental shelf (30,000 km²) and undertake by the smaller fishing crafts of 6-7m LOA and 8-9m LOA, and make single day operations. The coastal catch consists of mainly small pelagic fish and demersal species including low production of tuna and tuna-like species. Tuna catch dominated by small tuna verities; such as frigate tuna, bullet tuna and kawakawa. In general the fishing season closely follows the monsoon pattern. Gillnets of medium mesh size is commonly used but ring nets and trolling also employed. The gear used is change as with the fishery change. Fish are targeted in an opportunistic manner. By the nature and size, these vessels are mostly limited to a fishing range of about 30Km from the coast.

Offshore fisheries takes place outside the continental shelf extending up to the limit of the exclusive economic zone (EEZ) and in the high seas by the multiday boats(MDBs) of size categories; 9-10m LOA, 10-12m LOA,12-15m LOA and 15-18m LOA. The catch mainly includes tuna and tuna like specieswith other large pelagic fish. Access to the high sea fishing grounds is limited by the vessel size, on-board facilities and equipment and also the competence of the crew.

1.1 Fishing Operations of MDBs of the 9m- 15m length range

There are three boat categories fall into this range ie. 9-10m LOA, 10-12m LOA,12-15m LOA.The use of gear in this fleet are mainly the gill net alone , long line alone , long line or gill net one at a time in a single operation and the ring net.The use of gill net and long line joined together as a combined gear in a single operation shows a decline. The decision of the gear use is based on the availability of fish, climate condition, the availability of the bait, crew members skills etc. Bait for the longline is caught at sea using hand jigging, ring net or scoop nets. Indian mackerel, flying fish, milkfish and frozen squid are generally used as the bait.The skippers use their radio communications to gather fishing intelligence from other boats about the type of gear, location and species of fish being caught by them.

As a practice,fishing is done with gillnets or gillnet and longlinetargeting surface inhabiting fish curtailof catching deep water large tuna which gain attractive price at the export market. Due to this fact together with increase awareness on banning of drift gill nets >2.5km at the high seas as prompted most boat owners to progressively increase operations of tuna longline. This has also led to considerable reduction of incidental catches of non-target species such as sharks, rays and turtles etc.

However, due to lack of net and line hauling devices and the limited space on the deck, the number of hooks employed in longline and the pieces of gill nets is limited. In recent years, a few vessels have installed the line/net haulers.

The trip length varies with the gear used. If successful longline operation took place, the catch landed early targeting the export market. The vessels use gillnets under take long voyages sometimes up to 30 days and preserve the early caught fish by salting and sun drying. The sea condition also influences thetrip duration. Number of fishing dayslimited due to the small size of the vessel and also the inadequate safety equipment/facilitiesavailable.

Information on the fishing log is still not be able to report until proper implementation of log book data reporting and the establishment of VMS.

1.2 MDBs of the 15m-18mand above (< 24m)

Vessels in this length category are few in numbers due to high cost for construction. 23 number of these vessels operated in year 2012.They areexclusively longliners and are characterized by the use of hydraulicline haulers. These vessels have insulated fish hold partitioned for use as a chill tank and in some cases bait freezers. The chill tank may use just ice or have installed refrigerated cooling coils. Quality of the fish is maintained by making short fishing trips, extending not more than 10-12 days.These vessels subscribe toGeoMap and receive satellite maps, vessel position monitoring, fishing predictions,SST, thermocline and

plankton information on a daily and weekly basis. Information is provided to skipper prior to fishing trip. In general, other MDBs that are operating tuna longline do not have such technologies.

Offshore fishing of MDBs has been the rapid developing fishery in the marine sector in the recent past. There were 4257 MDBs in the vessel registry, registered for offshore and high seas fishery in year 2012, where only 2483 were actively operated.

The Government is placing a great emphasis on fisheries development and taken a speedy measure to strengthen and expand the offshore and high seas fisheries by facilitating entry of more larger vessels with necessary technological inputssuch as RSW system, line haulers and other equipments, facilities onboard to the crew, communication equipments and also the legal provisions to engage in high seas fishing.This would beachieved through expanding and upgrading the structure of fishing fleet in both the numbers and in size within the capacities of the proposed FDP.

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

2. Fleet structure

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

All the fishing vessels should be registered under the provisions of the regulations made by Fisheries and Aquatic Resources Act No 2 of 1996. About 5% of the vessels between 6-10m LOA seasonally operate in coastal area for tuna fisheries contributing for about 4% of the TPTT of Sri Lanka. There were 4257 MDBs in the vessel registry, registered for offshore and high seas fishery in year 2012. Only 2483 vessels were actively operated in 2012.

Fleet category	No of vessels	Operating area / Distance from shore (nm)	Fishing gear used	Trip duration
6-10m LOA (Single day)	1038	5-20 –Coastal	• Frigate tuna gill nets 1200- 1800 meters in length, hung depth 7-13m • Tuna longline with 50-100 hooks, depth 45-50m,manually hauled • Engine power 15 &25HP	Single day Seasonal operation
9-15m LOA (Multiday)	1864	Offshore and high seas	• Skipjack drift nets 2000-3000 meters in length, hung depth 10-12m • longline of 14-20km main line with 350-500 hooks, operate in 50-70 meters depths, manually hauled. • Longline of 28km main line with700 hooks, operate in 50-70meters depths,installed line haulers • Engine power 80-180 HP	Average 21 days
12-15m LOA (Multiday)	596	Offshore and high seas	• Tuna longline of 40km main line with 700-1000 hooks in 50-70m depth, using hydraulic line haulers	Average 20

			• and very few areusing mono filament spools. • Engine power 80-180HP	
15-18m LOA and > (Multiday)	23	Offshore and high seas	• Tuna longlines of 50-70 km main line with1000-1300 hooks in 70-+100 depth, line setter using monofilament spools These are mainly owned by exporting companies	Average 12

Source: Vessel registry - DFAR

Table 1(b). Number of MDBs operating in IOTC area of competence for tuna and tuna like species

Boat Type	2008	2009	2010	2011	2012	
					Authorized	Active
MDBs, <15m	3073	3359	3685	3915	4234	2460
MDBs > 15m	11	12	17	19	23	23
MDBs > 24m	00	01	00	02	00	00
	3084*	3382*	3702*	3936*	4257	2483

Source: Vessel Registry- DFAR

* Until 2012 there was no system to identify the actively operating crafts for tuna fishery. All vessels those renew the annual registration was taken as active. However, with the commencement of issuing operation license for high seas fishing and the implementation of log book reportingsystem in 2012 actual number of Active vessels was able to detect.

Table 2(a).Catch and effort by species and gear for year 2012

Species Code	Species / Target species	GI YFT; SKJ	LLGI YFT; SKJ	LLTU YFT	HL YFT	PL YFT; SKJ	PSRN FRZ	TL YFT; SKJ	Total	%
YFT	*Thunnusalbacares*	8,933	6,658	7,627	94	72	4,479	513	28,376	27
SKJ	*Katsuwonuspelamis*	26,264	12,052	1,157	100	638	7,135	102	47,449	45
KAW	*Euthynnusaffinis*	2,208	126	2	48	22	456	56	2,919	3
FRI	*Auxisthazard*	3,671	11	14	22	0	1,340	39	5,096	5
BLT	*Auxisrochei*	3,363	36	8	2	-	850	279	4,538	4
BET	*Thunnusobesus*	19	26	1,590	55	-	1	-	1,691	2
COM	*Scomberomoruscommerson*	129	29	17	58	-	1	2	235	0
WAH	*Acanthocybiumsolandri*	600	21	4	9	0	235	2	872	1
GUT	*Scomberomorusguttatus*	9	-	1	4	-	-	-	14	0
BUM	*Makairanigricans*	369	1,419	31	-	-	-	-	1,818	2
BLM	*Makairaindica*	1,327	1,486	169	58	-	9	3	3,052	3
SFA	*Istiophorusplatypterus*	973	1,801	289	10	-	5	1	3,078	3
SWO	*Xiphiasgladius*	634	1,736	1,459	-	-	8	5	3,843	4
RMB	*Manta birostris*	495	233	16	-	-	-	-	744	<1
FAL	*Carcharhinusfalciformis*	208	810	49	-	-	71	-	1,138	1
BSH	*Prionaceglauca*	38	193	52	-	-	1	-	284	0
OCS	*Carcharhinuslongimanus*	5	134	8	-	-	0	-	149	0
LMA	*Isuruspaucus*	8	40	4	-	-	-	-	52	0
SMA	*Isurusoxyrinchus*	28	32	4	-	-	-	-	63	0
BTH	*Alopiassuperciliosus*	280	67	115	-	-	2	-	465	0
PTH	*Alopiaspelagicus*	35	31	262	-	-	-	-	328	0
SPL	*Sphyrnalewini*	36	31	4	-	-	-	-	71	0
MLS	*Tetrapturusaudax*	31	-	-	-	-	-	-	31	0
		49,663	26,972	12,882	461	733	14,595	1,001	106,305	100

Source: PELAGOS Database- NARA/MFARD

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

The fishing fleettargeting TPTT is a multi-gear and multi-vessel type due to multi-species and varied special distributional nature. The total production of TPTT is106,305t and it consist of 91,190t (87%) of tuna followed by 11,791t (12%) of billfish and 2581t (1%) of shark.Skipjack tuna *(Katsuwonuspelamis)* dominated the tuna catch (45%) while yellowfin tuna *(Thunnusalbacares)* is the second most dominating species (27%). Catches of bigeye tuna *(Thunnusobsesus),* is relatively low and accounts for 2% of the TPTT. There is an 8% increase in the yellowfin tuna*(Thunnusalbacares)* catch than that of 2011. This depicts the development of the dedicated longline fleet targeting the deep sea tuna in high seas. The neritic tuna catch was 10,755t of which frigate tuna (*Auxisthazard*), 5096t and bullet tuna (*Auxisrochei*), 4538t were more or less dominated in the catches

Billfish comes as the second most catch in tuna fishery. The three species of marlin, black marlin (*Makairaindica*), blue marlin (*Makairanigricans*) and stripped marlin (*Tetrapturusaudax*), and sail fish(*Istiophorusplatypterus*) and the sword fish (*Xiphiasgladius*) reported in Sri Lanka. Species identification of billfish is difficult due to nature of landing in cut in to pieces. The billfish catch of marlins, sail fish and sword fish was 4870t, 3078t and 3843t receptively. A slight decrease in the bill fish catch was observed in 2012 than that of year 2011.

Species wise data collection of sharks is reiterated from 2011. The estimated shark catch for year 2012 was 2581t and silky shark (*Carcharhinusfalciformis*) dominated the catch (44%). However shark is not a target species in recent offshore and high seas fishery. The shifting of the gear from gill net and the gill net longline combination to deep long line has caused reduction inthe shark catches.The manta ray catch resulted in the tuna fishery is 744t.

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

Group	Species	FAO codes	2008	2009	2010	2011	2012	GEARS
Tuna	*Thunnus albacores*	YFT	19,259.65	23,758.20	26,958.50	18,709	28,376	GN.LL,TL,HL
	Katsuwonuspelamis	SKJ	51,885.57	52,486.20	55,438.30	50,355	47,449	GN,LL,HL,PL
	Euthynnusaffinis	KAW	269.70	217.30	1,592.20	1,529	2,919	GN,HL
	Auxisthazard	FRI	19.56	15.80	4,497.50	5,491	5,096	GN, HL
	Auxisrochei	BLT	94.90	88.90	2,198.30	3,644	4,538	GN
	Thunnusobesus	BET	193.45	110.20	537.70	1,285	1,691	LL
	Other tuna	TUX	4,124.90	5,063.00	680.20			GN
	Total tuna		**75,847**	**81,739**	**91,902**	**81,013**	**90,069**	
Seer fish	*Scomberomoruscommerson*	COM	⎫			675	235	9
	Acanthocybiumsolandri	WAH	582.35	620.30	1316.70	126	872	HL,GN
	Scomberomorusguttatus	GUT	⎭			11	14	HL, GN
	Total seer		**582**	**265**	**1316**	**812**	**1121**	
Billfish	Blue marlin	MAR	⎫	⎫2,476.60	⎫5,660.90	5,385	1,818	LL,GN
	Black marlin	MAR	2,105.16			894	3,052	LL,GN
	Sail fish	SFA	2,347.92	2,733.70	3,664.32	4.448	3,078	LL,GN
	Sword fish	SWO	1,324.00	1,467.00	3,115.60	3,309	3,843	LL,GN
	Total Billfish		**5,777.08**	**6,677.30**	**12,440.80**	**14,036**	**11,791**	
Shark	*Carcharhinusfalciformis*	FAL				2913	1,138	LL,GN
	Prionaceglauca	BSH				265	284	LL,GN
	Carcharhinuslongimanus	OWT				268	149	LL,GN
	Isuruspaucus	MSK	-	-	-	35.3	52	LL,GN
	Isurusoxyrinchus					10.5	63	LL,GN
	Alopiassupercilliosus	ALO	-	-	-	330	465	LL,GN
	Alopiaspelagicus					10	328	LL,GN
	Sphyrnalewini	HAM	-	-	-	110.8	71	LL,GN
	Other sharks	SKH				439.3	31	LL, GN
	Total shark		**1,870.62**	**2,059.30**	**4,137.40**	**4382.3**	**2581**	
Others	Manta birosrtis	SRX	-	-	-	1157	744	LL, GN.HL
	Other bony fish(NEI)	MZZ	15,500.10	14,685.90	25,828.00	11,108	28,897.94	GN
Total			99,577.88	105,782.40	135,625.60	112,508	135,203	

Source: PELAGOS-NARA/MFARD

Note: As it is a multi-species and multi-gear fishery, it is difficult to provide accurate effort information for each species for each gear or gear combinations. Please consider total number of vessels summarized in Table 1(b) as the total fishing effort for that particular year.

The gear usedor the combination of gear used to exploit large pelagic species are summarized in Table 2, due to the nature of sampling system it is not possible to estimate relative quantities of the various species caught by different gears operated separately during each fishing trip. Further, gear used or the combination of gear used vary seasonally as well. Thus, it is difficult to standardize fishing effort to anyone of them as the standard gear.

DFAR has implemented the log book data recording for multiday fishing vessels in 2012. This log book contains three separate data recording sheets for longline, gillnet and for any other type of gears. However, the data received were not up to the standard due to poor knowledge of the fishermen of filling the datasheet. DFAR is closely working with the field officers to improve the log book data entry by conducting monitoring and awareness programs in each district. Log book provides fishing information separately by gear enabling to overcome the above difficulties in obtaining catch and effort data more precisely by species or group of species. This would help to standardize the fishing effort to fulfil the IOTC data reporting requirements in due courses.

Figure 1. Historical annual catch of the national fleet, by gear and primary species.

Among the various types of fishing gears used in the offshore fishery gillnet and gillnet and longline combined were the widely used fishing gears. Gillnet still remain the dominant fishing gear in the offshore fishery, while the longline are becoming popular with the promotion and encouragement of the Government to ensure the quality of fish with the indent to meet the demand in the export market. The troll lines, hand lines and ring nets are the other fishing gears used in offshore fishery in Sri Lanka but their contribution is limited.

The catch trends by the main fishing gears (Figure 1) and the species compositions (Figure 1a-1d) are depicting below.
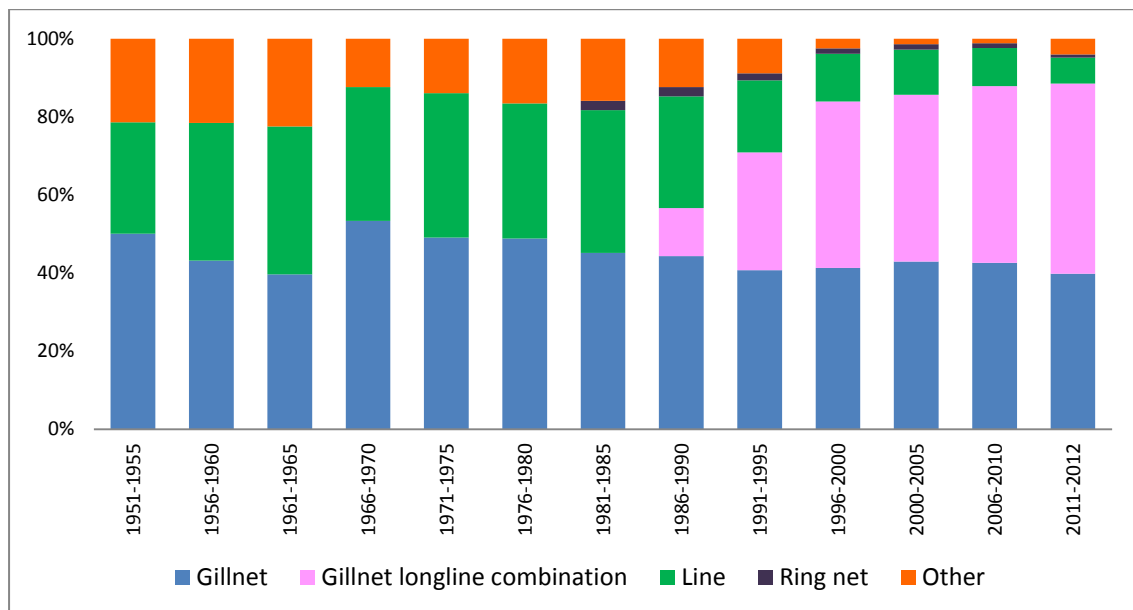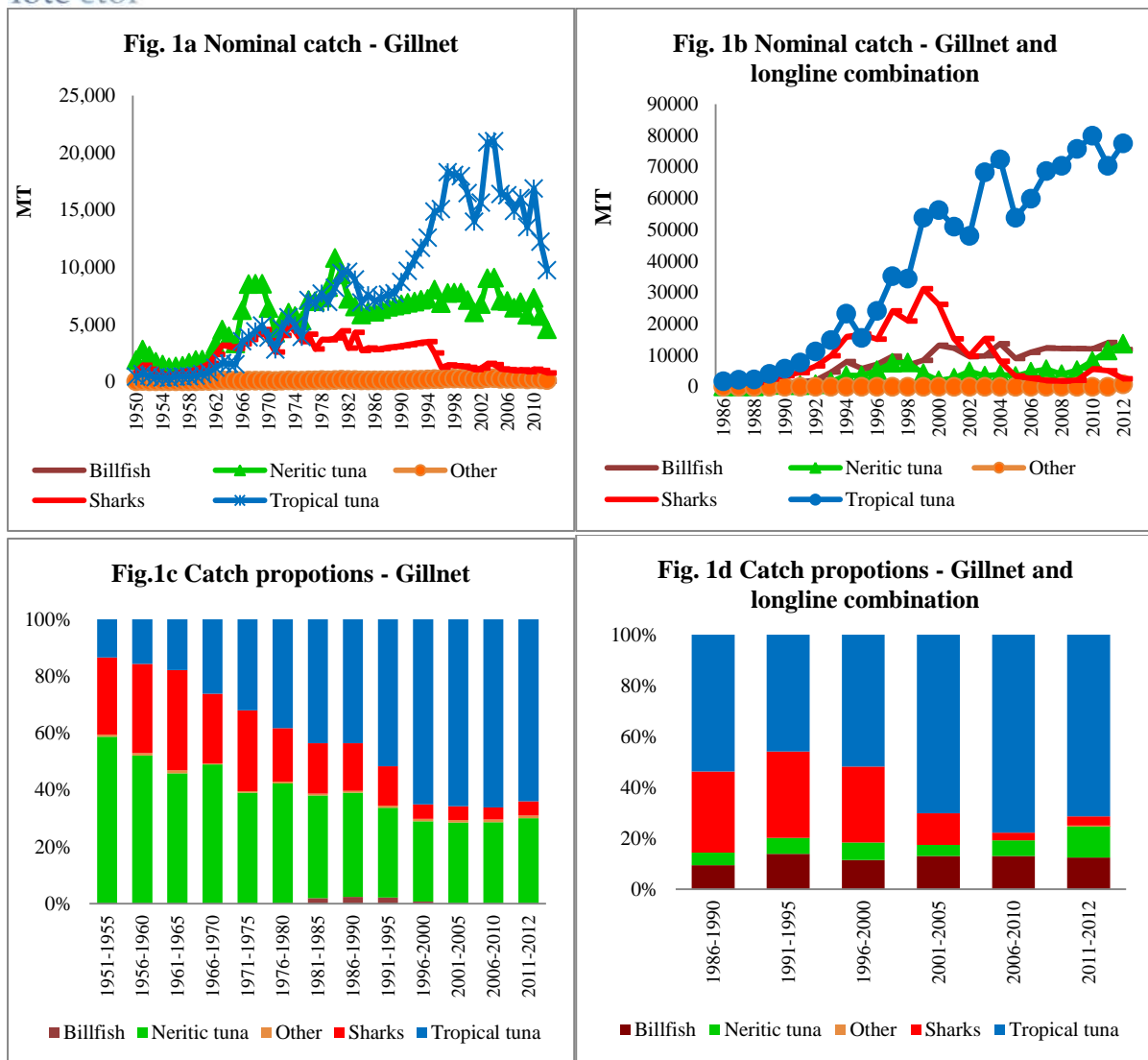

Figure 1: Relative contribution of fishing gear in TPTT fish production

Fig. 1a Nominal catch - Gillnet

Fig. 1b Nominal catch - Gillnet and longline combination

Fig.1c Catch propotions - Gillnet

Fig. 1d Catch propotions - Gillnet and longline combination

Source: IOTC data base

Figure 2a. Map of the distribution of <u>fishing effort</u>, by gear type for the national fleet in the IOTC area of competence for year 2012

Sri Lanka has produced catch and fishing effort estimates based on port sampling measures for 2012. As it was difficult to collect accurate information on fishing positions through port sampling, Sri Lanka is unable to produce a map to show the distribution of fishing effort by gear type for the national fleets in 2012 in the IOTC area of competence. Although log book data recording system has been introduced and made mandatory for the multiday fishing vessels (> 34 feet in length) since January 2012 log data received are not up to the standard to get the fishing effort by gear due to poor understanding and the literacy rate. Monitoring and awareness programs are being conducted to upgrade the log book data recording.

Figure 2b. Map of the distribution of <u>fishing effort</u>, by gear type for the national fleet in the IOTC area of competence (average of the 5 previous years e.g. 2008–2012

Sri Lanka has produced catch and fishing effort estimates based on port sampling measures for a period of 2008 - 2012. As there were difficulties of collecting accurate information on fishing positions through port sampling, it is difficult to produce a map to show the distribution of fishing effort by gear type for the national fleets for a period of 2008- 2012 in the IOTC area of competence.

Figure 3a. Map of distribution of fishing <u>catch</u>, by species for the national fleet, in the IOTC area of competence (most recent year e.g. 2012
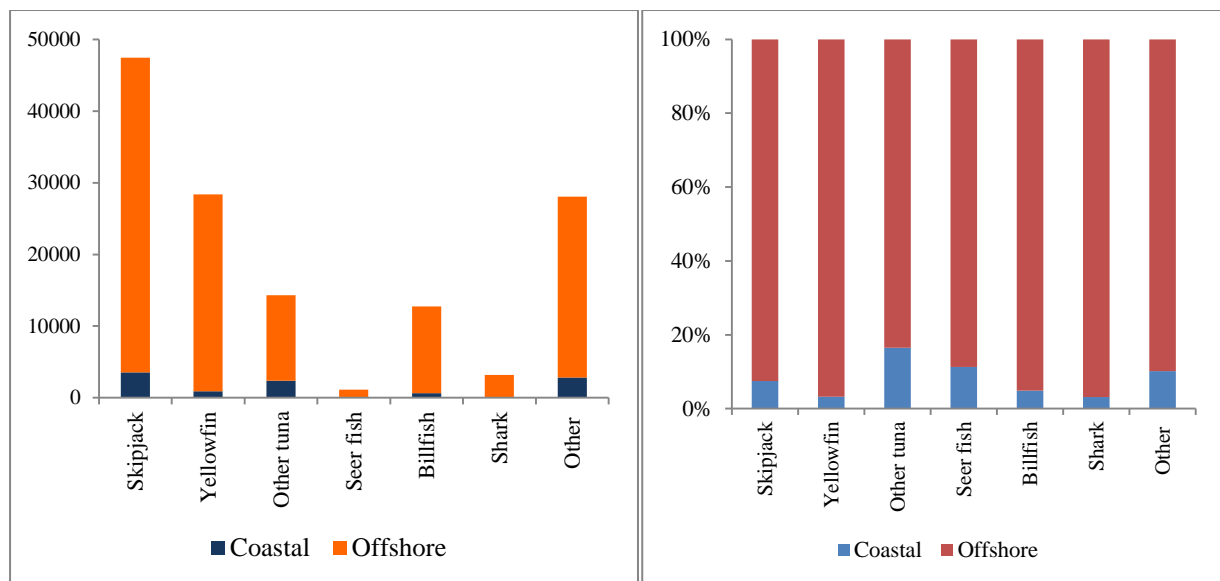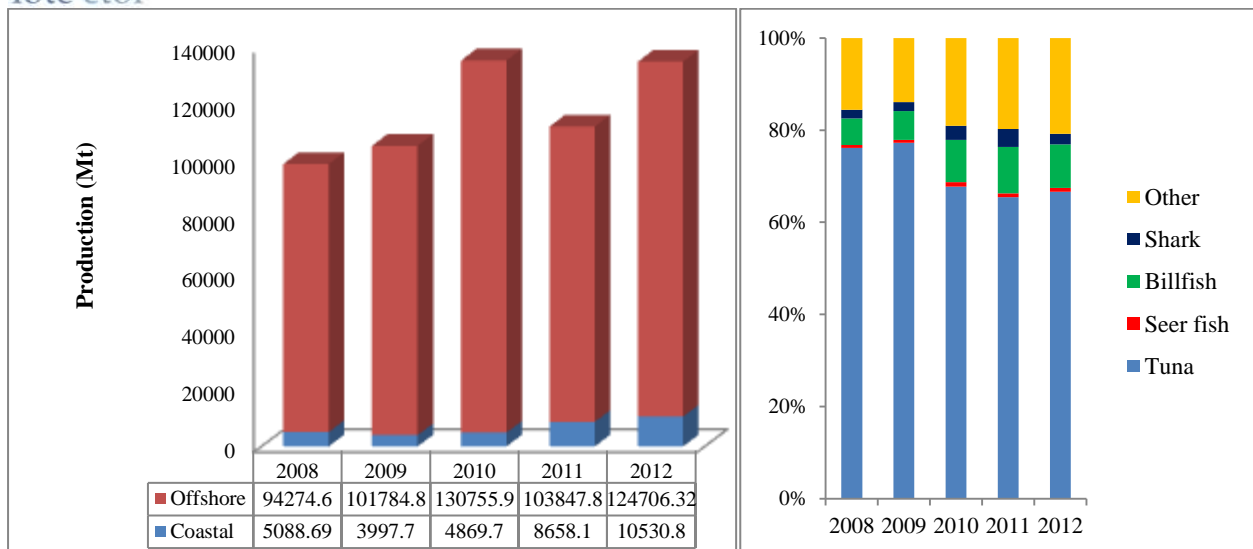

Source: PELAGOS database-NARA

Figure 3a: Coastal and offshore production of TPTT species in 2012

Sri Lanka is producing catch estimates based on port sampling. Since the log book data recordings received were not up to the standard to obtain position data there were difficulties of collecting accurate information. Therefore it is difficult to produce a map to show the distribution of fishing catch by species for the national fleets in 2012 in the IOTC area of competence.

Figure 3b. Map of distribution of fishing <u>catch</u>, by species for the national fleet, in the IOTC area of competence (average of the 5 previous years e.g. 2008–2012

Source – PELAGOS database-NARA

Figure 3b: Production trend of TPTT in coastal and offshore fisheries

The production trend of tuna and tuna like species is given in Figure 3b. The production was estimated based on port sampling.Since the log book data recordings received were not up to the standard in obtaining fishing log data it is difficult to produce a map to show the distribution of fishing catch by species or group of the national fleet for the period of 2008 – 2012 in the IOTC area of competence.

4.Recreational fishery

In Sri Lanka there is sporadic recreational fishery for large pelagic fish, carried out by very few people butinformation is not available on catch records. Since the Government has given high priority to develop ecotourism establishment of sport fishing in Sri Lanka would look forward to develop along with the main frame work of the tourism development plan.

5.Ecosystem and by-catch issues

Sri Lanka pays great concern on conservation and management of marine ecosystems and there are legal provisions under the three main Acts concerning biodiversity and ecosystem;Fauna and Flora Protection (amendment) Act 1937(FFPA) ,(amended 1993 and 2008); Fisheries and Aquatic Resources Act No. 2 of 1996 (FARA)(amended 2004,) and the National Environment Act of Sri Lanka in this regard.Several measures to reduce the impact of fishing on marine living resources and their environment are as follows.

1) Prohibition catch ,land, transport sell, buy, receive ,have in possession of marine mammalsand sea turtles (Fishing Operations Regulations (1996) - FARA& FFPA
2) Prohibition of use the gears, push nets, gillnets and trammel nets on corals or reefs, harpooning mammals (Fishing Operations Regulations 1996) - FARA
3) Prohibition of use of poisonous,explosives or stupefying substances in fishing (FARA amendment 2004)
4) Prohibition of monofilament net in Sri Lankan waters 2006 FARA
5) Prohibiting landing shark fins only without the whole fish (Landing of shark regulation, 2001)
6) Enforcement of prohibition of Catching, retaining onboard, transhipment , and sale of Thresher shark (Family Allopidae) regulation with effect from latter part of year 2012.
7) Mesh size restrictions for specified coastal fisheries.
8) Prohibition of dredging and bottom trawling for chank and sea cucumber fishery (Chank fishery management regulation 2003)

9) Declaration of size restrictions, catch prohibition of berried females and closed seasons in particular lobsterspecies (Lobster fisheries management regulation 2000(amended 2008)

10) Restrictions on small scale purse seine (Ring net) fishery in shallow coastal waters (Purse seine Fishery regulations 1986)

12) Declaration of Fisheries Management area under the provisions of section 28,29,and 61 of the FARA

13) Prohibition/ restriction of export of threatened species (Export and import of live fish Regulations 1998)

14) Prohibition of using light attractions in ring net fishery (Administratively)

15) Restrict the length of gill nets operated in high seas to <2.5 . (Administratively)

As a responsible fishing nation relevant legal provisions for high seas fishery have incorporated into the national legislation in complying with the relevant international conventions and commissions for better management of the tuna resources and to reduce bycatch issues. The amended act was passed by the parliament on the date of 5th November 2013 and to be publicise in due course.

5.1   Sharks

Sharksand rays were mainly caught by gillnet and the gillnet longline combination operating mainly in the offshore within EEZ. Catch records of shark by the tuna long liners operate in high seas is relatively very low.

There are number of national initiatives related to conservation and management of sharks. It includes:

(i) Completion of National Plan of Actions for Sharks Sri Lanka, in 2013.

(ii) Development of species identification guides and posters for shark identification

(iii) 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.

(iv) Improvement of the PELAGOS database by increasing number of shark species in the catch recording list.

(v) Enforcement of the regulation on landing of sharks with fins attached(Landing of shark regulation 2001)

(vi) Enforcement of prohibition of catching, retaining onboard, transhipment , and sale of Thresher shark (Family Allopidae) regulation(July 2012) with effect from latter part of year 2012.

(vi)Awareness programs are being conducted on the banning of thresher sharks and recording of the incidental catches and promptrelease in an unharmed condition. Further actions have taken to display posters and distribute leaflets amongfishermen. News on the prohibition of thresher shark has been published in local news papers. Legal actions have been taken against the violations and the sanction on violations has been increased up to Rupees 50,000 under the provisions of theAmended Act for High Seas Fishing which is to be enacted shortly.

5.2 NPOA-SHARKS SRI LANKA

The Sri Lankan NPOA-Sharks developed with stakeholder inputs, provides information on the status of chondricthyans in Sri Lanka. The structural mechanism and regulatory framework relating to the research,management,monitoring and enforcement associated with shark fishing and trade of shark products in the Sri Lankan context.

National Plan of Action for Conservation and Management of Shark NPOA-Sharks of Sri Lanka ,in an effort to strengthen the conservation and sustainable utilization of sharks and it recognizes the need to determine and implement harvesting strategies consistent with the principals of biological sustainability,attained through

scientifically based management and consistent with aprecautionary approach. Furthermore, it strives to identify unutilized incidental capture of sharks and contribute to the protection of biodiversity and ecosystem structure and function.

The NPOA-Sharks also recognizes the potential non-consumptive use of sharks through ecotourism activities. These aspects of use need to be explored so as to find an optimum balance between consumptive and non-consumptive use, maximizing their benefits with low impact on the marine ecosystem. The plan is intended to have an initial implementation period of four years (2014-2017) with an annual review scheduled to evaluate the progress.

The national stakeholder consultationof the draft NPOA-Sharks is scheduled to be held on 30th November 2013. After the public hearing the activities come into force from year 2014.

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 2008–2012.

Species	FAO codes	Total weight (t)				
		2008	2009	2010	2011	2012
Carcharhinusfalciformis	FAL				2913	1,138
Prionaceglauca	BSH				265	284
Carcharhinuslongimanus	OWT				268	149
Isuruspaucus	MSK	-	-	-	35.3	52
Isurusoxyrinchus					10.5	63
Alopiassupercilliosus		-	-	-	330	465
Alopiaspelagicus	ALO				10	328
Sphyrnalewini	HAM	-	-	-	110.8	71
Other sharks	SKH				439.3	31
Total shark		**1,870.62**	**2,059.30**	**4,137.40**	**4382.3**	**2581**

Source : PELAGOS-NARA/MFARD

The species wise shark data collection reinitiatein 2011 with the recommendation made by 14th Session of the IOTC Scientific Committee. As such species wise shark catches were given for the years 2011 and 2012.

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 for2008–2012.]

No data available due to none receiving of reliable data during the first year of implementation of the log book.

5.2   Seabirds
[add a brief summary of key national strategies related to seabirds, including NPOA-seabirds, current seabird mitigation measures used by the national longline fleet, recovery plans and interactions]

Sea bird catches are not reported in Sri Lanka due to the nature of the fishery and the gear used.Currently two short-term studies were made by NARA scientists; Comprehensive port sampling at Negombo for a period of 3 months February to May 2013 and the onboard observation study made with Dr. Fridtjof Nansen in the high seas of Bay of Bengal from 21st October to 3rd November 2013. No incidence of entangling of seabird was reported from the first study. While in the second study a fewegret were observed flying towards east to west and they may be migrating to Sri Lanka. No bird is attracted to the trawl catch employed by the during the survey period. Thus no mitigation measures in use and no NPOA-Sea birds.

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 which prohibits member nations from trading of endangered species including turtles and their parts and products. The sanctions have been increased by the FFPA for the violation of laws while the sanctions increase in the amended FARA. Further, large-scale drift net fishing in the high seas is restricted to < 2.5km to reduce the entangling of turtles and other non-target species.

Marine turtles may susceptible to be caught drift gillnets and longlines. Since the occurrence are quite low and they are legally protected the landings are not reflect in the database. NARA is being carrying out comprehensive study to assess the fisheries impact of sea turtles based on Negombo.

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). However, there are some incidences of entangling both whale sharks and sometimes small cetaceans to gill nets and ring nets which are operated for tuna and tuna like species. The fishermen are make aware of conducting regular awareness programs by NARA and DFAR to releasing dolphins, turtles and whale sharks if incidentally caught to a fishing gear. Reporting of incidental entangling and releasing is initiated with the implementation of log book in 2012. However during the first year of implementation the log book data returns are not satisfactory to collect such information.

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. 2007–2011 or to the extent available

Species/ group					
	2007	2008	2009	2010	2011
Marine turtles	Not reported	Not reported	Not reported	Not reported	Not reported
Marine Mammals	Not reported	Not reported	Not reported	Not reported	Not reported
Sea birds	Not reported	Not reported	Not reported	Not reported	Not reported

6. National data collection and processing systems

6.1.   Logsheet data collection and verification

The log book data recording system for multiday fishing vessels commenced from January 2012 and it was legally mandatory for all multiday boats beyond 32 feet in length. It took time to the skippers to become familiar to the data recording system. Data recording was poor due to the low level of education and the literacy of the skippers and their negative attitudes towards it. As a result DFAR does not receive the catch

and effort information according to standard expected. DFAR is now carrying out district wise monitoring programme to streamline the data recording and submission system.

6.2. Vessel Monitoring System

Under the fisheries sector development strategy a modern and technically improved (state-of-the-art)Vessel Monitoring System (VMS) is to be established in order to combat IUU fishing, disseminate warnings, communication during distress situation and provide the information on fishing grounds to fishers and report the fishing log .

VismaSiriusIT of Denmark has been selected as the prospective VMS provider to Sri Lanka and submitted the selections to the relevant authorities to proceed. Technical Evaluation Committee (TEC) and a Cabinet Appointed Negotiation Committee (CANC) were appointed for further analysis of the proposal. The TEC was constituted with highly professional and competent members from the Sri Lanka Navy, Universities and Information Communication Technology Agency (ICTA). The TEC has submitted their technical report to CANC.

After succession of several meetings,the CANC invited the project proponent to negotiate the project implementation work including the project cost. MOU was signed with the suppliers valid for ten years of service period. A pilot programme will be held by the end of 2013. The full implementation will take place at several phases.

At the meantime DFAR has already taken actions to improve the infrastructure such as construction of Fisheries Monitoring Stations with required facilities. Awareness programs to multiday boat owners and the crew are being conducted with regard to the compliance of IOTC resolutions. Allocation has been made in the 2014 budget for the infrastructure facilities needed for implementation of VMS. Regulations will be made to adopt to declare the VMS as a mandatory requirement for High seas fishingunder the provisions of recently amended Fisheries Act.

6.3. Observer programme

No observers deployed onboard of the tuna fishing boats of Sri Lanka. However, the required data is provided to the IOTC by means of monitoring the catch through the field sampling programme to determine catch and size by type of boat, gear and species. There were no large boats in Sri Lanka which possess onboard facilities to deploy an observer. Sri Lanka look forward to implementthe onboard observer scheme with the expansion of the fishing fleet with large vessels under the fleet development plan (FDP).

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. 2008–2012 or to the extent available

Observer program not implemented so far.

Figure 4. Map showing the spatial distribution of observer coverage.
Observer program not implemented so far.

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

Considering the recommendations of Scientific Committee, steps have been taken to strengthen the data collection and reporting systems on the coastal and offshore fisheries of Sri Lanka under the technical advisory of IOTC and the financial assistance of OFCF. A collaborative effort of DFAR, NARA and the statistics unit of MFARD was exerted to increase the sampling stations and to enhance the skills of data collectors to produce more accurate effort and catch estimates and increase the quality of size frequency data.

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 Kilinochchi. 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 is increased. 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).

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.
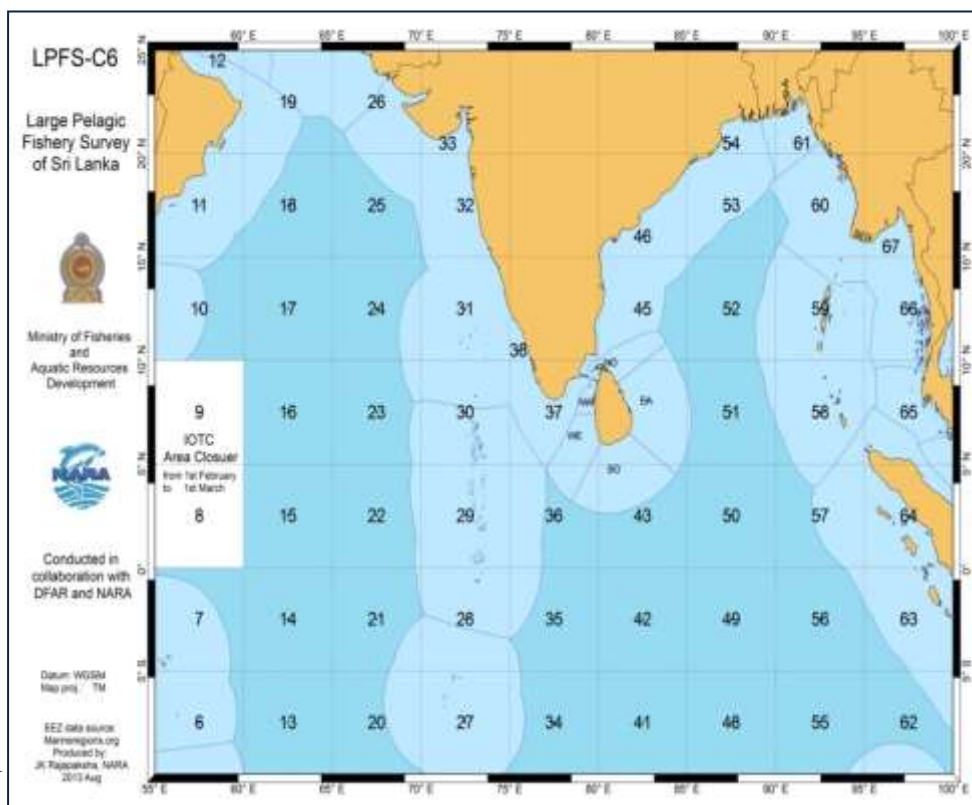
The overall monitoring of the survey is done by the Ministry of Fisheries and Aquatic Resources Development and actions are taken for further improvements of the survey considering the practical situation in the field.

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 still being modified to fit with the updated sampling scheme and data collection forms. The catch estimation and reporting is under development.

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

Species	Number of individuals measured	Gear / gear combination
Yellowfintuna	10,945	GN, LL, TL, HL
Skipjack tuna	14,315	GN, LL, HL,PL

Source : PELAGOS-NARA/MFARD

6.4. Unloading/Transhipment

Tuna and tuna like species are being landed by foreign fishing vessels at the designated fishery harbour at Mutwal, Colombo. Foreign fishing vessels in the Authorised list of IOTC with valid National registration and fishing operation license are permitted to land fish in Sri Lanka. Minimum 24 hours advance port call with relevant documents to consideration ofissuing of fish landing permit. Port inspectors have appointed and port inspection is being carried out. The landing data and the port inspection reports were submitted as per the IOTC resolution 05/03 and 10/11 respectively.

National research programs

The main fisheries and aquatic research arm of the fisheries sector is the National Aquatic Resources Research and Development Agency (NARA) . NARA has the capacities to carryout research work on the streams of oceanography, fishing technology, marine biology, post-harvest technology and socioeconomic and marketing in relation to the IOTC species concern. The oceanography division of NARA provides information regarding forecasting fishing grounds using satellite technology to the offshore fishers. Oceanographic information is retrieved from earth observation satellites and used to investigate the most favorable conditions for more likely to be fish abundance areas. Such information is plotted in a map and disseminating to the deep sea fishery sector. Utilizing this information enables to reduce the fishing operational cost and increase the fishing efficiency.

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

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
BOBLME	2009–2014	8 countries (India, Maldives, Sri Lanka, Bangladesh, Myanmar, Thailand, Malaysia, Indonesia	US$ 32 (all countries)	GEF,NOAA, SIDA, Norway, FAO	Sustainable utilization of living resources	On-going research 1.Comprehensive study on Indian Mackerel 2. Shark Action Plan 3.Awareness of Log Book 4. Training of data collectors engaged in large pelagic fisheries survey

Implementation of Scientific Committee Recommendations and Resolutions of the IOTC relevant to the SC.

Table 9. Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee [to be updated annually to include most recent Conservation and Management Measures adopted by the Commission].

	Resolution	Scientific requirement	CPC progress
	Concerning the conservation of sharks caught in association with fisheries managed by IOTC (05/05)	Paragraphs 1–12	• Completion of NPOA-Sharks • Contributing to the process of developing the regional shark fishery conservation and management plan under BOBLME • Recording of shark by species • Regulation of whole fish shark landing 2001 • Awareness on releasing of sharks incidentally

Resolution	Scientific requirement	CPC progress
		entangled in gears use.s
Mandatory statistical requirements for IOTC members and cooperating non contracting parties	Paragraphs 1–7	Refer the national data collection and processing systems under the point 6 for the recent developments to enhance the data collection system. Sri lanka is following the timelines for data submission.
On reducing the incidental bycatch of seabirds in longline fisheries. **Reminder**: Resolution 12/06 will supersede Resolution 10/06 on 1 July 2014	Paragraphs 3–7	Due to the nature of the fishery and the gear used, this is not applicable to Sri Lanka . Short term study is being carried out with the participation of undergraduate students to assess the fisheries impact on sea turtle.
On a regional observer scheme	Paragraph 9	Onboard observer programme is still a problem to the Sri Lankan vessels due to limited on board facilities. Sri Lanka look forward to implement onboard observer scheme with the expansion of the fishing fleet with large vessels under the fleet development plan (FDP) The required data is being provided to the IOTC by means of monitoring the catch through the field sampling programme to determine catch and size by type of boat, gear and species.
On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–11	The new log book format is being drafted in complying with the resolution 13/03 and the draft will be submitted to Executive Secretary by 15th February 2014. The new log book will be implemented from July 2014.
On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Study on turtle nesting beach has been included to research agenda of NARA in 2014 Short term study is being carried out with the participation of undergraduate students to assess the fisheries impact on sea turtle.
On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Refer the 5.1.1 National initiatives on conservation and management of sharks.

Resolution	Scientific requirement	CPC progress

Literature cited [Mandatory]

Taylor-Moore, N 2008. Tuna longline sector development in Sri Lanka: TCO support to planning and implementation of strategies of components and key activities under the ten year development policy frame work of the MRAF fisheries and aquatic Resources sector plan. FAO 133pp.