



[Sri Lanka) National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2015

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

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|---|---------------------------|
| <p>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 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 June 2015)</p> | <p>YES 30/06/2015</p> |
| <p>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 2015, preliminary data for the 2014 calendar year was provided to the IOTC Secretariat by 30 June 2015). 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 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 December 2015).</p> | <p>YES 30/06/2015</p> |
| <p>If no, please indicate the reason(s) and intended actions:</p> | |

Executive Summary [MANDATORY]

The total catch of tuna and tuna like species in Sri Lanka was 104,118t in year 2014. 75% of the catch is from EEZ and only about 25% is from the high seas. Skipjack (*Katsuwonus pelamis*) dominated the catch, and amounted to 47% (48,654t) while Yellowfin (*Thunnus albacares*) was the second most species representing 28% (28,775t) of the catch. Bigeye (*Thunnus obesus*) catch was relatively low (2711t) and accounted for 2.6% of the total catch. Bill fish comes as the second most group of catch in the tuna fishery. It was 10% of the total catch and amounted to 10,372t. This shows 2% drop compare to the catch that of 2013. Over 1/3 of the bill fish catch consisted sword fish (*Xiphias gladius*). Black marlin (*Makaira indica*) catch has increased while the blue marlin (*Makaira nigricans*), stripe marlin (*Tetrapturus audax*) and sail fish catches have gone down. The identification of bill fish especially marlin species remained difficult due to nature of landing, sometimes beheaded and cut into pieces. Neritic tuna comprised of three main species, kawakawa (*Euthenus affinis*), bullet tuna (*Auxis rochei*) and frigate tuna (*Auxis thazard*) and collectively contributed 9% of the catch. The by-catch was 2.6% and the main species recorded were sharks and rays. The total shark catch was 1610t showing further reduction of the catch than that of 2013 due to prohibition of catching of thresher shark. Silky shark is prominent in the catch. Around 4000 boats engaged in large pelagic fisheries within EEZ and in high seas. 99% of the boats operated were in the length range of 10m to 15m and the gears operated manually. Only 1615 boats over 10.3m length were actively operated in high seas. 1176 numbers of high seas operating vessels were fitted with VMS as at October 2015. 5or 6 inches large-mesh gillnets and gillnet - longline combination (64%) were the widely used fishing gear in tuna fisheries. The catch data collection has been improved and the log book and the observer program are being progressively implemented.

Contents [Desirable]

1. BACKGROUND/GENERAL FISHERY INFORMATION [MANDATORY]

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

The fishing fleet consists in array of size but as a whole all are small scale fishing boats of 6-24m length range. More than 99% crafts are below 15m and do not have the line or net hauling devices. Limited deck space and the manual operation of fishing gears have limit the fishing capacity of most boats. Fleet of size range of 8m to 24m inboard motor boats generally operate in offshore and high sea, boats of 5m-8m outboard motor and few mechanized traditional crafts basically engaged in coastal fishing for large pelagic. Out of the 4885 registered fishing boats around 570 boats were engaged in one day fishing operations and about 1750 boats conducted multiday fishing within the EEZ of Sri Lanka. Only the vessels >10.3m in length were permitted to engage in high-sea. Thereby, 2470 boats have been obtained high-seas fishing operation license for year 2014 and only 1615 boats operated in high seas but majority fished in the offshore limits of the EEZ and limited operations made in high seas.

Large-mesh gillnet (GN) was widely used fishing gear, 53% of the total effort in large pelagic fisheries targeting skipjack and yellow fin tuna. Ring net recently developed for catching neritic tuna and associated fish schools in especially coastal seas has gained popularity among coastal fishermen in south, southwest and east and sometimes among offshore fishermen during poor fishing months and they contributed 20% to the total effort. However, operation of ring nets has been banned to resolve the conflict among different user groups. Gillnet-long line combination contributed only 11%. These boats operate one gear at a time and carried 20-25 pieces of gillnets of 5" or 6" stretched mesh and around 200 -700 longline hooks. However, the number of pieces of nets and the number of hooks varied depending on the size of the boat. Around 10 % fishing fleets exclusively employed longline, with a larger number of hooks per set (1000 hooks), which have mechanized the gear operation by installing line-haulers and are able to reach fishing depth-range of 70 m to 100 m, when fully settled. The other fishing gears being used in lesser extent were handline and trolling. The purse seiners introduced in the latter part of 2013 were not continued, they have been soon deregistered and no more purse seiners operate in Sri Lanka. The use of fishing gear is determined based on the availability of fish, climate condition, the availability of the bait, crew members skills etc. Indian mackerel, flying fish, milkfish and frozen squid are generally used as the bait in long lines. Some fishermen catch the bait at the sea using the ring net. 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.

Offshore and the high-seas catch dominated by skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacores*) and followed by billfish, seer fish and sharks. The coastal catch is dominated by neritic tuna species mainly frigate tuna (*Axis thazard*), bullet tuna (*A. rochi*) and kawakawa (*Euthenus affinis*) and other pelagic species.

Fishing activities are mainly carried out within EEZ and there are seasonal differences due to monsoon pattern of the country. Fishing in coastal and offshore area are more success in just before and after monsoon: April, May and August-October in the west coast and September – November and March to May in the east coast. Coastal fishing is more seasonal activity and conducts mainly with 6-7meters FRP boats/ out board motor boats and 7-10 meters 3.5GT in board motor boats. Offshore fishing fleet generally employed fishing trips of 5-30 days or sometime more. Duration of the fishing trip varies with the gear used. If successful long line operation took place, the catch landed early targeting the export market. They use RSW or CSW method in preservation of the catch. The boats use gillnets under take long trips sometimes up to 30 days or more and preserve the early catch by salting and sun drying but the rest in ice. The sea condition also influences the trip duration. Number of fishing days limited due to the small size of the vessel and also the inadequate safety measures.

Offshore and high seas fishing was the main developing fishery in the recent past. The Government has placed a great emphasis on fisheries development and taken a speedy measure to strengthen legal frame work to expand the high seas fisheries. As such entry of more larger vessels with necessary technological inputs such as chilled seawater (CSW) or refrigerated sea water (RSW) systems, line haulers and other equipment, facilities onboard to the crew, VMS, communication equipment have been encouraged. This would be achieved through expanding and upgrading the structure of fishing fleet in both the numbers and in size within the capacities of the proposed FDP.

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

2. FLEET STRUCTURE [MANDATORY]

Table 1(a) National fleet structure, by gear type, including vessel size

| Boat Type | Total No. Registered for Tuna fishery | Vessels operated within EEZ | Vessels operated beyond EEZ | | Gears used | Duration of Operation |
|-------------|---------------------------------------|-----------------------------|-----------------------------|-------------|-------------------------|-----------------------|
| | | | Authorized | Active | | |
| 8m-10m | 570 | 570 | Nil | Nil | LL,GI, LL/GI,PSRN,HL,TS | One day |
| 10m-10.3m | 1750 | 1750 | Nil | Nil | LL,GI, LL/GI PSRN,HL,TS | 5-30 or more days |
| 10.3m - 15m | 2470 | 843 | 2437 | 1594 | LL, GI, LL/GI | 5-30 or more days |
| 15m-24m | 25 | 09 | 23 | 14 | | |
| > 24m | 10 | Nil | 10 | 07 | LL,PS | Three months |
| | 4825 | 3163 | 2470 | 1615 | - | - |

Source: Vessel Registry- DFAR

Out of the 4825 registered multiday fishing boats around 570 boats were engaged in one day fishing operations and about 1750 boats conducted multiday fishing within the EEZ of Sri Lanka. Only the vessels >10.3m in length were permitted to engage in high-seas fishing combined with offshore limits of the EEZ. Although 2470 boats have been obtained high-seas fishing operation license for year 2014 and only 1615 boats somewhat operated at high seas.

Table 1 (b): Number of vessels operating in the IOTC area of competence, by gear type and size for most recent five years

| Boat Type | 2010 | 2011 | 2012 | | 2013 | | | 2014 | | |
|-----------|------|------|------------|--------|------------|------------|--------|------------|------------|--------|
| | | | Authorized | Active | Registered | Authorized | Active | Registered | Authorized | Active |
| <15m | 3685 | 3915 | 4234 | 2460 | 4271 | 2440 | 2218 | 4790 | 1594 | 1594 |
| 15m-24m | 17 | 19 | 23 | 23 | 14 | 14 | 14 | 25 | 14 | 14 |
| > 24m | 00 | 02 | 00 | 00 | 09 | 09 | 09 | 10 | 07 | 07 |
| | 3702 | 3936 | 4257 | 2483 | 4294 | 2463 | 2241 | 4825 | 2470 | 1615 |

Source: Vessel Registry- DFAR

- Until 2012 there was no system to identify the actively operating boats for tuna fishery in high seas. All vessels those renew the annual registration was taken as active. With the commencement of logbook system in 2012 it is enable to identify the active boats correctly.
- From year 2013 Sri Lanka restricted the vessels authorized for tuna fishing in high seas only for the vessels >10.3m (34 feet). As a result from the total 4294 multiday vessels operated in Sri Lanka, 2463 vessels obtained authorization or licence to operate in high seas and only 2241 vessels were detected fish in high seas from Log book returns.
- With the enforcement of High seas fishing operation regulations only 1615 boats were active in Year 2014 out of the total 2470 boats obtained high sea operation licence.

Note: Refer the Table 1(a) for the Number of vessels operating in the IOTC area of competence by gear type and size for year 2014

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

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

| Species | FAO codes | 2009 | 2010 | 2011 | 2012 | 2013 | GEARS |
|---------------------------------|-----------|-----------------|------------------|---------------|---------------|---------------|-------------------------------|
| <i>Thunnus albacores</i> | YFT | 23,758.20 | 26,958.50 | 18,709 | 28,376 | 23,993 | GI,LLGI,LLTS,HL,PSRN,PSFS,TL |
| <i>Katsuwonus pelamis</i> | SKJ | 52,486.20 | 55,438.30 | 50,355 | 47,449 | 54,430 | GI,LLGI,LLTS,HL,PSRN,PSFS,TL |
| <i>Euthynnus affinis</i> | KAW | 217.30 | 1,592.20 | 1,529 | 2,919 | 2,012 | GI,LLGI,LLTS,HL,PSRN,TL GN,HL |
| <i>Auxisthazard</i> | FRI | 15.80 | 4,497.50 | 5,491 | 5,096 | 4,630 | GI,LLGI,LLTS,HL,PSRN,TL GN,HL |
| <i>Auxisrochei</i> | BLT | 88.90 | 2,198.30 | 3,644 | 4,538 | 4,434 | GI,LLGI,HL,PSRN,TL GN,HL GN |
| <i>Thunnus obesus</i> | BET | 110.20 | 537.70 | 1,285 | 1,691 | 1,573 | GI, LLGI, LLTS, |
| <i>Other tuna</i> | TUX | 5,063.00 | 680.20 | | | - | GN |
| Total tuna | | 81,739 | 91,902 | 81,013 | 90,069 | 91,072 | |
| <i>Scomberomorus commerson</i> | COM | | | 675 | 235 | 529 | GI, LLGI, LLTS, HL, PSRN, TL |
| <i>Acanthocybium solandri</i> | WAH | 620.30 | 1316.70 | 126 | 872 | 499 | GI, LLGI, LLTS, HL, PSRN, TL |
| <i>Scomberomorus guttatus</i> | GUT | | | 11 | 14 | 19 | GI, LLTS,HL,TL |
| Total seer | | 265 | 1316 | 812 | 1121 | 1,047 | |
| Blue marlin | MAR | | | 5,385 | 1,818 | 653 | GI, LLGI, LLTS |
| Black marlin | MAR | 2,476.60 | 5,660.90 | 894 | 3,052 | 2,288 | GI, LLGI, LLTS, TL |
| <i>Tetrapturus audax</i> | - | | | - | - | 54 | GI, LLGI, LLTS, |
| Sail fish | SFA | 2,733.70 | 3,664.32 | 4,448 | 3,078 | 4,152 | GI, LLGI, LLTS, HL, PSRN, TL |
| Sword fish | SWO | 1,467.00 | 3,115.60 | 3,309 | 3,843 | 5,534 | GI,LLGI, LLTS, HL, PSRN |
| Bill fish unidentified | - | - | - | - | - | 120 | |
| Total Billfish | | 6,677.30 | 12,440.80 | 14,036 | 11,791 | 12,800 | |
| <i>Carcharhinus falciformis</i> | FAL | | | 2913 | 1,138 | 1247 | GI, LLGI, LLTS, PSRN |
| <i>Prionace glauca</i> | BSH | | | 265 | 284 | 183 | GI, LLGI, LLTS, HL, PSRN |
| <i>Carcharhinus longimanus</i> | OWT | | | 268 | 149 | 41 | GI, LLGI, LLTS |
| <i>Isurus paucus</i> | MSK | - | - | 35.3 | 52 | 70 | GI, LLGI, LLTS |
| <i>Isurus paucus</i> | | | | 10.5 | 63 | 56 | GI, LLGI, LLTS |
| <i>Atopiasupercilliosus</i> | | - | - | 330 | 465 | 00 | - |
| <i>Atopiaspelagicus</i> | ALO | | | 10 | 328 | 00 | - |
| <i>Sphymalewini</i> | HAM | - | - | 110.8 | 71 | 119 | GI, LLGI, LLTS, PSRN |
| Other sharks | SKH | | | 439.3 | 31 | 00 | GI, LLGI, LLTS, |
| <i>Carcharhinus sorrah</i> | - | - | - | - | - | 19 | GI, LLGI, LLTS, |



| | | | | | | | |
|------------------------|-----|-----------------------------|-----------------|----------------|----------------|----------------|--------------------------|
| <i>Sphyrna zygaena</i> | - | - | - | - | - | 61 | GI, LLGI, LLTS, |
| <i>Spyrnamokarran</i> | - | - | - | - | - | 8 | GI, LLGI, LLTS, |
| Total shark | | 2,059.30 | 4,137.40 | 4382.3 | 2581 | 1804 | |
| Manta birostris | SRX | - | - | 1157 | 744 | 669 | GI, LLGI, LLTS, HL, |
| Devil ray | RMM | - | - | - | - | 759 | GI, LLGI, LLTS, HL |
| Eagle ray | EGR | - | - | - | - | 3 | GI, LLGI, LLTS |
| Total rays | | | | 1157 | 744 | 1431 | |
| Other bony fish(NEI) | | 14,685.90 | 25,828.00 | 11,108 | 28,8974 | 00 | }GI,LLGI,LLTS,HL,PSRN,TL |
| Common dolphin fish | | Included to other bony fish | | | | 1,204 | |
| Carangids (NEI) | | included to other bony fish | | | | 292 | |
| Trigger fish (NEI) | | included to other bony fish | | | | 13,917 | |
| Indian mackerel (NEI) | | included to other bony fish | | | | 24 | |
| Total NEI* | | 00 | 00 | 00 | 00 | 15,436 | PSFS |
| | | 105,782 | 135,625 | 112,508 | 135,203 | 123,896 | |

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

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

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

Table 2(b) ESTIMATED CATCHBEYOND EEZBY SPECIES AND GEAR FOR YEAR 2014 (MT)

| Species | | Gillnet | Longline | Ringnet | Handline | Trolling | 2014 |
|-------------------------|-----|----------------|---------------|---------------|------------|-----------|----------------|
| TUNAS | | 10941.9 | 10603 | 1287.4 | 357 | 8 | 23197.3 |
| Skipjack | SKJ | 9144.2 | 222.2 | 570 | 2 | 0 | 9938.4 |
| Yellowfin | YFT | 1589.7 | 8624.9 | 167.1 | 241 | 6 | 10628.7 |
| Bigeye | BET | 11 | 1731.9 | 0 | 113 | 0 | 1855.9 |
| Frigate tuna | FRI | 36 | 0 | 25.1 | 0 | 0 | 61.1 |
| Bullet | BLT | 42 | 0 | 519.2 | 0 | 0 | 561.2 |
| Kawakawa | KAW | 117 | 24 | 6 | 1 | 2 | 150 |
| Other tuna | TUX | 2 | 0 | 0 | 0 | 0 | 2 |
| BILLFISH | | 580 | 3,006 | 2 | 144 | 4 | 3,736 |
| Sword fish | SWO | 136 | 1,615 | - | 75 | - | 1,826 |
| Sailfish | SFA | 208 | 378 | 2 | 6 | 2 | 596 |
| Black Marlin | BLM | 169 | 968 | 0 | 62.1 | 0 | 1,199 |
| Blue Marlin | BUM | 47 | 33.9 | 0 | 0 | 2 | 83 |
| Marlin(identified) | MAR | 17 | 0 | 0 | 0 | 0 | 17 |
| Striped marlin | MLS | 3 | 11 | 0 | 1 | 0 | 15 |
| Short-billed spearfish | SSP | 0 | 0 | 0 | 0 | 0 | - |
| SEERFISH | | 444.1 | 4.2 | 0 | 13 | 1 | 462.3 |
| Wahoo | WAH | 421.1 | 1 | 0 | 8 | 0 | 430 |
| Spanish Mackerel | COM | 21 | 3.2 | 0 | 3 | 1 | 28 |
| Other Seer | KGX | 2 | 0 | 0 | 2 | 0 | 4 |
| SHARKS | | 131 | 352.1 | 2 | 0 | 0 | 485 |
| Silky Shark | FAL | 15 | 187 | 2 | 0 | 0 | 204 |
| Blue Shark | BSH | 48 | 74 | 0 | 0 | 0 | 122 |
| Oceanic Whitetip shark | OCS | 0 | 42 | 0 | 0 | 0 | 42 |
| Shortfin macko | SFM | 5 | 27.1 | 0 | 0 | 0 | 32 |
| Scallop hammerhead | SCH | 10 | 10 | 0 | 0 | 0 | 20 |
| Smooth hammerhead | SMH | 0 | 11 | 0 | 0 | 0 | 11 |
| Spot tail | SPT | 0 | 0 | 0 | 0 | 0 | - |
| Longfin macko | LFM | 2 | 0 | 0 | 0 | 0 | 2 |
| Great hammerhead | GRH | 0 | 0 | 0 | 0 | 0 | - |
| Other sharks | SKH | 51 | 1 | 0 | 0 | 0 | 52 |
| Whale shark | RHN | 0 | 0 | 0 | 0 | 0 | - |
| Rays &Skates | | 173 | 116 | 0 | 2 | 0 | 291 |
| Manta Ray | MAN | 26 | 70 | 0 | 0 | 0 | 96 |
| Devil Ray | DER | 121 | 46 | 0 | 0 | 0 | 167 |
| Eagle Ray | EGR | 0 | 0 | 0 | 0 | 0 | - |
| Other skates | SKA | 26 | 0 | 0 | 2 | 0 | 28 |
| OTHER | | 335 | 41 | 2493.5 | 18 | 0 | 2,888 |
| Mackerel scad | MSD | 140 | 0 | 1516 | 1 | 0 | 1657 |
| Dolfin fish | DOF | 42 | 40 | 144 | 1 | 0 | 227 |
| Indian mackerels | RAX | 0 | 0 | 0 | 0 | 0 | 0 |
| Needle cuttle fish | SPA | 0 | 1 | 0 | 0 | 0 | 1 |
| Rainbow runner | RWA | 5 | 0 | 0 | 0 | 0 | 0 |
| Barracuda | BAR | 0 | 0 | 0 | 0 | 0 | 0 |
| Bigeye scad | BIS | 0 | 0 | 0 | 0 | 0 | 0 |
| Wolf-herring | DOB | 2 | 0 | 0 | 0 | 0 | 2 |
| Flying fish | EXO | 0 | 0 | 0 | 0 | 0 | 0 |
| Other bait types | OTH | 0 | 0 | 0 | 0 | 0 | 0 |
| Other bony fish (NEI) | MZZ | 146 | 0 | 833.5 | 16 | 0 | 995.5 |
| GRAND TOTAL | | 12,605 | 14,122 | 3,785 | 534 | 13 | 31,059 |

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



Table 2(c) ESTIMATED CATCH WITHIN EEZ BY SPECIES AND GEAR FOR YEAR 2014 (MT)

| | Species | Gillnet | Longline | Ringnet | Handline | Trolling | 2014 |
|------------------------|--------------------------|----------------|----------------|----------------|---------------|------------|----------------|
| | TUNAS | 43824.4 | 9824.2 | 12127.7 | 533.5 | 96 | 66405.8 |
| Skipjack | SKJ | 32185.4 | 588.2 | 5914.8 | 7.3 | 20 | 38715.7 |
| Yellowfin | YFT | 6788.9 | 8360 | 2455.1 | 484.2 | 58 | 18146.2 |
| Bigeye | BET | 75.1 | 686.9 | 56 | 37.5 | 0 | 855.5 |
| Frigate tuna | FRI | 2232.1 | 0 | 1933.1 | 0.2 | 12 | 4177.4 |
| Bullet | BLT | 1684.4 | 169 | 1474 | 0.2 | 0 | 3327.6 |
| Kawakawa | KAW | 853.4 | 13.1 | 269.7 | 4.1 | 6 | 1146.3 |
| Other tuna | TUX | 5.1 | 7 | 25 | 0 | 0 | 37.1 |
| | BILLFISH | 2115.2 | 4424.3 | 10 | 67.2 | 19 | 6635.7 |
| Sword fish | SWO | 433.8 | 2087.2 | 7 | 9.1 | 0 | 2537.1 |
| Sailfish | SFA | 1013.4 | 685.1 | 3 | 24.4 | 19 | 1744.9 |
| Black Marlin | BLM | 510 | 1277 | 0 | 32.4 | 0 | 1819.4 |
| Blue Marlin | BUM | 105.9 | 124 | 0 | 0.1 | 0 | 230 |
| Marlin(unidentified) | MAR | 49.8 | 247 | 0 | 0.2 | 0 | 297 |
| Striped marlin | MLS | 1 | 4 | 0 | 1 | 0 | 6 |
| Short-billed spearfish | SSP | 1.3 | 0 | 0 | 0 | 0 | 1.3 |
| | SEERFISH | 736.6 | 33 | 3 | 146.4 | 3 | 922 |
| Wahoo | WAH | 415.4 | 24 | 0 | 72.2 | 1 | 512.6 |
| Spanish Mackerel | COM | 252.8 | 9 | 2 | 52.4 | 2 | 318.2 |
| Other Seer | KGX | 68.4 | | 1 | 21.8 | 0 | 91.2 |
| | SHARKS | 367.9 | 707 | 36 | 15.5 | 0 | 1126.4 |
| Silky Shark | FAL | 254 | 613 | 36 | 15.1 | 0 | 918.1 |
| Blue Shark | BSH | 35 | 46 | 0 | 0 | 0 | 81 |
| Oceanic Whitetip shark | OCS | 22.9 | 13 | 0 | 0 | 0 | 35.9 |
| Shortfin macko | SFM | 6.2 | 3 | 0 | 0 | 0 | 9.2 |
| Scallop hammerhead | SCH | 4 | 9 | 0 | 0 | 0 | 13 |
| Smooth hammerhead | SMH | 7 | 0 | 0 | 0 | 0 | 7 |
| Spot tail | SPT | 10 | 0 | 0 | 0 | 0 | 10 |
| Longfin macko | LFM | 4.2 | 8 | 0 | 0 | 0 | 12.2 |
| Great hammerhead | GRH | 2.4 | 2 | 0 | 0 | 0 | 4.4 |
| Other sharks | SKH | 22.2 | 13 | 0 | 0.4 | 0 | 35.6 |
| Whale shark | RHN | 0 | 0 | 0 | 0 | 0 | 0 |
| | Rays & Skates | 751.5 | 100.1 | 0 | 4.8 | 0 | 856.4 |
| Manta Ray | MAN | 256.1 | 61 | 0 | 0.9 | 0 | 318 |
| Devil Ray | DER | 399.1 | 39.1 | 0 | 2.8 | 0 | 441 |
| Eagle Ray | EGR | 1.2 | 0 | 0 | 0 | 0 | 1.2 |
| Other skates | SKA | 95.1 | 0 | 0 | 1.1 | 0 | 96.2 |
| | OTHER | 882.3 | 374.8 | 15493 | 991.9 | 55 | 17797 |
| Mackerel scad | MSD | 312 | 74.9 | 7041.1 | 218 | 0 | 7646 |
| Dolphin fish | DOF | 59.8 | 205.9 | 1970.1 | 54 | 15 | 2304.8 |
| Indian mackerels | RAX | 72 | 0 | 614 | 0 | 0 | 686 |
| Needle cuttle fish | SPA | 7 | 0 | 0 | 125 | 0 | 132 |
| Rainbow runner | RWA | 0.2 | 0 | 1231.7 | 0 | 0 | 1231.9 |
| Barracuda | BAR | 0 | 0 | 0 | 6.6 | 0 | 6.6 |
| Bigeye scad | BIS | 0 | 0 | 0 | 16.6 | 0 | 16.6 |
| Wolf-herring | DOB | 0 | 0 | 0 | 0 | 0 | 0 |
| Flying fish | EXO | 0 | 0 | 40 | 0 | 0 | 40 |
| Other bait types | OTH | 0 | 0 | 193 | 0 | 0 | 193 |
| Other bony fish (NEI) | MZZ | 431.3 | 94 | 4403.1 | 571.7 | 40 | 5540.1 |
| | Grand total | 48677.9 | 15463.4 | 27669.7 | 1759.3 | 173 | 93743.3 |

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

Table 2 (d) TOTAL ESTIMATED CATCH (EEZ+High seas) BY SPECIES AND GEAR FOR YEAR 2014 (MT)

| Species | Gillnet | Longline | Ringnet | Handline | Trolling | 2014 |
|------------------------|-----------------|--------------|--------------|------------|------------|--------------|
| TUNAS | 54766 | 20427 | 13415 | 891 | 104 | 89603 |
| Skipjack | 41330 | 810 | 6485 | 9 | 20 | 48654 |
| Yellowfin | 8379 | 16985 | 2622 | 725 | 64 | 28775 |
| Bigeye | 86 | 2419 | 56 | 151 | 0 | 2711 |
| Frigate tuna | 2268 | 0 | 1958 | 0 | 12 | 4239 |
| Bullet | 1726 | 169 | 1993 | 0 | 0 | 3889 |
| Kawakawa | 970 | 37 | 276 | 5 | 8 | 1296 |
| Other tuna | 7 | 7 | 25 | 0 | 0 | 39 |
| | BILLFISH | 2695 | 7430 | 12 | 211 | 10372 |
| Sword fish | 570 | 3702 | 7 | 84 | 0 | 4363 |
| Sailfish | 1221 | 1063 | 5 | 30 | 21 | 2341 |
| Black Marlin | 679 | 2245 | 0 | 95 | 0 | 3019 |
| Blue Marlin | 153 | 158 | 0 | 0 | 2 | 313 |
| Marlin(unidentified) | 67 | 247 | 0 | 0 | 0 | 314 |
| Striped marlin | 4 | 15 | 0 | 2 | 0 | 21 |
| Short-billed spearfish | 1 | 0 | 0 | 0 | 0 | 1 |
| | SEERFISH | 1181 | 37 | 3 | 159 | 1384 |
| Wahoo | 837 | 25 | 0 | 80 | 1 | 943 |
| Spanish Mackerel | 274 | 12 | 2 | 55 | 3 | 346 |
| Other Seer | 70 | 0 | 1 | 24 | 0 | 95 |
| | SHARKS | 499 | 1059 | 38 | 16 | 1612 |
| Silky Shark | 269 | 800 | 38 | 15 | 0 | 1122 |
| Blue Shark | 83 | 120 | 0 | 0 | 0 | 203 |
| Oceanic Whitetip shark | 23 | 55 | 0 | 0 | 0 | 78 |
| Shortfin macko | 11 | 30 | 0 | 0 | 0 | 41 |
| Scallop hammerhead | 14 | 19 | 0 | 0 | 0 | 33 |
| Smooth hammerhead | 7 | 11 | 0 | 0 | 0 | 18 |
| Spot tail | 10 | 0 | 0 | 0 | 0 | 10 |
| Longfin macko | 6 | 8 | 0 | 0 | 0 | 14 |

| | | | | | | | |
|-----------------------|-------------------------|--------------|--------------|--------------|-------------|------------|---------------|
| Great hammerhead | GRH | 2 | 2 | 0 | 0 | 0 | 4 |
| Other sharks | SKH | 73 | 14 | 0 | 0 | 0 | 88 |
| Whale shark | RHN | 0 | 0 | 0 | 0 | 0 | 0 |
| | Rays &Skates | 925 | 216 | 0 | 7 | 0 | 1147 |
| Manta Ray | MAN | 282 | 131 | 0 | 1 | 0 | 414 |
| Devil Ray | DER | 520 | 85 | 0 | 3 | 0 | 608 |
| Eagle Ray | EGR | 1 | 0 | 0 | 0 | 0 | 1 |
| Other skates | SKA | 121 | 0 | 0 | 3 | 0 | 124 |
| | OTHER | 1217 | 415 | 17988 | 1010 | 55 | 20685 |
| Mackerel scad | MSD | 452 | 75 | 8557 | 219 | 0 | 9303 |
| Dolphin fish | DOF | 102 | 246 | 2114 | 55 | 15 | 2532 |
| Indian mackerels | RAX | 72 | 0 | 614 | 0 | 0 | 686 |
| Needle cuttle fish | SPA | 7 | 0 | 1 | 125 | 0 | 133 |
| Rainbow runner | RWA | 5 | 0 | 1232 | 0 | 0 | 1237 |
| Barracuda | BAR | 0 | 0 | 0 | 7 | 0 | 7 |
| Bigeye scad | BIS | 0 | 0 | 0 | 17 | 0 | 17 |
| Wolf-herring | DOB | 2 | 0 | 0 | 0 | 0 | 2 |
| Flying fish | EXO | 0 | 0 | 40 | 0 | 0 | 40 |
| Other bait types | OTH | 0 | 0 | 193 | 0 | 0 | 193 |
| Other bony fish (NEI) | MZZ | 577 | 94 | 5237 | 588 | 40 | 6536 |
| | Grand total | 61283 | 29585 | 31456 | 2293 | 186 | 124802 |

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

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

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

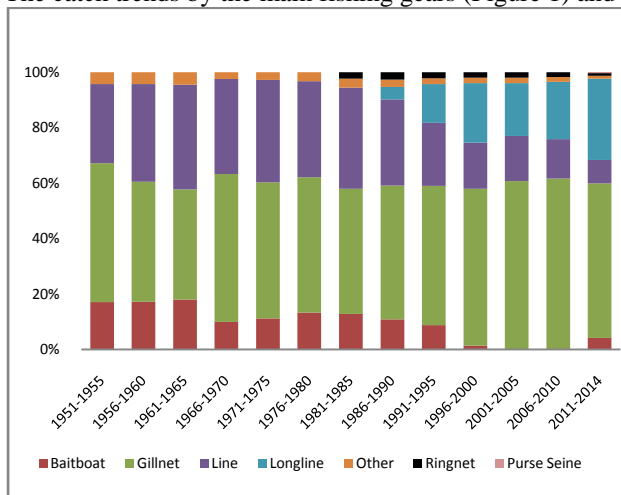


Figure 1a: Relative contribution of fishing gear in Tuna fish production in Sri Lanka 1950-2014

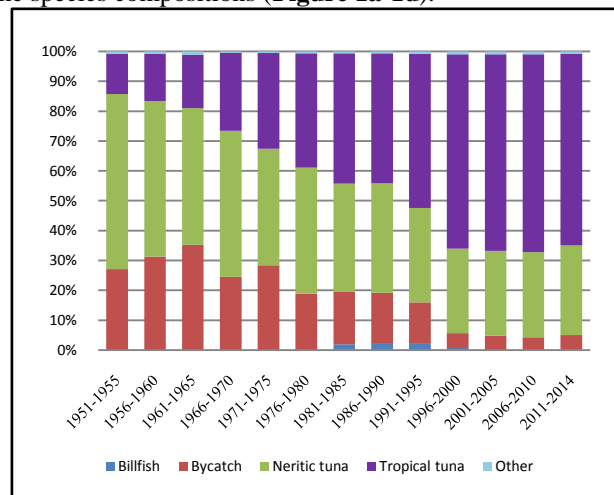


Figure 1b: Catch composition long line gill net fishery Sri Lanka 1950-2014

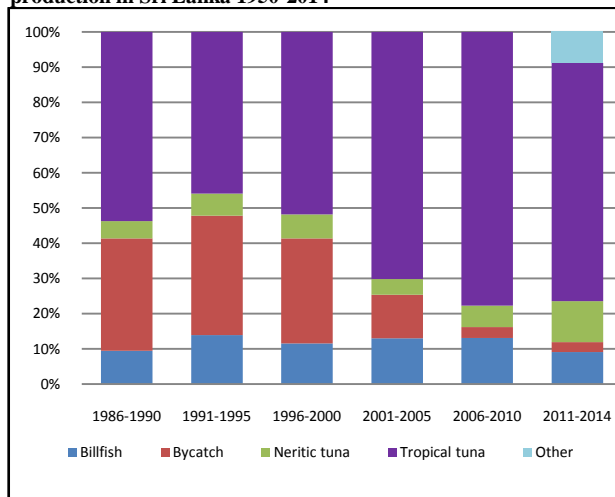


Figure 1c: Catch proportions gill net cum Long line

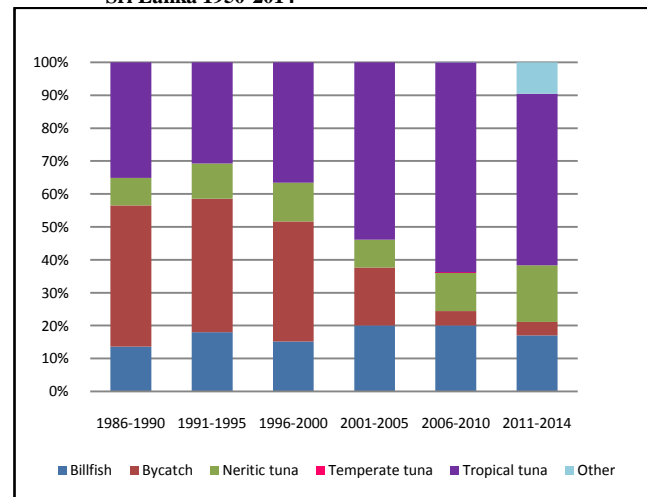


Figure 1d: Catch proportions long line fishery (including Long line attached to ill net) In Sri Lanka 1950-2014

Source: IOTC data base

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. 2014 **[Mandatory]**)

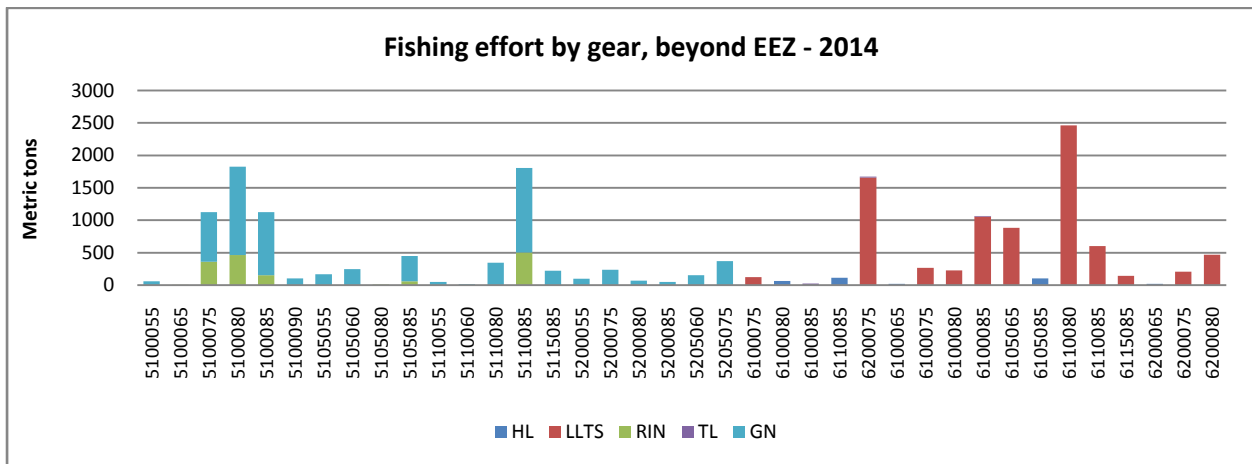
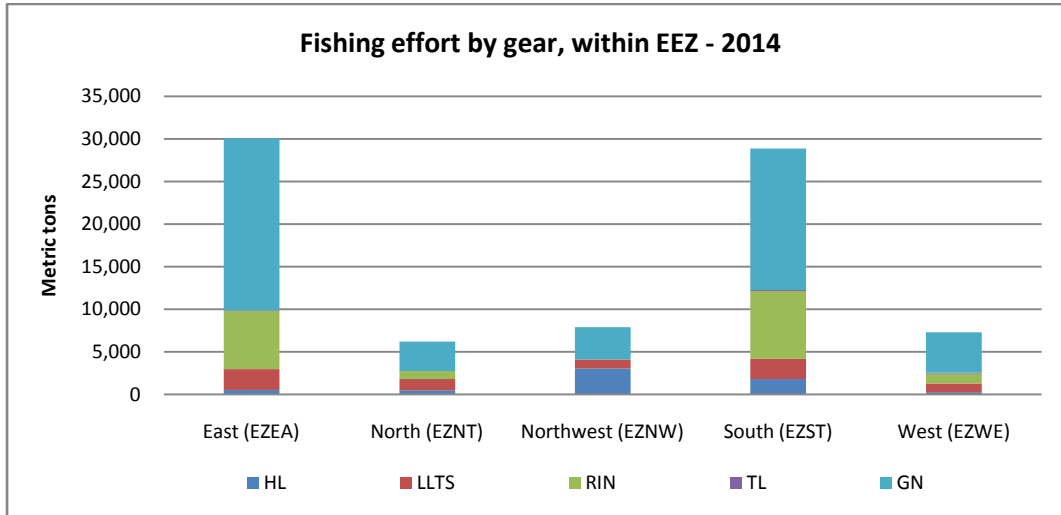
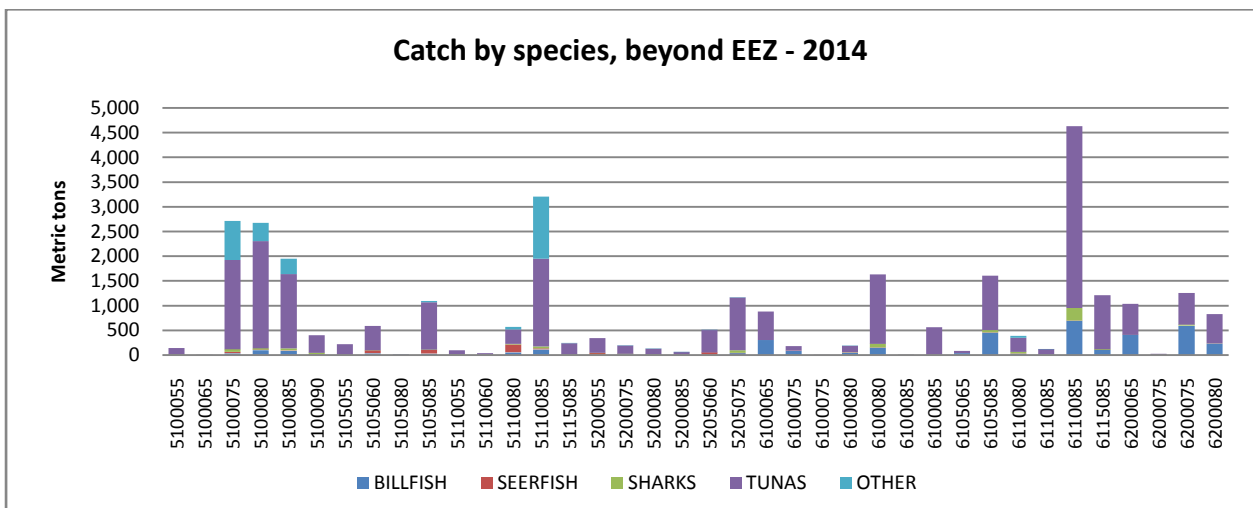
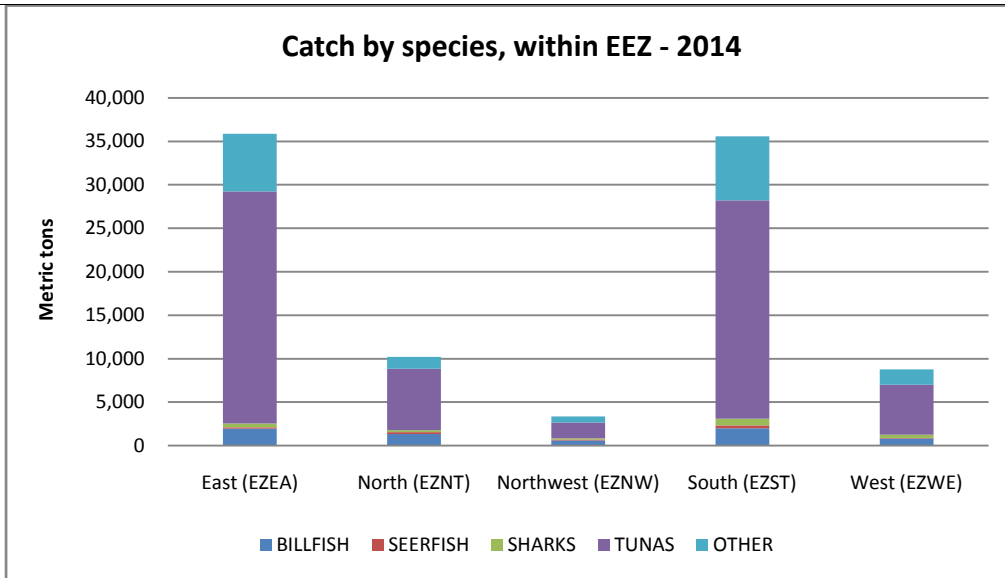


Figure 2b. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (average of the 5 previous years e.g. 2010–2014**[Mandatory]**)

Sri Lanka has produced catch and fishing effort estimates based on port sampling measures for a period of 2010–2013. As there were difficulties of collecting accurate information on fishing positions through port sampling without properly implemented log book recording system, 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 2010- 2013 in the IOTC area of competence.

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. 2014 **[Mandatory]**)



Sri Lanka produced 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 2014 in the IOTC area of competence. This will be achieved once the log book data recording of skippers is improved with the time.

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. 2010–2014). *[may require a separate map for each species]* [Mandatory]

The production was estimated based on port sampling. Since the log book data received were poor it was difficult to produce a map to show the distribution of fishing catch by species or group of the national fleet for the period of 2010 – 2013 in the IOTC area of competence.

4. RECREATIONAL FISHERY [Mandatory]

Recreational fishery for tuna and tuna like species is not a popular or the widely spread event in Sri Lanka, Therefore, no specific regulation on recreational fishery. In recent event Department of Fisheries initiated to draft the regulation for recreational fishery. Under this regulation recreational fishery will be allowed only under a license issued by Department. Several fish species are to be listed in a schedule prohibited from catch and data reporting format is incorporated to a schedule to record the position weight and length of each species caught.

5. ECOSYSTEM AND BY-CATCH ISSUES [Mandatory]

- Prohibition catch, land, transport, sell, buy, receive, have in possession of marine mammal and sea turtles (Fishing Operations Regulations (1996) – FARA & FFPA)
- The masters/skippers of the vessels have been legally ordered to prompt release of mammals, sharks, turtles and seabirds in live form at minimum harm caused to them if caught incidentally by the High Seas fishing regulation 2014.
- Carry the line cutters and de-hookers on board by long liners and dip nets by purse seiners has made legally mandatory under high seas fishing regulation 2014.
- Prohibition of landing shark fins, without the whole fish with fins and banning of Catching, retaining onboard, transshipment, and sale of Thresher (Regulations made under FARA Act No 2 of 1996 and 35 of 2013).
- white tip shark in high seas case of incidental catch fishers instructed to released in live/ dead keeping the catch record in the log book.

- Sri Lanka is a signatory to Convention on International Trade in Endangered Species and the responsible competent authority of Department of Wild Life. The hammer head ,white tip and porbeagal sharks are subjected to CITES and Thresher shark species also initiated for listing. All CITES listed species are exporters under permit issued by wild life Dept. after thorough analysis for species verification.
- Declaration of endangered marine species as protected species (FFPA)
- Prohibition of use of selected harmful fishing gears (Fishing Operations Regulations 1996) - FARA
- 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.
- Prohibition of dredging and bottom trawling damaging the sea bottoms and breeding and nursery grounds
- Prohibition of coral mining removal and transport by the regulations under CCD Act.
- Prohibition of use of drift gill nets > 2.5km in high seas.
- Promoting the use of circle hooks to the longlines rather than “J hooks.
- Marine Pollution Prevention Act No 59 of 1981(amended 2008) has legal provisions against pollutions affecting to marine animals and ecosystems such as actions on Sea accidents leading to oil pollution and cause harm to the environment and fauna and flora any to Sea.
- National Environment Act, has published “The National Red List 2012” of Sri Lanka revealing the National and Global conservation status of the fauna and flora of Sri Lanka. Special attention has been drawn to corals and marine fish species mammals and holoturians etc.

5.1 Sharks [Mandatory]

Sharks were mainly caught by gillnet and the gillnet longline combination operating mainly in the offshore within EEZ. Catch records of shark by the 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:

- The National Plan of Actions for Sharks- Sri Lanka(NPOA-Sharks) is prepared during year 2013 with several stakeholder consultations and publicized on 23rd October 2014.
- Development of species identification guides and posters for shark identification.
- 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 the PELAGOS database also updated accordingly. Total 271 number of sharks measured for their lengths in year 2014 and data submitted to IOTC on June 2015.
- Consolidated draft regulation integrating already promulgated regulations on sharks is ready to publish in November 2015 and this includes prohibition of catching of thresher sharks (12/09), oceanic white tip shark (13/06), whale shark and prohibition of shark finning on board and landing sharks with detached fins both within EEZ and high seas areas.
- 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.
- 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.
- 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.
- 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 shark species not prohibited to catch in Sri Lanka. The identifications are done both physically and genetically by the National Research Agency (NARA).

NPOA-SHARKS SRI LANKA

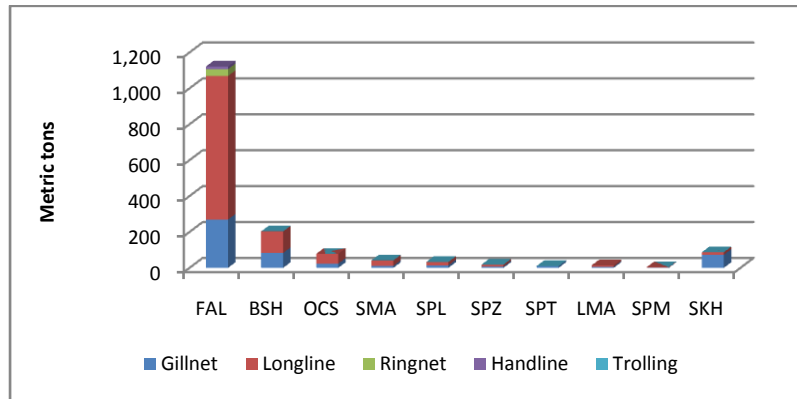
The Sri Lankan NPOA-Sharks developed with stakeholder inputs, provides information on the status of Chondrichthyans in Sri Lanka. The structural mechanism and regulatory framework relating to the research, management, monitoring and enforcement associated with shark fishing and trade of shark products in the Sri Lankan context. National Plan of Action for Conservation and Management of Shark is 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 a precautionary 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) . Upon the conclusion of this initial period impacts of the implementation will be evaluated against its goals and objectives to do the needful revisions. A copy of NPOA-Sharks Sri Lanka is under implementation and has already submitted to IOTC Secretariat.

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. 2010–2014). [Mandatory]

| Species | | FAO codes | Total weight (t) | | | | |
|--------------------------------|------------------------|-----------|--|------|-------|-------|------|
| | Common name | | 2010 | 2011 | 2012 | 2013 | 2014 |
| <i>Carcharhinusfalciformis</i> | Silky Shark | FAL | Data collection by species is not existed. Data submitted as a bulk for all sharks. | 2913 | 1,138 | 1,247 | 1122 |
| <i>Prionaceglauca</i> | Blue Shark | BSH | | 265 | 284 | 183 | 203 |
| <i>Carcharhinuslongimanus</i> | Oceanic Whitetip shark | OCS | | 268 | 149 | 41 | 78 |
| <i>Isuruspaucus</i> | Longfin macko | LMA | | 35.3 | 52 | 70 | 14 |
| <i>Isurusoxyrinchus</i> | Short fin macko | SMA | | 10.5 | 63 | 56 | 41 |
| <i>Alopiassupercilliosus</i> | Big eye thresher | BTH | | 330 | 465 | 00 | 00 |

| | | | | | | | |
|--------------------------|--------------------|-----|-----------------|--------------------------|--------------------------|-------------|-------------|
| <i>Alopias pelagicus</i> | Pelagic thresher | PTH | | 10 | 328 | 00 | 00 |
| <i>Sphyrnalewini</i> | Scallop hammerhead | SPL | | 110.8 | 71 | 119 | 33 |
| <i>Carcharhinus orca</i> | | - | | Included in other sharks | Included in other sharks | 19 | 00 |
| <i>Sphyrna zygaena</i> | Smooth hammerhead | SPZ | | | | 61 | 18 |
| <i>Sphyrnamokarran</i> | Great hammerhead | SPM | | | | 8 | 04 |
| | Spot tail | SPT | | | | | 10 |
| - | Other sharks | SKH | | 439.3 | 31 | 00 | 88 |
| Total shark | | | 2,059.30 | 4,137.40 | 4382.3 | 2581 | 1612 |

Source : PELAGOS-NARA/MFARD



The shark catch trends by the main fishing gears in year 2014 (Figure 2)

Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2010–2014). Where available, include life status upon released/discard. (Desirable)

| Species | Alive | | Dead | |
|---|---------|---------------|---------|---------------|
| | Gillnet | Tuna Longline | Gillnet | Tuna Longline |
| 1. Thresher shark (<i>Alopias vulpinus</i>) | 1 | | | |
| 2. Bigeye thresher shark (<i>Alopias superciliosus</i>) | 1 | 3 | 2 | 2 |
| 3. Pelagic thresher shark (<i>Alopias pelagicus</i>) | | 7 | | 4 |

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

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. Gill net of Sri Lanka are multifilament nylon, which are usually highly visible to seabirds and have less potential of becoming by-catch than less visible monofilament nets. 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. Sea birds have not been caught even to the trawl net catch employed during the survey period. Thus there is no mitigation measures in applied to prevent seabird interactions and Sri Lanka and has not developed the NPOA-Sea birds.

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 which prohibits member nations from trading of endangered species including turtles and their parts and products. The sanctions have been increased in amended FFPA,2008 and FARA, 2013 for 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. Marine turtles may susceptible to be caught drift gillnets and longlines. In the longline fishery most of the vessels use the circle hook s. (“J” hooks are not in use).

NARA has conducted a study on impact of large pelagic fishery on the survival of turtles in year 2013 and the report was presented to the WPEB in 2014. It revealed that incidental catch of sea turtles in the two major fisheries gill nets and long line in the off shore and high seas are quite low. 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.

| Species | Alive | | Dead | |
|---------|---------|---------------|---------|---------------|
| | Gillnet | Tuna Longline | Gillnet | Tuna Longline |
| | | | | |

| | | | | |
|---|---|---|--|--|
| 1. Olive ridley turtle (<i>Lepidochelys olivacea</i>) | 3 | 1 | | |
| 2. Green turtle (<i>Chelonia mydas</i>) | | 1 | | |

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 have operating purse seines at present. However legal provisions in place prohibiting catching of whale shark and to prevent intentional setting of purse seines surrounding whale sharks and the release of unintentionally enclosed ones. 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 if problematic to collect data.

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. 2010–2014 or to the extent available). [Mandatory]

| Species/ group | 2010 | 2011 | 2012 | 2013 | 2014 |
|----------------|--------------|--------------|--------------|---------------|--|
| Marine turtles | Not reported | Not reported | Not reported | Insignificant | 5 turtles, refer table under point 5.3 |
| 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 [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 of 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 2014 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 > 34 feet. Majority of sampled boats at ports have been regularly submitted the log sheet after every fishing trip. The assumption made during the multi-gear separation process was that each boat made two fishing trips instead of one; longline and gillnet separately.

15% to 18% landings is sampled jointly by NARA and DFAR officials at 18 major landing sites (fishery harbours) and 14 minor landing centers. Total of 32 data collectors (27 from DFAR and 15 from NARA) are involved in this field data collection.

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

The pilot project to establish a Vessel Monitoring System (VMS) by installing transceivers on fifty (50) fishing vessels operating in Sri Lankan Exclusive Economic Zone (EEZ) and high seas commenced in November 2014 and the installation was completed by March 2015. This was supported by the Sri Lanka Fish Exporters Association. The VMS system operates on the Themis web-based Interface and is mainly used to monitor the movements of Sri Lankan fishing vessels to check their compliance with the Fisheries regulations and validation of information submitted in the logbooks.

The second phase was installation of 1,500 units of VMS for the vessels > 10.3m operate in high seas. This is under Government treasury funds. The target was to complete installation of 1500 units to High seas operating vessels by 30th October 2015. However the progress as at 1st November 2015 is 1361 numbers of VMS units installed in high seas operating vessels.

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. Sri Lanka is at the initial stage of developing a software for Electronic catch data recording (E-logbook) and verification system leading towards better monitoring. The report on VMS for year 2014 was submitted to IOTC on June 2015.

“Implementation of Satellite based Vessel Monitoring System (VMS) for fishing boats operating in High Seas Regulation 2015” has come in to effect on 26.03.2015. Awareness programmes have been conducted for the owners and skippers of vessels fitted with transponder units.

6.3 Observer programme

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.

20 fisheries officers of DFAR with experience and capable for the duty were selected for the training. A 5 days training was given in the fields given below. A Memorandum of Understanding (MoU) was signed between DFAR and Fisheries implementation Project to carry out pilot 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 programmes were conducted on handling of GPS, Communication and Navigation at CINEC Maritime University and Species Identification at NARA from 23rd to 27th of March 2015.

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 period from 23rd – 25th February. The team of experts interviewed the observers to identify key gaps on data reporting, collecting information and for other matters. Special trainings were carried out for identification of fish species and the way of collecting best scientific information during the observer trips. Many gaps of 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 .

The Eight purse seiners were deregistered and at present only one long line vessel >24m operates at high sea. An observer is deployed for each trip of this vessel. The observer reports is submitted to IOTC for relevant fishing trips in year 2015.

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. 2010–2014 or to the extent available). **[Mandatory]**

No data available Sri Lanka initiate observer program in year 2014.

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

No data available Sri Lanka initiate observer program in year 2014.

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

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

Design of the survey

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

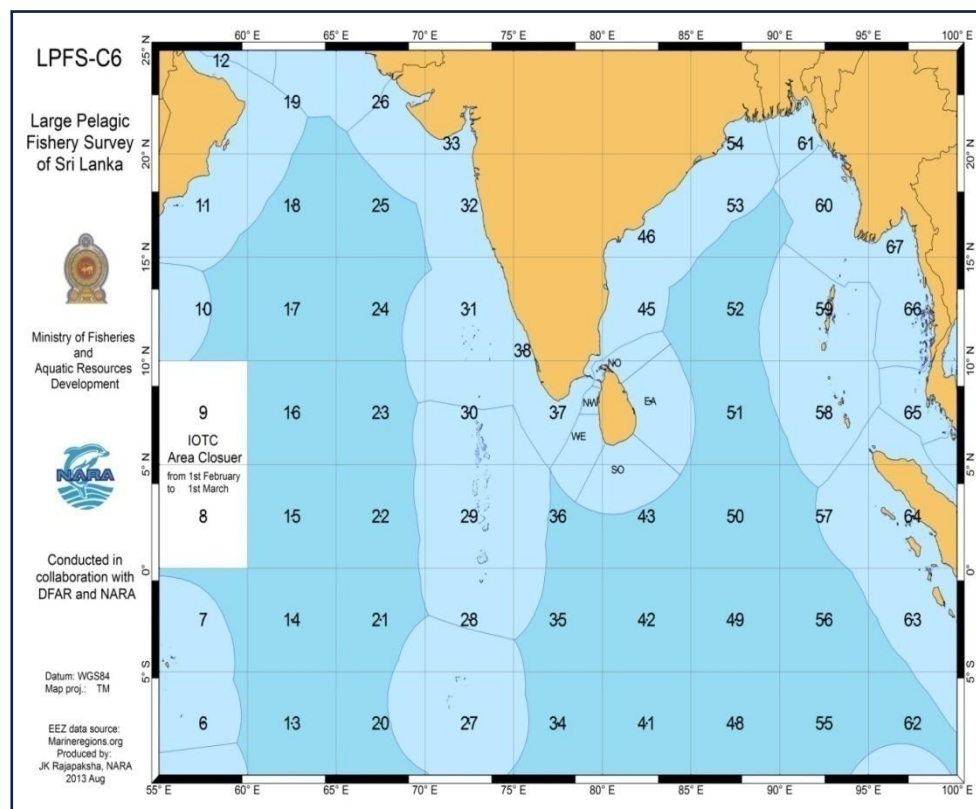
landing sites where the large pelagic fish species land from the coastal day boats. Accordingly 23 major fishing ports and 10 minor landing sites are covered.

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

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

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



Data collection

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

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

Form – A.

Catch –The total catch unloaded by the sampled boat is recorded either by weight or numbers in the Form – B,.At the same time information on the fishing operation of the sampled boats such as fishing gears used, fishing area, etc., are also recorded in the same form. Catch composition is recorded for 33 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

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

| | Within EEZ | | | Beyond EEZ | | | Grand total |
|-------------------------|------------|----------|---------|------------|----------|---------|-------------|
| | Gillnet | Longline | Ringnet | Gillnet | Longline | Ringnet | |
| Skipjack tuna | 32,173 | 396 | | 10,070 | 261 | 628 | 43,528 |
| Yellowfin tuna | 5,855 | 8,074 | | 2,423 | 8,554 | 132 | 25,038 |
| Bullet tuna | 1,527 | 190 | 1,472 | 48 | | 588 | 3,825 |
| Frigate tuna | 2,120 | | 1,878 | 12 | | 57 | 4,607 |
| Kawakawa | 1,306 | 218 | 302 | 83 | 19 | 13 | 1,941 |
| Blue Shark | | 17 | | | 39 | | 56 |
| Longfin macko | 8 | 7 | | | | | 15 |
| Oceanic white-tip shark | 12 | 8 | | | 29 | | 49 |
| Shortfin macko | | | | | 18 | 5 | 23 |
| Silky shark | | | | | 103 | 4 | 107 |
| Scallop hammerhead | 4 | 8 | | | 4 | | 16 |
| Smooth hammerhead | | | | | 5 | | 05 |
| Blue marlin | | | | 4 | | | 04 |
| Black marlin | | | | | 17 | | 17 |
| Sailfish | | | | | 8 | | 18 |
| Swordfish | | | | | 24 | | 24 |

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

Total 151 fish landings has been taken place at the designated fisheries port of Dikovita by 18 Taiwan vessels (Long line) and 19 Indonesian vessels (long lines) in year 2014. The total fish quantity landed is as follows. A

| | Species | Quantity (Kgs) |
|---|-----------------|----------------|
| 1 | Yellow Fin Tuna | 2,307,027 |
| 2 | Big Eye Tuna | 2,058,043 |
| 3 | Marlin | 237,090 |
| 4 | Sail fish | 14,331 |
| 5 | Wahoo | 5,839 |
| 6 | Sword Fish | 56 |
| | Total | 4,622,386 |

The species wise data was submitted to IOTC in March 2015. Only the vessels in the authorised list of IOTC were permitted. Vessel validity verified from the Taiwan Fisheries Agency in the case of Taiwanese vessels. 24 hrs minimum advance request for port entry was followed. Port inspections conducted and 12 port inspection reports submitted to IOTC.

No transshipments reported from Fishery Harbours. With the implementation of NPOA-IUU fish landings by foreign vessels suspended in Sri Lanka from February 2015. The PSMA regulation has been gazetted and under implementation with effect from 26th March 2015. Four commercial harbours and one fishery harbour designated. Port Authority and other relevant agencies have included to the steering committee of implementation NPOA-IUU.

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 |
|--|-------------------|--------------------|-----------------------------------|----------------|--|---|
| Monitoring of large pelagic fisheries | Ongoing | Sri Lanka | 4 SLR million-2014 | Treasury | Collection of large pelagic fisheries statistics-catch species Effort –by craft and gear Lengthy by species, craft, gear | Information sent to FAO, IOTC and also utilize for fishery management (locally) |
| Study of fishery impact on sea turtles | Specially project | Sri Lanka | Conduct under Monitoring of large | Treasury | Collect information on the incidental catch by species, gear | Information feed to PELAGOS |

| | | | | | | |
|--|-------------------|-----------|---|----------|--|---|
| | | | pelagic fisheries | | and gear specification, area, status when catching (live or dead) and fate (released, discard, consume) | database |
| Study of fishery impact on sea birds | Specially project | Sri Lanka | Conduct under Monitoring of large pelagic fisheries | Treasury | Collect information on the incidental catch by species, gear and gear specification, area, status when catching (live or dead) | Information feed to PELAGOS database |
| Study of feeding habit of yellowfin tuna | 2015 | Sri Lanka | Conduct under Monitoring of large pelagic fisheries | Treasury | Collect information of food and feeding habits | Information feed to PELAGOS database Results published in WPTT |
| Monitoring on sea turtle nesting behavior in the western and southern coasts | 2013-2015 | Sri Lanka | 0.5 SLR million | Treasury | Collect information of nesting behaviour by species and ranching status of juveniles | Information recorded in separate database |
| Study on biology (feeding biology and reproduction) of shark | 2013-2015 | Sri Lanka | 0.5 SLR million | Treasury | Collect information of food and feeding habits and reproduction by species | Information recorded in separate database |
| Development of scientifically managed sea turtle hatchery and refuge center at Kalpitiya | 2015 | Sri Lanka | 0.8 SLR million | Treasury | Study hatchery performance and short comings Treated sick or injured sea turtle until fully recovery | turtle hatchery Information recorded in separate database |
| Study of morphological relationships to facilitate estimating length weight relationship of billfish species | 2014-2015 | Sri Lanka | Conduct under Monitoring of large pelagic fisheries | Treasury | Estimate total weight where proceed fish are landed | Information feed to PELAGOS database Results published in WPBF |
| Genetic study of Neritic tuna species | 2013-2015 | Sri Lanka | 1.2 – SLR million | | Genetic composition | Information recorded in separate database |
| Genetic barcoding study of sea turtle, dolphins, whales (stranded) | 2010 continued | Sri Lanka | - | Treasury | Genetic composition | Information recorded in separate database |

7. 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 2005 and 2015.

| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|--|------------------------|--|
| 15/01 | On the recording of catch and effort by fishing vessels in the IOTC area of competence | Paragraphs 1–10 | <ul style="list-style-type: none"> i. Paper Log book onboard is made legally mandatory by the catch data collection regulation 2012, (amended 2014) ii The log books as per resolution 15/01 for year 2016 are printed and to be distributed well before 31st December. iii. Since the contents of the log book prepared for 2014 as per resolution 13/03 agrees with resolution 15/01, the template on the website submitted in 2014 is still valid as the official log book of Sri Lanka. |
| 15/02 | Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) | Paragraphs 1–7 | <ul style="list-style-type: none"> i. 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. ii. 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) iii. Sea bird catches are not reported in Sri Lanka due to the nature of the fishery. There is a separate cage to report incidental catches of sea birds if any and release of them dead/alive from. iv. Electronic software for catch and effort data recording (E-logbook) with autonomy geo-positions is being developed |

| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|---|------------------------|--|
| | | | for better data collection and generation of reports. |
| 15/05 | On conservation measures for striped marlin, black marlin and blue marlin | Paragraph 4 | <ul style="list-style-type: none"> i. Data collection of bill fish is being strengthen. ii. Landing bill fish, cut into pieces is an issue for the length data collection. iii. Study on length weight relationship and some morphometric relationships of Indo-Pacific sailfish using biological data of gill net and long line fishery in Sri Lanka is being conducted to overcome this issue. The results will be able to apply marlin species as well. |
| 13/04 | On the conservation of cetaceans | Paragraphs 7-9 | <ul style="list-style-type: none"> i. 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 ii. There is a separate cage to report incidental catches of cetaceans (if any) and release of them dead/alive from |
| 13/05 | On the conservation of whale sharks (<i>Rhincodon typus</i>) | Paragraphs 7-9 | <ul style="list-style-type: none"> (i) Catch of whale shark is prohibited in the consolidated regulation drafted integrating already promulgated regulations on sharks which is ready to publish in November 2015 both within EEZ and high seas areas. (ii) Fishers are being aware recording of the incidental catches and prompt release in an unharmed condition. (iii)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. |
| 13/06 | On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries | Paragraph 5-6 | <ul style="list-style-type: none"> (i) Catch, retain onboard, tranship, land,store or sell of thresher sharks species, oceanic white tip shark, whale shark and shark finning on board and landing sharks fins detached both within EEZ and high seas areas is prohibited in the consolidated regulation drafted by integrating already promulgated regulations on sharks which is is ready to publish in November 2015. (ii) See the (ii) and,(iii) under 13/05 |
| 12/09 | On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence | Paragraphs 4-8 | Refer 5.1.1 National initiatives on conservation and management of sharks. |
| 12/06 | On reducing the incidental bycatch of seabirds in longline fisheries. | Paragraphs 3-7 | - |
| 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 |
| 11/04 | On a regional observer scheme | Paragraph 9 | |
| 05/05 | Concerning the conservation of sharks caught in association with fisheries managed by IOTC | Paragraphs 1-12 | <ul style="list-style-type: none"> (i) The data for catches of sharks for 2014 was submitted including the length frequency data on June 2015. (ii) CPCs shall encourage the release of live sharks, especially juveniles and pregnant sharks, to the extent possible, that are caught incidentally and are not used for food and/or subsistence. |

8. LITERATURE CITED [Mandatory]