



**Government of the Republic of Maldives**

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Ministry of Fisheries and Ocean Resources  
Velaanaage, 7<sup>th</sup> Floor, Ameer Ahmed Magu  
Malé – 20096, Republic of Maldives

**Maldives National Report  
to the Scientific Committee of the Indian Ocean Tuna  
Commission, 2024**

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# Maldives National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2024

Mohamed Shimal<sup>1</sup>, Mariyam Shama<sup>1</sup>, Maleeha Haleem<sup>2</sup>, Munshidha Ibrahim<sup>2</sup>, Hawwa Raufath Nizar<sup>2</sup>

<sup>1</sup> Maldives Marine Research Institute, Ministry of Fisheries and Ocean Resources, Malé, Maldives

<sup>2</sup> Ministry of Fisheries and Ocean Resources, Malé, Maldives

## INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year were provided to the IOTC Secretariat by 30 June of the current year, <b>for all fleets other than longline</b> [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 June 2024)</p>	<p>YES</p> <p>30/06/2024</p>
<p>In accordance with IOTC Resolution 15/02, provisional <b>longline data</b> 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 2024, preliminary data for the 2023 calendar year were provided to the IOTC Secretariat by 30 June 2024).</p> <p><b>REMINDER:</b> Final longline data for the previous year are due to the IOTC Secretariat by 30 Dec of the current year [e.g., for a National Report submitted to the IOTC Secretariat in 2024, final data for the 2023 calendar year must be provided to the Secretariat by 30 December 2024).</p>	<p>NA,</p> <p>Maldives did not have longline fishing 2023</p>
<p>If no, please indicate the reason(s) and intended actions:</p>	

## Executive Summary

Tuna fishery is a significant source of employment and income for a substantial proportion of the whole population of Maldives. The two primary gears used in the fishery are pole-and-line and handline, with the main target species being skipjack (*Katsuwonus pelamis*) and yellowfin (*Thunnus albacares*), respectively. The total tuna landings (skipjack, yellowfin, bigeye, frigate and kawakawa) in 2023 were 160,485 t while skipjack and yellowfin tuna contributed to 81% and 19% to this total catch, respectively. Pole-and-line gear has been the most common gear for catching skipjack tuna (99% of the catch), a pattern that has persisted over the last five years (2019-2023). Yellowfin tuna are mainly caught from Handline gear, contributing about 64% of catch in 2023. The tuna fleet consists of 650 vessels, the most of which are in the 12.5 to 32.5 m length range. Since 1970, Maldives has been collecting species-level data with vessel-specific catch and effort data has become available from 1995. Logbooks were introduced to the Maldivian fishery in 2010 by the Ministry of Fishery and a web-enabled fishery information system, “*Keyolhu*” is now fully functional. Fishery and catch data are also collected through other tools such as Vessel Monitoring System (VMS) and Electronic Monitoring Systems (EMS).

## Table of contents

Executive Summary .....	2
1. Background / General Fishery Information.....	4
2. Fleet Structure .....	5
3. Catch and effort (by species and fishery).....	6
4. Recreational fishery.....	13
5. Ecosystem and bycatch issues.....	13
5.1 Sharks .....	13
5.1.1 NPOA Sharks.....	13
5.1.2 Shark finning Regulation .....	13
5.1.3 Blue shark .....	14
5.2 Seabirds .....	14
5.3 Marine Turtles .....	14
5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks).....	14
6. National data collection and processing systems .....	14
6.1 Logsheet data collection and verification .....	14
6.2 Vessel Monitoring System.....	15
6.3 Observer scheme .....	15
6.4 Port sampling programme .....	16
6.5 Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish.....	17
6.6 Gillnet observer coverage and monitoring .....	17
6.7 Sampling plans for mobulid rays.....	17
7. National research programs .....	17
7.1 National research programs on blue shark.....	17
7.2 National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish .....	18
7.3 National research programs on sharks.....	18
7.4 National research programs on oceanic whitetip sharks.....	18
7.5 National research programs on marine turtles .....	18
7.6 National research programs on thresher sharks .....	18
8. Implementation of SC Recommendations and Resolutions of the IOTC relevant to the SC.....	19
9. Literature cited .....	22

## 1. Background / General Fishery Information

Maldives is a tuna fishing nation with a history dating back hundreds of years. Tuna fishery was the mainstay of the Maldivian economy, providing employment and income, until the establishment of the tourism industry. Tuna fishery is still the most important source of employment and income for a substantial proportion of the population. Tuna is the primary source of protein for Maldivians and continues to be the single most important export commodity, earning a significant portion of foreign income from fishery exports.

The Maldives enacted a new fisheries act (14/2019) on 15th September 2019. This Act supersedes the Fisheries Act of 1987 (5/87). The Act is structured as a framework law, covering various multidisciplinary aspects of the sector and serving as the legislative backbone, while leaving more detailed codification to the regulations and management plans developed pursuant to the Act. The Act requires development and implementation of management plans for all commercial fisheries, including those for tunas and tuna-like species. The Act applies to all Maldivian fishing vessels, as well as foreign fishing and fishing-related vessels entering the maritime zones of the Maldives. It also covers vessels flagged to the Maldives operating beyond the maritime zones, if applicable. Additionally, the Act pertains to all fishing and fishing-related activities of such vessels, including those involving Maldivian and foreign nationals on board.

The tuna fishing fleets of the Maldives operate exclusively within the EEZ of the Maldives. However, operations of the longline fleet were not restricted and operated on the high seas until its suspension in 2019.

The most important component of the Maldivian tuna fishery is the pole-and-line fishery. The fishery targets, in order of importance, skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*), frigate tuna (*Auxis thazard*), and kawakawa (*Euthynnus affinis*). While the majority of trips are restricted to coastal areas, within about 100 miles from shore, modern vessels have the capacity to venture further. To assist the fishers, the Maldives government maintains a network of 88 Anchored Fish Aggregating Devices (AFADs) located approximately 12-20 miles from the coast. Some of these AFADs are deployed for sports fishermen for fishing reef and other associated species. The majority of these AFADs are restricted to the pole-and-line fleet. The AFADs are deployed and maintained exclusively by the government of the Maldives. Pole and line fishing trips generally last 1-2 days, however, with the advancement of the vessels and ability to stay at sea longer, fishing trips have mostly become multi-day operations, especially during times of low bait and tuna fishing.

The multi-day handline fishery for yellowfin tuna (>70 cm FL) is a significant part of the tuna fishery, primarily targeting yellowfin tuna from the surface waters (<10m deep) (Adam and Jauharee, 2009, Adam et al., 2015, Ahusan et al., 2016). The export oriented commercial fishery emerged in the late 1990s or early 2000s, building on seasonal fisheries that had previously targeted large yellowfin tuna in various regions of the country (refer to MRS, 1996). Handline fishing requires minimal modifications to pole-and-line vessels, mainly the addition of handline gear and facilities for fresh-storage of catch. The fishery has been boosted by the ease of operation, the ready availability of ice and the high market price for yellowfin tuna. The troll fishery is the smallest component of the tuna fisheries and targets neritic species of kawakawa and frigate tuna. The importance of the fleet, which landed substantial proportions of these species in the past, has significantly declined due to the mechanization of the fishing fleet during 1970s and 80s. Trolling activity peaked during the transition period of mechanizing of pole-and-line fleet (1975-1982) (Anderson et al., 1996). More recently, troll activity appears to have increased due to the widespread availability of small crafts, popularity of recreational fishing and availability of markets for the catch. However, it is believed that these operations mostly target non-

tuna species such as Indo-pacific Sailfish (*Istiophorus platypterus*), wahoo (*Acanthocybium solandri*) and other large pelagic species.

## 2. Fleet Structure

The fishing fleet in the Maldives have evolved significantly since the mechanization of the vessels that began in 1974. Currently, it features a blend of wooden-hulled and fibre-reinforced plastic (FRP) vessels. These vessels typically have long, open decks at the stern and a high-rise superstructure at the front. Most Maldivian tuna fishing vessels range from 12.5 to 32.5 meters. Unlike earlier models, modern vessels can accommodate up to 30 crew members and can operate at sea for several days or weeks. However, the duration of trips is primarily constrained by the amount of live-bait, vital for tuna fishing operations, that can be held onboard the vessels. Typically, pole-and-line fishing trips last from a single day up to a week, while handline trips tend to extend from 10 to 15 days, depending on the catch and bait availability (Adam, Jauharee and Miller, 2015).

Historically, Maldivian tuna vessels were gear specific. Pole-and-line fishery was conducted on mechanized tuna vessels (*masdhoni*) while troll fishing was conducted from smaller versions of the pole-and-line tuna vessels, locally called a *vadhu dhoni*. The introduction of the handline yellowfin tuna fishery allowed mechanized tuna vessels to adapt with minor modifications and minimal additional costs. In majority of cases, these mechanized tuna vessels are used exclusively for pole-and-line or handline operations. Occasionally, vessels may switch between pole-and-line and handline operations during high abundance of catch. However, this is not common practice as both fisheries require different types and sizes of bait.

**Table 1:** Number of vessels operating in the IOTC area of competence, by gear type and size class (2013-2023)

Year	Vessel type	Length Range (LoA, meters)							
		< 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
2013	Engine row boat	4	--	--	--	--	--	--	--
2013	Longline vessel	--	1	5	2	--	--	--	7
2013	Mechanized masdhoni	--	23	117	141	224	68	11	--
2013	Mechanized vadhu dhoani	1	6	--	--	--	--	--	--
2014	Engine row boat	2	2	1	1	1	3	--	--
2014	Longline vessel	7	34	10	9	2	--	--	9
2014	Mechanized masdhoni	--	--	132	163	277	94	12	--
2014	Mechanized vadhu dhoani	1	2	1	2	--	--	--	--
2015	Mechanized masdhoni	11	50	161	182	302	108	14	1
2015	Longline vessels	-	-	9	17	2	-	-	-
2016	Mechanized masdhoni	9	43	116	155	273	93	16	-
2016	Longline vessel	-	-	14	21	3	-	-	4
2017	Mechanized masdhoni	-	66	140	170	320	104	17	1
2017	Longline vessel	-	1	13	23	3	-	-	4
2018	Mechanized masdhoni	11	38	94	134	297	95	19	-
2018	Longline vessel	-	-	6	20	1	-	-	-
2019	Mechanised masdhoni	14	47	132	155	320	102	20	-
2019	Longline vessel	-	-	6	21	1	-	-	-
2020	Mechanised masdhoni	11	47	134	152	322	107	21	-
2021	Mechanised masdhoni	12	50	124	150	314	108	22	1
2022	Mechanised masdhoni	10	39	99	143	315	107	22	1
2023	Mechanised masdhoni	5	27	84	119	286	107	22	-

### 3. Catch and effort (by species and fishery)

Total tuna landings (skipjack, yellowfin, bigeye, frigate and kawakawa) in 2023 were 160,485 t by all gears. Tuna catches reached an all-time high of about 167,000 t in 2006 (Figures 1A). Catches then declined by 53% by 2010 (101,800 t). Total tuna catches have since recovered from this decline and have remained somewhat stable in the recent years with higher catches in 2023. In terms of species, skipjack and yellowfin tuna are the two most important species in the Maldives tuna fisheries, contributing 81% and 19% to the total catch, respectively, in 2023. The average catch of skipjack tuna in the recent five years (2019-2023) has been around 113,430 t, increasing by 31% from 89,041.46 to 129,201 t. The average catch of yellowfin tuna in the same period has been 34,162 t with a 31% decrease from 44,700.21 t in 2019 to 30,775.56 t in 2023. The average catch of bigeye tuna was 290 t in the past five years.

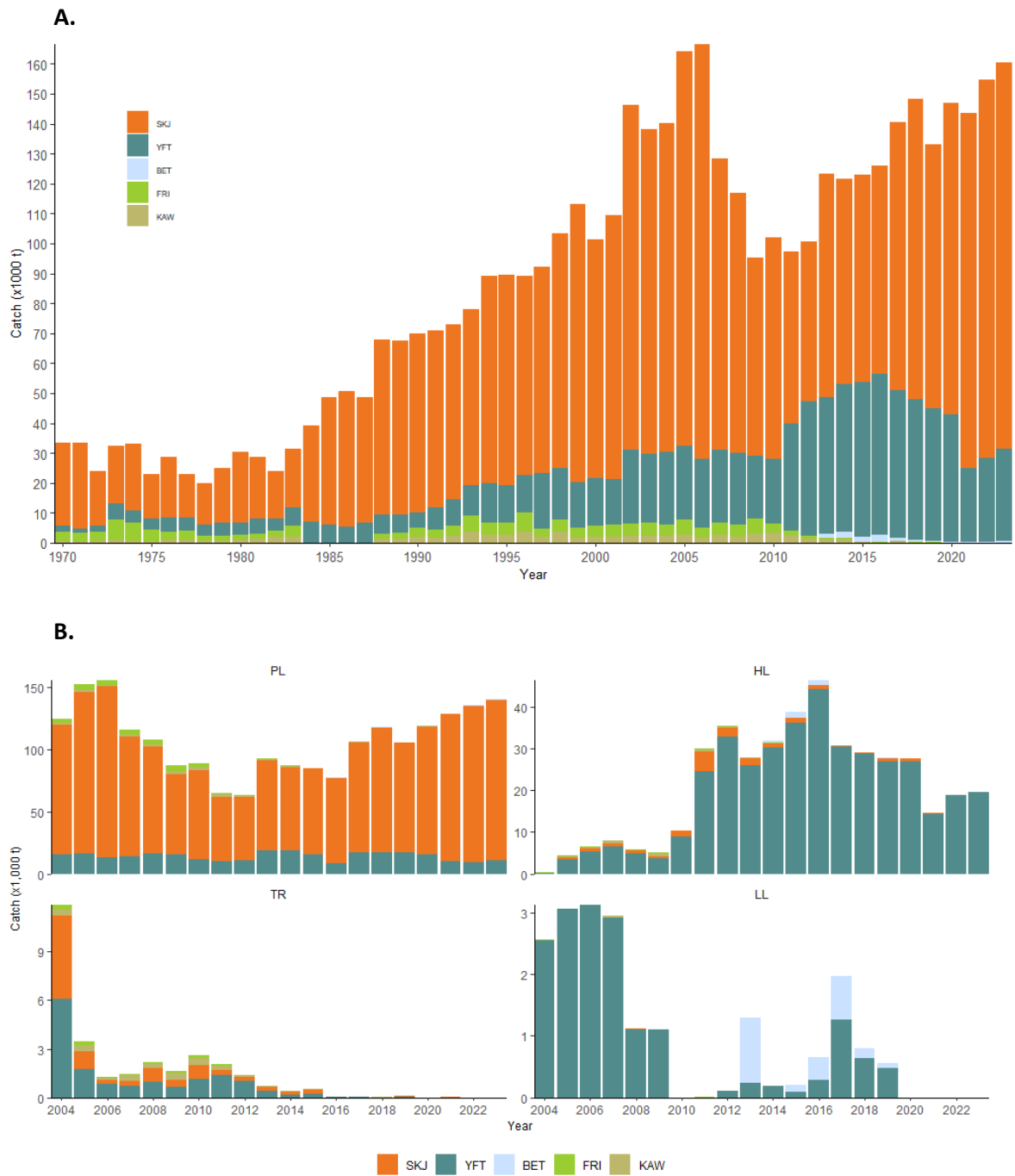
Pole and line gear contributed 99% of skipjack tuna (129,024 t) landed in 2023, which is the same trend observed over the past five years (2019-2023). Pole-and-line also contributes 37% of the yellowfin tuna (11,235 t) landed in 2023. Neritic tunas (frigate and kawakawa) used to be a reasonable component in the pole and line catches in the past. However, as neritic tunas are of little value and not purchased by the large processors, targeting neritic tunas by the PL fleet is uncommon. However, PL remains the main gear for frigate and kawakawa, with almost all being landed by the PL gear. Handline is the most important gear for yellowfin tuna in the Maldives, with 63% of yellowfin tuna being landed by the handline fishery.

Both pole-and-line and handline fisheries operate quite close to the atolls, although there is a difference in the predominant fishing regions of the two fisheries. Most of the pole-and-line catch is taken from the south of the country while the handline catch is mainly taken from the north and central atolls. The small-scale trolling operates in the coastal areas and atoll lagoons. The main trolling fleet effectively died in the late 1980s due to improved socioeconomic changes. These days, catch of kawakawa and frigate come mainly from pole-and-line vessels. Combined catch of both species was 113 t in 2023 by all gears. Combined effort for pole-and-line, handline and trolling has fluctuated between about 37,122 and 58,909 days in the most recent five-year period. Pole and line and handline effort had decreased by 17% and 58%, respectively in 2023 compared to 2019.

**Table 2.** Annual catch and effort by fishery and primary species in the IOTC area of competence for the period 2019-2023.

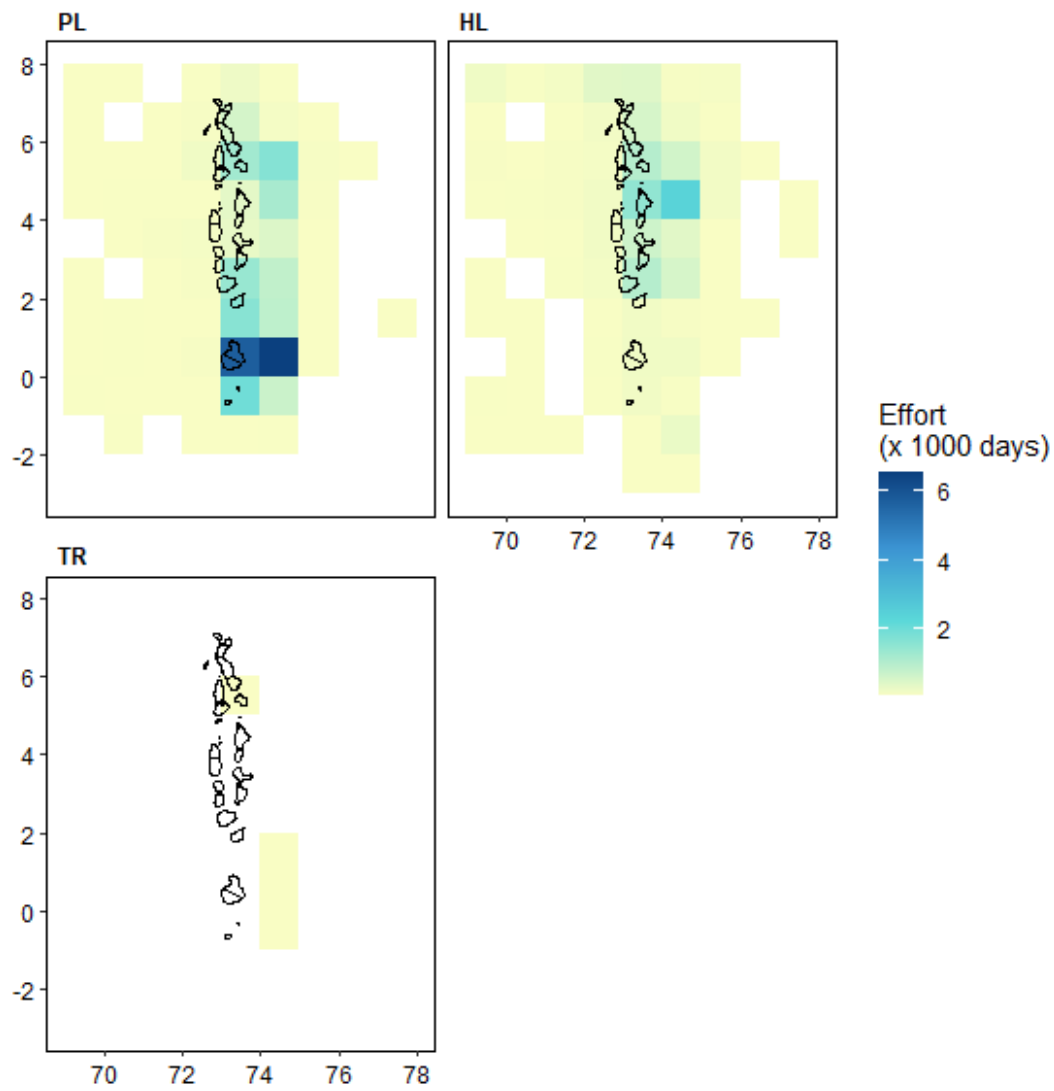
Year	Gear	Effort (days)	SKJ (t)	YFT (t)	BET (t)	KAW (t)	FRI (t)
2019	PL	31,409	88,174	17,240	224	35	129
	HL	27,006	797	26,932	86	5	1
	LL	Na	1.46	479.21	83.6	0	0
	TR	494	69	49	2	5	2
2020	PL	28,053	103,195	15,651	162	3	86
	HL	23,441	647	27,053	51	1	1
	TR	146	1	1	0	3	1
2021	PL	26,960	118,517	10,167	207	3	58
	HL	18,227	159	14,370	17	10	3
	TR	147	7	11	0	2	0.4
2022	PL	33,616	126,362	9,089	223	2.55	47.69
	HL	14,472	23	18,993	0.89	0.02	0.25
	TR	8	0	0.11	0	0	0
2023	PL	25,817	129,024	11,235	379	13	100
	HL	11,301	165	19,540	17	0	0
	TR	4	12	0.56	0	0	0

**Figure 1.** Historical annual catch for the national fisheries by primary species, for the IOTC area of competence (A) for the entire history of the fisheries and (B) by main gears (2004-2023).

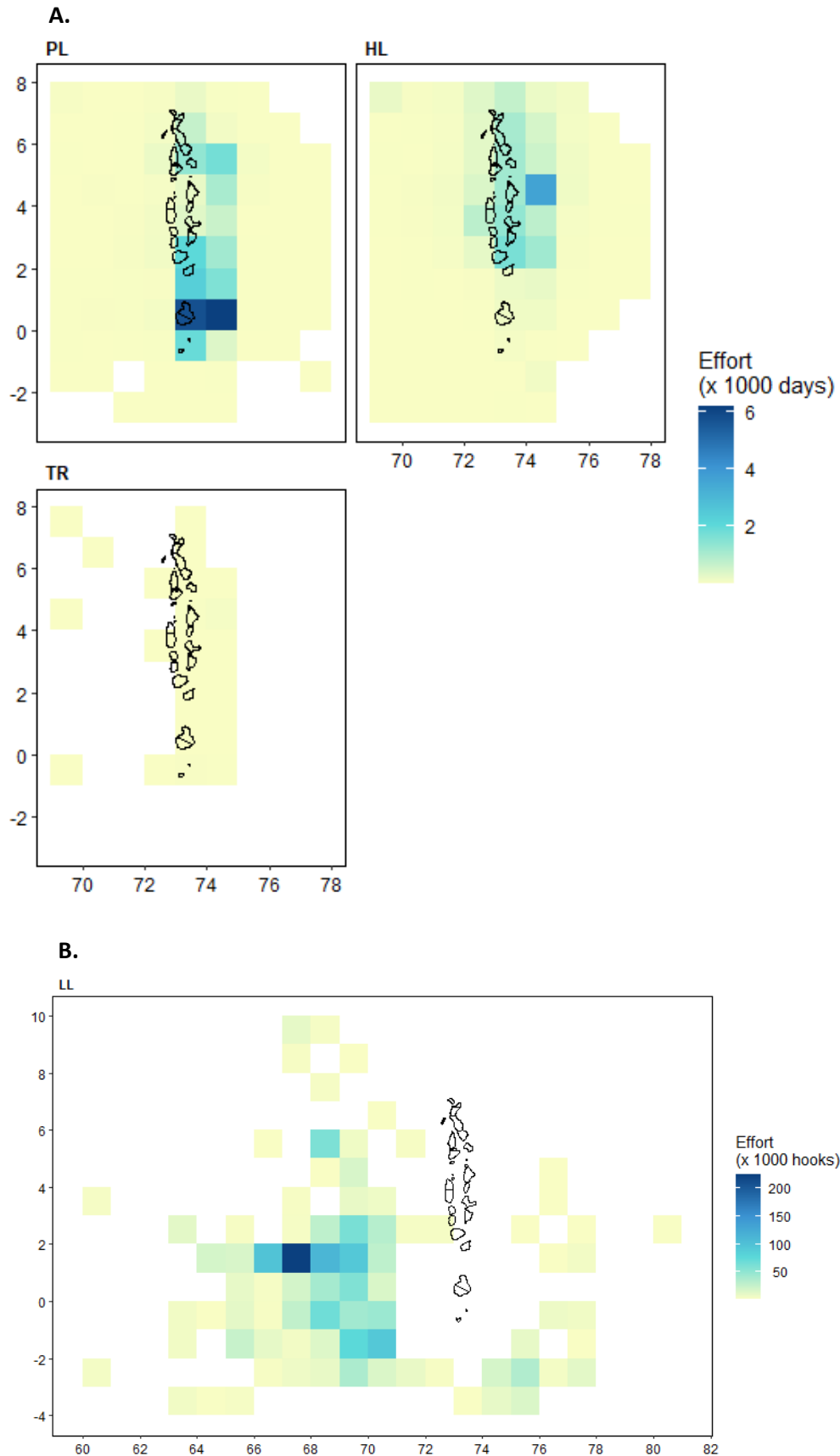




**Figure 2a.** Map of the distribution of fishing effort, of Pole-and-line (PL), Handline (HL) and Trolling (TR) gears for 2023.

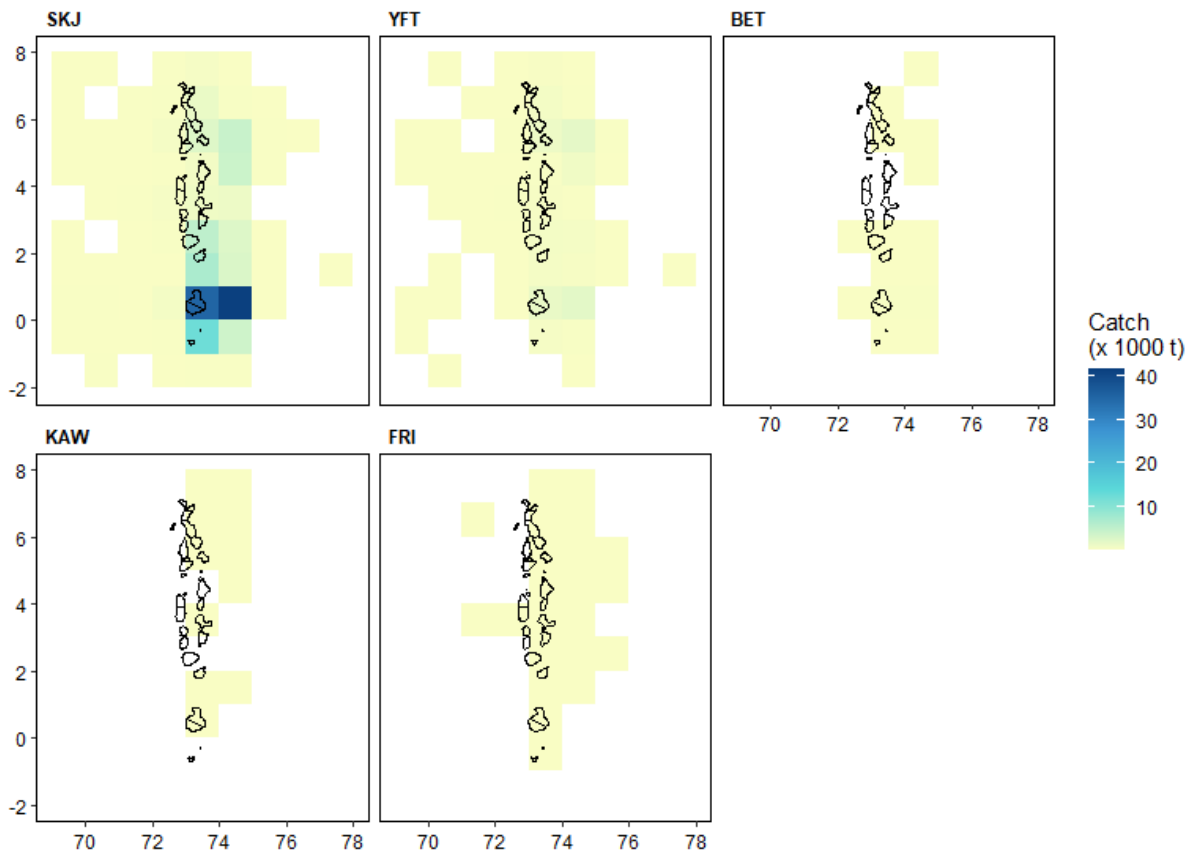


**Figure 2b.** Map of the distribution of average fishing effort of (A) Pole-and-line (PL), Handline (HL) and Trolling (TR) gears for the period 2019-2023 and (B) fishing effort for the longline (LL) gear in 2019. (Only effort in 2019 is shown as Maldives doesn't have a longline fishery since then).

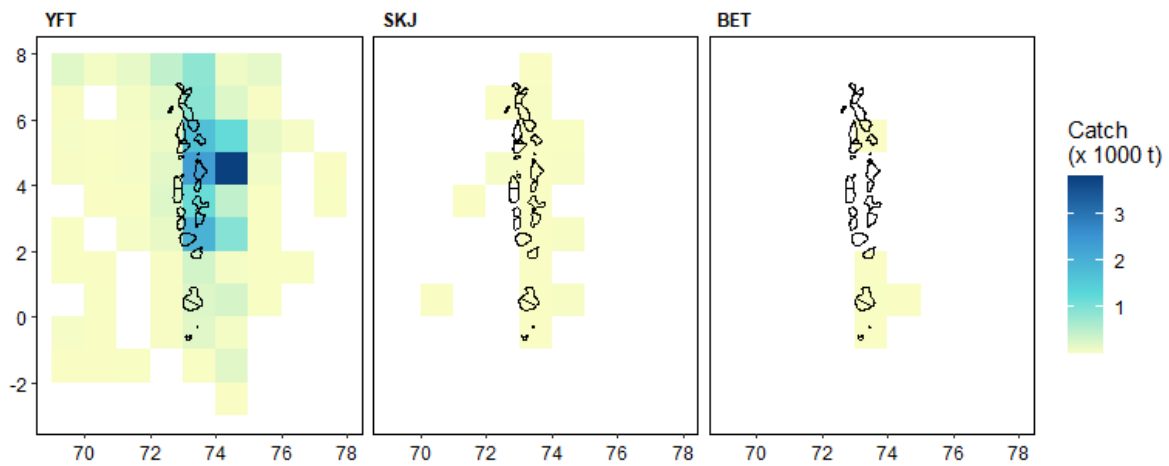


**Figure 3a.** Map of distribution of fishing catch, by species for (A) Pole-and-line, (B) Handline and (C) Trolling gear for 2023.

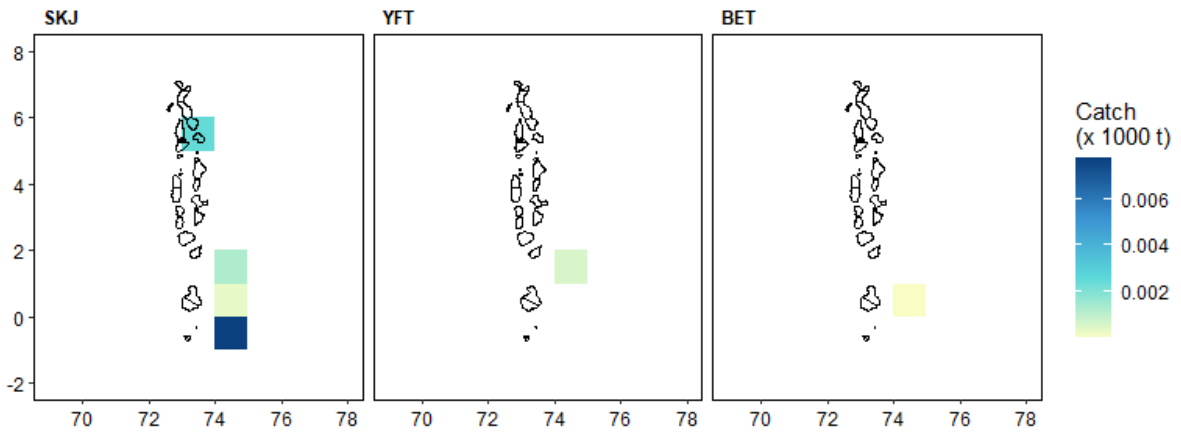
**A. Pole and Line**



**B. Handline**

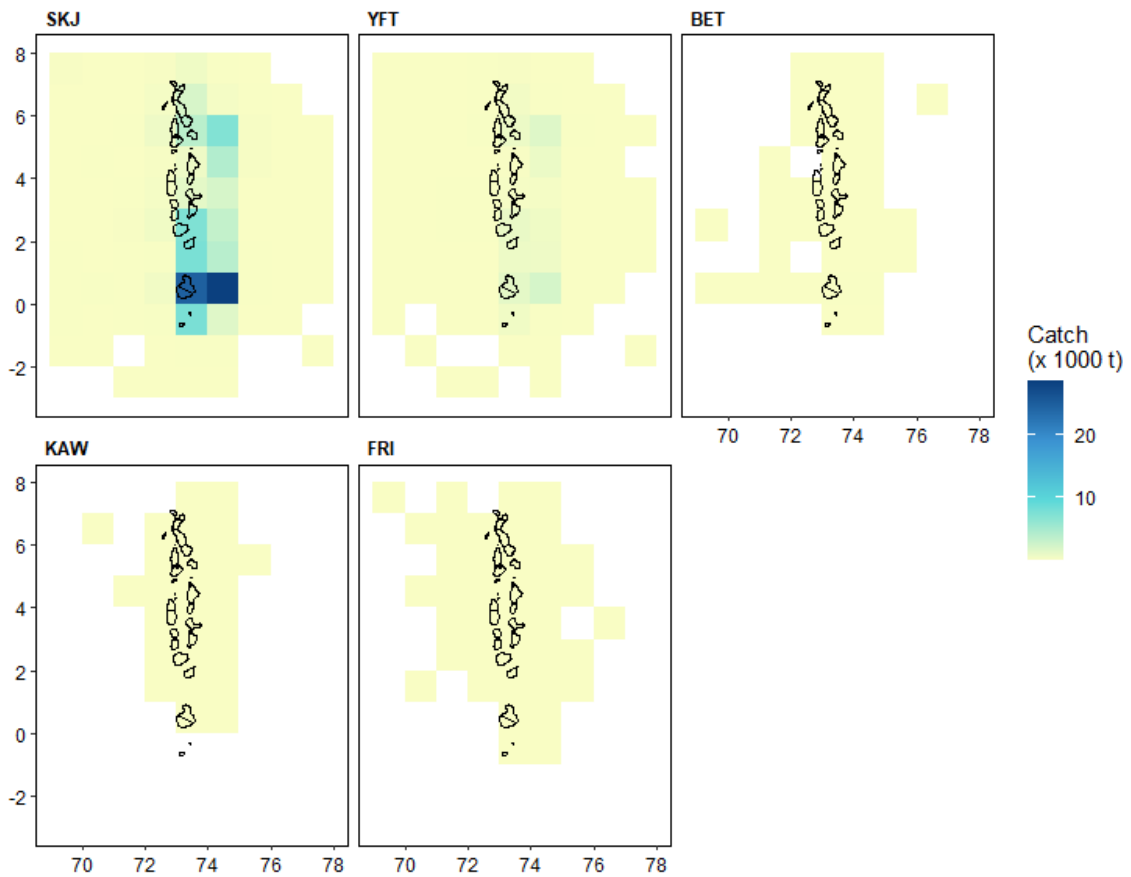


**C. Trolling**

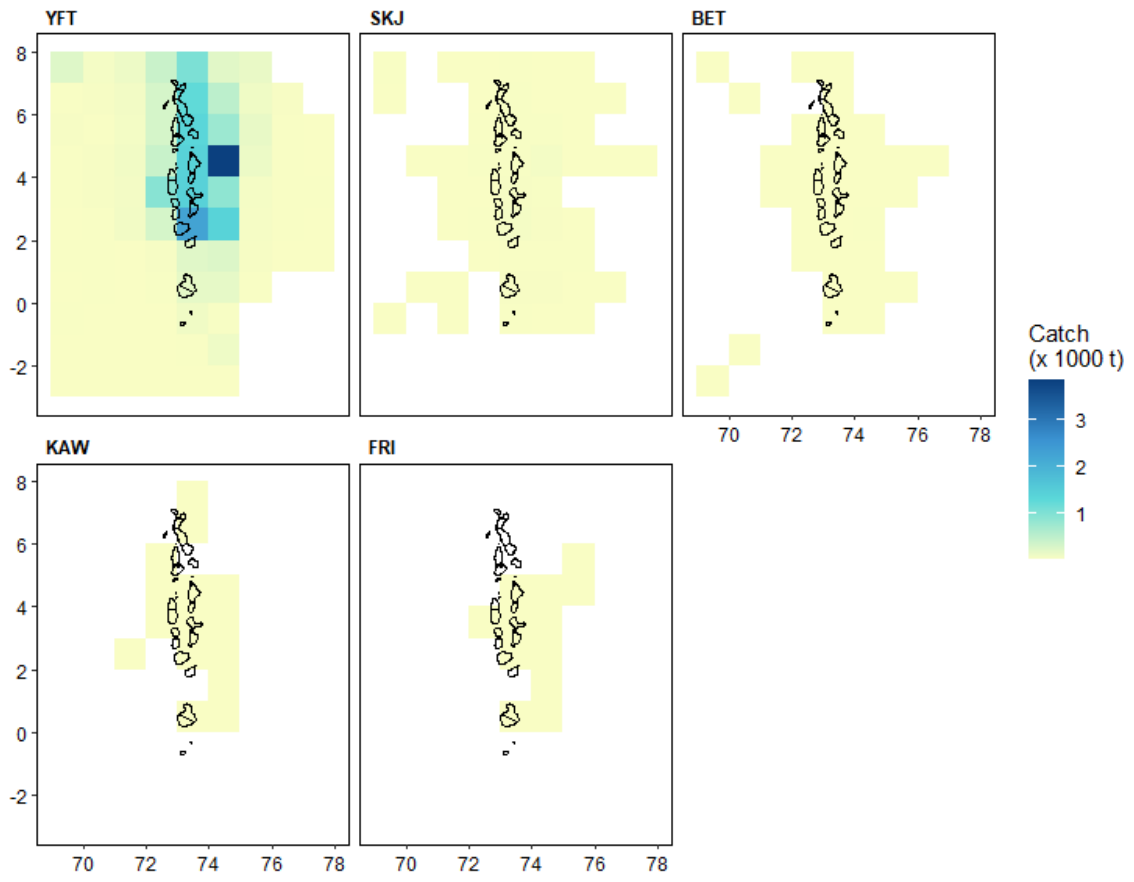


**Figure 3b.** Map of distribution of fishing catch, by species for (A) Pole-and-line, (B) Handline and (C) Trolling gear for the period 2019-2023 and (D) for the longline (LL) gear in 2019. (Only effort in 2019 is shown as Maldives doesn't have a longline fishery since then).

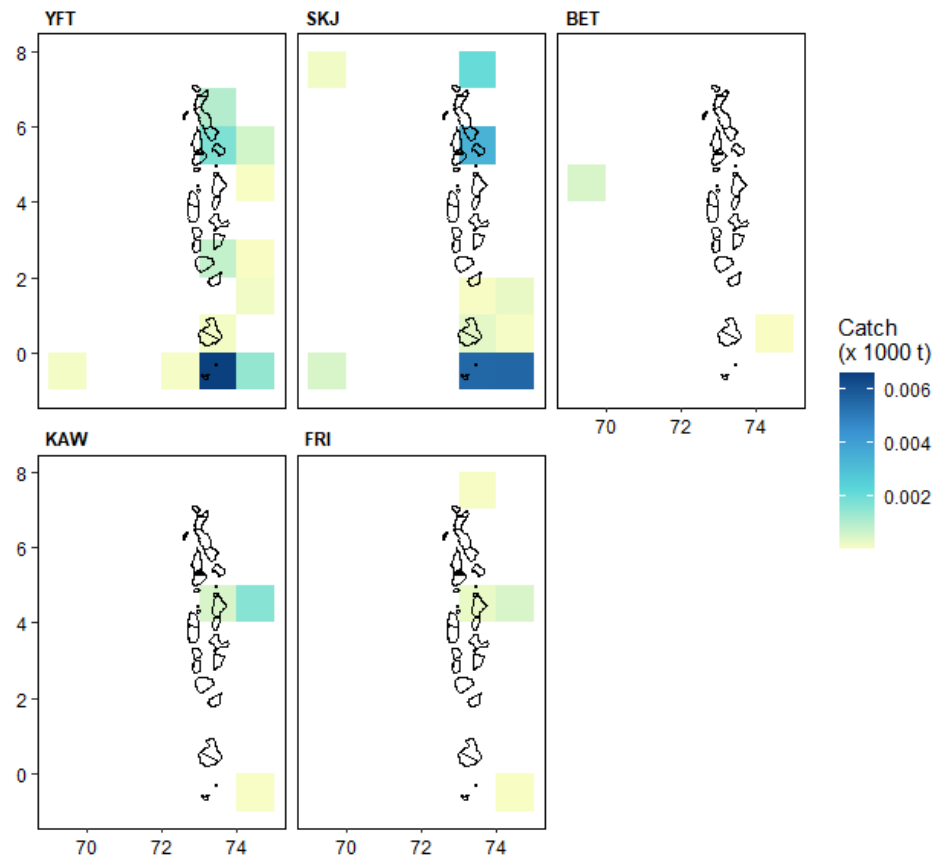
**A. Pole-and-line**



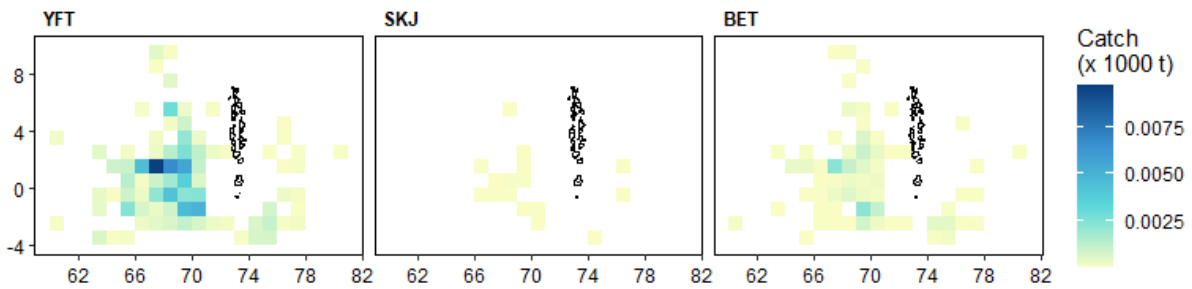
### B. Handline



### C. Trolling



#### D. Longline (2019 only)



### 4. Recreational fishery

Big game fishing is popular among tourists and locals. Common target species are Indo-pacific Sailfish (*Istiophorus platypterus*), marlins and wahoo (*Acanthocybium solandri*) but also large yellowfin to some extent. Casting using poppers, rod and reel is also popular game fishing activity targeting mainly large jacks, snappers and other similar fish off the reef and seamounts.

### 5. Ecosystem and bycatch issues

Maldives has a highly selective form of fishing with virtually no by-catch and no discards. The pole-and-line method alone contributed close to 88% of the total tunas caught in 2023. Similarly, handline and troll fishing methods are also highly selective with almost no bycatch and discards. This has resulted in minimal impacts from the Maldives tuna fisheries on non-targeted, associated and dependent species and the ecosystem.

Live-bait is critical for the tuna pole-and-line and handline fishery. The species harvested 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 and conducted a review of the live-bait fishery.

#### 5.1 Sharks

Shark fishing is banned in Maldives waters, and all sharks are protected since March of 2010.

##### 5.1.1 NPOA Sharks

Maldives' National Plan of Action on the Conservation and Management of Sharks (NPOA-Sharks) was formulated and presented to the stakeholders in April 2014. It was subsequently endorsed by the Ministry in April 2015. With the aim to ensure the implementation and observation of the shark fishery ban, the NPOA-Sharks addresses six key areas: mitigating the impacts of shark fishery ban; improving data collection and handling of shark by-catch; improving scientific research on shark populations; raising awareness on life-history characteristics of sharks; improving coordination, consultation and monitoring of shark ban; and cooperating on international agreements pertaining to sharks and with relevant RFMOs on research and management of shark species.

##### 5.1.2 Shark finning Regulation

All shark species are protected in Maldivian waters. Harvesting, retaining on-board, storing on-board, transshipping, transporting to a landing facility or landing any of the species or a part of any of the species is prohibited. With the suspension of longline fishery in 2019, shark bycatch has been non-existent.

### **5.1.3 Blue shark**

The pole-and-line, handline and trolling fisheries for tuna and tuna-like species do not catch blue sharks. The longline fishery that had shark bycatch was suspended in June 2019. Since none of the current gears catch blue sharks, the paragraph 4 of Resolution 18/02 that requires CPCs to monitor the blue shark catches does not apply to Maldives.

## **5.2 Seabirds**

The interaction with seabirds is minimal in handline, pole-and-line and troll fisheries. Current logbook data collection system allows the fishermen to report such interactions. All seabirds of the Maldives are protected by the Regulation 2020/R-25. Regulation 2014/R-169 protects all migratory and seasonal birds, including seabirds. An action plan to protect and manage seabird nesting sites have been developed.

## **5.3 Marine Turtles**

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 a ban on egg-harvesting from 14 turtle nesting islands (Ali & Shimal, 2016). With the termination of the second ten-year moratorium in 2016, a new legislation on marine turtles under the Environment Protection and Preservation Act (4/93) came into effect in April 2016, declaring all species of marine turtles as protected and prohibiting harvest of turtle eggs throughout the Maldivian archipelago. Maldives is also a signatory to the IOSEA Marine Turtles MoU, signed on April 2010. With the suspension of the longline fishery in June 2019, Maldives tuna fisheries do not interact with marine turtles anymore.

## **5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks)**

Whale sharks and dolphins are protected by the fisheries law in the Maldives. Even though handline fishermen target yellowfin tuna from dolphin associated schools, the interactions are minimal, and fishermen avoid hooking dolphins as there is no value in it.

## **6. National data collection and processing systems**

Data collection from the tuna fishery in the Maldives began in 1959, with species-level data starting in 1970 and vessel-specific catch and effort data becoming available from 1995 onward. The system relied on total enumeration of catches, which required conversion factors to estimate weight. Vessels reported their catch by species and effort data (number of days fished) to the island offices where they were registered. This data was then aggregated by vessel and month, providing catch information by species or species groups and effort measured in number of days fished.

In 2010, the Ministry of Fisheries introduced logbooks for the tuna fisheries to improve reporting requirements and address challenges in the data reporting system at the time. The logbooks were revised based on the experience of the initial few years. By the end of 2017, the previous reporting system was completely phased out.

### **6.1 Logsheet data collection and verification**

Logbooks were introduced to the tuna fisheries in 2010 and refined twice, with the most recent revision in 2012 and the revised logbooks being introduced in January 2013. Following the successful establishment of the logbooks, the enumerated system of data reporting was ceased on December 31<sup>st</sup>,

2017, having been gradually phased out since 2010. The logbook data allowed Maldives to report data by the required spatial resolution improving compliance with the data reporting requirements.

A major challenge was to increase the coverage of logbook submission rates. To address this issue, changes were made to the regulatory framework and fishing license conditions, making it mandatory for completed logbooks to be returned to processing or purchase facilities prior to unloading operations. This change was put into effect on March 1<sup>st</sup>, 2019, and the return rates have improved considerably since.

A web-enabled fishery information system, “*Keyolhu*” is now fully functional, and all catch data are recorded and analysed through the system. This is a major improvement over the old database for data recording. The system facilitates vessel registration, issuance of fishing licenses and fish processing licenses, data entry of fish purchase (by the commercial companies) and logbook data, providing a comprehensive system for compilation and reporting. The system is also designed to automate the process of issuing catch documentation required for the export of all forms of tuna from the Maldives.

Logbook data can be verified through different mechanisms. Observer data collected by the Maldives Marine Research Institute, with donor funding, allow for the verification of all aspects of the logbook reported data. Additionally, landings data obtained from the tuna exporting companies are used to verify the logbook data. The Fisheries Information System, *Keyolhu*, enables near real-time tracking of landings and purchases and licensing.

The FIS is currently being further developed to integrate online logbook reporting by fishers through a smartphone application. This will allow the Ministry to ensure that all purchases made by processing facilities are linked to the corresponding electronic logbook for each fishing trip. To enhance the accuracy of data received, the system is being developed with several validation features to ensure e-logbooks are submitted with all required fields and information.

## **6.2 Vessel Monitoring System**

Through the Sustainable Fisheries Resources Development Project, funded by the World Bank, the current Vessel Monitoring System (VMS) project was initiated in 2019. Currently, over 70% of the IOTC mandated vessel category (375 vessels over 24m or vessels operating beyond EEZ) is covered under this project. The newly enacted tuna fisheries regulation mandates vessels that fit the criterion for VMS (vessels over 18m in length) to install the VMS systems.

## **6.3 Observer scheme**

The National Observer program was established in 2015. The program has proven to be costly, and due to frequent staff turnover, consistent implementation has been challenging. Given the nature of the fishery and the size of the fleet, achieving the mandatory 5% observer coverage has been a further challenge.

To complement the National Observer program, the Ministry initiated a World Bank (WB) funded project to implement Electronic Monitoring (EM) in 2019. Electronic Observer Systems were installed on 14 fishing vessels. This project has experienced numerous hurdles, the most significant of which is the high cost associated with the EM. The Ministry is currently working with different service providers to find cost-effective EM solutions for the Maldivian tuna fleet.

The bycatch sampling and observer trips by MMRI and partners began in 2014, and several observer reports have previously been submitted to IOTC. The objective of the programme is to take part on

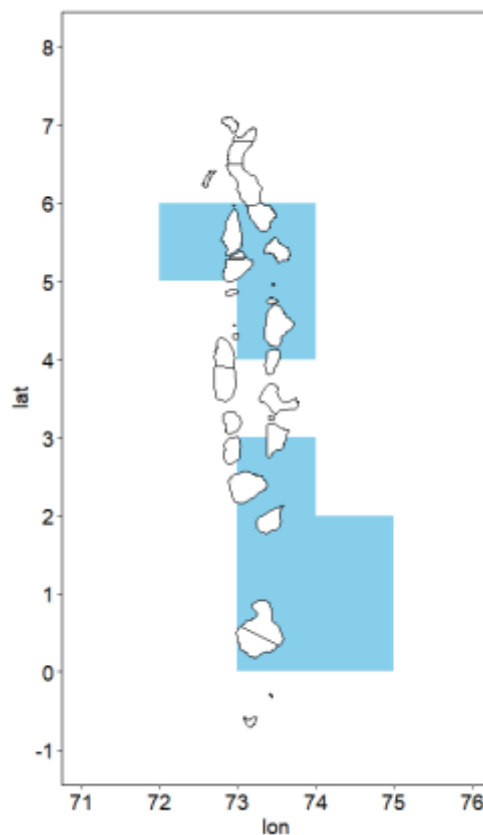


fishing trips to and collect operational and biological data. A sampling protocol is established for the observers on sampling and recording of catch and bycatch.

The Maldives Marine Research Institute, in collaboration with World Bank funded TransFORM project implemented by Ministry of Fisheries and Ocean Resources are in process of reviving the Fishery Observer Program in line with Regional Observer Scheme of the IOTC.

**Table 3.** Annual observer coverage for the years 2017-2023.

Year	Fishery	Number of trips observed
2017	Pole-and-line	1
2018	Pole-and-line	2
2019	Pole-and-line	54
2020	-	0
2021	-	0
2022	-	0
2023	-	0



**Figure 4.** Map showing the spatial distribution of observer coverage for 2019. No observer coverage for the years 2020-2023.

#### **6.4 Port sampling programme**

A systematic port-sampling programme to monitor artisanal landings is not in place yet. However, size sampling of catches landed at the ports is conducted regularly through samplers at PL tuna landing ports, fishermen samplers on their vessels, and scientific observer and MMRI staff.

All fish processing and purchasing facilities are required to obtain a processing license to process fish for the export market, as stipulated by the licensing regulation (2020/R-92). Changes have been made

to the license conditions and data reporting requirements, making it mandatory for all licensed fish processing facilities to record and report size frequency data. This will ensure that the Maldives complies with length frequency data reporting requirements to the IOTC in the future.

**Table 4.** Number of vessel trips or vessels active monitored by fishery, 2023

<b>Fishery</b>	<b>trips</b>
PL	491

**Table 5.** Number of fish measured, by species and fishery, 2023

<b>Gear</b>	<b>SKJ</b>	<b>YFT</b>	<b>BET</b>	<b>FRI</b>
PL	34,727	418	2	75

### **6.5 Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish**

The Maldives Billfish Fishery Management Plan published in 2020 include provisions to manage billfish fishery including measures related to data collection and monitoring of all billfish species.

### **6.6 Gillnet observer coverage and monitoring**

[NOT APPLICABLE]

### **6.7 Sampling plans for mobulid rays**

The Maldives tuna fisheries have minimal bycatch and interactions with non-targeted, endangered and threatened species and mobulid rays are protected in the Maldives. As such, the pole and line, handline and trolling fisheries do not catch mobulid rays. Miller et. Al, (2017), after monitoring 106 pole and line fishing trips, did not record bycatch of mobulid rays. Additional observer data since shows zero interactions with mobulid rays in the Maldives tuna fisheries. The longline fishery, which has the potential for interaction has been suspended in 2019. Due to the non-interaction of Maldives tuna fisheries with mobulid rays, a sampling plan as stipulated in Paragraph 11 of Resolution 19/03 is not required.

## **7. National research programs**

The Maldives Marine Research Institute (MMRI) is national agency mandated to conduct research on the marine resources, including fishery resources and the marine environment. Various programs exist that are of relevance to IOTC. These include fishery monitoring and research, as well as ecosystem monitoring and research activities. In addition to national activities, MMRI collaborates with regional and international agencies that would contribute to better understanding of the stocks of tuna and tuna-like species.

### **7.1 National research programs on blue shark**

The pole and line, handline and trolling fisheries that target tunas and tuna like species do not have blue shark by-catch.

## **7.2 National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish**

The Maldives Billfish Fishery Management Plan published in 2020 include provisions to manage billfish fishery including measures related to data collection data reporting of all species of billfishes.

## **7.3 National research programs on sharks**

Baited Remote Underwater Vehicle studies to understand the population of sharks are part of the ecosystem research activities at MMRI. The study has been ongoing since 2018. In 2022, 138 BRUV surveys were carried out to assess local populations of sharks within the inner atoll reefs. The surveys are to be continued in 2023 and initial findings to be published by late 2023 or early 2024.

As sharks are fully protected within the Maldives waters, and the tuna fisheries have minimal interaction with sharks, studies on the aspects of post-release survival, safe release and fishing practices do not apply.

## **7.4 National research programs on oceanic whitetip sharks**

The pole and line, handline and trolling fisheries that target tunas and tuna like species do not have oceanic whitetip shark by-catch.

## **7.5 National research programs on marine turtles**

The pole and line, handline and trolling fisheries that target tunas and tuna like species do not have turtle by-catch. Further, the Anchored FADs used in the Maldives are of non-entangling designs. It is noted that under the Environment Protection and Preservation Act (4/93), marine turtles are fully protected in the Maldives

## **7.6 National research programs on thresher sharks**

Maldives does not currently implement a research program on thresher sharks that would contribute to the requirements of Resolution 12.09 paragraph 6 (CPCs shall, where possible, implement research on sharks of the species *Alopias* spp in the IOTC area of competence, in order to identify potential nursery areas). The surface fisheries (pole and line, handline and trolling) do not interact with thresher sharks.

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

**Table 9.** Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2023.

Res. No.	Resolution	Scientific requirement	CPC progress
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	<p>With the termination of the second ten-year turtle moratorium in 2016, a new legislation on marine turtles under the Environment Protection and Preservation Act (4/93) came into effect in April 2016 which fully protects marine turtles in the Maldives.</p> <p>The Strategic Action Plan of the Maldives (2019-2023) pledges to protect from each atoll, representative sites of reefs, wetlands, islands and sandbanks. These sites include areas important for marine turtles among other things.</p> <p>Logbooks for all the tuna fisheries have provisions to report interactions with non-targeted protected species, including marine turtles. The data is reported regularly to IOTC.</p>
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	<p>All species of sharks are protected in the Maldives. Incidental catch of sharks is reported from all tuna fisheries through the logbooks. All data relating to shark interactions and catch is reported to IOTC.</p> <p>Shark fishing is prohibited in Maldivian waters. See section on Resolution 13/06 for details. An observer scheme is established and the information on shark interactions will be verified through these observer schemes</p>
13/04	On the conservation of cetaceans	Paragraphs 7– 9	<p>Maldives is part of the International Whaling Commission’s Indian Ocean Sanctuary established in 1979. Furthermore, all whales and dolphins are protected by law in the Maldives and their interactions with the fisheries are minimal. The observer &amp; bycatch sampling programme records all interactions with cetaceans during fishing trips. Reports from the observer program will present all, if any, interactions with cetaceans.</p> <p>Maldives recently completed the progress report on List of Foreign Fisheries and Marine Mammals to comply with US Marine Mammal Protection Act’s Import Provisions. MMPA requires exporting countries to maintain risks of mortality to cetaceans in par with US regulation by 2023.</p>
13/05	On the conservation of whale sharks ( <i>Rhincodon typus</i> )	Paragraphs 7– 9	<p>Whale sharks are protected in the Maldives. None of fisheries of the Maldives are known to harm the whale sharks. The logbooks which are mandatory, do have provisions to report interactions with non-targeted and bycatch species</p>
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	<p>All species of sharks are protected in the Maldives. Observer data suggests that interactions with sharks in the pole-and-line and handline fisheries are minimal. Shark interactions are recorded in detail in the logbooks of all fisheries targeting tunas (PL and HL) and information on shark interactions has been reported to the IOTC as required.</p>
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	<p>It has been made mandatory for the completed logbooks to be returned to the processing or purchase facilities prior to the unloading operations which has improved the submission of logbook data. Furthermore, the Fisheries Information System (FIS) is</p>

Res. No.	Resolution	Scientific requirement	CPC progress
			currently being further developed to integrate logbook reporting online by fishers through a phone application. This will allow the Ministry to ensure that all purchases made by processing facilities are associated with the electronic logbook of the corresponding fishing trip. To ensure the accuracy of data received, the system is being developed with a number of validation features that will ensure e-logbooks are submitted with all required fields/information
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Maldives implements a size sampling programme at key commercial landing sites that are operated by the major fish processors and exporters in the country. Additionally, scientific observers and MMRI staff also contribute data from observer trips and visits to landing sites.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	<p>Shark fishing is prohibited in Maldives waters (the entire EEZ). The ban is effective from May 2010. The general fishery regulation (2020/R-75) prohibits intentional catch, harming and removal of sharks. The regulation further prohibits the sale, display and import and export of sharks and shark products. Hence, any incidental catch of shark by other gears has to be released immediately.</p> <p>The tuna fishery logbook has provisions to report any incidental catch of sharks. The data are reported to IOTC regularly. As there is virtually zero catch of sharks in Maldivian tuna fisheries, the provisions on reducing shark bycatch, safe release, post release survival, improve gear selectivity and handling practices do not apply to Maldives.</p> <p>MMRI undertakes shark research as part of the Ecosystem research activities.</p>
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	<p>Shark fishing is prohibited in Maldives waters (the entire EEZ). The ban is effective from May 2010. The general fishery regulation (2020/R-75) prohibits intentional catch, harming and removal of sharks. The regulation further prohibits the sale, display and import and export of sharks and shark products. Hence, any incidental catch of shark by other gears has to be released immediately.</p> <p>As none of the tuna fisheries in the Maldives (by)catch blue sharks, the paragraphs 2-5 do not apply to Maldives.</p>
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	<p>The Maldives Billfish Fishery Management Plan published in 2020 include provisions to manage billfish fishery including measures related to data collection data reporting of all species of billfishes.</p> <p>Further, with funding from the World Bank, the Maldives Marine Research Institute is to begin scientific data collection of billfish landings. It is expected that this effort will produce a better understanding of the fishery in the Maldives.</p>
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	Maldives has taken measures to strengthen implementation of logbook scheme in tuna fishing fleet by strengthening enforcement at the landing centres. Landing centres are now required to confirm the submission of logbook prior to the offloading of the catch. All data related to tuna fisheries including fishing license, logbook, landing data are electronically logged into Fisheries Information System. Maldives reports its actions taken to implement the reporting

Res. No.	Resolution	Scientific requirement	CPC progress
			obligations as well as report the zero-catch matrix in accordance with Paragraphs 1 and 4.
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence ( <i>If not provided under Res 21/01 below</i> )	Paragraph 22	The use of Gillnets is banned in the Maldives. Therefore, the paragraph 22 (CPCs are encouraged to increase their observer coverage or field sampling in gillnet fishing vessels by 10% using alternative data collection methodologies (electronic or human) verified by the IOTC Scientific Committee by 2023) does not apply.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	The Maldives tuna fisheries have minimal bycatch and interactions with non-targeted, endangered, and threatened species and mobulid rays are protected in the Maldives. As such, the pole and line, handline and trolling fisheries do not catch mobulid rays. Therefore, Paragraph 11 of the Resolution 19/03 does not apply to Maldives.
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence ( <i>If not provided under Res 19/01 above</i> )	Paragraph 23	Not Applicable. Maldives do have a gillnet fishery; it is banned by law.
22/04	On a regional observer scheme	Paragraph 12	Maldives initiated an observer program in 2015. Recruiting observers and their high turnover rate proved to be challenges. Ministry initiated an Electronic Monitoring Systems (EMS) in 2019 and EM units were installed in 14 vessels. Maldives is currently working in addressing the challenges and gaps in EM program. MMRI is planning to conduct observer trips for the handline and pole and line fleet in 2024.
23/07	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Longline fishery is not conducted in the Maldives; hence these provisions are not applicable.

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