

## Japan National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2023

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### INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

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 2023, final data for the 2022 calendar year must be provided to the Secretariat by 30 June 2023)	YES  28/June/2023
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 2023, preliminary data for the 2022 calendar year were provided to the IOTC Secretariat by 30 June 2023).  <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 2023, final data for the 2022 calendar year must be provided to the Secretariat by 30 December 2023].	YES  28/June/2023
If no, please indicate the reason(s) and intended actions:	

## Executive Summary

This Japanese national report describes following eight relevant topics stipulated in the 2023 national report guideline mainly in recent five years (2018-2022) (2022 is provisional), i.e. (1) Fishery information (longline and purse seine fishery), (2) fleet information, (3) catch and effort by species and fishery, (4) ecosystem and bycatch (sharks, seabirds, marine turtles), (5) national data collection and processing systems including “logbook data collection and verification”, “vessel monitoring system”, “observer scheme”, “port sampling programs” and “unloading and transshipment”, “monitoring billfish catch”, and “sampling plans for mobulid rays”, (6) national research programs, (7) Implementation of Scientific Committee recommendations and resolutions of the IOTC relevant to the Scientific Committee”, and (8) “Literature cited”. Highlights from the eight topics are described as follows: Japan is currently operating longline and purse seine fisheries in the Indian Ocean. Catch and effort data are collected mainly through logbooks. Bigeye, yellowfin, albacore, southern bluefin tuna are main components of the catch by longliners, while three species (skipjack, yellowfin and bigeye tuna) are exploited by purse seiners. In recent years, catch and effort by longliners are in a low level mainly because of piracy activities off Somalia. Purse seiners have not operated in the Indian Ocean since 2021. Japan has been dispatching scientific observers in accordance with the Resolution 11/04 (superseded by 22/04), whose coverage for longline fishery has been more than the 5% compliance level in recent years except for 2020-2022 due to COVID-19 pandemic. Observer coverage for purse seine fishery is highly variable. A number of information including bycatch and biological data, has been collected through the observer program. Japan has been conducting several research activities.

## Contents

1. BACKGROUND/GENERAL FISHERY INFORMATION-----	02-03
2. FLEET STRUCTURE-----	03
3. CATCH AND EFFORT (BY SPECIES AND FISHERY) -----	03-12
4. RECREATIONAL FISHERY-----	12
5. ECOSYSTEM AND BY CATCH ISSUES-----	13-16
6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS-----	17-23
7. NATIONAL RESEARCH PROGRAMS-----	24-25
8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC -----	26-28
9. LITERATURE CITED -----	28-28

### 1. BACKGROUND/GENERAL FISHERY INFORMATION

Longline and purse seine fisheries are two types of Japanese tuna fisheries currently operating in the Indian Ocean, although purse seine fishery didn’t operate during 2021-2022. Longline fishery started its operation in 1952 when the limitation of operational area imposed by the GHQ\*<sup>1</sup>, was removed. Commercial purse seine fleet commenced fishing operations in the Indian Ocean in 1991 after several years of experimental fisheries.

The total fishing effort (the number of hooks) of Japanese longliners in the Indian Ocean sharply increased from 2 million (1952) to 129 million hooks (1967) (the historically highest level), and then there was no clear increasing or decreasing trend with large fluctuation (52-128 million hooks) until 2007. Thereafter, it decreased down to about 28 million hooks in 2011 due to piracy activities off Somalia. It has been kept at the low level with slight decrease and 20 million hooks in 2022. The percentage compositions of fishing effort (number of hooks) in this Ocean against the total effort in all Oceans fluctuated around 20% until 2003, afterwards it increased to 35% in 2006 and 2007. Thereafter it has drastically decreased to 11% in 2010 and kept at a low level (10-13%) to now, mainly because of piracy activities.

\* GHQ (General Headquarters) of the occupying forces of the Allies after the World War II

As for the purse seine fisheries, operations took place mainly in the tropical western Indian Ocean until 1993. Afterwards operations shifted almost completely to the eastern Indian Ocean mainly because of economic problem derived from the rise of Japanese Yen during that time, in addition to the extra cost imposed due to the long geographical distances from Japan. Purse seiners have not operated in the Indian Ocean since 2021.

## 2. FLEET STRUCTURE

All Japanese longline vessels operating in the Indian Ocean have been the distant water category (120-500GRT) with some exceptional offshore vessels (10-120GRT). Historical change in the number of longline vessels from 1987 to 2021 is shown in Table 1. In the last 20 years, the number of vessels operated in this Ocean was around 172-228 per year until 2008. Although the number of operating vessels was relatively high (223-251) during 1995-1999, after that it decreased to less than 200 except for 228 in 2002. It decreased rapidly year by year until 2011 because of piracy activities off Somalia, and kept in a low level (41-59) after 2013. The number of longline vessels operated in 2022 was 45.

Japanese purse seine vessels operating in the Indian Ocean are the 350-700 GRT class (700-1,000 carrying capacity). Historical change in the number of purse seine vessels from 1987 to 2022 is shown in Table 1. Although 11-12 Japanese purse seiners operated during 1991-1994, it decreased year by year and purse seiner retreated from the Indian Ocean in 2001 leaving only one vessel “Nippon-Marū”, the research vessel of Fisheries Research Agency (FRA) with a few commercial vessels. This vessel was replaced by another research vessel “No.1 Taikei-Marū” in 2013. Since 2015 commercial vessels have resumed their operations and the number of total vessels in each year operated during 2017-2020 was 2-3, but no vessel operated during 2021-2022.

**Table 1:** Number of vessels operating in the IOTC area of competence

Fleet/Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Longliners	272	235	245	216	184	181	206	206	224	251	243	242	223	192
Purse seiners	1	1	3	4	11	12	11	11	8	5	3	4	3	2
Fleet/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Longliners	199	228	172	189	184	188	178	173	130	84	72	75	57	53
Purse seiners	2	1	1	1	1	3	3	3	2	1	1	1	1	1
Fleet/Year	2015	2016	2017	2018	2019	2020	2021	2022						
Longliners	52	45	41	46	50	59	56	45						
Purse seiners	3	3	3	3	3	2	0	0						

## 3. CATCH AND EFFORT (BY SPECIES AND FISHERY)

### 3.1 Longline fishery

The latest available longline data is that of 2022 (data for 2022 are preliminary).

## Fishing effort

The longline fishery commenced in 1952 in the eastern equatorial waters in the Indian Ocean. In the late 1960s, the effort covered entire fishing ground of the longline in the Indian Ocean. The annual amount of the effort had increased until the late 1960s and fluctuated after that. However, fishing effort had been dramatically decreasing since 2008 and then kept at a low level (Table 2a) because of the effects of piracy activities off Somalia. Fishing effort in 2022 (21,000 thousand hooks) was only about 18% of that in 2007 during the recent highest level.

**Table 2a. Annual catch and fishing effort and primary species in the IOTC area of competence (longline fishery, 2018-2022) as of October 2023 (2022 is provisional)**

(catch in mt, set in number and hooks in thousand)

Year	Set	Hooks	SBF	ALB	BET	YFT	SWO	MLS	BLZ	BLM	SFA	SPF	SKJ
2018	6,975	22,207	2,097	1,807	3,398	2,975	500	34	111	27	63	47	11
2019	6,332	19,950	2,476	1,913	3,493	2,350	455	16	79	26	35	18	15
2020	6,900	21,649	3,464	1,518	4,146	1,849	502	13	62	20	20	8	12
2021	7,676	23,899	4,493	1,618	4,134	974	510	8	51	13	8	11	3
2022	6,750	20,687	3,290	1,831	3,305	1,482	470	13	62	13	25	20	4

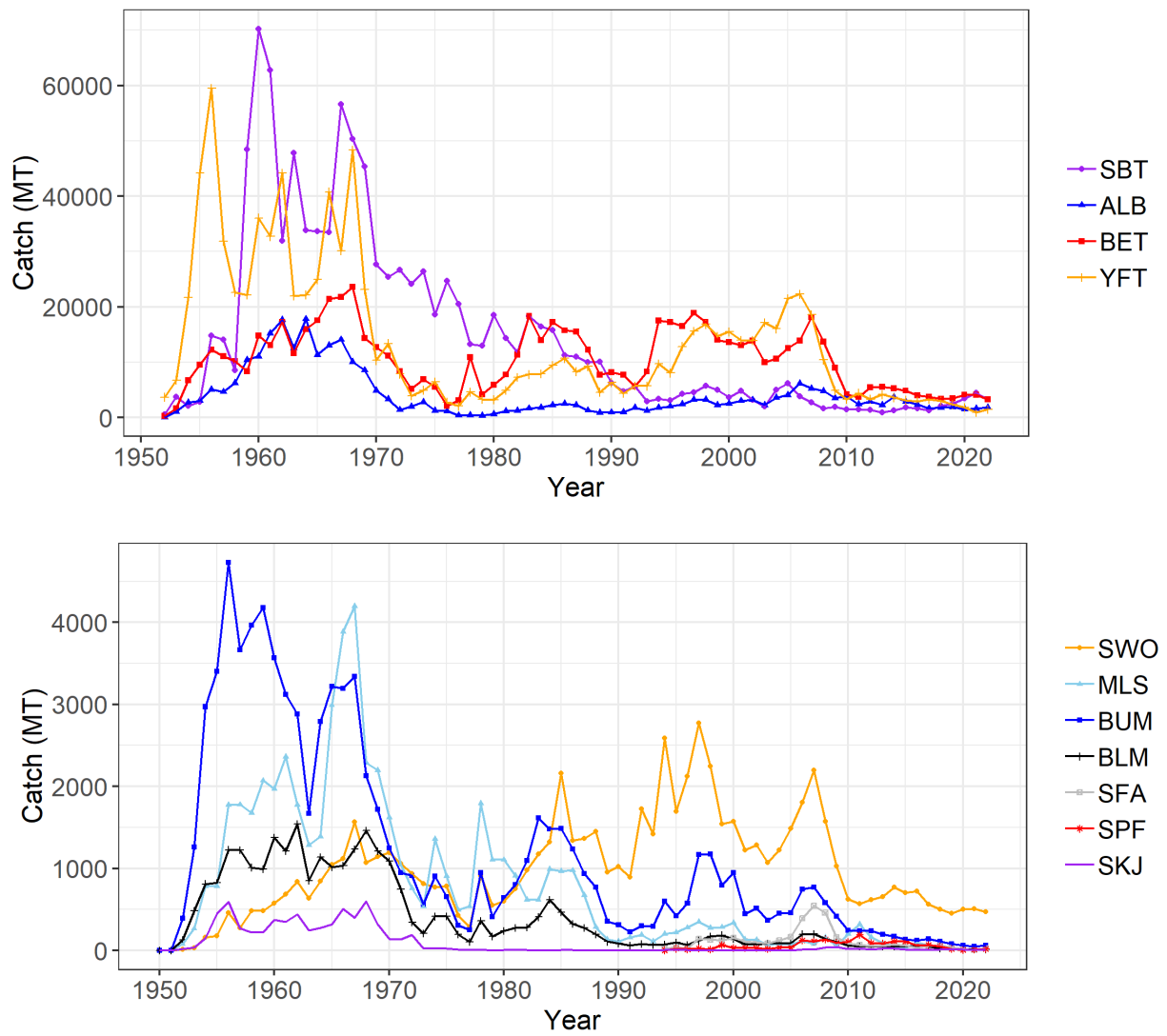
(Note) *SBT* (Southern bluefin tuna), *ALB* (albacore), *BET* (bigeye tuna), *YFT* (yellowfin tuna), *SWO* (swordfish), *MLS* (striped marlin), *BLZ* (blue marlin), *BLM* (black marlin), *SFA* (sailfish), *SPF* (shortbill spearfish), and *SKJ* (skipjack tuna).

Geographical distributions of longline fishing efforts for 2022 and average of 2018-2022 are shown in Fig. 2a. In 2022, the efforts were mainly in African offshore area (from the waters off Cape of Good Hope to Mozambique) and in the eastern part of the Indian Ocean off Australia and Indonesia, which is similar to that for 2018-2022. The effort in the northwestern area has dramatically decreased since 2008 and the efforts for 2018-2022 are still almost nothing because the threats of piracy remain off Somalia.

## Catch

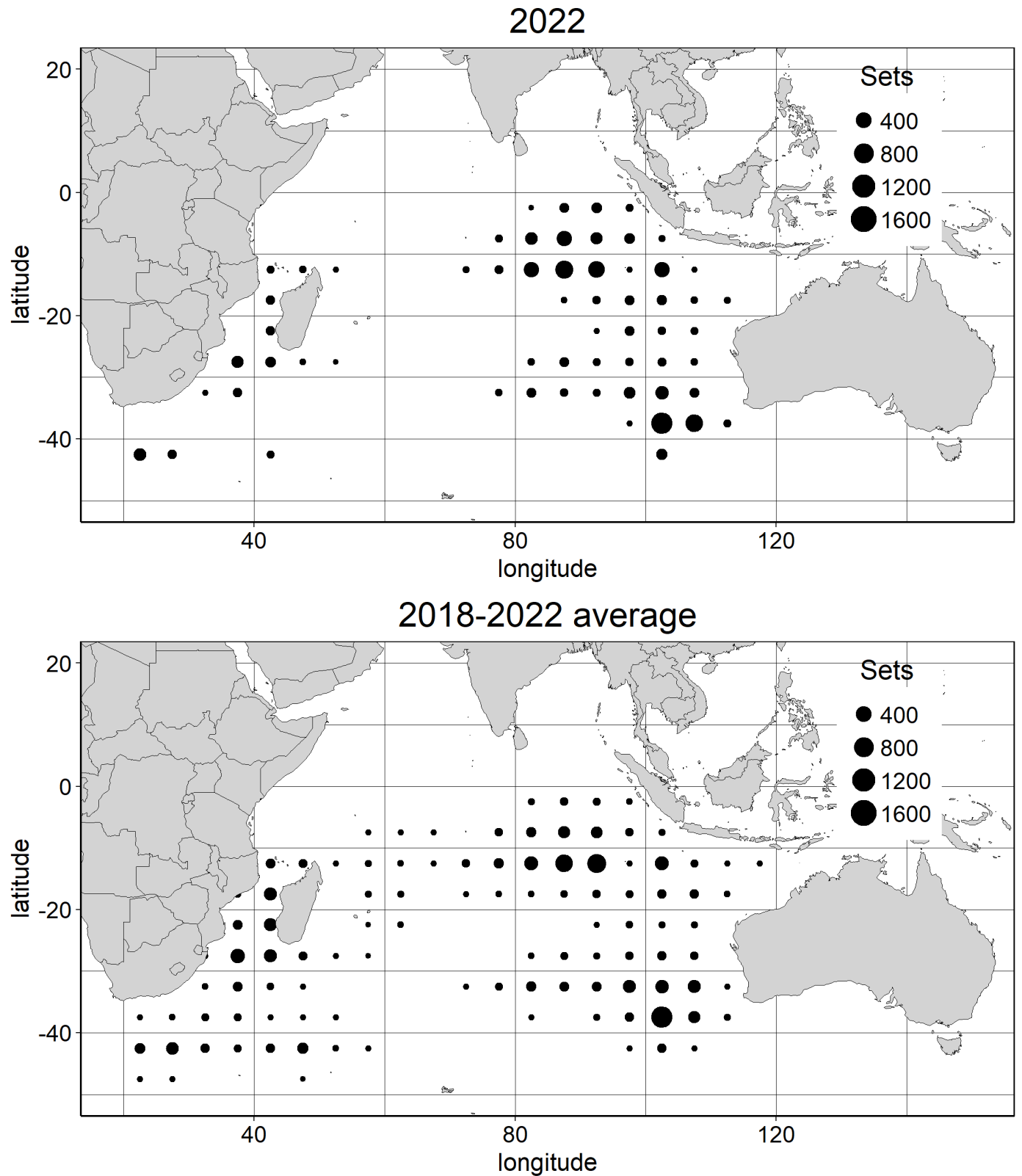
Historical catch in weight by species and catch statistics by Japanese tuna longliners in the Indian Ocean are shown in Fig. 1a (entire period) and Table 2a (2018-2022), respectively, and geographical distributions of catch in 2022 and average of 2018-2022 for major tuna and billfish species are shown in Fig. 3a. Catch of albacore, yellowfin and southern bluefin tunas were very high during 1950s and 1960s, and then sharply decreased. After mid 1990s bigeye and yellowfin tunas have been main components of the catch.

Total catch (the catch of southern bluefin tuna, albacore, bigeye, yellowfin, swordfish, striped marlin, blue marlin, black marlin, sailfish, shortbill spearfish, and skipjack) in 2021 and 2022 was 11,828 MT and 10,519 MT, respectively. It should be noted that the catch of yellowfin and bigeye drastically decreased during 2007-2010, although the catch of albacore was roughly at the same level during this period. Furthermore, yellowfin catch in 2021 was the lowest after 1980s, and this decrease was mainly derived from decrease in fishing effort especially in the tropical area especially in the piracy area (northwestern Indian Ocean).



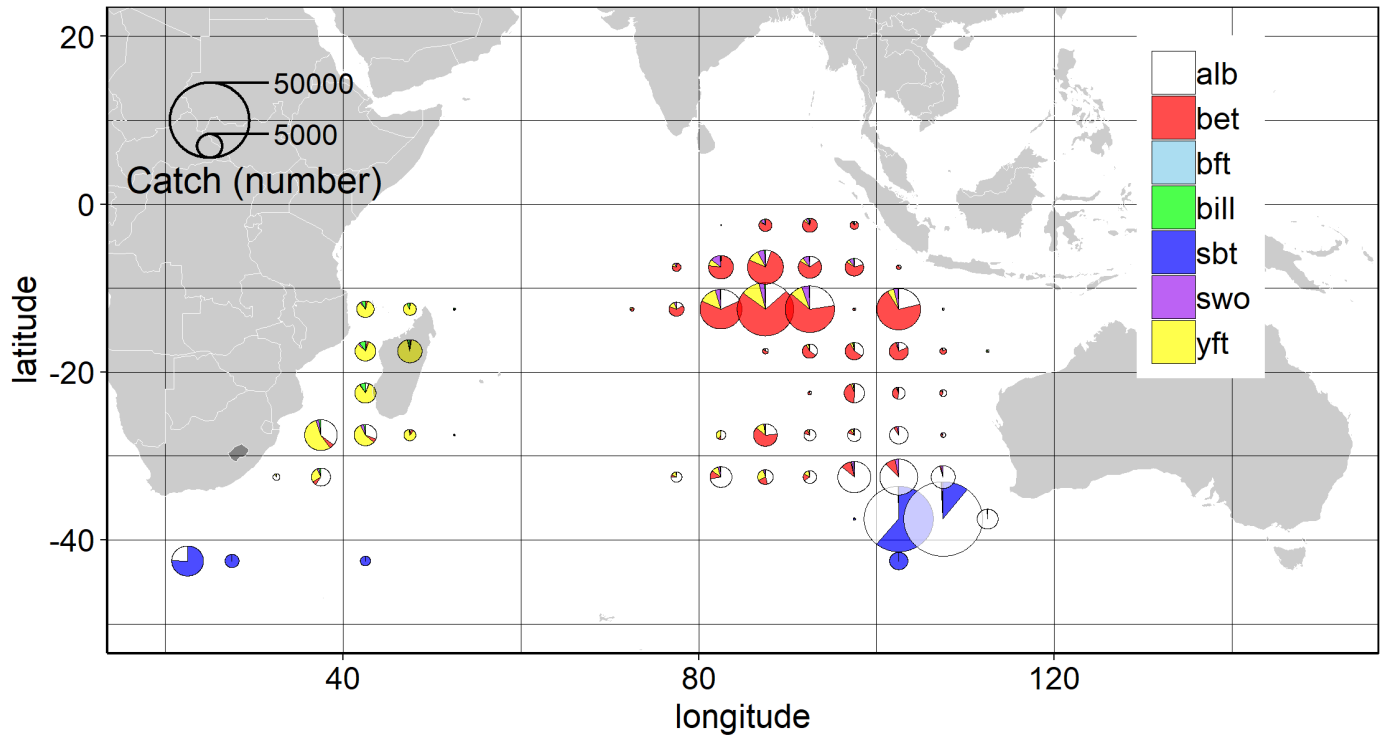
**Fig. 1a. Catch trends of tuna and tuna-like species exploited by Japanese longliners (2022 is provisional).**

*Upper: tuna species, lower: billfish species and skipjack tuna*

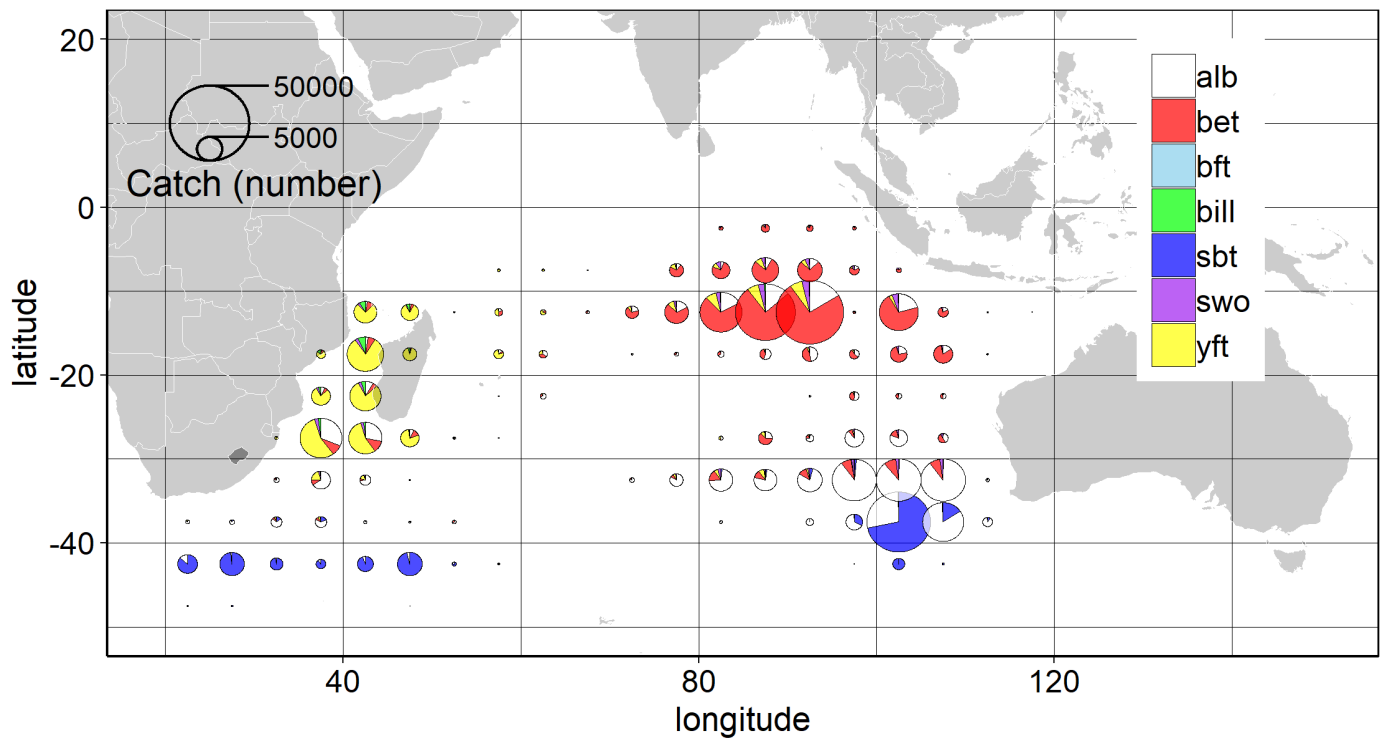


**Fig 2a. Geographical distributions of longline fishing effort (in number of sets) for 2022 (upper) and in average of 2018-2022 (lower) (2022 is provisional).**

### 2022



### 2018-2022 average



**Fig. 3a Geographical distributions of longline catch (in number) of major species in 2022 (upper) and in average of 2018-2022 (lower) (2022 is provisional).**



Based on the geographical distribution of the catch (Fig. 3a), yellowfin and bigeye tunas are mainly caught off Mozambique and the central-eastern tropical waters, respectively. Albacore is mainly caught in the temperate area off Australia. During 2018-2022, there was almost no efforts in the northwestern area (good yellowfin fishing grounds), which has been similar situation since 2011 when the piracy activities started. Hence, longliners shifted their operations to the other waters especially off Mozambique and the southeastern Indian Ocean.

### 3.2 Purse seine fishery

The latest available data for Japanese purse seine fishery is for 2020.

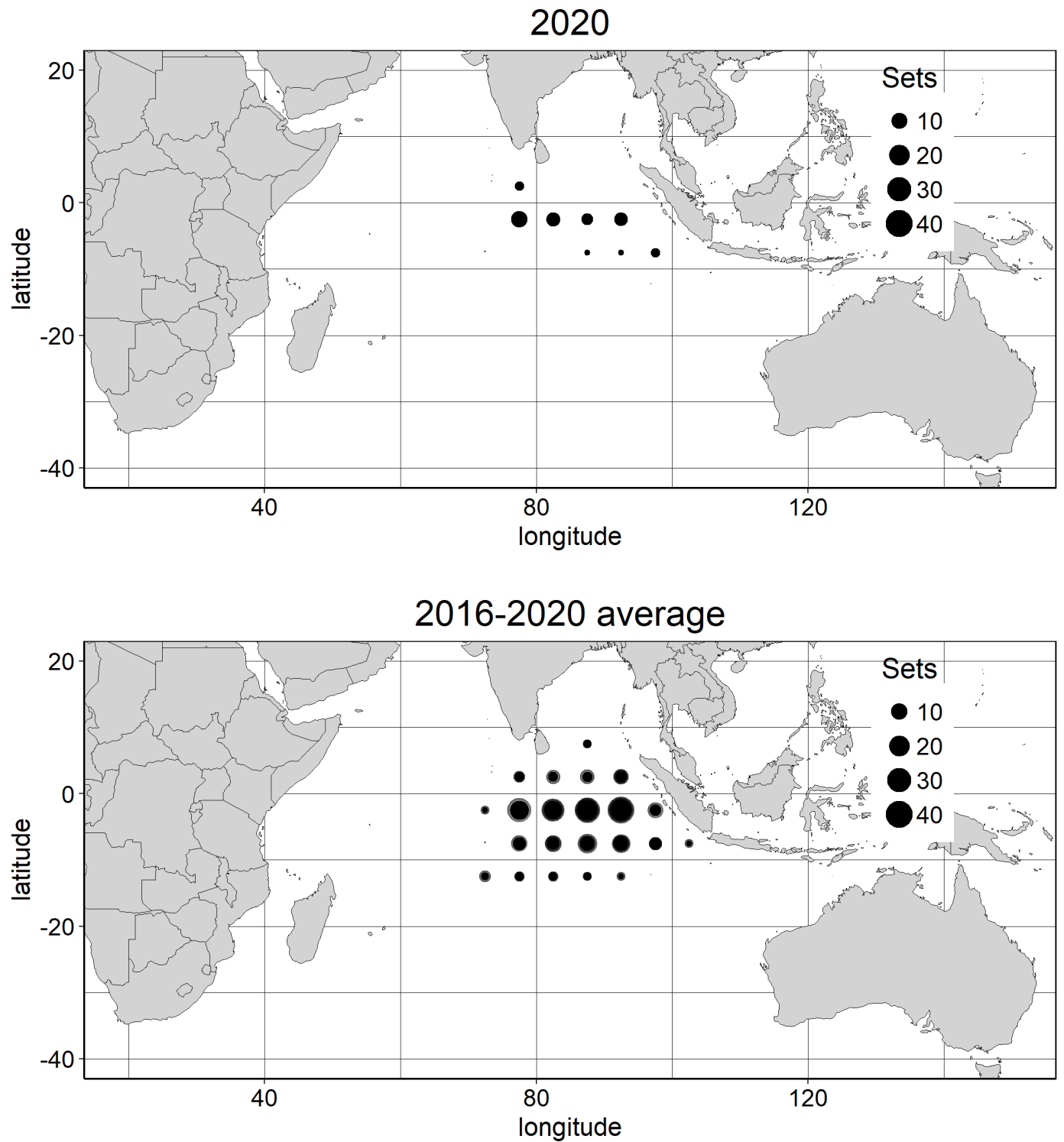
#### Fishing Effort

Total fishing effort (number of set) was 201 in 2017 and 147 in 2018 (Table 2b). This is larger than those in the early 2010s due to the increase in the number of vessels (from 1 to 3). Fishing effort (number of set) in 2019 sharply decreased to 9 because the fishing conditions were extremely poor thus fishing operations ended very quickly in a very short time then purse seine vessels shifted to the Pacific Ocean. Also in 2020, the number of set was small and so the catch was also low. No purse seine operation was conducted during 2021-2022 because all the vessels shifted to the Pacific Ocean. Geographical distributions of effort for 2020 (latest year of operation) and the average of 2016-2020 are shown in Fig. 2b. Operations were conducted almost only in the eastern part in recent years.

**Table 2b. Annual catch and effort and primary species in the IOTC area of competence (2016-2022) (purse seine fisheries).**

Year	Number of set	Catch (MT)				Total
		SKJ	YFT	BET	others	
2016	146	2,357	422	258	0	3,037
2017	201	3,129	712	424	0	4,265
2018	147	2,076	407	287	0	2,770
2019	9	187	24	24	0	235
2020	34	494	58	68	0	620
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0





**Fig. 2b. Distributions of purse seine fishing effort (number of sets) in the Indian Ocean in 2020 (upper) and average of 2016-2020 (lower).** Note: distribution in and up to 2020 was shown because there was no operation during 2021-2022.

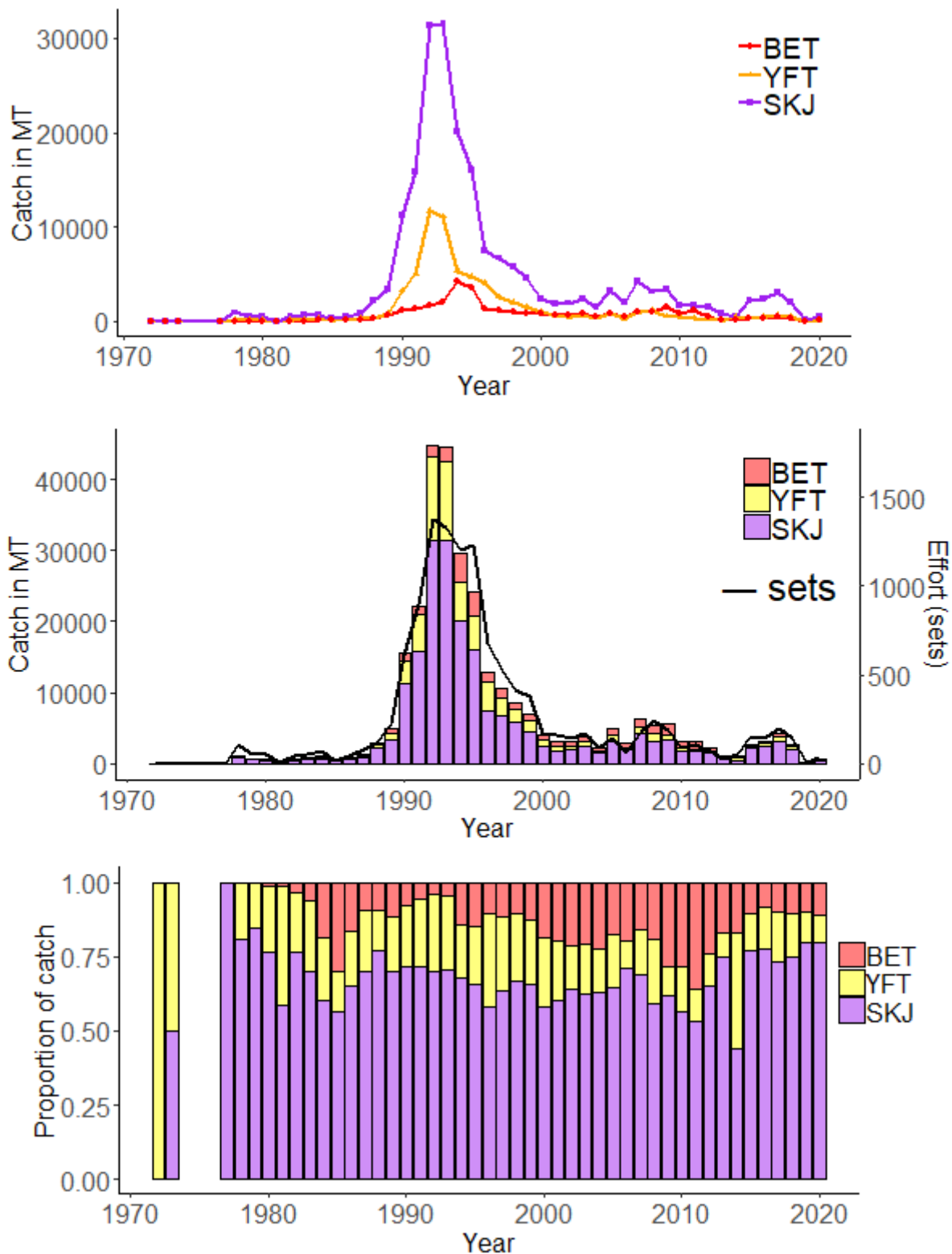


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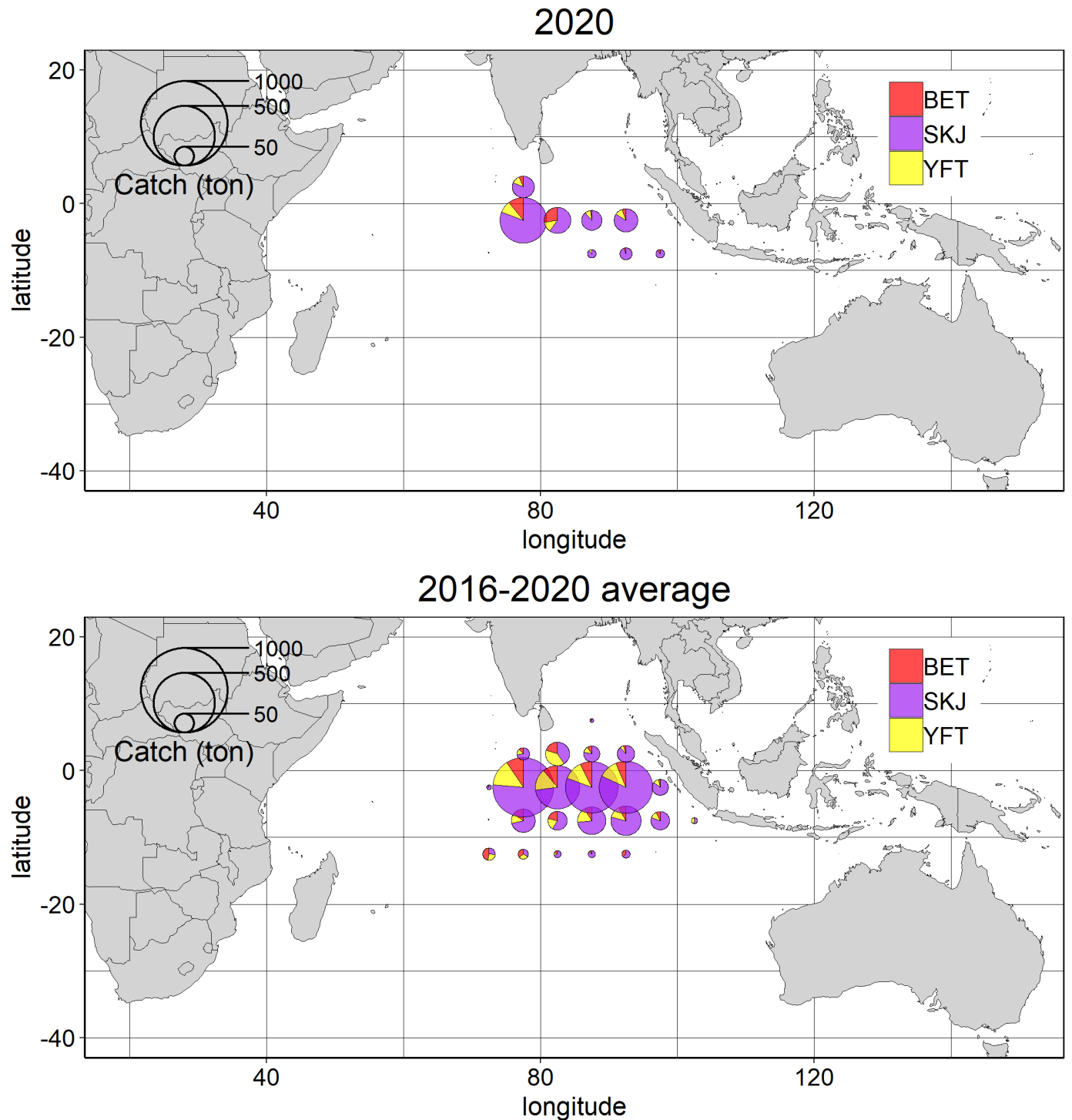
## Catch

During 1972-1987, the total catch was low (< 1,000 MT except 3 years), afterwards increased rapidly to about 45 thousand MT in 1992 and 1993 (the highest record), then decreased sharply to 11 thousand MT in 1997 and 7 thousand MT in 1999 (Fig. 1b). Thereafter it had fluctuated between 2.2 and 6.2 thousand MT until 2012 and the total catch in 2013 and 2014 decreased to approximately 1 thousand MT. Total catch in 2015 increased to 2.8 thousand MT because of increase in the number of vessels operated, and further increased until 2017 (4.3 thousand MT in 2017). The catch drastically decreased in 2019 due to decrease in fishing effort as explained. Catch in weight of skipjack, yellowfin and bigeye in 2020 (2019) was 494 (187) MT, 58 (24) MT and 68 (24) MT, respectively. There was no catch in 2021 and 2022.

Geographical distributions of catch in 2020 (latest year of operation) and average of 2016-2020 for major tuna species are shown in Fig. 3b. The main component of the catch was usually skipjack tuna in all the areas then yellowfin and/or bigeye tuna followed.



**Fig1b. Trends of SKJ, YFT and BET catch (top: actual and middle: cumulative with number of sets) and trends of species compositions of catch (bottom) exploited by Japanese purse seiners (1972-2020)**



**Fig. 3b. Geographical distributions of purse seine catch of SKJ, YFT and BET in 2020 (upper) and average of 2016-2020 (lower).** Note: distribution in and up to 2020 was shown because there was no operation during 2021-2022.

#### 4. RECREATIONAL FISHERY

No recreational fishery in the Indian Ocean.

## 5. ECOSYSTEM AND BYCATCH ISSUES

In accordance with FAO International Action Plans on sharks and seabirds, Japan established the National Action Plans on sharks and seabirds in 2001 and then revised them in 2009 and 2016. In addition, Japan has been taking actions in accordance with the FAO Guidelines on sea turtle by-catch and also taking actions in accordance with IOTC conservation and management measures on bycatch of sharks, sea turtles and seabirds.

### 5.1 Sharks

#### 5.1.1. NPOA sharks

Japan's National Plan of Action for Conservation and Management of Sharks was established in February 2001 and then revised in 2009 and 2016.

#### 5.1.2. Sharks finning regulation

Japan complies with Resolution 17/05 (IOTC) including the ban of shark finning for Japanese fleet operating in the Indian Ocean under ministerial ordinance of Fisheries Act since 2008.

#### 5.1.3. Blue shark

The Japanese longline fishery in the Indian Ocean catches blue shark. Catch data (in number and weight) of blue shark has been collected since 1994. Details of logbook data collection and verification is described in 6.1. Historical catches of three major shark species including blue shark in weight (MT) between 2018 and 2022 are shown in Table3.

As described in 6.3., scientific observers deployed to the Japanese tuna longliners have collected catch (in number and weight), biological and other information including body size, sex, fate of blue shark caught in the Indian Ocean since 2010. In 2022, observer data on blue shark could not be collected because scientific observer was not deployed to the commercial vessel due to the covid-19 pandemic.

Table 3 **Annual catch in weight (MT) of three major shark species caught by Japanese tuna longliners in the Indian Ocean (2018-2022) (2022 is provisional).**

Year	Blue shark	Porbeagle	Shortfin mako
2018	455	2	102
2019	485	2	63
2020	380	0	6
2021	397	0	9
2022	300	0	5

## 5.2 Seabirds

### **National strategies, NPOA-seabirds and recovery plan**

In order to reduce incidental catches of seabirds, in 2001, Japan instituted the effective and practical National Plan of Action for reducing incidental catch of seabirds in Japanese longline fishing operations to suit the NPOA-Seabirds adopted in 1999. Japan’s NPOA was developed based on (a) impact analyses based on the information from the Japanese longline operations and (b) consideration of the effective and practical methods to reduce incidental catch of seabirds. After instituting NPOA-Seabirds, Japan has revised it with the aim to effectively coping with the changes of the situation surrounding this issue. The newest revision was made in 2016.

Furthermore, FAJ has been mandating fishers to comply the domestic laws on relevant measures to reduce incidental catch of seabirds, which are based on various resolutions adopted by RFMOs.

### **Current seabird mitigation measures used by the national longline fleet**

Seabird bycatch mitigation measures stipulated in accordance with the IOTC Resolution 12/06 have been in force under a national notice on bycatch mitigation measures.

### **Data collection**

Japan has been collecting relevant scientific information for analyses (especially the ecology and population status of seabirds) from sources such as observers onboard and logbooks.

The interaction of seabirds was examined by the Japanese observer data from 2018 to 2020. The observer data for the years 2021 and 2022 were not obtained because of the impact of COVID-19. The results are described as follows:

#### *Eastern Indian Ocean*

Bycatch per unit effort (BPUE) tended to be higher in the second quarter than in the third quarter. Especially BPUE tended to be higher around 100E 40S. There were no observations in high-latitude areas in the first and fourth quarters. Thus, there was no observation of seabird bycatch in those periods in the Eastern Indian Ocean between 2018 and 2020.

#### *Western Indian Ocean*

There were observations in high-latitude areas during the first to third quarter in the Western Indian Ocean between 2018 -2020. BPUE tended to be relatively higher in the second quarter than in the other quarters. Especially BPUE tended to be higher around 50E 40S.

### 5.3 Marine Turtles

#### National Strategies and recovery plan

FAJ has developed guidelines for fishers to reduce sea turtle mortality in accordance with the FAO voluntary guidelines to reduce sea turtle mortality in fishing operations.

#### Interaction

The interaction of sea turtles was examined by the Japanese observer data from 2018 to 2020. The observer data for the years 2021 and 2022 were not obtained because of the impact of COVID-19. The results are described as follows:

##### *Eastern Indian Ocean*

There were observations in the first, third, and fourth quarters in the tropical area (0-15S) in the Eastern Indian Ocean. Sea turtle bycatch was observed in the first and fourth quarters. However, the BPUE was less than 0.02 at maximum at those periods.

##### *Western Indian Ocean*

There were observations in the first, third, and fourth quarters around Madagascar Island in the Western Indian Ocean. Sea turtle bycatch was observed in the first and fourth quarters. However, the BPUE was less than 0.02 at maximum at those periods.

**Table 5. Observed annual captures (number of individuals) of species of special interest by species by the Japanese longline in the IOTC area in 2018-2022. Data for the years 2021 and 2022 were not obtained because of the impact of COVID-19.**

IOTC code	English name	2018	2019	2020	2021	2022
<b>Seabirds</b>						
Aves	Unidentified birds	2	0	0	-	-
AG42	Other albatrosses	0	4	0	-	-
KPY	King penguin	0	0	2	-	-
AG42	Black-browed albatross	11	4	0	-	-
TQH	Indian yellow-nosed albatross	4	25	1	-	-
DIX	Wandering albatross	4	17	2	-	-
DIP	Southern royal albatross	0	1	0	-	-
AG42	Unidentified albatrosses	2	41	0	-	-
AG42	Black-browed albatross group	2	2	1	-	-
AG42	Shy-type albatrosses	5	13	2	-	-
DIC	Grey-headed albatross	8	10	8	-	-
PHU	Sooty albatross	0	17	0	-	-
PHE	Light-mantled albatross	0	8	0	-	-
MAH	Northern giant petrel	2	9	2	-	-
MAI	Southern giant petrel	1	3	4	-	-
PRX	Unidentified petrels	0	11	0	-	-
PCI	Grey petrel	0	1	5	-	-
PRO	White-chinned petrel	1	49	0	-	-
PRX	Spectacled petrel	0	1	0	-	-
PFC	Flesh-footed shearwater	1	5	0	-	-
PUG	Great shearwater	1	0	0	-	-
<b>Sea Turtle</b>						
AG50	Unidentified sea turtles	0	0	0	-	-
TTL	Loggerhead turtle	3	2	0	-	-
TUG	Green sea turtle	0	1	0	-	-
LKV	Olive ridley turtle	3	5	0	-	-
DKK	Leatherback turtle	2	3	0	-	-
<b>Mammals</b>						
Pinnipedia	Unidentified pinnipeds	0	4	0	-	-
ODN	Unidentified tooth whales	5	2	0	-	-



## 6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

### 6.1. Logsheet data collection and verification (including date commenced and status of implementation)

#### Longline

The logbook of longline, which started in 1952 and the format has changed several times afterwards, includes set by set data on catch number and weight in each species, and other information such as fishing date and location, fishing effort (the number of basket and hooks used), water temperature and starting/setting time of the gear. The number of hooks per basket is the important information as it is the proxy of the depth of the gear and target species. As for tuna and tuna-like fishes, six tunas (bluefin, southern bluefin, albacore, bigeye, yellowfin and skipjack), and six billfishes (swordfish, striped marlin, blue marlin, black marlin, sailfish and shortbill spearfish) are recorded by species in the logbook. In addition, information on the cruise (departure/arrival date and port names), vessel (name, size, license number and call sign), the number of crew and the configurations of the fishing gear (material of main and branch lines) are required to fill in the top part of the logbook sheet for each cruise. Japan revised the logbook format for distant water fishing vessels in accordance with IOTC Resolution 12/03,13/03 and 15/01.

Submitted logbooks are processed into electronic data files in the Fisheries Resources Institute (FRI) (former National Research Institute of Far Seas Fisheries (NRIFSF)). Various error checks such as date, location, fish weight, CPUE are also conducted by FRI before these data are finalized. Vessel characteristics (call sign, name, license number, etc.) are verified with registered persons.

#### Purse seine

The logbooks of purse seiners, which started in 1967, are required to be submitted to the Japanese government every month. The reported catch by species could be verified by comparing with the landing data, which are obtained from market receipts of three major unloading ports (Yaizu, Makurazaki and Yamagawa).

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

VMS installation on all distant water and offshore longline and distant water purse seine vessels is obligated since 1<sup>st</sup> August in 2007.

### 6.3. Observer scheme (including date commenced and status; number of observer, include percentage coverage by gear type)

#### Longline

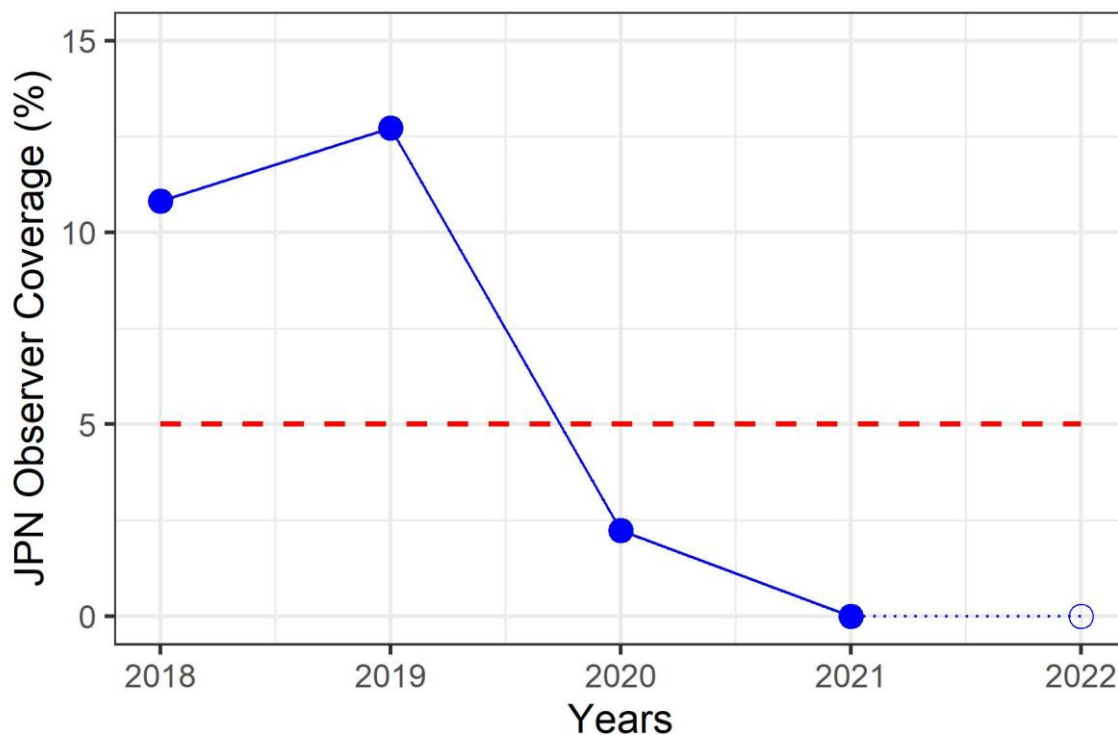
In accordance with Resolution 11/04 (superseded by 22/04) (Regional Observer Scheme), Japan started to deploy observers in July 2010. The number of trained observers onboard deployed in the IOTC area in 2018-2022 was 12, 12, 4, 0 and 0 respectively. Table 6 and Figure 4 show the observer coverages based on sets and hooks in 2018 – 2022. The observer coverages are more than 5% in 2018-2019, which satisfies the compliance level stipulated in Resolution 11/04. Japanese observer coverage was below 5% in 2020 and no observer coverage in 2021-2022, because most of the observer activities were stopped during 2020-2022 because of the COVID-19 pandemic.

Figure 5 is the heat map in the IOTC convention area showing the observer coverages deployed by Japanese tuna longline fisheries. The effort of observer data spreads evenly both in the western and eastern areas.

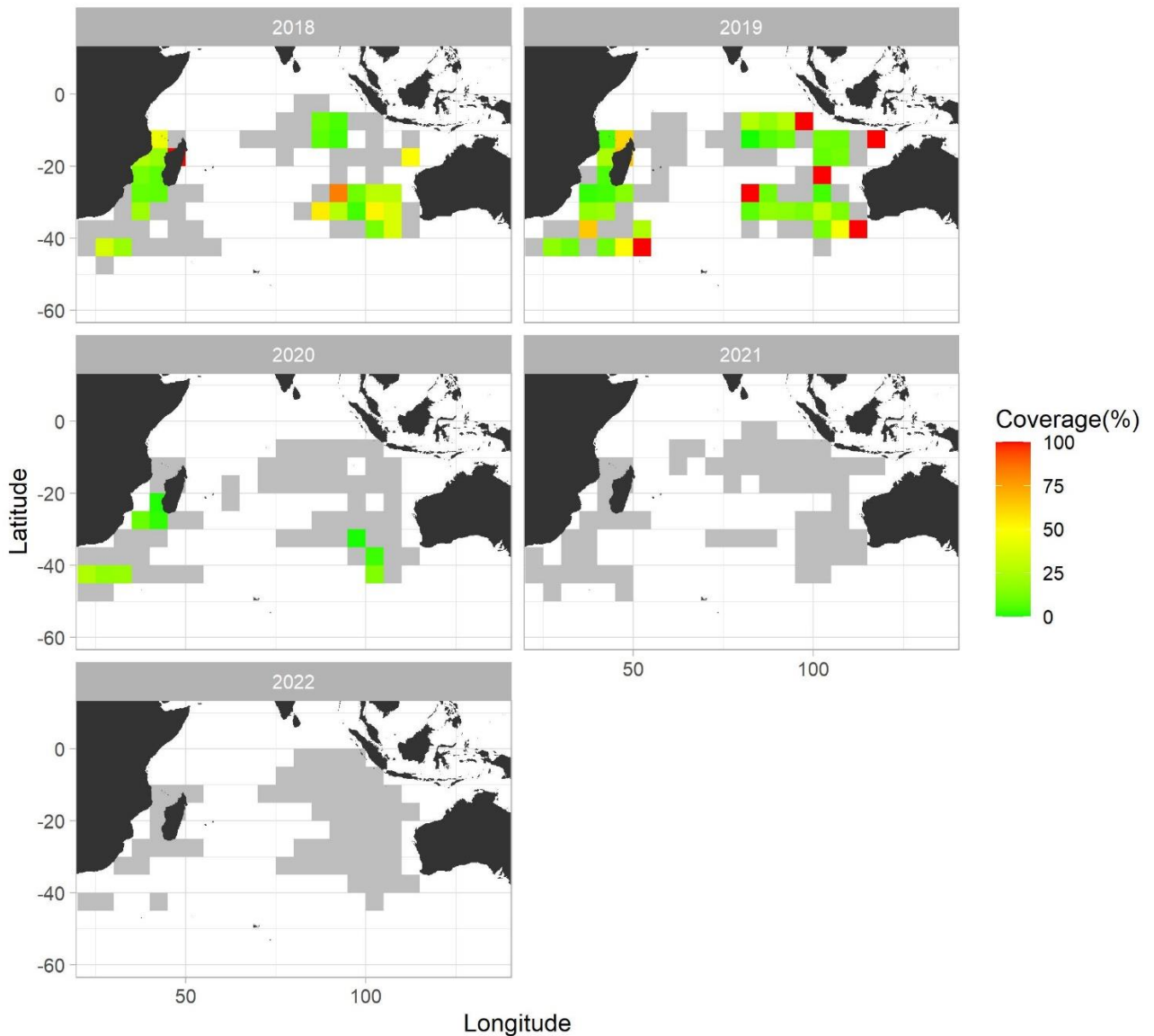
**Table 6.** Annual observer coverage by longline sets and hooks from 2018 to 2022.

No observer was deployed in 2021-2022 because of the impact of COVID-19. Set-based coverage (%) = observed sets \* 100 / total sets. Hook-based coverage (%) = observed hooks \* 100 / total hooks.

Year	Based on number of sets			Based on number of hooks		
	Total sets	Observed sets	Set-based coverage (%)	Total hooks	Observed hooks	Hook-based coverage (%)
2018	6,975	754	10.8%	22,207,349	2,462,475	11.1%
2019	6,332	805	12.7%	19,950,030	2,560,408	12.8%
2020	6,900	154	2.2%	21,648,621	496,687	2.3%
2021	7,676	0	0%	23,898,532	0	0%
2022	6,750	0	0%	20,687,237	0	0%



**Figure 4** The blue line indicates observer coverage of the Japanese tuna longline fisheries from 2018 to 2022 based on a number of sets. The red line indicates a 5% coverage line. A much smaller number of observers was deployed in 2020, and no observers were deployed in 2021 and 2022 because of the impact of the COVID-19 pandemic.



**Figure 5** The map shows the spatial distribution of observer coverage from 2018 to 2022 in the Japanese longline. The grey tile indicates no observer deployments, and the green to red tiles indicate levels of observer coverage (low to high). No observer was deployed in 2021 and 2022 by the impact of COVID-19.

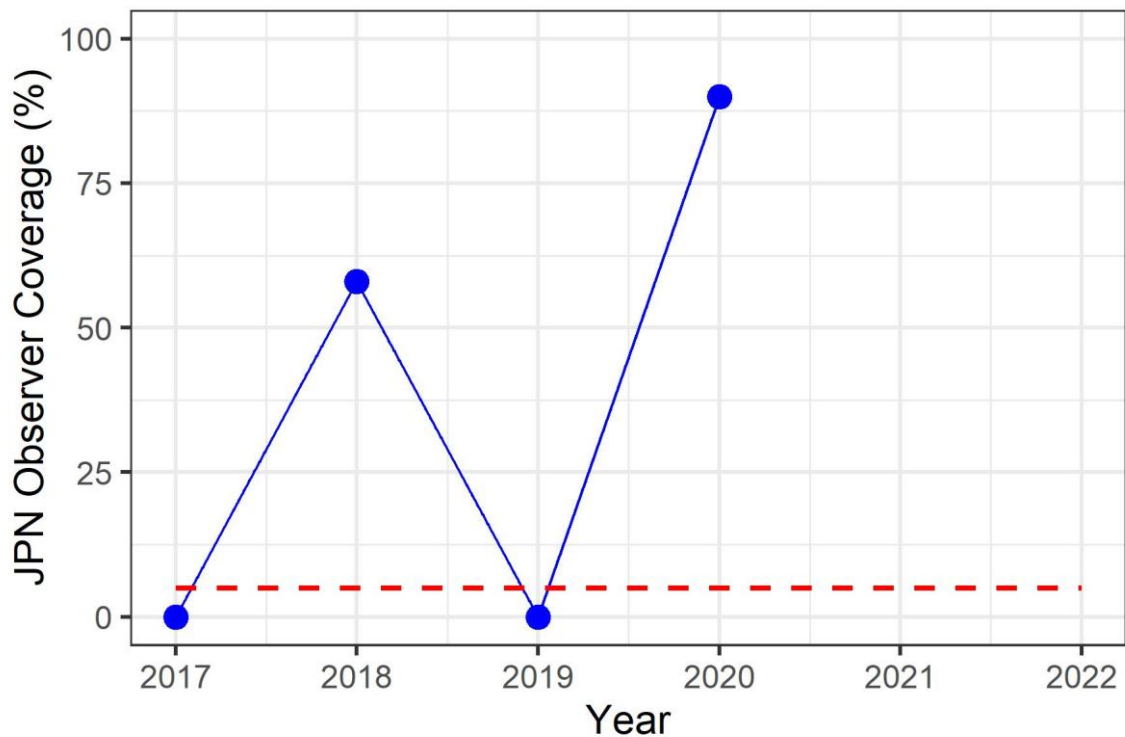
### Purse seine

Japan deploys observers also for purse seine fishery. The number of vessels and observer coverage are shown in Table 7. As observer program is conducted fiscal year (starts from April) basis, annual coverage is highly variable, and no sets were monitored in some of calendar years. There was no purse seine operation during 2021-2022, and so observer was also not dispatched.

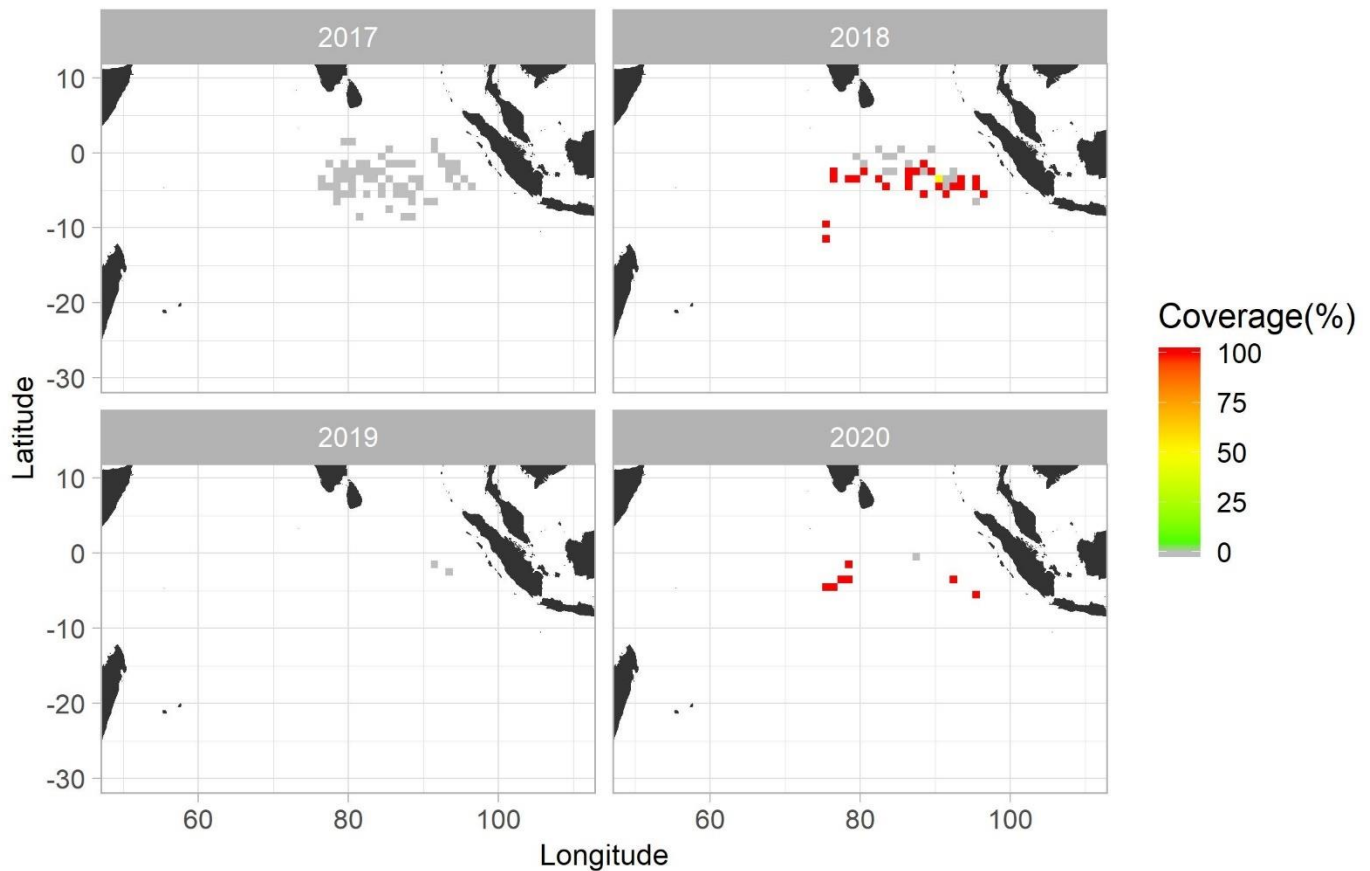
**Table 7.** Annual observer coverage by purse seine fishery from 2017 to 2022.

Year	Number of vessels observed <sup>*1</sup>	[A] Total sets <sup>*1</sup>	[B] Observed sets <sup>*1</sup>	coverage (%) = [B]*100/[A]
2017 <sup>*2</sup>	1	95	0	0.00%
2018	2	50	29	58.00%
2019 <sup>*2</sup>	1	2	0	0.00%
2020	1	10	9	90.00%
2021	0	0	0	-
2022	0	0	0	-

<sup>\*1</sup> Research vessels are not included, <sup>\*2</sup> One observer was on board, but no operation was made.



**Figure 6** Annual change in purse seine observer coverage in number of sets. The blue line indicates observer coverage of the Japanese purse seine fisheries from 2017 to 2022. The red dashed line indicates 5% coverage. Note: there was no purse seine operation during 2021-2022, and so coverage is not shown.



**Figure 7** Map showing the spatial distribution of observer coverage from 2017 to 2020 in Japanese purse seine. The Grey tile indicates the sets without observer deployments, and Green to Red tiles indicate levels of observer coverages (low to high). Note: there was no purse seine operation during 2021-2022, and operations by research vessels are not included.

#### 6.4. Port sampling programme

##### Longline

Port samplings for longline catch were only occasionally conducted (mainly at Tokyo, Shimizu and Yaizu). The date commenced is not known because there is no information of place and method for measurement in the database before 1985.

##### Purse seine

Japan has been conducting purse seine catch port sampling program since 1995 in the major Japanese landing ports. Because the catch in the Indian Ocean is mainly unloaded abroad, port samplings at Japanese ports have been conducted only nine years since 1995 at Makurazaki port as shown in Table 8. There are more sampling frequencies for the catch from the equatorial area of Pacific Ocean.

**Table 8.** Number of vessel trips or vessels active monitored, by species and fishery.

**Longline**

(Not available by trip or vessel number base)

**Purse seine**

Year	Number of trips
1995	1
1996	1
1997	1
1998	1
1999	3
2000	2
2001	2
2002	1
2006	1

**Table 9.** Number of fish measured, by species and fishery.

**Longline**

Year	SBT	ALB	BET	YFT	BLM	BLZ	SFA	SPF
1986	15	6	284	215	130	107	89	5
1987	93	20	130	116	35	53	31	21
1988	102	22	455	198	41	133	60	0
1989	59	9	532	364	83	86	71	0
1990	0	0	0	87	8	12	6	0
1991	0	0	21	47	0	0	0	0
1993	0	0	47	21	0	0	0	0
1994	0	0	0	0	2	4	1	0

**Purse seine**

Year	SKJ	YFT	BET
1995	1,842	1,571	2,181
1996	1,255	1,129	3,159
1997	1,093	968	460
1998	1,122	793	370
1999	2,474	1,235	848
2000	1,547	924	655
2001	1,648	787	713
2002	894	359	506
2006	896	472	783

**6.5. Unloading/Transshipment**

**Unloading**

The fishers are required to submit relevant documents to FAJ 10 days before the planned landing date including unloading abroad. When unloading abroad the owner of fishing vessels are required to obtain approval from FAJ in advance.

### Transshipment

Japan controls at sea transshipments by its vessels in accordance with the Resolution 21/02 on Establishing a Programme for Transshipment by Large-Scale Fishing Vessels. The fishers are required to obtain approval from FAJ in advance of at sea transshipments. To apply for in port transshipment, owners must submit relevant documents to FAJ 10 days before the planned transshipment. Fishers shall complete the IOTC transshipment declaration and inform the FAJ no later than 15 days after the transshipment.

**Table 10.** Quantities by species and fishery landed in ports located in the IOTC area of competence

(in tonnes)

Year	Gear	SBT	ALB	BET	YFT	SWO	MLS	BLZ	Others	Total
2022	LL	0	0	0	0	0	0	0	0	0
2022	PS	0	0	0	0	0	0	0	0	0

(Note) *SBT* (Southern bluefin tuna), *ALB* (albacore), *BET* (bigeye tuna), *YFT* (yellowfin tuna), *SWO* (swordfish), *MLS* (striped marlin) and *BLZ* (blue marlin)

**Table 11.** Quantities by species and fishery transhipped in ports located in the IOTC area of competence

(in tonnes)

Year	Gear	SBT	ALB	BET	YFT	SWO	MLS	BLZ	Others	Total
2022	LL	0	0	22.7	6.3.8	3.4	0.2	0	40.1	72.7
2022	PS	0	0	0	0	0	0	0	0	0

(Note) *SBT* (Southern bluefin tuna), *ALB* (albacore), *BET* (bigeye tuna), *YFT* (yellowfin tuna), *SWO* (swordfish), *MLS* (striped marlin) and *BLZ* (blue marlin)

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

Japan has been monitoring marlin catch by logbooks and observer program. As marlins are not target species by Japanese fisheries, the catch level is low especially in recent years (see Table 2a).

### 6.7. Gillnet observer coverage and monitoring

Not applicable. Japan is not operating gillnet fishery in the Indian Ocean.

### 6.8. Sampling plans for mobulid rays

Japan has been monitoring incidental catch of mobulid rays through the observer program.

**7. NATIONAL RESEARCH PROGRAMS [Desirable]**

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

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

**7.3. National research programs on sharks**

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

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

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

*No information is prepared for 7.1-7.6*

**7.7. Others**

**(1) Development and application of joint CPUE indices**

A collaborative study has been conducted to create joint CPUE for albacore, bigeye and yellowfin tuna in the Indian Ocean based on Japanese, Korean and Taiwanese longline fisheries data. In 2022, CPUE for bigeye tuna (2022–WPTT24(DP)–15) and albacore (IOTC–2022–WPTmT08(DP)-15) were created and reported. This study will be continued, and we are preparing for CPUE standardization of Indian Ocean yellowfin tuna for 2024 stock assessment.

**(2) Trials of Electronic Monitoring System (EMS)**

Please refer to IOTC-2022-WGEMS02-06.

**(3) IOTC-OFCF projects (2002-2023)**

The IOTC-OFCF Japan joint project (hereafter “the Project”) to improve tuna fisheries statistics in the developing countries in the IOTC area of competence has been implemented for last 20 years in six phases, i.e., 1st phase (5 years: 2002-2006), 2nd phase (3 years: 2007-2009), 3rd phase (3 years: 2010-2012), 4th phase (3 years: 2013-2015, and 1 year: follow up activities for 3 years in 2014), 5th phase (2017-2019) and 6th Phase (2020-2023: ongoing). The objective of the Project is to contribute to the sustainable utilization of tuna resources, by improving the systems of collecting and processing data on resources related to tuna fisheries in the Indian Ocean and providing technical guidance and assistance for strengthening data collection and production of statistics in target countries. In September 2022, FAO/IOTC and OFCF Japan signed the Cooperation Agreement as a new framework, and under this agreement, the Project will be able to continue for another five years from 2022 to 2026 for contributing to the fulfillment of the above-mentioned objective.

In 2023, the following activities are being undertaken in line with this agreement (Still in progress).

1) printing, translation and delivery of the IOTC species Identification Cards (ID cards); translation of Hindi and Bengali was implemented. 2) assisting IOTC Secretariat for identifying the current status of the use of Electronic Data Collecting Tools (EDCTs) for fisheries; OFCF



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Japan has compiled information (literature, webpage, questionnaire) on EDCTs application in IOTC area of competence and provided them to the IOTC secretariat.

**(4) Research cruises by Marine Fisheries Research and Development Center (JAMARC), Japan Fisheries Research and Education Agency (2016-2020)**

During 2016 to 2020, JAMARC conducted experimental purse seine fishing cruises in the eastern Indian Ocean. RV Taikei Maru No.1 was used for the study. The main objective of the research program is to mitigate bycatch of juvenile yellowfin and bigeye tunas in purse seining with FADs. Two kinds of study have been conducted; (a) Study on how large mesh size affect the catch size distribution of skipjack, yellowfin and bigeye tunas, and (b) Study on preset estimation of species and size composition of schools associated with FADs using wide band echo sounder. With the more accurate estimation, sets on FADs with larger concentration of juvenile tunas could be avoided and would lead to the protection of juveniles. From 2020 fiscal year research activity in Indian Ocean has been suspended as JAMARC shifted the research field to the Pacific Ocean. There were no research cruises during 2021-2023.

## 8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

**Table 12.** Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2022.

Res. No.	Resolution	Scientific requirement	CPC progress
12/04	On the conservation of marine turtles	<b>Paragraphs 3-10.</b> CPCs shall collect and provide all data on interactions including estimation of <b>total mortality</b> , to report successful mitigation measures, deterioration of nesting sites and swallowing of marine debris, for fishermen to foster its recovery and use de-hooking technique. All <b>LL</b> shall carry line cutters and de-hookers, use of whole <b>finfish</b> bait. <b>PS</b> shall avoid encirclement, conduct safely release, to encourage to adopt FAD designs that reduce the incidental catch. CPCs undertake research trials of <b>circle hooks</b> , whole finfish for bait, alternative FAD design.	Japan has complied with the requirements under the Resolution except for estimation of total mortality. In 2022, there were no LL observers on board due to the COVID-19 pandemic, thus no data collections nor activities were conducted. There were no PS operations in 2022.
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	<b>Paragraphs 3-7.</b> CPCs shall provide the information on how they are implementing this measure and achieve reductions in levels of seabird bycatch across through the use of effective mitigation measure. In the south of 25°S, CPCs shall ensure that all LL use at least <b>two of the three mitigation measures</b> . The design and deployment for <b>bird scaring lines</b> should meet the specifications.	Japan has complied with the requirements.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	<b>Paragraphs 4-8.</b> CPCs shall encourage their fishers to record and report incidental catches as well as <b>live release</b> and implement research to identify potential nursery areas. Scientific observers shall be allowed to collect biological samples.	Japan has complied with the requirements under the Resolution.
13/04	On the conservation of cetaceans	<b>Paragraphs 7-9.</b> CPCs shall report the information and data collected through logbooks, or observer programs. CPCs shall report, in which cetaceans have been <b>encircled by PS</b> . For CPCs having national and state legislation for protecting these species shall be exempt from reporting.	Japan has submitted by-catch information in the national report. There were no PS operations in 2022.
13/05	On the conservation of whale sharks ( <i>Rhincodon typus</i> )	<b>Paragraphs 7-9.</b> CPCs shall report the relevant information through logbooks, or observer programs. CPCs shall report any instances in which whale sharks have been <b>encircled by PS</b> .	There were no PS operations in 2022.



Res. No.	Resolution	Scientific requirement	CPC progress
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	<b>Paragraph 5-6.</b> CPCs shall encourage their fishers to record incidental catches and live releases of <b>oceanic whitetip sharks</b> . CPCs shall implement research on oceanic whitetip sharks.	Japan has complied with the requirements.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	<b>Paragraphs 1-10</b> Record <b>minimum information</b> on vessel, trip, gear configuration, operations, catch & effort then provide by June 30th of the following year.	Japan has complied with the requirements.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	<b>Paragraphs 1-7.</b> CPCs shall provide Total catch, Catch and effort data, bycatch, <b>Size (1 fish/ton)</b> , FADs data (PS) and others.	Japan has complied with the requirements except for size data: some species not complying with 1 fish/ton requirement for some years. No size data was collected in 2022 due to the COVID-19.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	<b>Paragraphs 6, 9 and 11</b> CPCs shall report data for catches of sharks including all available historical data, estimates and life status of discards & size. CPCs shall undertake research to: a) effectiveness of prohibiting <b>wire leaders</b> ; b) improve knowledge on key biological/ecological parameters, c) identify key shark mating....	Japan has complied with the requirements. In 2022, there were no LL observers on board due to the COVID-19 pandemic, thus life status of discards & size could not be collected. There were no PS operations in 2022.
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	<b>Paragraphs 2-5.</b> CPC shall record catch, effort, <b>size</b> and discard data. CPCs are encouraged to undertake scientific research.	Japan has complied except for numbers of size for some past years.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	<b>Paragraphs 7-11.</b> CPCs shall collect and report information of <b>5 billfish species</b> ( <i>Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish</i> ), i.e. catches, released alive and/or discarded, together with effort, size and discard.	Japan has complied with the requirements. In 2022, there were no LL observers on board due to the COVID-19 pandemic, thus life status of discards & size could not be collected.

Res. No.	Resolution	Scientific requirement	CPC progress
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	<b>Paragraphs 1 and 4.</b> CPCs shall include information in their Annual Reports on actions taken to implement their reporting <b>obligations</b> including shark species in particular steps taken to improve their data collection for direct and incidental catches.	Japan has complied with the requirements.
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence	<b>Paragraph 22.</b> CPCs shall set their gillnets at 2m depth from the surface in <b>gillnet</b> fisheries by 2023 to mitigate ecological impacts.	Not applicable. Japan has no gillnet fisheries.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	<b>Paragraph 11.</b> CPCs shall develop sampling plans for the monitoring of the mobulid rays catches. The sampling plans, including their scientific and operational rationale, shall be reported in the national scientific reports to the SC <b>starting in 2020.</b>	Not applicable. Requirement in paragraph 11 is limited to mobulid ray catches by the subsistence and artisanal fisheries. Japan has no such fisheries.
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (If not provided under Res 19/01 above)	<b>Paragraph 23.</b> 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.	Not applicable. Japan has no gillnet fisheries.
22/04	On a regional observer scheme	<b>Paragraph 12.</b> CPCs shall provide to the IOTC Secretariat and the IOTC Scientific Committee, annually in their national scientific reports, a description of the protocols supporting their observer programs and sampling schemes mentioned in paragraphs 3, 5, 7 and 8, the number of fishing vessels and of fishing effort sampled, as well as the coverage achieved by gear type in accordance with the provisions of this Resolution.	Japan has complied with requirement.

## 9. LITERATURE CITED

IOTC-2022-WPTmT08(DP)-15: Joint CPUE indices for the albacore *Thunnus alalunga* in the Indian Ocean based on Japanese, Korean and Taiwanese longline fisheries data (Kitakado T et al.)

IOTC-2022-WPTT24(DP)-15: Joint CPUE indices for the bigeye tuna in the Indian Ocean based on Japanese, Korean and Taiwanese longline fisheries data up to 2022 (Kitakado T, Wang S-P, Matsumoto T, Lee SI, Tsai W-P, Satoh K, Yokoi H, Okamoto K, Lee MK, Lim J-H, Kwon Y, Su N-J, Chang S-T and Chang F-C)

IOTC-2022- WGEMS02-06 : Progress report of EMS trials by Japan