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India's National Report to the Scientific Committee of the Indian Ocean Tuna Commission'2015

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Fishery Survey of India

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INFORMATION OF FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 15/02, final scientific data for the previous year was provided to the Secretariat by June of the current year, for all fleets other than longline(e.g., for a National report submitted to the Secretariat in 2015, final data for the 2014 Calendar year must be provided to the Secretariat by 30 June'2015)	YES Communication F.No.43-6/2014 Fy. II, dated 03/07/2015 to the Ministry of Agriculture and Farmer's Welfare, New Delhi.
In accordance with IOTC Resolution 15/02, 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 2015, final data for the 2014 Calendar year must be provided to the Secretariat by 30 June'2015) Reminder: Final longline data for the previous year is due to the Secretariat by 30 December of the current year (e.g., for a National report submitted to the Secretariat in 2015, final data for the 2014 Calendar year must be provided to the Secretariat by 30 June'2015)	YES Communication F.No.43-6/2014 Fy.II, 03/07/2015 to the Ministry of Agriculture and Farmer's Welfare, New Delhi.
If no, please indicate the reason(s) and intended actions: -	

Executive Summary

Tuna and tuna like fishes are one of the components of pelagic resources. In Indian states mainly ten species of coastal and oceanic species are encountered in the tuna fishery. Tuna fishing fleet includes coastal multipurpose boats operating a number of traditional gears, oceanic pole and line boats, small longliners and industrial longliners etc. The total production of tunas and tuna-like fishes, including Neritic and Oceanic tunas, Billfishes and Seerfishes during the year 2014 was 154850 tonnes.

There are no reported instances of sea bird interaction in any of the Indian Tuna Fishery. Sea turtles, Marine mammals and Whale sharks are protected in India under various national legislations. Data on tuna production is collected by different agencies in India including Fishery Survey of India (FSI), Central Marine Fisheries Research Institute (CMFRI) and Marine Export Development Authority (MPEDA).

During the period 2013-14 and 2014-15 (till November), The Fishery Survey of India's longline research vessels collectively had 681 Fishing days and 670 Fishing days respectively, expending a total fishing effort of 1,711 hours and operated 155,010 hooks and 116,881 hooks respectively (MoA,2014).

Tuna and allied resources called as large pelagic resources. The large pelagic resources contributed 198206 t, accounting for 5.5% of the mainland's total marine fish production. Major share of the landing was by Tunas (44.8) followed by Seerfishes (24.8%) and Barracudas (9.9%). Other major resources were Billfishes (4.7%), Dolphin fishes (4.5%), Carangids (leather jackets and rainbow runners (7.9%)), Belonids (1.6%) and Cobia (1.6%). The contribution by different states of India to the landings of each resource varied considerably. Landings recorded a steady increase over the years from 6200 t in 1985 to 198991 t in 2012 and declined marginally thereafter. The change in landings during the year was positive (11.4%) compared to mean yield of the previous five years (2009 – 2013).

The tuna fishery was supported by five species of neritic tunas and four species from oceanic tunas respectively, representing 68 and 32% of the catch. Kawa kawa (*Euthynnus affinis*), Frigate tuna (*Auxis thazard*), Bullet tuna (*Auxis rochei*), Longtail tuna (*Thunnus tonggol*) and Bonito (*Sarda orientalis*) represented the neritic tuna.

Oceanic group was represented by Yellowfin tuna (*Thunnus albacores*), Skip jack tuna (*Katsuwonus pelamis*), Big-eye tuna (*Thunnus obesus*) and Dogtooth tuna (*Gymnosarda unicolor*).

CONTENTS

1. BACKGROUND / GENERAL FISHERY INFORMATION

India's tuna fishery is contributed by Coastal fishery, mainly by artisanal sector / mechanized boats operating a number of traditional gears and Oceanic fishery by artisanal pole and line fishery based at the Lakshadweep group of Islands, small longliner (mainly shrimp trawlers converted to tuna longliners) fishery targeting fresh tuna within the EEZ and industrial longline fishery by the Indian owned tuna longline vessels and LOP vessels.

The total production of tunas and tuna-like fishes, including Neritic and Oceanic tunas, Billfishes and Seerfishes during the year 2014 was 154850 tonnes. The change in tunas and allied resources landings during the year was positive (11.4%) compared to mean yield of the previous five years (2009 – 2013).

The stock assessment of large pelagic resource shows that the as a whole is in abundant state and yield is on steady increase. The present fishing pattern indicated that coastal based fishery is restricted to limited areas of the coast.

Tunas were landed almost round the year along the mainland coast. In general the major fishing season along the coast was August to October. Along the Northwest coast of India it was September to April, in the Southwest coast during August to October, Southeast coast during July to September and in the Northeast coast from August to September.

Fishery of large pelagic resources involved different craft and gear combinations. Most fishing units carry variety of gears however, operation of which depends on the resources targeted and ground conditions. Almost 50% of the catch was by gillnets followed by trawls, hook&line, purse-seines. Drift gillnets generally targeted fishes which occupy the upper layers of water column and hooks and line targeted those from deeper waters.

2. FLEET STRUCTURE

The coastal fishery has a large assemblage of small fishing boats, mainly gillnetters, mini purse seiners, ring seiners, hook and line boats etc., which are not targeting tunas, but contribute significantly to the tuna landings(tab.1).

Table 1: Structure of Tuna longline and Hook & line fleet in India' 2014

Length range(m)	Indian owned vessels		Converted vessels	Total
12.0-15.9			147	147
16.0-19.9		2	66	68
20.0-23.9	2	19	11	32
24.0-39.9	5	4	1	10
40.0-59.9		14		14
Un specified		17		17
Total	**7**	**56**	**225**	**288**

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

a) By Coastal Fishery

India's coastal fishery landed 154,847 t of tunas and allied species during 2014. The production from the Fishing Areas 51 and 57 was 84,482 tonnes and 70,366 tonnes (Table 2&Fig.1), i.e., 54.55% and 45.50% respectively. About 68.33% of Yellow fin tuna, 53.10 % of Skipjack and 45.71% of Kawakawa were caught by the coastal fishery from the FAO area 57. In the area 51, Yellow fin tuna 31.70%, Skipjack tuna 46.80% and Kawakawa was 54.28%.

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In the tuna landings from the coastal fishery, 44.9% was obtained by Gillnet followed by ring-seine (16.1%), hook and line (15.3%), purse-seine (12.0%), trawl net (2.9%), bag net (0.19%) and the remaining by other gears. The catch details obtained by different gears are depicted in Table 3 & Fig.2a – 2c).

Table 2 Nominal catch (in tonnes) of tuna and allied fishes from the Coastal & Oceanic fishery during the year' 14.

Species	FAO Area 51	FAO Area 57	Total
	TUNA		
Yellowfin Tuna	5697.57	12296.35	17993.32
Skipjack Tuna	8384.00	9493.02	17877.03
Longtail Tuna	11418.00	13.00	11431.00
Bullet Tuna	5037.00	356.00	5393
Frigate Tuna	1545.00	4103.00	5648.00
Kawakawa	20026.00	16867.00	36893.00
Dogtooth Tuna	4.00	0.00	4.00
Striped Bonito	780.00	270.00	1050.00
Total	**52891.57**	**43398.37**	**96289.35**
	BILLFISH		
Sail fish	2419.30	1641.21	4060.21
Blue Marlin	2211.06	1320.94	3532.00
Black Marlin	0	0.30	0.30
Sword fish	107.00	1652.05	1759.06
Total	**4737.36**	**4614.50**	**9351.57**
	SEERFISH		
Narrow-Barred Seerfish	6427.00	11828.00	18255.00
Indo-pacific Seerfish	20418.00	10421.00	30839.00
Streaked Seerfish	0.00	12.00	12.00
Wahoo	8.00	92.00	100.00
Total	**26853.00**	**22353.00**	**49206.00**
Grand Total	**84481.93**	**70365.80**	**154846.92**

Source: State Fisheries Department, CMFRI and FSI, 2014-15

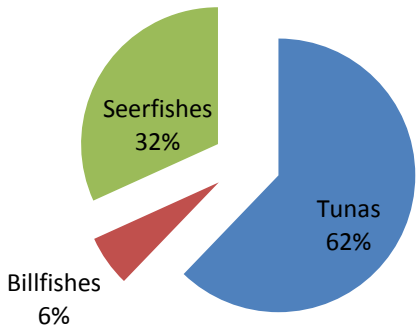

Fig.1 Percentage of tunas and allied resources from the Coastal & Oceanic fishery' 2014

Table:3 Gear-wise nominal catch(tones) of tuna and allied fishes from the coastal fishery' 2014

	Bagnet	Gillnet	Gillnet/ hook&line	Hook& lines	Purse-seine	Ring-seine	Trawl net	Trawlnet/ Hook&line	Others	Total
YFT	0	7146	4054	4008	227	449	795	671	0	17350
Kawakawa	42	12251	1223	3478	7873	10780	840	362	44	36893
Bullet tuna	0	365	81	4295	355	257	38	2	0	5393
Frigate tuna	0	2908	155	186	159	2100	88	2	0	5598
Skipjack	0	7653	1040	1478	0	778	159	17	0	11125
Long tail	32	8710	52	8	2043	0	584	2	0	11431
Dogtooth	0	1	3	0	0	0	0	0	0	4
Striped bonito	0	841	81	108	0	0	15	1	4	1050
Total	**74**	**39875**	**6689**	**13561**	**10657**	**14364**	**2519**	**1057**	**48**	**88844**
Sail fish	0	2255	1292	309	45	0	81	17	0	3999
Black Marlin	0	786	1820	858	0	0	6	6	0	3476
Sword fish	0	425	1093	74	0	0	159	8	0	1759
Total	**0**	**3466**	**4205**	**1241**	**45**	**0**	**246**	**31**	**0**	**9234**
Indo-pacific Seerfish	604	10604	0	556	430	597	5448	0	16	18255
Narrow-barred Seerfish	383	15767	0	3519	1937	375	8591	220	47	30839
Wahoo	0	85	8	0	0	7	0	0	0	100
Streaked Seerfish	0	12	0	0	0	0	0	0	0	12
Total	**987**	**26468**	**8**	**4075**	**2367**	**979**	**13276**	**220**	**63**	**48443**
Grand total	**1061**	**69809**	**10902**	**18877**	**13069**	**15343**	**16041**	**1308**	**111**	**147284**

Source: CMFRI'2014-15

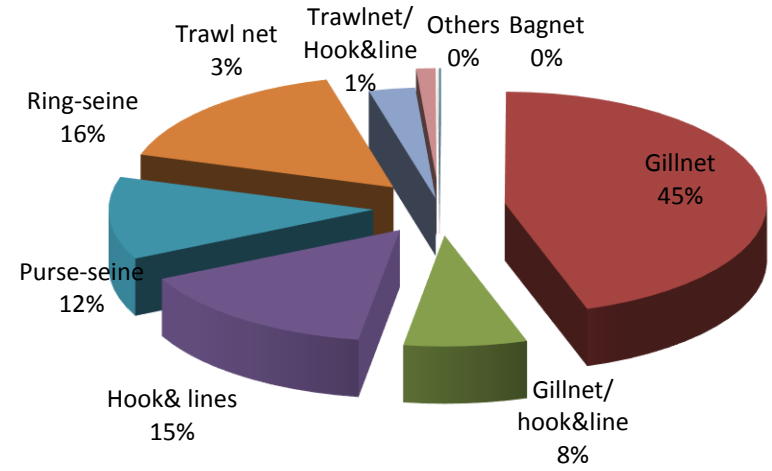

Fig.2a. Percentage of tuna catch by gear type from the Coastal fishery' 2014

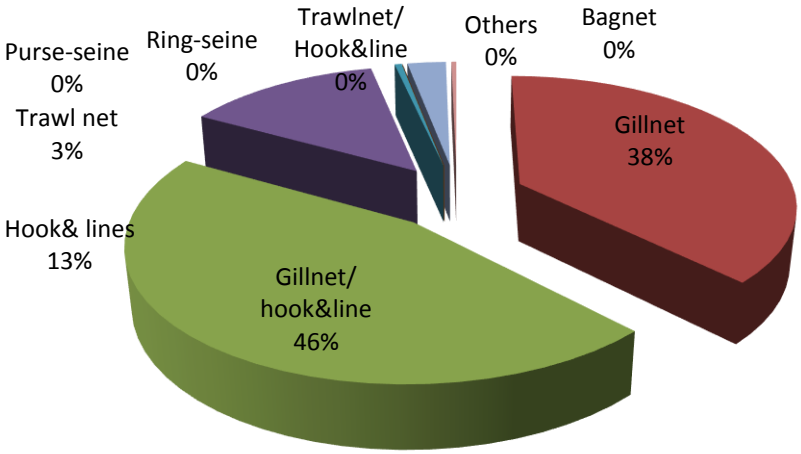

Fig.2b. Percentage of Billfish catches by gear type from the Coastal fishery' 2014

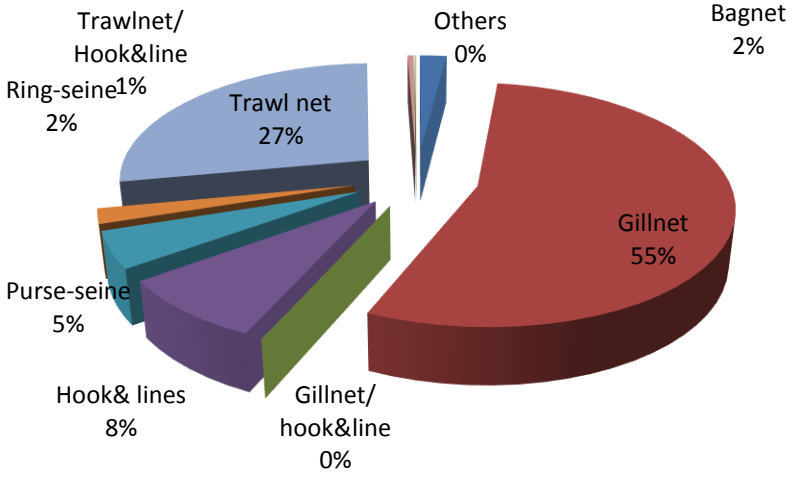

Fig.2c. Percentage of Seerfish catches by gear type from the Coastal fishery' 2014

b) By Oceanic Tuna Fishery

The nominal catch of tunas and allied species from the oceanic fishery was 154850 tonnes (Table 4, Fig.3). The catch was dominated by Kawakawa contributing 23.82% of the total catch followed by Indo-pacific Seerfish (19.92%), Narrow-barred seerfish (11.79%), Yellow fin tuna (11.62%), Skipjack tuna (11.54%), Longtail tuna (7.38%), Sailfish (2.62%) and others (11.30%).

Maximum catch from the oceanic sector was by small longliners i.e., 147284 tonnes, targeting fresh tuna in the Indian EEZ. The fishery is concentrated mainly in the Middle-East and South & North – West coasts of India (FSI, 2014). The catch from this sector was 8.323 tonnes, dominated by Yellow fin (62.22%) followed by Sharks (14.86%) etc.

Total landing by Pole and Line fishery based at Lakshadweep was 7119 tonnes. Catch consisted of Skipjack (94.84%, Yellow fin tunas (4.45%) and Frigate tuna (0.7%).

The effort by industrial tuna fishery, total catch reported by this fishery was 438.84 tonnes, consisting of Yellow fin tuna (73.32%), Sailfish (13.94%) and Marlin (12.75%).

During the period 2013-14 and 2014-15 (till November), The FSI survey vessels collectively had 681 Fishing days and 670 Fishing days respectively, expending a total fishing effort of 1,711 hours and 1,794 hours and operated 155,010 hooks and 116,881 hooks respectively (MoA, 2014).

Table 4 Nominal catch of tunas and allied species (in tonnes) from the Oceanic fishery'2014

Species / Group	Pole & Line	Industrial tuna longline	Small scale longline / other gears	FSI vessels longline	Total
Yellowfin Tuna	317	321.74	17350	5.179	17993.919
Skipjack	6752	0	11125	0.025	17877.025
Bullet tuna	0	0	5393	0	5393
Frigate tuna	50	0	5598	0	5648
Kawakawa	0	0	36893	0	36893
Longtail tuna	0	0	11431	0	11431
Dogtooth tuna	0	0	4	0	4
Striped bonito	0	0	1050	0	1050
Total (Tunas)	**7119**	**321.74**	**88844**	**5.204**	**96289.944**
Sail fish	0	61.16	3999	0.35	4060.51
Blue marlin	0	55.94	3476	0.055	3531.995
Black marlin	0	0	0	0.298	0.298
Swordfish	0	0	1759	0.056	1759.056
Total (Bill fishes)	**0**	**117.1**	**9234**	**0.759**	**9351.859**
Barracuda	0	0	0	0.007	0.007
Total (Barracuda)	**0**	**0**	**0**	**0.007**	**0.007**
Dolphin fish	0	0	0	0.14	0.14
Total (Dolphin fish)	**0**	**0**	**0**	**0.14**	**0.14**
Sharks	0	0	0	1.237	1.237
Ray	0	0	0	0.357	0.357
Total (Elasmobranchs)	**0**	**0**	**0**	**1.594**	**1.594**
Narrow-barred Seerfish	0	0	18255	0	18255
Indo-pacific Seerfish	0	0	30839	0	30839
Streaked Seerfish	0	0	12	0	12
Wahoo	0	0	100	0	100
Total (Seerfish)	**0**	**0**	**49206**	**0**	**49206**
Miscellaneous	0	0	0	0.619	0.619
Total (others)	**0**	**0**	**0**	**0.619**	**0.619**
Grand Total	**7119**	**438.84**	**147284**	**8.323**	**154850.163**

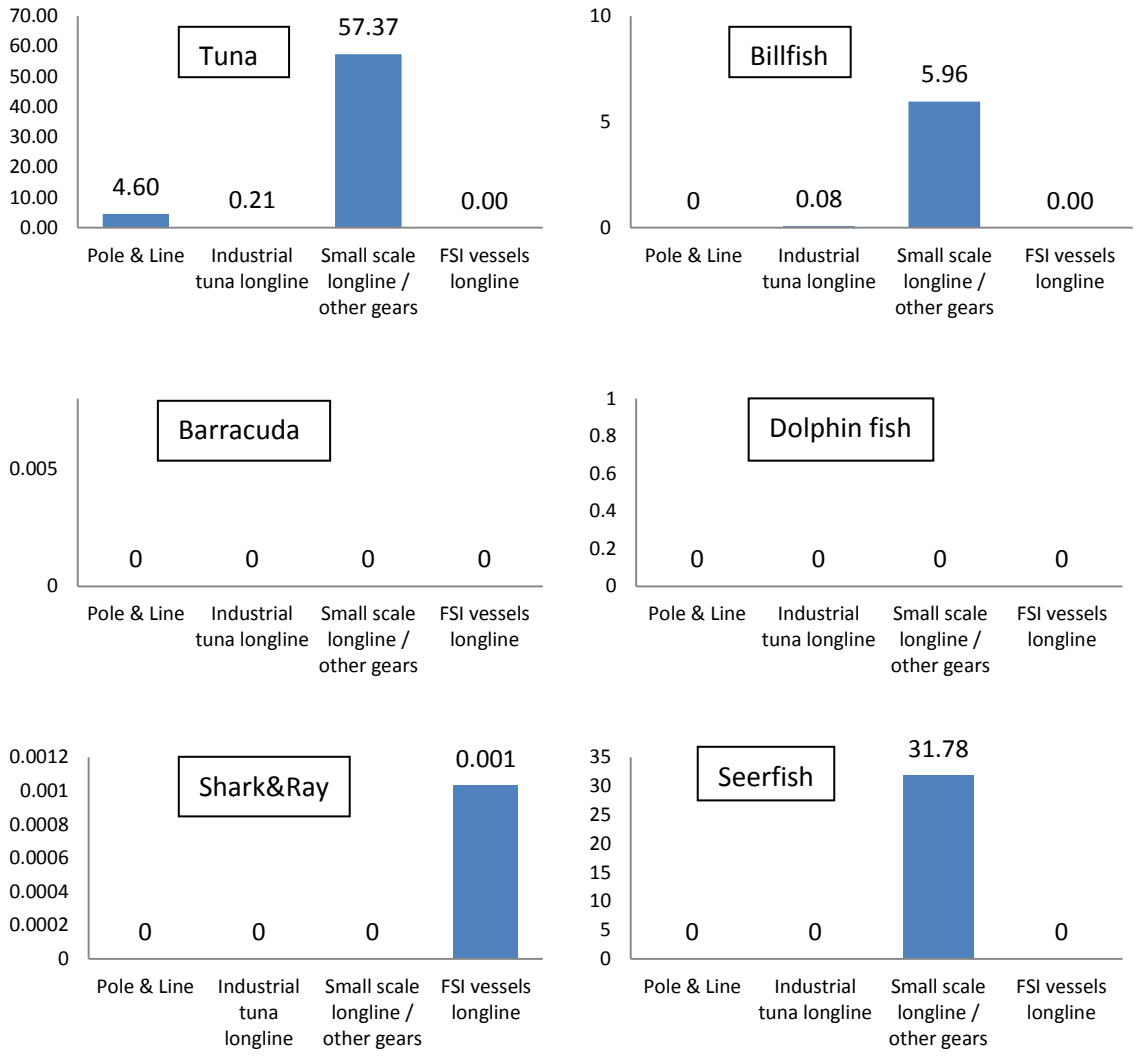

Fig.3. Percentage of Tuna and allied catches by gear type from the Oceanic fishery' 2014

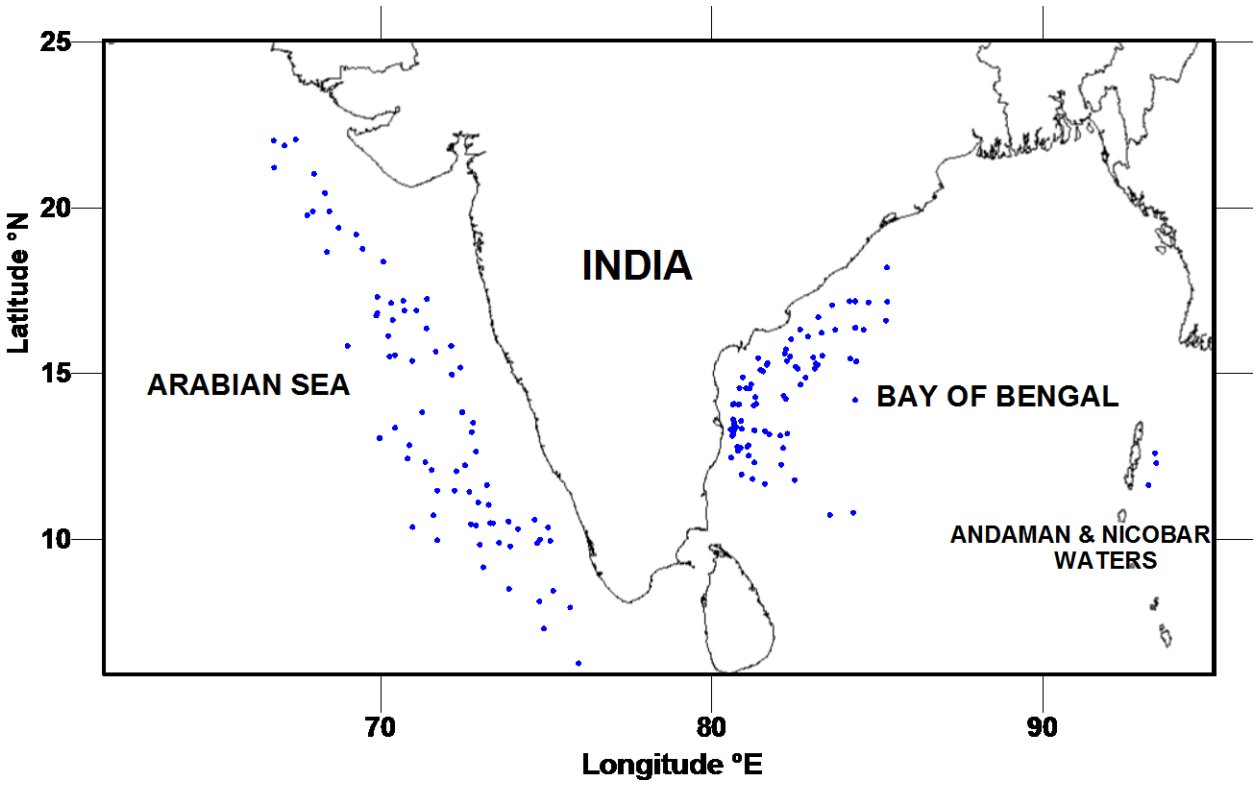

Fig. 1. Map showing distribution of fishing effort (fishing station) by Oceanic longline fishery

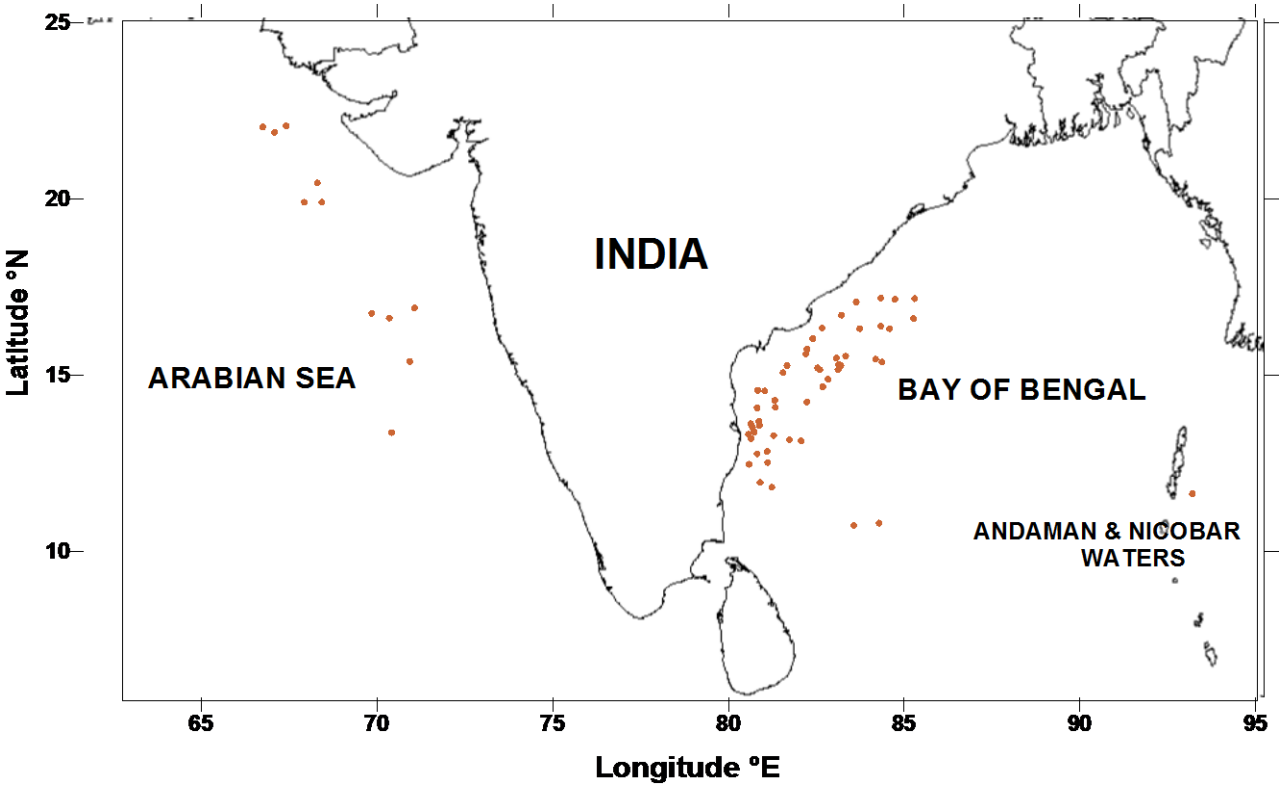

Fig. 2. Map showing Yellowfin tuna catch distribution by oceanic longline fishery

4. Recreational Fishery

In India, there is a scope for large scale recreational fishery for tunas and allied species. However, presently there is no commercial fishery existing in India.

5. Ecosystem and By-catch issues

5.1. Sharks

Survey conducted by the Fishery Survey of India(FSI), in the Indian EEZ revealed that Sharks constitute 0.001% to the total catch in the longline fishery. Many of the shark species are protected under the Indian National Law. A National Plan of Action for Conservation of Sharks (NPOA – Sharks) and also a Regional Plan of Action, jointly by Bangladesh, India, Maldives and Sri Lanka is contemplated. Consultation process is in progress.

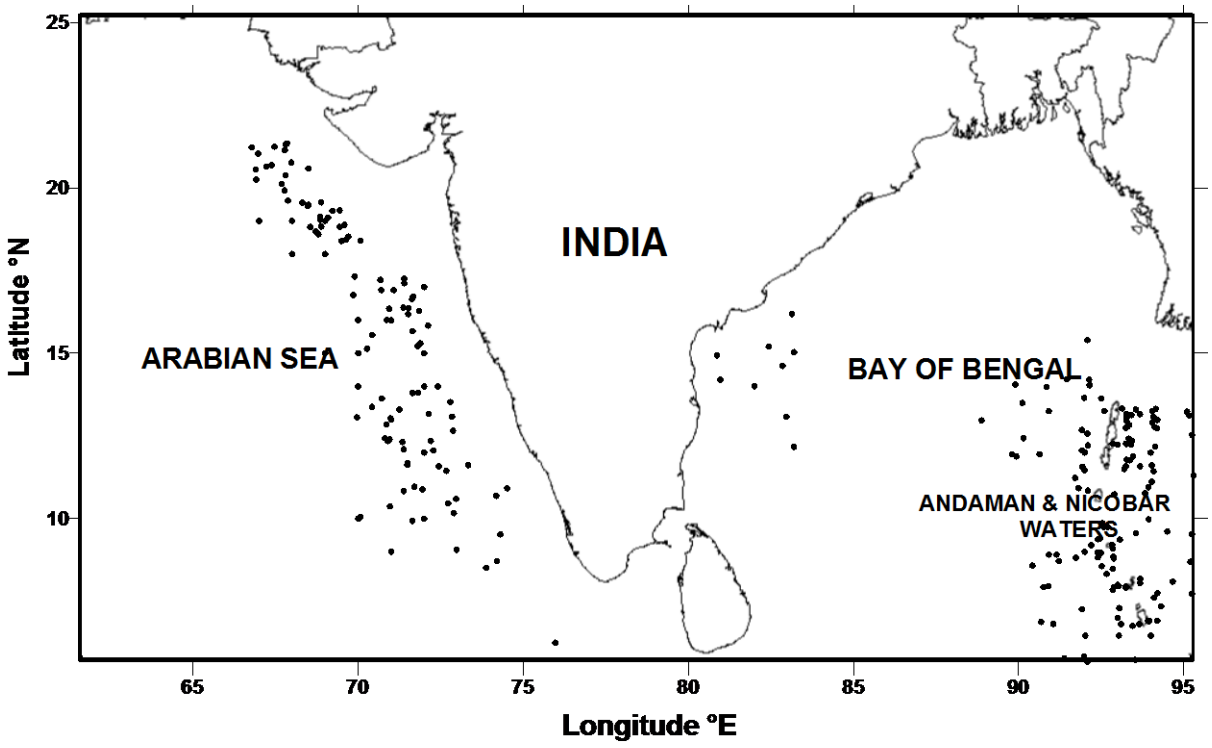

Fig. 3. Map showing Shark catch distribution by oceanic longline fishery

Table.3 Total number and weight of Sharks (by Species) during 2010 – 2014 (from FSI, longliners survey data)

	Year	2010		2011		2012		2013		2014		Total	
Sl.No.	**Species Name**	**Number**	**Weight**	**Number**	**Weight**	**Number**	**Weight**	**Number**	**Weight**	**Number**	**Weight**	**Number**	**Weight**
1	*Alopias pelagicus*	43	1762	16	702	33	1475	8	321	2	91	**102**	**4351**
2	*Alopias superciliosus*	5	249	48	1806	6	273					**59**	**2328**
3	*Alopias vulpinus*	27	1200	1	15	6	224					**34**	**1439**
4	*Carcharhinus limbatus*	25	600	41	756	19	523	2	73			**87**	**1952**
5	*Carcharhinus albimarginatus*	12	31	2	7			6	12	13	178	**33**	**228**
6	*Carcharhinus sorrah*	10	82			1	15	1				**12**	**97**
7	*Carcharhinus amblyrhynchos*			1	2.5	19	467	10	55.5			**30**	**525**
8	*Carcharhinus dussumieri*	8	128			1	11	4				**13**	**139**
9	*Carcharhinus macloti*	1	5	3	31					15	237	**19**	**273**
10	*Carcharhinus longimanus*			2		1	8					**3**	**8**
11	*Carcharhinus melanopterus*	7	114			1	22	2		13	301	**23**	**437**
12	*Carcharhinus obscures*			2	4							**2**	**4**
13	*Carcharhinus brevipinna*					26	526					**26**	**526**
14	*Carcharhinus falciformis*					2	25	2	28	25	293	**29**	**346**
15	*Carcharinus hemiodon*			3	312							**3**	**312**
16	*Galeocordo cuvier*	5	566	2	80			1	27	1	27	**9**	**700**
17	*Isurus oxyrinchus*	1	45	1	140					1	10	**3**	**195**
18	*Loxodon macrorhinus*	2	4	9	15							**11**	**19**
19	*Sphyrna lewini*	1	70	2	155			2	91			**5**	**316**
	Total	**147**	**4856**	**133**	**4026**	**115**	**3569**	**38**	**607.5**	**70**	**1137**	**503**	**14195**

5.2. Sea Birds

There were no reported instances of sea bird interaction in any of the Indian tuna fishery. Indian vessels are not engaged in tuna fishing in the Southern Indian Ocean where the sea bird interactions are reported to be more.

5.3. Marine Turtles

Sea turtles are protected in India, being included in the included in the Schedule I of the Indian Wildlife (Protection) Act 1972. Studies conducted by Fishery Survey of India indicated that, the observed hooking rate of sea turtles in the longline fishery of Indian EEZ is 0.108 turtle / 1000 hooks (Varghese et al., 2010). This rate is remarkably lower than many of the studies conducted in other areas. However, Indian longline vessels are advised to carry de-hookers and line cutters while on fishing operations and pamphlets on safe release of sea turtles were distributed to the longline fishermen.

5.4. Other Ecologically related species

Fishing of marine mammals and whale sharks are banned in Indian waters under various national legislations.

6. National Data Collection and Processing Systems

In the coastal fishery around mainland India, the Central Marine Fisheries Research Institute (CMFRI), under the Indian Council of Agricultural Research (ICAR), collects data on fish landings through a stratified multi-stage random sampling procedure.

For the Island groups of Lakshadweep and Andaman & Nicobar, the landing data reported by the respective Union Territory Governments are considered.

6.1. Log Sheet data collection and verification

From the Oceanic fishery, the voyage reports received by the Fishery Survey of India and from the Indian owned tuna fishing vessels operating under the Letter of Permission (LOP) scheme formed the data source. New log sheets as per the requirements under the IOTC resolutions were designed and distributed to the LOP vessel operators.

The exports data is collated by the Marine Products Export Development Authority (MPEDA), under the Ministry of Commerce based on actual export documents.

6.2. Vessel Monitoring System

Operation of the Indian industrial tuna fishing vessels is monitored by the ATS (Automatic Tracking System). However, Government of India has finalized a programme for installation of Vessel Monitoring System onboard all the fishing vessels. This programme will satisfy all the requirements under the IOTC Resolutions on installation of VMS.

6.3. Observer programme

A programme for posting of observers onboard tuna fishing vessels is being contemplated by the Government of India. However, in FSI tuna longliners which is more than 5% of vessels operated in Indian EEZ are posted with qualified Scientists for every month onboard data collection. The Scientist will collect data in the prescribed format as per instructions.

6.4. Port sampling programme

The Central Marine Fisheries Research Institute is implementing a port sampling programme, wherein landings, length structure and biological parameters of important species are collected.

6.5. Unloading / Transshipment

Mid-sea transshipment is allowed in Indian tuna fishery under the strict monitoring by Indian Coast Guard, Marine Products Export Development Authority and Reserve Bank of India.

7. National Research Programmes

- ✓ Survey of oceanic tunas and allied resources in the Indian EEZ by deploying four tuna longliners, two each on the Arabian sea and Bay of Bengal, is being undertaken by the Fishery Survey of India, under the Ministry of Agriculture & Farmer's Welfare. Data on resource distribution, CPUE, by-catches and environmental conditions are being collected. Biological studies of all the species occurring are also undertaken.
- ✓ A project for "Locating tuna habitat through satellite remote sensing", jointly by the Fishery Survey of India and the Space Application Centre (SAC) of the Indian Space Research Organisation (ISRO) is in progress.
- ✓ A project on "Satellite Telemetric studies on Migration pattern of Tunas in the Indian Seas (SATTUNA)" sponsored by the Indian National Centre for Ocean

Information Services (INCOIS), Central Marine Fisheries Research Institute (CMFRI) and Centre for Marine Living Resources and Ecology (CMLRE).

- ✓ Scientists from India participated in various Working party meetings of the IOTC, including working party on Billfishes, Tropical Tunas, Ecosystem and By-catch, Neritic Tunas. Scientific papers on issues relevant to the working parties were also presented by the Indian Scientists while participating in the above meetings.

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

Several recommendations of the Scientific Committee / IOTC are being implemented. A Working Group has been constituted under the Chairmanship of the Joint Secretary (Fishery), Ministry of Agriculture & Farmer's Welfare, New Delhi with members from the Ministry, Indian Council of Agricultural Research (ICAR) and relevant Research and Development Institutions, viz., FSI, CMFRI and MPEDA, for monitoring the implementation of various IOTC resolutions and recommendations. At the FSI, an IOTC cell has been set up to follow up necessary actions. Some of the specific recommendations implemented are given below:

- ✓ Log book has been designed, printed and distributed to the tuna longline operators.
- ✓ Studies are being undertaken on depredation from four tuna longline survey vessels of the Government of India.
- ✓ Studies on by-catch are being undertaken from four tuna longline survey vessels of the Government of India.
- ✓ The commercial vessels, through the logbook introduced, are being advised to report on the depredation, occurrence of turtles, by-catches and discards in the longline fishery.
- ✓ For conservation / protection of sea turtles, several measure including area closures for fishing, fabrication and popularization of TEDs, conducting awareness campaigns and protection under Wild life Protection Act have been implemented. Indian longline vessels are advised to carry de-hookers and line cutters while on fishing operations and pamphlets on safe release of sea turtles were distributed to the longline fishermen.
- ✓ A National Plan of Action for Conservation of Sharks (NPOA – Sharks) and also a Regional Plan of Action, jointly by Bangladesh, India, Maldives and Sri Lanka is contemplated. Consultation process is in progress.

Scientific Committee requirements contained in Resolution of the Commission, adopted between 2005 and 2015:

Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recoding of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1-10	Indian Tuna Fishing vessels are mandated to use and submit the log books to Indian Government. India had recently developed a system for online logbook submission for the industrial tuna fishing vessels. The data collected is being submitted to IOTC annually.
15/02	Mandatory Statistical reporting requirements for IOTC Contracting Parties and Co-operating Non-Contracting Parties (CPCs)	Paragraphs 1-7	India is taking all the efforts to meet the deadline for submission of the mandatory data at a maximum level of precision.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	In India striped marlin not at all reported. There is instruction for Black marlin juvenile conservation.
13/04	On the conservation of Cetaceans	Paragraphs 7-9	The Marine mammals stranding incidences were more in east coast than west coast of India in the past one year. The stranding incidences on Sperm whale were unusual in east coast (CMFRI, 2014).
13/05	On the conservation of Whale sharks (*Rhincodon typus*)	Paragraphs 7-9	In Indian waters Whale Shark conservation and its protection are being

			followed by various National Act. However, an accidental catch (1.5m length and 175 kg) was observed at Tuticorin (Tamilnadu) Fishing harbor during August'2014 (CMFRI,2014)
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries.	Paragraphs 5-6	Awareness programmes were initiated top popularize the need for shark conservation in Shark.
12/09	On the conservation of Thresher Sharks (Family: Alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4-8	Indian longline vessels in the IOTC record are instructed to strictly implement this resolution.
12/06	On reducing the incidental by-catch of sea birds in longline fisheries.	Paragraphs 4-8	There were no reported instances of sea bird interaction in any of the Indian tuna fishery. Our fishery is not operating in the area south of 25°S, where the sea bird interaction is commonly reported.
12/04	On the conservation of marine turtles	Paragraphs 3,4,6-10	Fishing and trade of marine turtles are banned in the country. Incidental catch of marine turtles are releases at sea in live condition.
11/04	On a regional observer scheme	Paragraph 9	A National programme for ensuring observer coverage of tuna fishing vessels is being

			contemplated by the Government of India. FSI Scientists collecting the data in the IOTC prescribed format.
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1-12	Data on the Shark by-catch is being reported to the IOTC regularly. Finning is not usually practiced in Indian Tuna Fishery. The Fishery Survey of India is conducting research to identify measures to make fishing gears more selective and to identify shark nursery areas etc.

Conclusion

India is the prominent coastal nation in Indian Ocean region, engaged in tuna fishing and research. The tuna fishery in India expanded in recent years mainly by the encouragement through the Government policies for diverting the overcapacity in the continental shelf areas to the oceanic waters. However, the fishery is facing serious issues mainly due to declining catches. Since tunas are highly migratory, the over exploitation in one region will influence the abundance in other regions. In Indian waters for the last two decades, the oceanic tuna catch is in the increasing trend with minor fluctuations (Anrose, 2013). The tuna production has increased commensurately in respect of neritic tunas (Sinha, 2014).

Tunas constituted 44.8% of the total large pelagic fishery during the year with a landing of 88841 t. Tuna landings increased steadily over the years with a wide annual fluctuations from 23544 t in 1987 to 88841 t in 2014 (CMFRI, 2014). Tunas were landed almost round the year along the mainland coast. In general the major fishing season along the Indian coast was August to October. Along the northwest coast it was September to April, in the Southwest coast during August to October, Southeast coast during July to September and in the Northeast coast from August to September.

India adopts precautionary approach and has been practicing fishing ban for a period of 65 days coinciding the monsoon season. Similar area-time closure for the entire Indian Ocean and a major fleet reduction programme for major tuna fishing nations (DWFN's, mainly) should be adopted for the sustainability of the Indian Ocean tuna fishery. India is committed to the conservation and management measures within the framework of the IOTC for sustainability of the tuna fishery without affecting the livelihood of the coastal fishermen. India, however, is keen to safeguard the livelihood security of small-scale fishers by advocating appropriate action by major DWFNs.

9. Literature cited

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