

**India's National Report to the Scientific Committee of the Indian Ocean
Tuna Commission, 2013**

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, for all fleets other than longline [e.g. for a National report submitted to the Secretariat in 2013 final data for the 2012 calendar year must be provided to the Secretariat by 30 June 2013)</p>	<p>YES vide our letter to IOTC No. 43-6/2003 F-II. Dated 01.08.2013</p>
<p>In accordance with IOTC Resolution 10/02, provisional longline data for the previous year was provided to the Secretariat by 30 June of the current year (e.g. for a National Report submitted to the Secretariat in 2013, preliminary data for the 2012 calendar year was provided to the Secretariat by 30 June 2013)</p>	<p>YES vide our letter to IOTC No. 43-6/2003 F-II. Dated 01.08.2013</p>
<p>If no, please indicate the reason(s) and intended actions</p>	

EXECUTIVE SUMMARY

Fishing is an age old practice in India. Major share of the fish landings in India, where a multi species, multi gear fishery exists is from the coastal fishery (Sajeevan and Nair, 2006). Tuna fishery in India consists of both targeted longliners and multipurpose coastal fishing fleets. India's tuna fishing fleet includes traditional, motorized and mechanised boats operating various traditional gears, small pole and line boats, small longliners and industrial longliners. Except the Industrial tuna long liners and pole and line boats other fishing fleets are aimed at multi species fishery. Tuna and allied resources also caught by these fleets as by-catch.

The total production of tunas and tuna-like fishes, including neritic and oceanic tunas, billfishes and seerfishes during the year 2012 was 179,625 tonnes against a total production of 159924 tonnes during the year 2011. An increase in the tuna landings by the oceanic and by coastal fishery sector was noticed during the year under report.

Resource survey conducted by the Fishery Survey of India in the EEZ revealed that sharks constitute 38.66% by weight to the total catch in the longline fishery. There are no reported instances of sea bird interaction in any of the Indian tuna fishery. Sea turtles, marine mammals, most of the shark species 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 Products Export Development Authority (MPEDA). Policy decisions on fishery management are being formulated by the Department of Animal Husbandry, Dairying and Fisheries (DAHD&F), Ministry of Agriculture, Government of India.

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1. BACKGROUND/GENERAL INFORMATION ON FISHERY

India's tuna fishery consists of Coastal fishery, Oceanic fishery, small scale longliners and industrial longline fishery. Coastal fishery is mainly composed of traditional, motorized and mechanised boats operating a number of traditional gears. Oceanic fishery is represented by the artisanal pole and line fishery based at the Lakshadweep group of Islands. Small-scale longliners mainly composed of shrimp trawlers-converted-tuna-longliners targeting fresh tuna within the EEZ. Major share of industrial longline fishery are the Indian owned tuna longline vessels operating under Letter of Permission Vessels (LOP vessels).

The total production of tunas and tuna-like fishes, including neritic and oceanic tunas, billfishes and seerfishes during the year 2012 was 179,625 tonnes against a total production of 159,924 tonnes during the year 2011. There was an increase in the catch by the oceanic fishery and increase in the tuna landings by coastal sector during the year under report.

2. FLEET STRUCTURE

The coastal fishery has a diverse 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.

Pole and line boats, numbering 365 are engaged in targeted fishing for tunas (mainly skipjack) in the Lakshadweep waters (South-east Arabian Sea). The tunas caught by pole and line fishery is used mainly for preparation of Masmeen, a cooked, smoked and sun dried tuna delicacy in the Lakshadweep.

Government of India, the Ministry of Agriculture, as a measure to reduce the fishing pressure on the coastal resources provided financial assistance to the coastal trawlers during the 10th five year plan (2002–2007) of India for conversion of existing trawlers (mainly shrimp

trawlers) above 20 m OAL for tuna longlining operation. This was done under the centrally sponsored scheme “Development of marine fisheries, infrastructure and post-harvest operations”. Under this scheme, ten shrimp trawlers in the size range of 21.5–24.0 m OAL were converted for tuna longlining. Encouraged by the success of the said scheme The Marine Products Export Development Authority (MPEDA) also introduced a scheme for providing financial assistance to existing vessels for conversion to tuna longline fishing. Under the scheme, 225 vessels in the size range of 13 – 24 m OAL have availed assistance and converted for tuna longline fishing. The small scale tuna longliners of India are mainly composed of these converted trawlers.

The Industrial tuna longline vessels are mainly composed of the LOP vessels. Under the Letter of Permission (LOP) scheme of the Ministry of Agriculture, 52 tuna longline vessels in the range of 21.6 - 58.7 m OAL, and 7 hook & line vessels which are of foreign origin, but registered as Indian vessels (Indian owned vessels), have been permitted for fishing in the Indian waters. Out of the 52 registered Indian owned vessels 20 vessels were active during 2012. The structure of the oceanic tuna fleet is given in table 1. All the converted tuna longline vessels are using monofilament longlining system.

Table 1: Structure of tuna longline and Hook & Line fleet in India: 2012

Length range (m)	Indian owned vessels		Converted vessels		Total
	Hook & Line	Longline	MPEDA Scheme	MoA Scheme	
12-15.9			147		147
16-19.9		2	66		68
20-23.9	2	19	11	9	41
24-39.9	5		1	1	7
40-59.9		14			14
Un specified		17			17
Total	7	52	225	10	294

3. CATCH AND EFFORT BY SPECIES, AREA AND GEAR

1) By coastal fishery

India's coastal fishery landed 143,760 t of tunas and allied species during 2012. The production from the Fishing Areas 51 and 57 was 83554 t and 60206 t (Table 2), i.e., 58.12% and 41.88% respectively. About 76% of skipjack tuna and 90% of yellowfin tuna caught by the coastal fishery was from the area 57. However, neritic tuna landings from the fishing area 51 were higher than that from area 57.

The tuna fishery was supported by ten species; three oceanic species and seven neritic species. Oceanic species formed 27.4% and neritic species 72.6%. Among the oceanic species, yellowfin and skipjack were dominant contributing 74.05% and 25.94% respectively. Among the neritic tunas, kawakawa was dominant (55.45%) followed by longtail tuna (24.5%), bullet tuna (10.5%) frigate tuna (6.0%) and other species. In the tuna landings from the coastal fishery, 50.8% was obtained in gillnet followed by trawl net (10.8%), hook and line (8.7%), mini-purse seine (8.3%), ring seine (7.9%), and the remaining by other gears. The catch details obtained by different gears are given in Table 3.

Table 2. Nominal catch (t) of tuna and tuna-like fishes from the coastal fishery in India: 2012

Species	FAO Area 51	FAO Area 57	Total
Skipjack Tuna	1382	4400	5782
Yellowfin Tuna	1550	14957	16507
Bullet Tuna	4339	1891	6230
Dogtooth Tuna	40	-	40
Frigate Tuna	2093	1423	3516
Kawakawa (Little Tuna)	19329	13436	32765
Longtail Tuna	14455	-	14455
Striped Bonito	1486	593	2079
Tunas total	44674	36700	81374
Marlin	624	1028	1652
Sailfish	1678	2142	3820
Swordfish	671	73	744
Billfishes Total	2973	3243	6216
Indo Pacific Seerfish	8610	5075	13685
Narrow-Barred seerfish	27284	15132	42416
Wahoo	13	56	69
Seerfishes Total	35907	20263	56170
Grant total	83554	60206	143760

Table 3. Gear wise nominal catch (in tones) of tuna and tuna like fishes from the coastal fishery in India: 2012

Name of Species	Bag net	Gill net	Gill net / Hooks & Lines	Hooks & Lines	Purse seine	Ring seine	Trawl net	Trawl net / Hooks & Lines	Others
Bullet Tuna	0	2078	9	3143	179	770	51	0	0
Frigate Tuna	0	1580	58	619	489	651	40	0	79
Kawakawa (Little Tuna)	0	13049	336	2865	6466	8325	1192	435	97
Dogtooth tuna	0	0	40	0	0	0	0	0	0
Skipjack Tuna	0	4212	274	347	16	258	673	2	0
Striped Bonito	0	1706	22	209	0	2	80	9	51
Yellowfin Tuna	0	4814	797	2380	0	144	1897	5445	1030
Longtail Tuna	2	12578	35	10	1234	0	237	359	0
Sailfish	3	2189	738	697	0	0	174	19	0
Black Marlin	0	616	491	488	0	0	57	0	0
Swordfish	0	157	435	57	17	0	78	0	0
Wahoo	0	56	13	0	0	0	0	0	0
Narrow-Barred Seerfish	76	21406	210	4276	2867	2488	7618	3383	92
Indo-Pacific Seerfish	64	8802	31	558	628	172	3362	0	68
Total	145	73007	3489	12506	11896	11389	15459	9652	1417

2). *Oceanic tuna fishery*

The nominal catch of tunas and allied species from the oceanic fishery was 35864.682 tonnes (Table 4, Fig. 1 & 2). The catch was dominated by Skipjack Tuna, contributing 44.15% to the total followed by Yellowfin Tuna (39.29%). Contribution of billfishes to the total catch was marginal. Indo-pacific sailfish was the dominant billfish species (Sajeevan, 2013).

Gear-wise, small longliners with 68.5% of total catch contributed maximum catch from the oceanic sector. The fishery is concentrated mainly in the South-east and South-west coasts. Catch from this sector was 24566.05, dominated by yellowfin (46.35%) followed by Skipjack Tuna (31.96%).

Total landing by pole and line fishery based at Lakshadweep was 9978 tonnes. Catch consisted of Skipjack (80%) and Yellowfin (20%). Total catch reported by industrial tuna fishery was 1312.36 tonnes. Catch was mainly composed of yellowfin (53.76%), Indo-pacific sailfish (19%), marlins (18.80%) and swordfish (6.05%).

Table 4. Nominal catch of tunas and allied species (t) from the oceanic fishery

Species/group	Small longline/other gear	Pole and line	Industrial tuna longliner	FSI vessel (exploratory)	Total
Yellowfin Tuna	11386.22	1995.534	705.6	3.944	14091.298
Skipjack tuna	7852.16	7982.136		0.014	15834.31
Bigeye Tuna	2.69	0	1.5	0.147	4.337
Other Tunas	4504.36	0	29.76	0	4534.12
Indo Pacific Sailfish	361.16	0	249.3	0.356	610.816
Marlin	329.69	0	246.7	0.042	576.432
Swordfish	120.47	0	79.5	0.282	200.252
Sharks	9.3	0		3.426	12.726
Others	0	0	0	0.391	0.391
TOTAL	24566.05	9977.67	1312.36	8.602	35864.682

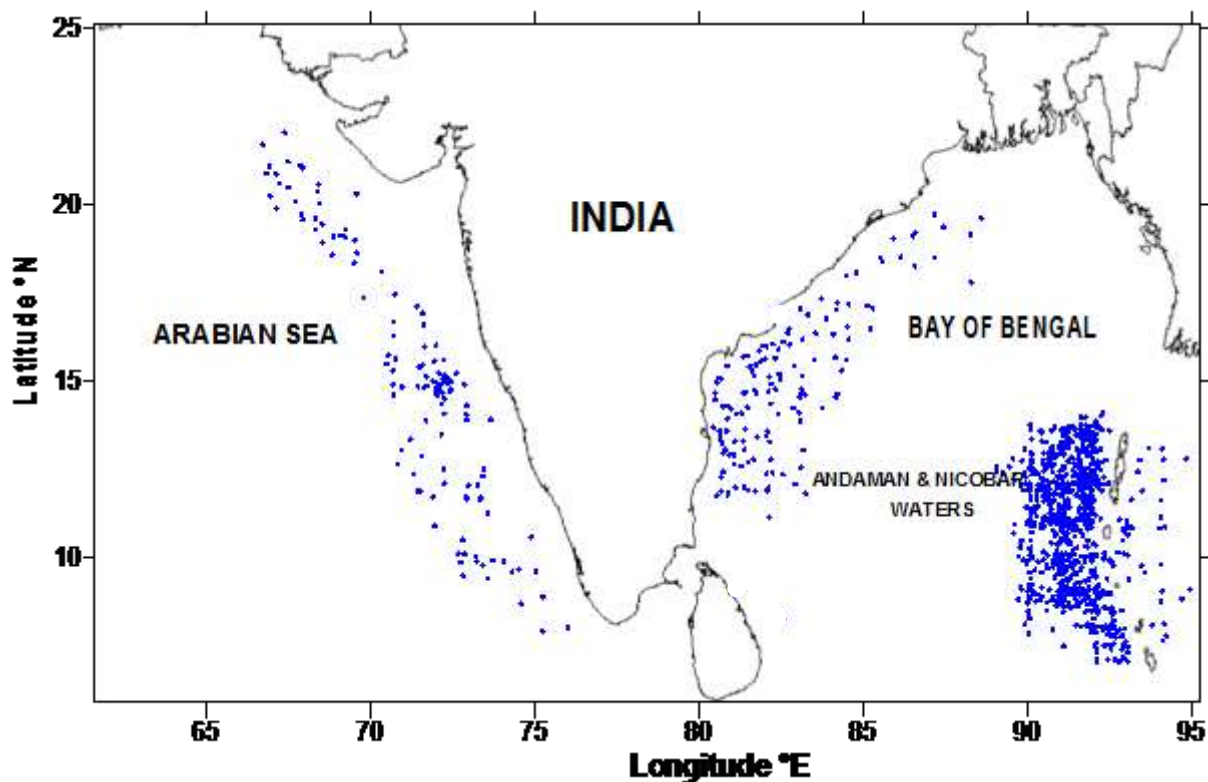


Fig. 1. Map showing distribution of fishing effort (fishing station) by Oceanic longline fishery

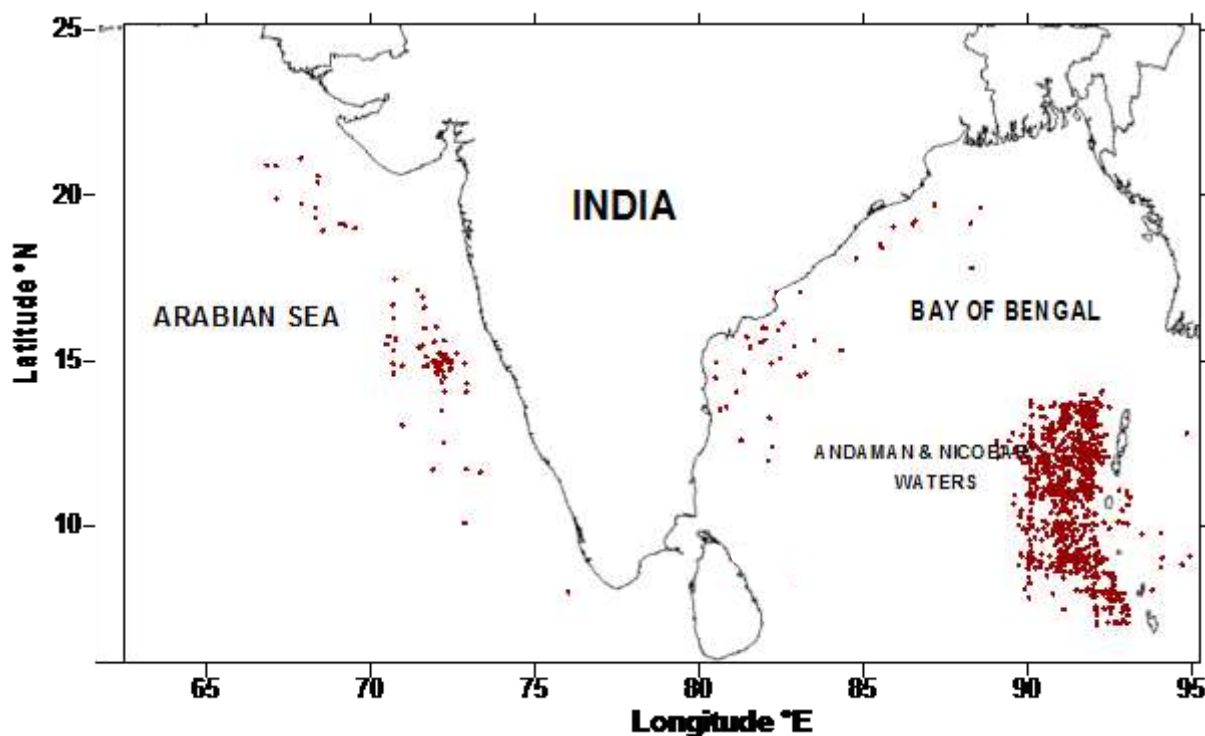


Fig. 2. Map showing Yellowfin tuna catch distribution by oceanic tuna fishery

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 recreational fishery exist in India..

5. ECOSYSTEM AND BYCATCH ISSUES

5.1 Sharks

Results of fishery resource survey conducted by the Fishery Survey of India in the EEZ revealed that sharks constitute 39.81% by weight to the total catch in the longline fishery. However, the reported catch of sharks by industrial longline fishery is negligible. In India, 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 are being contemplated. Consultations are in progress.

5.2 Seabirds

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 significant.

5.3 Marine Turtles

Sea turtles are protected in India, being 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 dehookers 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

6.1 Log sheet data collection and verification

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 (CMFRI,2012). For the Island groups of Lakshadweep and Andaman & Nicobar, the landing data reported by the respective Union Territory Governments were utilised.

From the oceanic fishery, the voyage reports (log books) received by the Fishery Survey of India (FSI) 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. Both electronic and paper based data submission schemes are in place for timely submission of the data.

Export of Tuna and allied fish from the country in quantity and value are based on 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 finalised a programme for

installation of Vessel Monitoring System onboard all the fishing vessels. The technology uses Indian satellites for tracking the Indian 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 Scientists are posted, this can be considered as observer onboard tuna longliners.

6.4 Port sampling programme

The Central Marine Fisheries Research Institute (CMFRI) is implementing a port sampling programme, wherein the 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 PROGRAMS

- India is continuously monitoring the stock status, biological parameters and environmental impacts on the oceanic tunas and allied resources in the seas around India by deploying four tuna longliners, of the Fishery Survey of India (FSI), under the Ministry of Agriculture.
- A project on “A value chain on oceanic tuna fisheries in Lakshadweep Sea” with funding support from the National Agricultural Innovative Project (NAIP) is operational since 2008. The major activities under the project are resource assessment, trophic modeling, technology development and demonstration for conversion of existing pole and line boats

for longlining, improved handling onboard and at landing centers, production of value added products, development of fisheries management advisories, social impact analysis and transfer of technology. The project is being implemented jointly by the Central Marine Fisheries Research Institute (CMFRI), Fishery Survey of India (FSI), Central Institute of Fisheries Technology (CIFT) and the Department of Fisheries, Union Territory of Lakshadweep and National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT).

- 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), aimed to study the migratory pattern of oceanic tunas in Indian waters by satellite technology was initiated during the last year. Institutes participating in the programme are Fishery Survey of India (FSI), 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 participate in various Working Party meetings of the IOTC. Scientific papers on issues relevant to the Working Parties were presented by the Indian Scientists 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 (Fy.), Ministry of Agriculture, 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 furnishes as Table 5.

- Logbook has been designed, printed and distributed to the tuna longline operators. A web based electronic data submission scheme for oceanic tuna fishery is developed for real time data submission by fishing industry.
- Studies are being undertaken on depredation from four tuna longline survey vessels of the Government of India.
- Studies on bycatch 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 measures including area closures for fishing, fabrication and popularization of TEDs, conducting awareness campaigns and protection under Wildlife Protection Act have been implemented. Indian longline vessels are advised to carry dehookers 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.

Table 5. Progress made to recommendation of Scientific Committee.

Res.No.	Resolution	Scientific requirement	CPC progress
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	Data on the shark bycatch 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.
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting parties	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
10/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	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
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
1203	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–9	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.
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
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 tuna vessels in the IOTC record are instructed to strictly implement this resolution.

9. CONCLUSION

Oceanic tuna fishery in India is complex in nature contributed by small scale traditional coastal fishery to Indian owned industrial vessels. Though landings of tuna and allied resources registered an increase in catch, overall pattern of fishery is not lucrative. The coastal tuna fishery is facing serious issues mainly due to declining catches, however oceanic tuna catches are far below the potential estimated (MOA, 2011). In total India's contribution to total oceanic tuna and associated species catch from the Indian Ocean during 2006 was 2.01%..

As a major step to ensure sustainability in Indian fishery the Government of India adopted a precautionary approach and has been practicing fishing ban for a period of 47 days coinciding with the monsoon season. This measure will definitely helps in reduction of effort towards the tuna fishery. Since tunas are highly migratory, the over exploitation in one region will influence the abundance in other regions Hence, Similar area-time closure for the entire Indian Ocean and a major fleet reduction programme for major tuna fishing nations like Distant Water Fishing nations (DWFN) 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 millions of coastal fishermen in the country. Indian priority would be, therefore, to safeguard the livelihood security of small-scale fishers by advocating appropriate action by major DWFNs.

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