Received: 23 November 2014
IOTC-2014-SC17-NR17

Government of Republic of Maldives
Ministry of Fisheries and Agriculture
Velaanaage Complex, 7th Floor
Malé - 20096, Republic of Maldives

MALDIVES NATIONAL REPORT
SUBMITTED TO THE

INDIAN OCEAN TUNA COMMISSION
SCIENTIFIC COMMITTEE - 2014

M. Shiham Adam, Hussain Sinan, A. Riyaz Jauharee,
Khadeeja Ali, Adam Ziyad, Ahmed Shifaz & Mohamed Ahusan

Ministry of Fisheries and Agriculture
7th Floor, Velaanaage Complex
Ameeru Ahmed Magu, Malé -20025
Republic of Maldives

Maldives National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2014

M. Shiham Adam[1], Hussain Sinan[2], A. Riyaz Jauharee[1]
Khadeeja Ali[1], Adam Ziyad[2] Ahmed Shiafz[2] & Mohamed Ahusan[1]

[1/]Marine Research Centre, Ministry of Fisheries and Agriculture, Malé, Maldives,
[2/]Fisheries Management Division, Ministry of Fisheries and Agriculture, Malé, Maldives

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National report submitted to the Secretariat in 2013 final data for the 2012 calendar year must be provided to the Secretariat by 30 June 2013)	YES 30/06/2014
In accordance with IOTC Resolution 10/02, provisional longline data for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2013, preliminary data for the 2012 calendar year was provided to the Secretariat by 30 June 2013). REMINDER: Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2013, final data for the 2012 calendar year must be provided to the Secretariat by 30 December 2013).	YES 31/08/2014
If no, please indicate the reason(s) and intended actions:	

1. Executive Summary

The Maldivian tuna fishery comprises of four components; pole-and-line, handline, longlining and trolling. The most important is the traditional liveabait pole-and-line fishery. The fishery was certified by the Marine Stewardship Council (MSC) in November 2012. The main target species is skipjack tuna (*Katsuwonus pelamis*), but small amounts (~15-17%) of juvenile yellowfin tuna (*Thunnus albacares*) are also caught in the fishery of which about 5-10% is bigeye tuna (*Thunnus obesus*). Handline fishery is still expanding and targets surface dwelling large yellowfin tuna (> 70 cm FL). A Maldivian longline fishery is being developed following the termination of the licensing scheme for foreign longliners in 2010. Trolling fishery is minor and targets mainly neritic species of kawakawa (*Euthynnus affinis*) and frigate tuna (*Auxis thazard*), but occasionally also catches skipjack and yellowfin tuna.

Catches of skipjack registered an increases in 2013 following declining catches from an all-time high of around 140,000 t in 2006. Recent catches have been of the order of 60,000 – 75,000 t, still much less recorded catch in 2006. Caches of yellowfin are increasing, due to the growing handline fishery. No specialized vessel is required for handline fishing hence many pole-and-line vessels now carry both sets of gears and switch target fishery and gear depending on fishing opportunities. Many also practice multi-day switching them opportunistically. Most recent catches of the yellowfin are around 50,000 t and about 60% of the catch is from handline fishery.

The national data collection was based on an enumeration system, which is now replaced by a modern logbook data collection system. A web-enabled database will become online by the end of this year to allow compilation and processing of catch and effort data. The web-enabled database will also be used to record tuna purchases by the exporters. The database when fully functional will help maintain records of active fishing vessel and fishing licenses.

Maldives is taking lead in skipjack management strategy evaluation (MSE) work that would allow revising interim reference points and help develop harvest controls rules for skipjack and other tropical species. The work is being done in close collaboration with the Working Party on Methods group supervised by an MSE Advisory Committee set up for the purpose. Its progress is regularly reported to the Secretariat.

.

****

2. Background and General Fishery Information

Maldives is a tuna fishing nation with a long tradition dating back hundreds of years. Until the 1980s the tuna fishery was the mainstay of the Maldivian economy, providing employment and a source of protein for its inhabitants. Tuna products remains the single most important export commodity from the Maldives earning currently about 160 million US$ a year. Although spectacular growth and expansion of tourism in the country has declined fisheries' economic importance, tuna fishing continues to be the main economic activity in the outer islands. The fishery sector contributes around 6-8% of GDP.

The largest and most important component of the Maldivian tuna fishery is the livebait pole-and-line fishery targeting skipjack (*Katsuwonus pelamis*). Small amounts (~15-17%) of juvenile yellowfin tuna (*Thunnus albacares*) are also caught in the fishery of which about 5-10% is bigeye tuna (*Thunnus obesus*). In the past bigeye tuna is not recorded separately in the domestic catches and so have been estimated from the Thunnus catches (Anderson 1996). The proportion of bigeye in pole-and-line catches were revised recently (Adam et al., 2014)

A second and still growing component of the tuna fishery is the multi-day handline fishery targeting surface dwelling large (>70 cm FL) yellowfin tuna (Adam and Jauharee, 2009). Handline fishing does not require specialised modifying of the vessel except for addition of the handline gear and having facilities for fresh-storage of this high-valued catch. Depending on the locale of operation and availability of ice, it is becoming quite common to conduct two types of fishing on the same trip.

The rapid growth and expansion of the handline yellowfin tuna fishery appears to be the reason for the declining effort trend of the pole-and-line component (Figure 4). Recent years have shown increase in catches of yellowfin to offset reduced catches of skipjack. Recorded catches in yellowfin tuna in 2013 were about 46,000 t, almost about the same level as 2012 whereas skipjack catches were 75,000 t in 2013 up by 40% compared with 2012 levels.

Two minor components of the tuna fishery are longline and trolling fisheries. Maldives used to have licensed foreign longline fleet operating in the outer EEZ (100 miles and beyond). During the height of the fishery some 30-40 vessels operated in the Maldivian waters and beyond. Reporting and monitoring of the foreign longline fishery was sub-optimal. Due to pressure from the pole-and-line fishermen, licensing for foreign fishing was finally brought to end in mid-2010. Until November 2011, there was no longline fishing in Maldivian waters. Maldivian vessel started operation during 2012 and is showing an increasing trend. Longline vessel is highly regulated with mandatory VMS and strict licensing and reporting catches of all bycatch varieties.

The trolling component targets coastal species of Kawakawa (*Euthynnus affinis*) and Frigate tuna (*Auxis thazard*) (Ahusan and Adam, 2011a, Ahusan and Adam, 2011b). Total catches are of the order 7,000 – 8000 t per year (Ahusan and Adam, 2012). Trolling vessels are normally ex- pole-and-line vessels relegated to trolling due to their small size.

Pole-and-line fishing is still restricted to coastal areas not extending more than 60-70 miles from the atoll boundary. Fishing effort is highest around the anchored fish aggregating devices (aFADs) located 12-15 miles range from the coast. Longline fishing is restricted to the outer EEZ - from 100 miles and beyond by law.

3. Fleet structure

The fishing fleet has undergone several changes following the mechanization beginning in 1973. The current fleet is a mix wooden hulled and fibre reinforced plastic (FRP) vessels. Vessels are characterized by having long and open-deck at the stern with a high-rise super structure forward of the vessel. Two rows of the FRP ice-boxes are commonly placed on the open deck of wooden vessels, a characteristic of handline fishing vessels targeting yellowfin tuna. It is also becoming popular to have inbuilt FRP boxes into the hull for keeping ice or slurry (RSW).

Pole-and-line and handline fishing is conducted from identical vessels and switching from handline to pole-and-line or vice versa is done at no extra cost. Vessels have multiple bait-wells for carrying live scads (Fam: Carangidae) for handline or regular bait for the pole-and-line fishing. The most important visible feature of the handline vessels are the large ice-boxes (0.5 –1.8 t capacity) placed on open fishing platform. Often they are placed in pairs on either side of the engine hatch (2, 4, or 6 numbers are common). Relatively large number of vessels are known to conduct both types of fishing on single trips lasting around 10-14 days (Adam and Jauharee, 2009).

Following the cessation EEZ longline foreign licensing in May 2010, the Ministry is working to introduce a Maldivian longline fleet. Nineteen Maldivian-owned longline fishing vessels have been licensed, since the scheme to develop a Maldivian longline fishing fleet was initiated in November 2011. However, these vessels did not start operation until May 2012. Furthermore, there was a growing interest by the locals to either convert large handline yellowfin tuna vessels or to bring in new vessels (purchased from foreign owners) for longline operation. To cater for this demand while promoting a sustainable and transparent approach the Government of the Maldives decided to implement a transparent quota based approach to management of this fishery. As such it was decided to adhere to the fleet development plan submitted by the Maldives to IOTC, and cap the total output of the fishery by introducing a quota system for Maldivian longline vessel.

The quota system increased the revenue from the fishery through licensing fees and also provided a competitive platform for the companies. At the moment, 19 vessels from 7 companies operate longline vessels in the Maldivian waters and high seas.

Table 1: Number of vessels operating in the IOTC area of competence, by type for last 4 years (2010-2013).

Year	Vessel type	Length Range							
		< 07.5	> 07.5 < 12.5	> 12.5 < 17.5	> 17.5 < 22.5	> 22.5 < 27.5	> 27.5 < 32.5	> 32.5 < 37.5	> 37.5
2010	Engine row boat	12	--	--	--	--	--	--	--
2010	Mechanized Mas dhoani	-	29	88	83	133	58	8	--
2010	Mechanized vadhu dhoani	6	4	--	--	--	--	--	--
2011	Engine row boat	11	--	--	--	--	--	--	--
2011	Longline vessel	--	--	2	--	2	--	--	--
2011	Mechanized Mas dhoani	--	35	123	125	203	81	10	--
2011	Mechanized vadhu dhoani	9	6	--	--	--	--	--	--
2012	Engine row boat	10	--	--	--	--	--	--	--
2012	Longline vessel	--	--	3	--	--	--	--	--
2012	Mechanized Mas dhoani	1	50	121	151	223	84	12	--
2012	Mechanized vadhu dhoani	3	6	--	--	--	--	--	--
2013	Engine row boat	4	--	--	--	--	--	--	--
2013	Longline vessel	--	1	5	2	--	--	--	7
2013	Mechanized Mas dhoani	--	23	117	141	224	68	11	--
2013	Mechanized vadhu dhoani	1	6	--	--	--	--	--	--

4. Catch and effort (by species and gear)

Reported national tuna landings in 2013 were 122,000 t. Of these over 62% was skipjack tuna and 38% was yellowfin tuna. A plot of location of catch is given in Figure 1. A small quantity of bigeye tuna is caught along with yellowfin component in the pole-and-line, estimated around 3-4% (Anderson, 1996). Analysis of recent tag release data has shown those estimates may 3 times more (Adam et al., 2014).

Total tuna catches reached an all-time high of over 167,000 t in 2006 but have been declining since except for the most recent year 2013. A reason for this decline in total catches is the sharp and continuing decrease of skipjack catch. Skipjack catches dropped from a record high of 138,000 in 2006 to 53,400 in 2103. By 2012 this is a drop of more than 60% decline (Figure 2).

Yellowfin tuna is the second most important species in the tuna fishery. Catches of yellowfin has increased dramatically over the years, thanks to rapid growth of the handline yellowfin fishery that targets surface dwelling schools of the large yellowfin (> 70 cm FL). Catches of yellowfin tuna were 46,000 t only slightly higher than recorded level in 2012. Close to 75% of the yellowfin catch is expected to be from the handline fishery targeted for export (Adam, 2009).

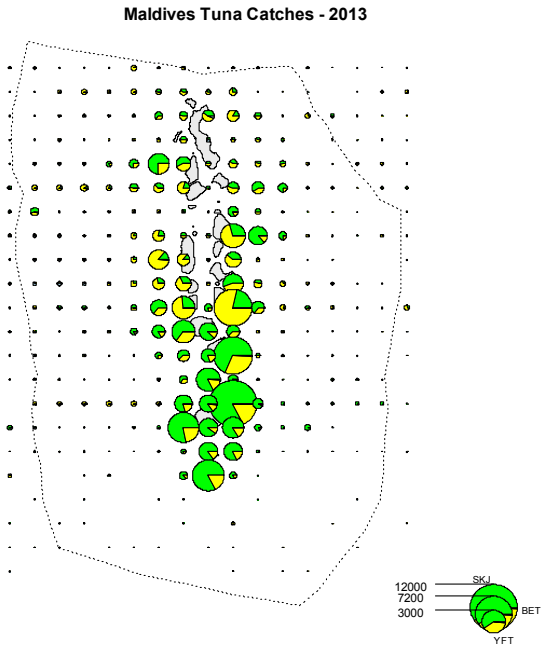

Figure 1: Location of catches of major tuna species by grid area for 2013.

The small-scale trolling fleet targets Kawakawa (*Euthynnus affinis*) and frigate tuna (*Auxis thazard*) in the coastal areas and atoll lagoons. The main trolling fleet effectively died in the late 1980s due to improved socio-economic changes. These days catch of kawakawa and frigate is mainly from pole and vessels (Ahusan and Adam, 2011a and b). Total catches of these two species ranged about 5,000 – 6,000t per annum.

Longline fleet used to be foreign-owned and operated in the EEZ, beyond 100 miles under licensed and joint venture arrangements. Licensing scheme for foreign vessels was scrapped in March 2010. However, in 2011 Maldives has re-started a longline fishery exclusively for Maldivian-owned vessels. At the time of the writing 19 vessels have been licensed to fish outside 100 miles and beyond. Catch by species by gear and effort trends is shown in Table 2, Figure 2 and Figure 3.

Fishing effort is measured in number of fishing days. This was the most natural and easiest since fishing takes place on day-trips leaving early in the morning and returning by evening. In the past, the uniform fleet structure and use of essentially pole-and-line method for most of the tuna catches makes the choice for unit of effort satisfactory. However, with increasing efficiency of vessels (size, engine horse power, fish hold and bait capacity, and operational factors) the day of fishing should be standardized to use the CPUE data (Kolody et al., 2011; Sharma et al., 2013, Sharma et al. 2014). Total recorded days of fishing have been declining largely due to increase size of vessels combined with declining overall tuna catches. Reduction in days fishing in most prominent in pole and line component while effort shows slight increase in handline fishery (Table 2).

Table 2. Annual catch (MT) and their effort by gear (days fished) in IOTC area of competence for the 2009-2013.

Year	Gear	SKJ	YFT	KAW	FRG	Effort(days)
2009	HL	666	3,523	516	294	28,892
2009	LL	2	1,090	1	0	9,174
2009	PL	65,018	15,279	2,099	4,740	124,466
2009	TR	381	676	426	160	39,006
2010	HL	1,322	9,003	12	16	20,178
2010	LL	-	-	-	-	-
2010	PL	71,585	11,679	2,756	2,902	114,217
2010	TR	814	1,153	438	206	30,640
2011	HL	4,870	24,518	406	228	44,709
2011	LL	-	1	2	1	47
2011	PL	52,489	9,650	1,816	1,344	84,832
2011	TR	313	1,406	197	123	19,935
2012	HL	1,981	32,969	376	309	51,875
2012	LL	-	113	-	-	42
2012	PL	51,134	10,896	1,012	481	79,005
2012	TR	276	999	97	31	16,334
2013	HL	1,584	26,085	179	70	43,196
2013	LL	0	239	-	-	1,501
2013	PL	72,583	18,878	760	478	63,247
2013	TR	255	387	66	18	12,300

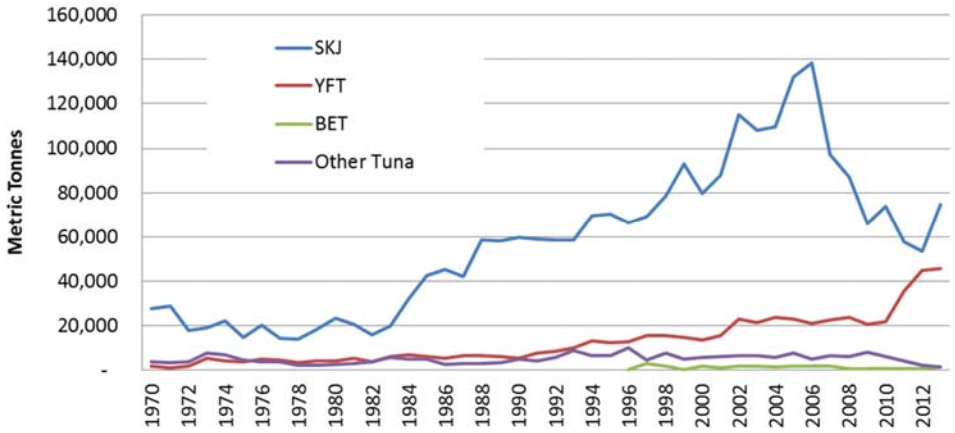

Figure 2: Historical annual catch for the national fleet by species (1970-2013)

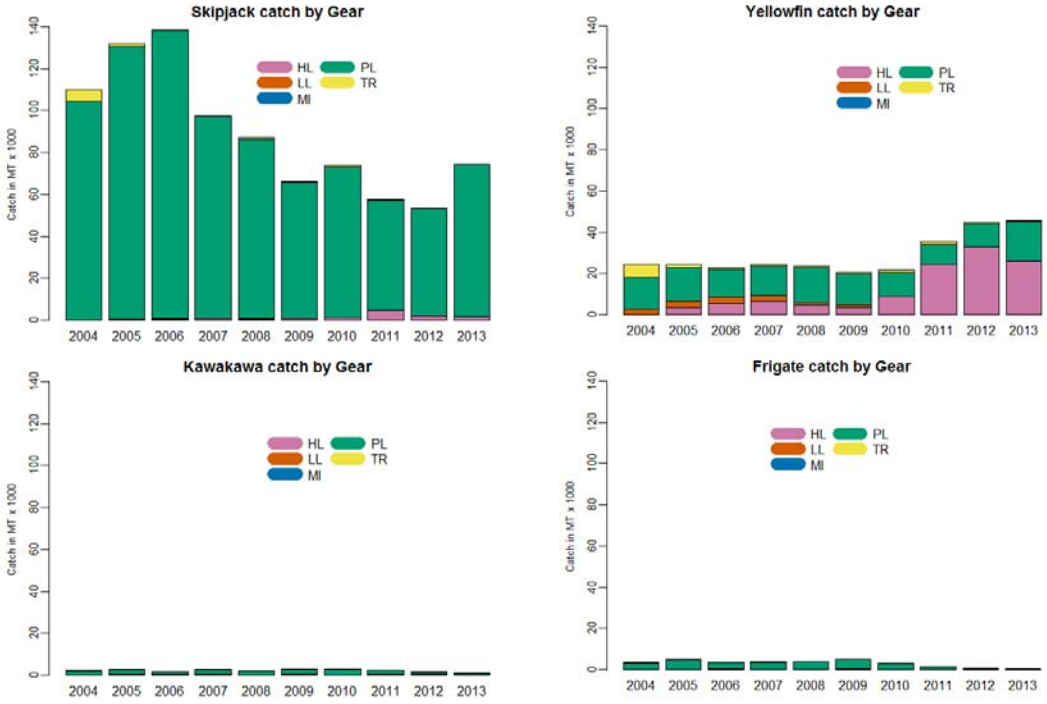

Figure 3: Catch trends by gear for each species for the last 10 years (2004-2013)

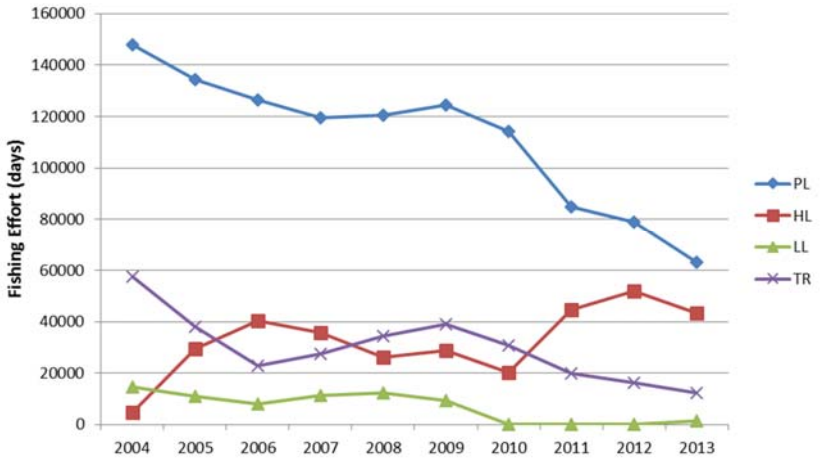

Figure 4: Trends in fishing effort by gear type for the last ten years (2004-2013).

5. Recreational fishery

Big game fishing is popular among the tourists and it is now common practice to have an outfit in almost every resort. Common target species are sail fish (Makaira spp.) and dolphin fish (*Coryphaena hippurus*), but also large yellowfin and skipjack tuna. Dogtooth tuna (*Gymosarda unicolor*) are often caught on the troll lines operated off the outer atoll reef. Casting using poppers, rod and reel is also popular big game fishing activity targeting mainly large jacks off the reef and seamounts. Tourist resorts have separate fishery landings forms and it is expected that their catch are recorded in the national fishery statistics. Some resorts are reporting their monthly landings from the recreational fishery to MRC.

There are no institutionalized mechanisms for recording catch. Unlike in other countries, Maldives does not have fishing clubs where recreational fisheries are data recorded

Reef fishing logbooks have been recently introduced and being enforced slowly. This arrangement is expected to improve the landings of billfishes in the Maldives (Para 79 and 80, IOTC–2012–SC15–R[E], 2012)

6. Ecosystem and bycatch issues

Maldives has a highly selective form of fishing with almost zero by-catch and no discards. The pole-and-line method alone contributes more than 70% of the total tuna landings. Similarly handline and trolling fishing methods are also highly selective with no bycatch and discards. Currently less than 1% of tuna is caught from longline which contributes catches of non-target, associated and dependent species (such as sharks etc.).

Maldives imposed a 10 year moratorium on catching or harming of turtles in 1995. The moratorium was renewed in 2005 extending further 10 years with ban on egg-harvesting. Maldives is also a signatory for the IOSEA MoU singed on April 2010.

Livebait is critical for the tuna pole-and-line fishery and considered as retained species. The species exploited by tuna fleet are characterized by short generation times and high intrinsic rates of population growth. These are species that are not easily overexploited. Maldives has recently intensified monitoring of this fishery and are in the process of developing a livebait fishery management plan.

6.1. Sharks

Shark fishing is banned in Maldives waters including the EEZ. The ban is effective from March of 2010. However, with the introduction of longline fishing from 100nm and beyond into high seas, there is a possibility of shark by-catch in the fishery. Provisions are in placed in "Regulation on Fishing and Export of Large Yellowfin Tuna" to minimise the by-catch of sharks in adherence to IOTC Resolution 05/05 and the more recent one 12/09. The Regulation requires shark bycatch to be reported, released if alive, and landed intact to be destroyed if it is dead. Currently 19 [ARJ1]longline vessels are in operation in Maldivian EEZ. Detailed records of shark bycatch from longline for 2013 have been reported to IOTC.

NPOA-Sharks: Maldives' National Plan of Action on the Conservation and Management of Sharks (NPOA-Sharks) has been formulated and presented to the stakeholders on April 2014. NPOA-Sharks is in the final process of endorsement within the Ministry of Fisheries and Agriculture. With the aim to ensure the implementation and observation of the total shark fishery ban, the NPOA-Sharks addresses six key areas; mitigation of impact of shark fishery ban, improvement of data collection and handling of shark by-catch, improve research on shark stocks, raise awareness on life-history characteristics of sharks, improve coordination, consultation and monitoring of shark ban and cooperate on international agreements pertaining to sharks and with relevant tRFMOs on research and management of shark species.

Shark bycatch in tuna longline fishery: The shark fishery ban prohibits usage of any shark species caught from the EEZ of the Maldives. The "Regulation on Fishing and Export of Large Yellowfin Tuna" has provisions to retain the dead shark by-catch for subsequent confiscation. However, as the Maldives do not yet have any observer coverage, the dead shark by-catch from the longline fleet operating in the Maldives' EEZ is discarded to the sea. Logbooks for tuna longline fishery currently record the shark-bycatch as species-complexes; mako sharks, thresher sharks, hammerhead sharks, oceanic white tip shark and other sharks. An analysis of shark by-catch by species-complexes caught in the longline fishery in 2013 was presented at the IOTC WPEB of 2014.

6.2. Seabirds

The interaction with seabirds is minimal in handline, pole-and-line, trolling fisheries and longline fisheries. New logbook data collection system allows the fisherman to report such interaction and currently there is none reported. "Regulation on Fishing and Export of Large Yellowfin Tuna" mandates longline fishing vessels to implement at least one seabird mitigation measure to reduce by-catch of seabirds. These measures are in adherence to IOTC Resolution nos: 10/06 and the new 12/06.

6.3. Marine Turtles

Maldives is signatory to the Indian Ocean – Southeast Asian (IOSEA) Marine Turtle Memorandum of Understanding. A second 10-year Turtle Moratorium is in force from 2006-2016 that includes banning of hunting, taking, or harming turtles, including harvesting of eggs from 14 islands known for turtle nesting. Regulation on Fishing and Export of Large Yellowfin Tuna describes turtle mitigation measures during longline fishing operations, including release of live turtles and having de-hookers and line cutters on vessels. Maldives is now collaborating with the Bay of Bengal Large Marine Ecosystem Project (BoBLME) to raise awareness on the issue of derelict fishing gear on marine turtles in the central Indian Ocean. A paper studying the impacts of derelict fishing gear on turtles particularly Oliveridley turtles (*Lepidochelys olivacea*) has been presented by the Maldives at the IOTC WPEB of 2014.

6.4. Other ecologically related species

Whale sharks and dolphins are protected under fisheries regulation. Even though handline fishermen target yellowfin tuna from dolphin associated schools, the interaction is minimal and there has been no reported dolphin catches or interactions.

Table 2: 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.

	Seabirds	Marine Turtles	Marine Mammals
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	NA	0	0

7. National data collection and processing systems

Data collection and reporting system of Maldives was based on total enumeration of the catch requiring conversion factors for estimating weight of the catch. Vessels report catch by species and effort data (number of days fished) to it respective island council offices where the vessels are registered. There the data are aggregated by vessel by month providing catch by species in number along with the number of day fished.

Complication on separating catch by gear occurred due to the prominence attached to vessel type rather than gear (Adam et al. 2012). For historical reasons it is assumed the 'pole-and-line vessels' would always use pole-and-line gear and so the vessel type is assigned to presumed gear type in the monthly aggregated forms.

7.1. Logbook data collection and verification

The enumerated system of reporting continued until 2013. The system was slowly replaced by a logbook system staring from 2010. Logbooks went a second revision in 2012 and the new logbooks were introduced in January 2013. Following successful establishment of logbooks system tradition system of

enumerated reporting is now formally stopped. The logbook data has allowed Maldives to report data by the required 1 x 1 degree resolution helping to comply with data reporting requirements.

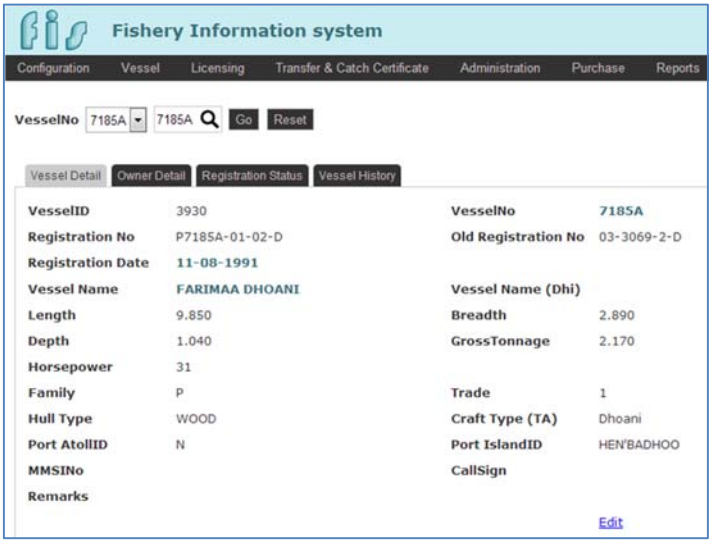

Figure 5: Screen capture of new Fishery Information System (FIS) showing Vessel Module

A web-enabled fishery information system is being developed to further improve the current database and will go online by the end of the year (Figure 5). The system will allow integrating vessel registry, fishing licenses, fish purchase (by the commercial companies) and logbook data to provide a comprehensive system of compilation and reporting.

Logbook data verification may only be done through an observer system. The preparatory work to start an observer programme system has been completed. Funding is required for training and deployment of observers.

7.2. Vessel Monitoring System

Maldives now has successfully established a VMS system. At the time of this writing there are 50 vessels equipped with VLDs and further 238 vessels have applied to install VLDs, which are monitored round the clock (Figure 6). Under the current regulations all fishing vessels applying for a new license or a renewal should have a VLD installed on board as of 1 June 2014. However, for the ease of process licenses are renewed or issued based on the request to install VLDs as there is a delay in installing VLDs due to logistics issues in travelling to island but Ministry expects all licensed fishing vessels to be equipped with VLDs by the June of 2015.

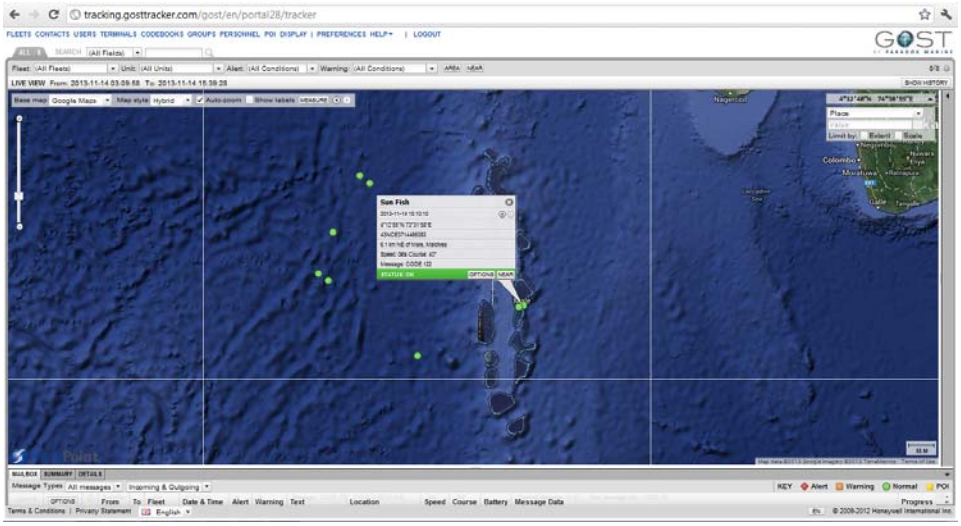

Figure 6: Screen capture of the Maldives VMS System. Currently 15 longline vessels have VLDs, monitored round the clock by the Fishery Management Division, of the Ministry of Fisheries and Agriculture

7.3. Observer Programme

Ground work to initiate an observer programme has been completed as of 2012, but due to budgetary constraints an observer programme has not been implemented thus far. Accommodating observers on the board vessel have been made mandatory in the longline fishing license agreements. It is expected some level of funding will be available in 2015 to start this programmes

7.4. Port sampling programme

A port-sampling programme is not in place yet. It should be noted that under the implementation of EU – IUU fresh fish collectors (fish buyers) are required to record the details of catch and report to the Ministry which is being used as part of the issuing of catch certificate and to corroborate with the fishermen reported logbooks. A review of the fishermen-field officer size sampling programme was undertaken recently and recruits are being made in the main fish collection areas for size sampling at the ports, in addition to fishermen samplers. Table 3 provides a summary of size measurements taken for the year 2013.

Table 3: Number of individuals measured, by species by gear for 2013

Gear	SKJ	YFT	BET	KAW	FRI	Total
PL	25,232	6,366	2,708	234	62	34,602
HL	0	3,826	0	0	0	3,826
Total	25,232	10,192	2,708	234	62	38,428

7.5. Unloading/Transhipment

This section is not applicable to Maldives as at-sea transhipments are banned in Maldivian waters and Maldivian-flagged vessels do not tranship at sea in the IOTC Convention Area.

8. National research programs

Table 4 provides a summary of the major research program currently being done. They are primarily geared towards improving national reporting and compliance to IOTC. A continuing work still has been the development of a Fishery Information System (FIS) – an integrated web-enabled database system that allows maintaining records and tracking of fishing vessel registries, their fishing licenses and help to

compile the various logbooks (HL, PL and LL). The system would also allow produce summaries that would facilitate reporting data to IOTC.

A new programme started in September 2014 is the bycatch sampling programme. The objective of the programme is take part on regular fishing trips to observe and measure the total catch, including species composition of tuna catch. A sampling protocol has been established for observations, sampling, and recording on database of both the catch and bycatch including the livebait fishery, valid to meet IOTC observer criteria. Efforts will be concentrated in the south, including L. Maandhoo, Ga. Thinadhoo and GDh Kooddoo (Villingilli). Options will also be explored to conduct fishing trips from the Malé as well as from Lh. Felivaru.

Table 4: Summary table for national research programs.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
Development of Fishery Information System (FIS) web-enabled database	2012-2016	Local	US$ 81,000	International NGOs	To develop an integrated database to enter and compile fishery information	The database is constructed modular. At the heart of the database is the Vessel Registry information, linked to Vessel Licenses, logbook data, fish purchase data. The database will also allow issuing fishing licenses and catch certificates required for export to EU
Development of SKJ Harvest Control Rules	2013-2015	Local	US$ 75,000	Int'l NGOs and local industry	To improve SKJ reference points, and develop harvest control rules through Management Strategy Evaluations	A consultant is hired to develop SKJ MSE work in collaboration with the IOTC Secretariat and WPM Group (see Adam et al. 2013, Nokome and Adam, 2014)
Bycatch sampling Programme	2014/205 (Initially)	Maldives	US$ 25,000	IPNLF	To observe and sample bycatch in pole-and-line fishery	Observers take part on regular fishing trips to observe and measure the total catch, including species composition of tuna catch. A sampling protocol has been established for observations, sampling, and recording on database of both the catch and bycatch including the livebait fishery, valid to meet IOTC observer criteria.

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

The table below summarises the progress Maldives has made to recommendations of the Scientific Committee and Specific Resolutions relevant to the work of the Scientific Committee.

Table 5: Summary response on the progress made to recommendation of the SC and specific Resolutions relevant to the work of the Scientific Committee.

Res. No.	Resolution	Scientific requirement	CPC progress
13/03	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–11	Logbook data collection system has been established in 2010; logbooks revised in 2013 based on the new requirements of Res 13/03. Each fishing vessel should have a logbook on board to record catch and effort and reporting of catch and effort data is mandatory. For the first time, in 2013 Maldives reported the catch and effort data by IOTC requirements of 1x1 geographic gird. A new web-enabled database to compile the data in new format will be complete and operational by December 2014
13/04	On the conservation of cetaceans	Paragraphs 7– 9	The logbooks have fields to record cetaceans. The bycatch observer programme is keeping track of interactions. There are plans to produce a report after the first year of completion the observer programme that should provide summary of such interactions.
13/05	On the conservation of whale sharks (*Rhincodon typus*	Paragraphs 7– 9	Whale sharks are protected in the Maldives. None of fisheries of the Maldives are known to harm the whale sharks. Maldivian flagged vessels only recently started fishing on high seas. These vessels are only longline vessels and are unlikely to encounter any interaction that is worthy of reporting for fishery purpose. The logbooks do have a field for recording such unusual encounters if any.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraphs 5-6	The regulation relating to longline fishery requires that sharks caught on their lines should be released live if possible at all. Records of these releases are recorded. Under the recently formulated shark NPOA, review and analysis of longline bycatch is given a priority. LL shark bycatch data form 2013 have been provided to IOTC
12/09	On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4-8	Sharks are banned from EEZ. Regulation on Fishing and Export of Large Yellowfin Tuna in several instances refers to recording of the sharks and landing their carcases for inspection. . Regular inspection will be conducted when the observer programme is initiated in 2014.
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 4-8	The Appendix 2 of "Regulation on Fishing and Export of Large Yellowfin Tuna" gives 6 ways to mitigate the bycatch of seabirds as per the relevant IOTC resolutions. Implementation of one of these mitigation measures is mandatory.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Maldives is signatory to the Indian Ocean – Southeast Asian (IOSEA) Marine Turtle Memorandum of Understanding. A second 10-year Turtle Moratorium is in force from 2008-2018 that includes banning of hunting, taking, or harming turtles, including harvesting of eggs. Regulation on Fishing and Export of Large Yellowfin Tuna, in Appendix 3, describes turtle mitigation measures during longline fishing operations, including release of live turtles having de-hookers and line cutters on vessels as per the relevant IOTC resolutions.
11/04	On a regional observer scheme	Paragraphs 9	Maldives has developed an observer manual in 2012. Budget allocation request has been made to initiate observer programme in 2015.
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting parties	Paragraphs 1–7	Maldives has been regularly providing catch and effort data for the stock assessment work of the working party meetings. Maldives have submitted the 2013 catch and effort data on June 30, 2014. Longline data was submitted to

Res. No.	Resolution	Scientific requirement	CPC progress
			IOTC 28/8/2014
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	Sharks are banned from the Maldives waters (the entire EEZ). The ban is effective from May 2010. The only fishery likely to catch shark would be longline fishery. Currently there are fourteen active longline vessels (targeting BET/YFT) operating between 100nm to 200nm of Maldives EEZ. The Regulation on Fishing and Export of Large Yellowfin Tuna requires shark by-catch to be reported and landed intact to be destroyed.

10.Literature Cited

Adam, M.S and A.R Jauharee (2009).Handline yellowfin tuna fishery of the Maldives. Working paper submitted to WPTT 2009, Mombasa, Kenya, 14pp.

Adam, M.S, H. Sinan, S. Rasheed and R. Abdulla (2012). Notes on Presence of 'Other Marine Fish' in the Maldives Pole-and-line catch. Information paper presented at the Working Party on Tropical Tunas, Mauritius,24-29 October 2012. [IOTC-2012-WPTT14-INF04], 15 pages.

Adam, M.S, J. Milllion, A. R. Jauharee and M. Ahusan (2012, presentation only). Exploratory Analysis of Maldives Tagging Data Releases during RTTP, 2004-2009. Presented at the Indian Ocean Tuna Tagging Symposium, Mauritius, 30 Oct- 02 November 2012.

Adam, M.S, R. Sharma, N. Bentley (2013) Progress and arrangements for Management Strategy Evaluation of Indian Ocean Skipjack tuna. Paper submitted to the 15th Working Party of Tropical Tuna, 23-28 October, San Sebastian, IOTC-2013-WPTT15-33, 11 pages.

Adam, M.S. A.R. Jauharee, and M. Ahusan (2014). Notes on Yellowfin/Bigeye Tuna Ratio and Size Distribution in the Maldivian Tuna Fishery. Paper submitted to WPPT16, IOTC–2014–WPTT16–26, 11 pages.

Adam, M.S., H. Sinan, S. Rasheed, R. Abdulla (2012). Notes of the presence of 'Other Marine Fish' in the Maldives Pole-and-line catch. Paper submitted to 14th Session of the Working Party on Tropical Tuna, Mauritius, 24-29 October 2012, IOTC-2012-WPTT14-INF04, 13 pages.

Ahusan, M &M. S. Adam (2011a).Kawakawa (*Euthynnus affinis*) fishery in Maldives. Paper presented at the WPNT 2011, Chennai, India 10 pages

Ahusan, M &M. S. Adam. (2011b). Frigate tuna (*Auxisthazard*) fishery in Maldives. Paper presented at the WPNT 2011, Chennai 10 pages

Ali, K, H. Sinan. 2014. Shark ban in its infancy: Successes, Challenges and Lessons Learned, Journal of Marine Biological Association of India in the Special Edition Volume 56; Issue: 1

Ali, K. 2014. Status of the Shark Fishery Ban in the Maldives and the Implementation of the National Plan of Action on Sharks. Marine Research Centre, Ministry of Fisheries and Agriculture, Malé, Maldives. Paper no. 16 presented at the tenth session on Indian Ocean Tuna Commission Working Party on Ecosystem and Bycatch, Japan, 27-31st October 2014, pp. 8

Bentley, N and M. S Adam (2014). Management Strategy Evaluations for Indian Ocean Skipjack Tuna: First Step; Working paper submitted to WPTT16, Bali, Indonesia. IOTC-2014-WPTT16-39, 40 pages.

Sharma, R, Geehan, and M. S. Adam (2014). Maldives skipjack pole and line fishery catch rate standardization 2004–2012: Reconstructing historic CPUE until 1985. Working Paper submitted to WOPTT16, Bali, Indonesia, IOTC-2014-WPTT16-42, 33 pages.

Sharma, R. and M. Herrera (2014). Indian Ocean Skipjack Tuna Stock Assessment 1950- 2013 (Stock Synthesis), Working Paper submitted to WOPTT16, Bali, Indonesia. IOTC–2014–WPTT16–43 Rev_2, 74 pages.

Stelfox, M.R., J.A. Hudgins, K, Ali, R.C. Anderson,. 2014. High mortality of Olive Ridley Turtles (Lepidochelys olivacea) in ghost nets in the central Indian Ocean. Marine Research Centre, Ministry of Fisheries and Agriculture, Malé, Maldives. Paper no.28 presented at the tenth session on Indian Ocean Tuna Commission Working Party on Ecosystem and Bycatch, Japan, 27-31st October 2014, pp. 28

++++++