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PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

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JAPAN

ANNUAL REPORT TO THE COMMISION
PART1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

National Tuna Fisheries Report of Japan

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SUMMARY

This paper describes recent trends in the Japanese tuna and billfish fisheries, e.g., longline, pole-and-line, purse seine and other miscellaneous coastal fisheries in the WCPFC Convention Area (WCP-CA), including fleet size, catch and fishing effort statistics. During the 2017–2022, the number of Japanese commercial longline vessels shows a declining trend but slightly recovered in recent year and the total number of pole-and-line vessels (larger than 20 GRT) and has decreased, while the total number of purse seine vessels which are engaged in tuna fishery shows no clear trend. The total 2022 WCP- CA catch of tunas (Pacific bluefin, albacore, bigeye, yellowfin and skipjack) by the Japanese fisheries (longline, pole-and-line, purse seine and miscellaneous fisheries) was still provisional and estimated to be 269,289 mt, and this is corresponding to 80% of 2021 total tunas catch (333,056 mt). In 2022, the total tuna catch by the purse seine fishery was 150,451 mt (56% of the total), with 73,865 mt (27%) by the pole-and-line fishery, 34,155 mt (13%) by the longline fishery, and the remaining (4%) by the other gears. Japan has conducted several research activities in relation to biological and stock assessment studies on tunas, tuna-like species and other bycatch species in the WCP- CA in 2022 and early 2023 such as several research cruises on larvae/juvenile sampling for Pacific bluefin and tropical tunas, and mitigation studies for bycatch species.

1. Introduction

This paper describes recent trends in the Japanese tuna and billfish fisheries, e.g., longline, pole-and-line, purse seine and the other fisheries in the WCPFC Convention Area (WCP-CA), including fleet size, catch and fishing effort statistics. With respect to the recent research activities, a brief explanation was given at section 6 of this report. The catch statistics is given not only in WCP-CA but in the other areas, depending on species, according to the section on "Annual Catch Estimates" contained in the document "Scientific Data to be provided to the Commission". The catch estimates for bigeye, yellowfin, blue marlin, black marlin and skipjack in the portion of the WCP-CA east of the 150˚ meridian of west longitude, which is the duplicating area with IATTC, is shown in Appendix Table 1, which is requested by Attachment N of the report of the SC4. Note that there are some catches in the portion of the WCP-CA east of the 150˚ meridian of west longitude only by the distant water and offshore longline fisheries. The catch estimates for Pacific bluefin, albacore, swordfish and striped marlin in other broad ocean areas are shown in Appendix Table 2. In addition to this, tables which are requested by CMMs were given in the Appendix Tables.

2. Data source

The Fisheries Research Institute (FRI) is responsible for compiling catch and effort statistics for major fisheries (pole-and-line vessels larger than 20 gross tonnage (GRT), longliners larger than 10 GRT, and tuna purse seiners). The other minor fisheries are referred to in the publication of the Statistics Department, Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries for 2017–2021 data (MAFFJ 2017–2021) and presented in this paper. The statistics of the last two years (2021 and 2022) are provisional in this report.

3. Trends in fleet size

Table 1 shows the number of Japanese tuna fishing vessels by fishery and vessel size class, which actually fished in the WCP-CA during the 2017–2022 period (coastal longline vessels were not included). As this number of active vessels is estimated based on logbook submitted, some vessels which actually operated but did not submit logbook yet were not included. The research and training vessels of longline and pole-and-line are not included.

The number of Japanese commercial longline vessels in total shows a declining trend, from 323 vessels in 2017 to 276 in 2021, and then slightly recovered to 312 in 2022. The number of vessels for each category, 10–49 GRT (more than 10 and less than 50 GRT), 50–99 GRT, 100–199 GRT and over 200 GRT, generally decreased, but it increased in 2022 for the smallest category.

The total number of pole-and-line vessels (larger than 20 GRT) has decreased during the 2017–2022. The number of vessels for category 50–199 GRT decreased from 48 in 2017 to 33 in 2022, corresponding to 30% decrease. The number of vessels for category over 200 GRT ranged from 22 to 31 without apparent trend during the period.

The total number of purse seine vessels which are engaged in tuna fishery ranged from 69 to 75 without apparent trend during the 2017–2022 period. The number of vessels of 50–199 GRT showed slight decreasing trend during the period. The number of vessels of 200–499 GRT shows a decreasing trend during the period and reached to 30 in 2022. Note that the number of distant water purse seiners which are allowed to operate in the tropical waters in the Pacific Ocean by government regulation was 29 in 2022.

4. Trends in catch and effort

The total 2022 WCP-CA catch of tunas (Pacific bluefin, albacore, bigeye, yellowfin and skipjack) by the Japanese fisheries (longline, pole-and-line, purse seine and miscellaneous fisheries) was still provisional and estimated to be 269,289 mt, and this is corresponding to 80% of 2021 total tunas catch (333,056 mt). In 2022, the total tuna catch by the purse seine fishery was 150,451 mt (56% of the total), with 73,865 mt (27%) by the pole-and-line fishery, 34,155 mt (13%) by the longline fishery, and the remaining (4%) by the other gears. The following is the description of each fishery in more details including tables of their catch and effort in the WCP-

CA.

4.1. Longline fishery

Japanese longline vessels are classified into three categories (coastal, offshore and distant water longline fisheries) according to the operation area and vessel size. The coastal longliners, whose size is less than 19 GRT, are allowed to fish only in Japan's EEZ. The offshore longline vessels are further divided into two categories, small offshore ones, 10–19 GRT, and offshore ones, 10–119 GRT, both of which are able to go beyond Japan's EEZ in the Pacific Ocean with some restricted areas in the eastern Pacific Ocean. Although the vessel size of two offshore categories is duplicated in the range of 10–19 GRT, most vessels of the latter category (10–119 GRT) are larger than 50 GRT. Distant water longliners are over 120 GRT and basically can fish in all oceans but need to follow the various domestic regulations that will ensure the management measures imposed by tuna RFMOs.

Catches in weight of tuna species (Pacific bluefin, albacore, yellowfin, bigeye and skipjack), swordfish and billfishes (striped marlin, blue marlin, black marlin, sailfish and shortbill spearfish) caught by the Japanese distant water and offshore (not including small offshore) longliners in the WCP-CA from 2017 to 2022 are shown in Table 2A. Historical changes in fishing effort and catch by species for this fishery are shown in Figs. 1 and 2, respectively, for the years 1971–2022. The total effort (in number of hooks) of distant water and offshore longline fisheries in all oceans decreased from 556 million hooks in 1981 to 495 million in 1983 and increased again to 557 million in 1988 after which it decreased steadily to less than 400 million since 1999. The ratio of the fishing effort exerted in the Pacific Ocean to that of the total fishing effort was about 40–50% in the latest decade. In the WCP-CA, around 60% of the total Pacific effort has been deployed since the middle of the 1980s. The fishing effort of distant water and offshore longlines in the WCP-CA was more than 200 million hooks during the 1971–1990 period, and then decreased to less than 100 million hooks in 2005, furthermore decreased to less than 50 million hooks after 2015 and decreased to 30 million hooks in 2022 (Table 2A). Primary target species for the longline catch are yellowfin and bigeye historically. The yellowfin catch was around 60,000 mt at a peak during the late 1970s and the early 1980s and since declined continuously to about 5,000 mt or less in the recent years. The yellowfin catch in 2022 was 4,385 mt, which was equal to the 5–years average (2017–2021) catch (Table 2, Fig. 2). The bigeye catch was relatively stable during the 1970s and 1980s ranging between 30,000 and 50,000 mt, and then decreased to between 20,000 and 30,000 mt during the mid–1990s to early 2000s. Further, the bigeye catch continued to decrease to 20,000 mt around 2005 and decreased to around 3,000 mt in recent years. The bigeye catch in 2022 was 1,965 mt which is 56% of the 5–years average catch of this species. The average quarterly effort distribution of distant water and offshore longline vessels during the 2020–2022 is shown in Fig. 3. The fishing grounds are located in east–west direction off Japan to Hawaii, equatorial area between 10˚ S and 15˚ N and off Australia. Distribution patterns of the effort do not show remarkable seasonal changes, but in the overall area, the fishing effort appeared to decrease in the second quarter than in the other quarters. Distribution of the catch by species by this fleet is shown in Fig. 4. They are classified into several clear patterns, swordfish was dominant species near Japan, albacore was abundant in the middle latitudes between 15–30˚ N and 25–40˚ S, and tropical tunas (mostly bigeye and yellowfin) were caught in the equatorial waters.

As for the small offshore longline fishery, catch by species in the WCP-CA during the 2017–2022 period is shown in Table 2B. The total number of hooks deployed by the small offshore longline fishery fluctuated in recent years and it was 50,530 thousand hooks in 2022. The bigeye catch for the small offshore longline show no apparent trend in this period. The bigeye catch was 4,117 mt in 2022, which is 60% of that in the average of previous 5 years. The yellowfin catch of the fishery in recent five years was stable around 4,000 mt. The yellowfin catch in 2022 was 2,680 mt which is 57% of the recent 5-years average. Geographical distributions of fishing efforts and catches by species of the fishery are shown in Figs. 5 and 6, respectively. At the area between 130–150˚ E and north of 15˚ N, albacore is dominant in the catch while bigeye catch is dominant from 140˚–160˚ E and from 30˚–40˚ N. In the south of 15˚ N, bigeye and yellowfin tunas were primary target

species.

4.2. Pole-and-line fishery

The catch and effort statistics in the WCP-CA by the Japanese pole-and-line fishery (larger than 20 GRT in vessel size) are shown in Table 3 during the 2017–2022. In addition to this, historical changes in catch by species and effort are shown in Fig. 7 for the period of 1972–2022. The data for 2022 are preliminary. Both the catch and effort which were at a peak around the late 1970s gradually decreased throughout 1980s. After 1991, the total catch and effort had been relatively stable until the mid–2000s, though the catch showed some fluctuations. After that, the catch and effort show decreasing trend with fluctuations. Total annual catches which ranged from 250,000 to 300,000 mt in the 1970s and early 1980s, decreased to around 150,000 mt in the 1990s and around 100,000 mt during 2008-2013. It decreased to around 80,000 mt during 2014-2021, and sharply decreased to 45,000 mt (preliminary) in 2022.

Skipjack occupied a major part of catches followed by albacore and yellowfin. The number of fishing days exceeded 60,000 in the 1970s, but it is less than 18,000 days from 2006 onward and is more or less 10,000 days after 2020.

During the 2017–2022 period, the number of fishing days (including no catch days) for this fishery shows decreasing trend. The number of fishing days was 9,544 in 2022 which is 78% of that in the average of the previous 5 years. (Table 3). The total catch of tunas (skipjack, bigeye, yellowfin and albacore) in 2022 was 45,600 mt, which is 72% of that in the average of the previous 5 years. The skipjack catch was 39,740 mt in 2022 which is 68% of that in the average of the previous 5 years.

Seasonal distributions of fishing effort (fishing days in 1x1 degree area) of the pole-and-line fishery are shown in Fig 8 as the average of 2020–2022. The fishing ground in the temperate waters (north of around 25˚ N) moved from southwest of Japan toward northeast as time progresses. In addition to these fishing grounds, in subtropical waters, north of the North Equatorial Current area was also the important fishing ground for this fishery in first, second, and fourth quarters of the year. In the third quarter fishing grounds off northern Japan expanded to further east of 170˚ E. There were few operations in the tropical waters south of 15˚ N in the third quarter.

Typical seasonal fishing grounds by vessel type are as follows. The distant water vessels (larger than 300 GRT) fish skipjack in the tropical waters and the North Equatorial Current area from the late 4th quarter to the early 2nd quarter, and turn to north of around 35˚ N, east of 150˚ E where they target on albacore from June to October. The offshore vessels (smaller than 300 GRT) primarily catch skipjack, and its fishing starts at sub–tropical area east of Northern Mariana Islands in February. This fishing ground gradually moves northward, and then reaches areas just close to Japan, south and/or east of Tokyo in May and June. The fishing ground of this fleet moves further northeastward to off northern Japan 35˚ N–42˚ N, west of 155˚ E, so–called the Tohoku area. Other than these offshore vessels, some of small sized offshore vessels operate around the Nansei Islands, southwest of Japan, with anchored FADs almost all year around. The other smaller size vessels in the offshore vessel category operate around the Izu Islands, south of Tokyo, almost all year round.

In most of the fishing grounds of the pole-and-line fishery, skipjack dominated among species, except for in some regions off north–east Japan, in which albacore dominated (Fig. 9). Most of yellowfin catch was made in the waters around the Nansei Islands located in the southern part of Japan.

4.3. Purse seine fishery

The catch and effort statistics in the WCP-CA by the Japanese tuna purse seine fishery (larger than 50 GRT in vessel size) are shown in Table 4 from 2017 to 2022. In addition to this, historical changes in catch by species and effort are shown in Fig. 10 for the period of 1970–2022. The data for 2021 and 2022 are preliminary. The fishing effort was less than 5,000 days in the 1970s, rapidly increased in the early 1980s, then the effort fluctuated between 7,500 to 9,500 days (Fig. 10). The total catch of this fishery showed rapid increase in the early 1980s, then, gradually increased until the late 2000s. Skipjack occupied a major part of catches followed by

yellowfin.

During the 2017–2022 period, the number of fishing days (including only searching) for this fishery shows a declining trend. The number of fishing days was 5,196 in 2022 which is 91% of that in the average of previous 5 years (5,703 days, Table 4). While the total catch of the purse seine fishery was fluctuating between 155,000 and 177,000 mt during the past 5 years. the total catch in 2022 showed a decline of 15% (144,445 mt) from the average of previous 5 years (168,794 mt). Skipjack catch for this fishery was 115,978 mt in 2022, which is 89% of that in the average of the previous 5 years (115,978 mt). Yellowfin catch for this fishery was 27,242mt in 2022, which is 75% of that in the average of the previous 5 years (36,324 mt).

The fishing effort (fishing and searching days) for the purse seine fishery distributed in two regions: tropical waters and northern waters. They are clearly separated by the border of 20˚ N (Fig. 11). The fishing grounds in the tropical waters were developed widely between 10˚ N, 130˚ E and 10˚ S, 180˚ with some seasonal fishing ground shifts. In the northern waters, the skipjack fishing season starts in April and continues until the third quarter in the vicinities of Japan in the Pacific Ocean. Geographical distributions of catches for skipjack, yellowfin and bigeye are shown in Fig. 12. In most regions, skipjack was the largest part of the catch among these three species in each 1˚ x 1˚ block as shown in Fig. 11.

This fishery utilizes tuna schools in association with FADs mainly in equatorial fishing grounds (Fig. 13). However, the operations for free swimming schools were dominant both in the equatorial waters and northern waters. Number of purse seine sets those encircled cetaceans is currently being added up. According to the reports of the master of a vessel/observer, the number of cases that Japanese tuna purse seine encircled a cetacean unintentionally was 13 times.

4.4. Other coastal fisheries

Besides the major tuna fisheries described above, there are miscellaneous coastal fisheries, which also catch tunas and tuna-like species such as troll, setnet and gillnet fisheries. The catch by species and fishery during the 2017–2022 is shown in Table 5. The figures in 2021 and 2022 are preliminary.

There used to be two kinds of large–scale gillnet (driftnet) fisheries. One is a large–mesh driftnet fishery, which fished billfishes and tunas, and the other is a squid driftnet fishery, which fished flying squid. Those fisheries used to operate in the wide area of high seas in the Pacific Ocean, however, stopped the operations on the high seas of the North Pacific in January 1993 due to a UN moratorium on the use of large–scale driftnets on the high seas. After 1993, the former gillnet fishery started operating within the Japanese EEZ targeting tunas and billfishes. Swordfish, striped marlin and skipjack are primary target species in the fishing ground. The annual catch by the fishery has been less than 1,500 mt since 1993.

The troll fishery takes various pelagic species including tunas. The size of troll vessels is generally small, mostly less than 10 GRT, and they make one–day trip. All catches by the troll gear are made within territorial seas. Skipjack is very important resources for the troll fishermen in the local communities, but skipjack catch by troll along the Pacific coast in the western Japan has been very low in recent years.

The setnet (also called as "trap net") fishery also catches pelagic species including tunas.

4.5. Total catch for tropical tunas for all gears combined

The total catch of tropical tunas by all gears combined, including coastal fisheries (longline, pole-and-line, troll and other miscellaneous gears), are shown in Table 6 for 2017–2022. The total catch of skipjack shows a increasing trend during this period from 193,517 mt in 2017 to 176,733 mt in 2022. The total catch of bigeye shows a declining trend during this period from 16,069 mt in 2017 to 9,074 mt in 2022. The total catch of yellowfin shows a decreasing trend during this period from 52,540 mt in 2017 to 43,332 mt in 2022.

5. Status of tuna fishery data collection systems

5.1. Logbook data collection and verification

Longline

The owners of fishing vessels larger than or equal to 10 GRT are required to submit the log sheet on their

operations and catch information to the Japanese government. Coastal, small offshore and offshore vessel must submit it by each cruise within 30 days after the end of cruise while distant water longliners are required to submit it every ten days. The log sheet of longline contains set by set data on catch number and weight in each species, and other information data such as fishing date and location, fishing effort (the number of basket and hooks used), water temperature. Catch weight information was not included in the logbook till 1993. The number of hooks per basket is essential information as it suggests the depth of the gear and target species. As tuna and tuna-like fishes, six tunas (Pacific bluefin, southern bluefin, albacore, bigeye, yellowfin and skipjack), and six billfishes (swordfish, striped marlin, blue marlin, black marlin, sailfish and shortbill spearfish) are separately recorded in the log sheets. Additionally, information on the cruise (date and port of departure and arrival of the cruise), vessel (name, size, license number and call sign), the number of crew and the configurations of the fishing gear (material of main line and branch line) are asked to fill in on the top part of the sheet by each cruise.

Submitted log sheets are processed into electronic data files. Error checks for several types of information, such as date, location, range of weight, CPUE, are conducted before these data are finalized. Vessel characteristics (call sign, name, license number, etc.) are verified with the corresponding register.

Because the coverage rate of log sheets is not necessarily 100% for longline fisheries, it is necessary to raise the sample values to represent 100 %. The coverage rate for the combined both of distant water and offshore longline fisheries (20–120 GRT, excluding 10–20 GRT vessels that operate outside of the Japanese EEZ) has been about 90 – 95% of total operation since 1994, The coverage rate by fishery category for recent years is shown in Table 7. In the case of the distant water longline fishery, information on the total number of operations aggregated by sub–areas and month provided by the fishermen's association was used to raise the log sheet data to the total catch. For the offshore longline vessels larger than 20 GRT, the total number of operations by prefecture (which the vessel belongs to) by year given by MAFFJ has been used to raise the log sheet data to the total catch. Since 2008, Vessel Monitoring System (VMS) information is utilized to raise the log sheet data. As for the small offshore longline, although reliable information of coverage rate had been available until 2007, it became possible to raise for the data of 2008 onward due to the utilize of VMS. But reliable information of coverage rate is not available for the coastal longline yet.

Since the catch in weight in log sheet is in processed weight, so that conversion factors by species are used to convert processed weight to whole weight.

. An electric logbook system had been available for only distant water longline fishery since November 2016, but also for the offshore and small offshore longline fishery since August 2022. It allows for fishermen to fill out logbook in electric file and submit the electric file of logbook through web site to the server running by the Fishery Agency of Japan. Fishermen is moving to change from the ordinary log sheet by paper to the electric logbook system.

Pole-and-line

The license holders of the distant water pole-and-line or the offshore pole-and-line (mostly vessel larger than 20 GRT) are required to submit a log sheet on their operations and catch information to the Japanese government within 30 days after the end of cruise. The log sheets submitted to the government are forwarded to the FRI and are then compiled. Although the log sheet submission is mandate, the submission rate for the pole-and-line is not necessarily 100%. The coverage is likely to be around 80% in the beginning of the history of the pole-and-line log sheet system (1970s), but the submission rate was improved after that, to nearly 100% in 1990s. The coverage rate in Table 7 for the pole-and-line was calculated by

(Number of the vessels which submitted log sheet at least once) / (Number of vessels which actually operated).

Similar error check processes to the longline are also conducted. In case there is significant omission or errors, the FRI staff will contact the owner or other relevant person to obtain information to revise.

An electric logbook system will be available from August 2023. It allows for fishermen to fill out logbook in electric file and submit the electric file of logbook through web site to the server running by the Fishery

Agency of Japan. Fishermen is moving to change from the ordinary log sheet by paper to the electric logbook system.

Purse seine

The logbooks of 50 – 200 GRT class and greater than 200 GRT vessels were reported when fishermen caught tuna species. The coverage of the latter class was 100 % and the reported catch by species could be verified by comparing with the landing data, which were obtained from market receipts of three major unloading ports (Yaizu, Makurazaki, and Yamagawa).

In 2011, the reporting system from fishermen to the government was changed for the cruises for which purse seine vessels operates in the Sea of Japan or the East China Sea. Such fishermen used to submit the log sheets designed for tunas when they operated targeting tunas or submit the log sheets designed for small pelagics, such as mackerel sardines and anchovies, when they operated targeting small pelagics. The FRI used to compile the logbook data only for the tuna caught operation. After implementation of the new system, fishermen submit a single kind of log sheets regardless of target species. As a result, the logbook data used for fishing operations in the Sea of Japan or the East China Sea now have a large quantity of zero catch records of tuna, so care should be given when interpreting the fishing effort for tunas using the data coming from the new log sheets.

An electric logbook system will be available from 2023. It allows for fishermen to fill out logbook in electric file and submit the electric file of logbook through web site to the server running by the Fishery Agency of Japan. Fishermen is moving to change from the ordinary log sheet by paper to the electric logbook system.

5.2. Size data collection and compilation

The FRI has collected size data for tuna and tuna-like species to use for biological study and to provide to stock assessments. There are several kinds of data source for the size data such as at–sea sampling and port sampling for the fish caught by commercial fisheries and onboard sampling by training and research vessels.

5.2.1. At–sea sampling on commercial fishing vessels

Length data had been voluntarily collected for all tunas and billfishes by fishermen who were on board distant water longline vessels. Fishermen recorded the data in the field note which was provided by the FRI, and sent the field note back to the FRI after the completion of the cruise. The length data reported by the at–sea sampling was compiled on a daily basis as temporal resolution and 1˚ x 1˚ block basis as geographical resolution and is stored in a specific database for size data for tunas and billfishes. In some cases, fishermen took measurement at an interval of 2cm or 5cm though the FRI encouraged measurement at an interval of 1cm. The length data provide from fishermen in this way is available until 2014.

5.2.2. At–sea sampling on training and research vessels

Size data is collected for not only tunas and billfishes but also all animals caught by training and research vessels using longline gears. The crew and/or students measured the length and weight of the animals retrieved on board and reported the data to the FRI. Size data is collected for skipjack (and the other species sometimes) by training and research vessels using pole-and-line gears. The crew and/or students measured the length and weight of skipjack retrieved on board and reported the data to the FRI. Size data received from training/research vessels is compiled and stored in the same manner as the at–sea sampling on commercial fishing vessels.

5.2.3. Port sampling

Port sampling is an important way to collect size data and occupies the largest percentage of size sampling which the FRI has been conducting. Measurement is done at a timing between unloading from fishing vessels and starting of auction. Samplers randomly conduct measurement in general but conduct measurement for all individuals in some cases. In general, size data collected by port sampling is compiled on a monthly basis as temporal resolution and by specific blocks of 1˚ x 1˚, 5˚ x 5˚, 5˚ x 10˚ or 10˚ x 20˚ as geographical resolutions, depending on the width of the range of fishing position at the cruise. The temporal and geographical resolution is determined by the range of each cruise in which size sampling is done based on the information in the interview with the captain or fishing master of the fishing vessel at unloading sites and/or logbook data reported

by fishermen.

As a special case, skipjack unloaded as unfrozen fish is recorded in a unique way from the above even in measurements by port sampling. In most cases of measurement of such skipjack, information of the fishing dates on a daily basis and fishing positions on a minute basis (finer than 1˚ x 1˚ block) are recorded on the size database for skipjack, since fishing dates and fine positions can be specified by the interview.

The followings are species, types of gear/fishery and locations of sampling site for port sampling conducted in 2021.

• Size data was collected for albacore and skipjack caught by distant water pole-and-line vessels by the FRI staff at Yaizu.

• Size data was collected for skipjack caught by offshore pole-and-line vessels which unload unfrozen fishes at Kesennuma by the FRI staff.

• Size data was collected for albacore and skipjack caught by distant water pole-and-line vessels by the FRI staff at Yaizu.

• Size data was collected for skipjack caught by the middle–sized pole-and-line vessels which unload unfrozen fishes at Kesennuma by the FRI staff.

• Size data was collected for albacore, swordfish and striped marlin and sharks caught by the offshore longline and pole-and-line vessels at Kesennuma

• Size and sex data were collected for blue shark, shortfin mako, salmon shark and other species caught by offshore, small-scale offshore and coastal longline vessels and gillnet fishing vessels at Kesennuma. Majority of measurement was for blue shark and shortfin mako (details are described in FRI 2023). For blue shark, subsampling (about 2–3 individuals) was conducted for each container and shortfin mako was landed by individuals and measurement was conducted as much as possible.

• Size data was collected for Pacific bluefin caught by the vessels of most of fishing gears at most of prefectures where bluefin is unloaded under the nationwide port sampling project. Also, size data was collected for albacore, yellowfin, bigeye and swordfish and billfishes caught by offshore and small offshore and coastal longline vessels, for skipjack caught by mid–sized pole-and-line at major landing ports under the same project.

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6. Research activities related to tuna and tuna-like species in the WCPFC Convention Area

6.1. Observer program

Purse seine

The observer program for purse seine boats has been implemented in the tropical Pacific Ocean since 1995. The details of time and position at each operation, type of association, and the length frequencies of samples were taken by scientific observers in each operation. After 2012, the observer program for tuna purse seiners in the vicinity of Japan's waters has been started. In 2022, the observer program for the purse seiners was temporarily suspended due to the COVID–19 pandemic.

Long line

The observer program for longliners in the WCP-CA was started in 2008. The information on fishing vessels, fishing operations and all the catches in each operation were collected and most of retrieved animals were measured as much as observer could. The number of operations and catches by species and species groups are shown in Table 8.

Due to COVID–19 pandemic, observer deployment for longline vessels had been suspended during 2022 in the WCP-CA, however, since the longline cruise with observers on board began at the end of 2022, the reporting of observer data will gradually be able to resume in 2023.

6.2. Tagging

Skipjack tagging

The FRI has been conducting skipjack tagging research mainly to investigate migration patterns around the

fishing ground off Japan. One offshore pole-and-line vessel (20-119 GRT) and one distant water pole-and-line vessel (> 199 GRT) were fully chartered to conduct the research off Japan in October 2022 and in tropical areas (0°-25°N, 135°-180°E) in February and March 2023, respectively. A total of 7,245 skipjack tuna (1,250 off Japan and 5,995 in tropical areas) including 256 individuals (75 off Japan and 181 in tropical areas) with archival tags (Lotek LAT2910) were released.

In addition, skipjack tagging has been conducted in cooperation with Ajinomoto Co., Inc. in the coastal area of southwestern Japan since 2009. A total of 750 skipjack tuna (324 in June 2022 and 426 in March 2023) including 5 individuals (all in June 2022) with archival tags were released. Besides above studies, three research/training cruises on pole-and-line vessels conducted skipjack tagging in 2022 around off Japan areas. A total of 148 skipjack tuna including 10 individuals with archival tags were released in off Hachijo Island (33˚ N, 139˚ E), and Wakayama (33.15˚ N, 135.75˚ E), and Ibaraki (36.5˚ N, 143.2˚ E).

Shark and swordfish tagging

In 2022, conventional tags were attached to 21 blue sharks in the area around 19 degrees north and 160 degrees east during the research cruise of Japanese research and training vessel (JRTV). The released blue sharks were subadult and adult and the percentage of male was 57%.

6.3. Research cruise

PBF larval/juvenile sampling

Since 2011, larval and juvenile surveys have been conducted to estimate current main spawning area and period of PBF. In 2022, research cruises were designed to focus on ecological studies of larval/juvenile PBF by R/Vs, Kaiyo-Maru of Japan Fisheries Agency, Yoko-Maru, Hokko-Maru of FRA and four prefectural R/Vs. Surveys for larval/juvenile PBF were conducted in the south of Japan around Nansei Islands area, where is a major spawning ground of PBF, from May to August and also in the Sea of Japan, which is another spawning ground of PBF, from July to August. In addition to these two spawning grounds, the survey was conducted in Joban area in the coastal area of northeastern Japan in July and August, where is recognized as the spawning ground of PBF recently. In 2022, PBF larvae were captured by all cruises in the spawning grounds. Small juveniles of PBF around 2-5 cm FL were also captured in Nansei Island area and Joban area by small surface-trawl net. The number of larval and juvenile PBF collected is currently being aggregating.

Collected samples are being examined by a variety of approaches such as genetic identification, aging, growth analysis, stable isotope, microchemistry and stomach contents analyses to elucidate the survival processes of larval and juvenile PBF in relation to biological and environmental factors, which should help to understand the recruitment mechanism to PBF fisheries around Japan.

Skipjack larval/juvenile sampling

In order to better understand the relationship between recruitment variability and growth during the early life stage of tropical tunas, a cruise was conducted with the aims to (1) describe the variations of the early life stage growth among areas and (2) describe the horizontal distribution of skipjack and the other tropical tunas. Two research cruises were conducted from 25 October to 13 November 2022 around tropical areas and from 15 November to 9 December around the Nansei Island areas by R/V Shunyo-Maru. Those research cruises conducted CTD (XCTD) observations, mid-water and tucker trawls, 2-m ring plankton net and NORPAC and trolling. 36 Skipjack juveniles were captured in two research areas.

6.4. Biological sampling for swordfish, billfish and sharks

Samples of sagitta, reproductive organ, dorsal fin and anal fin were collected from a total of 44 swordfish, 73 striped marlin, and 17 blue marlin for the collaborative study within ISC billfish working group to estimate biological parameters of billfishes. For the study of genetic population structure and other ecological study, muscle tissue was collected from 16 swordfish, 60 striped marlin, and 9 blue marlins.

For sharks, samples of whole body were collected for five shortfin mako and one salmon shark for the biological study of life history, genetic population structure, and other ecological study. Reproductive organ, muscle, and vertebrae were collected from one adult female shortfin mako to investigate the reproductive cycle,

growth, and distribution pattern. In addition, reproductive organ (i.e., ovary) were collected from two bigeye thresher for the study of reproductive ecology.

All the samples above were collected by the research cruise (including chartered vessel) and commercial/training longline operation, and sportfishing conducted in the North Pacific Ocean in 2022.

6.5. Bycatch species related research

Mitigation studies for bycatch species

A research cruise was conducted from May to June 2023 using a longline fishing vessel of Den–Maru No. 37 (167 GRT), covering an area of 20º–35ºN and 137º–170ºE of the North Pacific Ocean. The objective of this research cruise was to investigate practical use of lure bait for bycatch mitigation, satellite tagging for loggerhead sea turtles and collection of video footage for analyzing bycatch process during pelagic longline operation.

6.6. Experiments of growth for tropical tunas

Bigeye and yellowfin tunas (fork length (FL): 31.1–54.2 cm) were caught by a pole and line fishery at the coastal waters of Amami archipelago, Japan (27 °N, 129 °E) in October 2020 and May 2021. They were reared for an experiment at a sea cage (28 °N, 129 °E) to investigate mechanism to form the increment and eventually verify the appropriate ageing methods for these species. Fish length was measured and oxytetracycline (OTC) was injected when they were released into the cage. After 57 to 60 days, 152 to 181 days, 343 to 366 days, 496 to 518 days, the fish were pulled out once to fourth from the cage, and FL was measured and OTC was injected each time, then they were released into the other cage. A bigeye and 38 yellowfin tunas were continuously reared over 347 days, the growth rates of them were 0.04 cm/day (growth increment 13.8 cm; rearing period 347 days) and 0.08 ± 0.01 cm/day (growth increment 13.7–54.5 cm; rearing period 347–518 days), for bigeye and yellowfin tunas, respectively.

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MAFFJ 2017–2021. Annual report of catch statistics on fishery and aquaculture 2017–2021, on the portal site for governmental statistics "e–Stat" (published on May 21, 2023). https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00500216&tstat=000001015174&cycle=7&year=20200&month=0&tclass1=000001015175&tclass2=000001162470

Table 1. Number of fishing vessels engaged in tuna fisheries in the WCPFC Convention Area by gear and size of vessel. Figures in the last two years indicate provisional data. In the number of longline vessels, coastal longliner and training/research vessels are not included. In the number of pole- and-line vessel, research and training vessels are not included.

Longline	**10–49 GRT**	**50–99 GRT**	**100–199 GRT**	**200– GRT**	**Total**
2017	233	15	16	59	323
2018	230	14	16	63	323
2019	230	13	17	51	311
2020	227	11	15	42	295
2021	201	10	17	48	276
2022	248	6	16	42	312
Pole-and-line	**20–49 GRT**	**50–199 GRT**	**200– GRT**	**Total**	
2017	1	48	31	80	
2018	1	44	25	70	
2019	1	42	24	67	
2020	1	38	22	61	
2021	1	36	22	59	
2022	1	33	22	56	
Purse Seine	**50–199 GRT**	**200–499 GRT**	**500– GRT**	**Total**	
2017	37	34	4	75	
2018	35	30	4	75	
2019	35	31	5	69	
2020	34	31	6	71	
2021	33	29	7	71	
2022	32	30	8	70	

Table 2. Fishing effort (in 1000 hooks) and catch (MT) in the WCPFC convention area by species for the Japanese distant and offshore (top table) and small offshore (bottom table) longline fisheries. Figures in the last two years indicate provisional data. OSHK; other sharks.

A. Distant water (120– GRT) and offshore (10–119 GRT) longlines

Year	#hooks	PBF	ALB	BET	YFT	SWO	MLS	BUM	BLM	SFA	SSP	SKJ
2017	45,882	22	5,814	3,867	5,660	3,066	181	804	53	72	55	64
2018	47,143	18	4,441	4,565	5,408	3,429	149	719	57	75	47	36
2019	43,580	23	3,998	3,464	5,102	2,689	203	649	30	62	25	43
2020	37,072	73	3,672	2,955	2,504	3,928	209	373	22	23	18	41
2021	36,949	130	5,281	2,679	3,285	3,142	223	433	26	31	12	72
2022	30,669	90	3,667	1,965	4,385	2,299	186	380	29	46	16	114
Year	BSH	LMD	POR	SMA	OCS	THR	FAL	SPN	RHN	OSHK		Total
2017	10,140	128	0	640	0	61	0	0	0	1		30,630
2018	9,687	241	0	682	0	18	0	0	0	0		29,571
2019	8,624	150	0	668	0	35	0	0	0	0		25,765
2020	6,616	63	0	456	0	32	0	0	0	0		20,984
2021	10,213	212	0	474	0	29	0	0	0	0		26,241
2022	9,286	347	0	505	0	11	0	0	0	0		23,326

B. Small offshore longline (10–19 GRT)

Year	#hooks	PBF	ALB	BET	YFT	SWO	MLS	BUM	BLM	SFA	SSP	SKJ
2017	66,682	–	–	7,613	4,451	1,884	541	789	14	39	0	4
2018	65,322	–	–	7,461	4,743	1,732	471	769	14	47	0	3
2019	64,136	–	–	7,175	5,838	1,253	667	788	13	32	0	2
2020	66,627	–	–	5,907	3,567	1,408	718	617	19	41	0	3
2021	67,958	–	–	5,730	4,614	1,163	593	753	19	13	0	2
2022	50,530	–	–	4,117	2,680	954	282	489	12	16	0	1
Year	BSH	LMD	POR	SMA	OCS	THR	FAL	SPN	RHN	OSHK		Total
2017	1,571	3,092	0	66	0	47	0	0	0	1		31,649
2018	2,026	2,287	0	88	0	31	0	0	0	0		28,578
2019	1,694	2,206	0	71	0	11	0	0	0	0		28,213
2020	1,021	1,929	0	34	0	10	0	0	0	15		25,068
2021	2,117	685	0	54	0	14	0	0	0	17		30,933
2022	1,410	429	0	11	0	2	0	0	0	19		20,277

*The catches for PBF and ALB are not appropriate to show here as the category "small offshore". See also Table 6 and Appendix Tables 2 for PBF and ALB catches by longline.

Table 3. Fishing effort (days fished and number of poles) and catch by species (mt) for the Japanese offshore and distant water pole-and-line fishery in the WCPFC convention area. Figures in the last two years indicate provisional data.

Year	#days	#pole	SKJ	YFT	BET	PBF	ALB	Total
2017	12,913	236,713	52,255	1,747	1,241	–	20,863	76,106
2018	13,445	249,145	65,740	1,577	1,276	–	17,795	86.388
2019	12,663	233,758	66,960	1,360	431	–	8,356	77,107
2020	11,273	204,436	39,663	1,283	947	–	36,389	78,282
2021	10,747	191,544	67,721	1,465	1,358	–	11,241	81,785
2022	9,544	178,057	39,740	1,036	1,157	–	3,667	45,600

* PBF catches for offshore and distant water pole-and-line were not estimated separately. See also Table 6 and Appendix Table 2 to see statistics for PBF catch.

Table 4. Fishing days including searching days and catch (mt) by species for the Japanese tuna purse seine fishery in the WCPFC Convention Area based on logbook data. Figures in the last two years indicate provisional data.

Year	#days	SKJ	YFT	BET	PBF*	ALB	Total
2017	6,083	128,122	34,475	2,645	–	–	165,242
2018	5,231	132,838	40,673	3,626	–	–	177,137
2019	5,530	128,082	39,767	2,125	–	–	169,974
2020	5,947	119,047	33,640	2,404	–	–	155,091
2021	5,748	141,541	33,066	1,922	–	–	176,528

* PBF and ALB catches for tuna purse seine were not estimated separately. See also Table 6 and Appendix Table 2 to see statistics for PBF and ALB catches.

Table 5. Fishery statistics reported in annual MAFFJ report. Japanese catches (mt) for miscellaneous coastal fisheries by species and gear in the WCPFC Convention Area. SKJ: skipjack tuna, YFT: yellowfin tuna, BET: bigeye tuna, PBF: Pacific bluefin tuna, ALB: albacore. SWO: swordfish, MLS: striped marlin, BLZ: blue marlin, BLM: black marlin. Figures in the last two years are provisional.

Coastal longline (miscellaneous coastal longline in MAFFJ report)

	SKJ	YFT	BET	PBF*	ALB*	SWO	MLS	BUM+BLM	Total
2017	6	1,666	291	–	–	91	223	116	2,393
2018	6	1,611	298	–	–	69	240	113	2,337
2019	3	1,987	298	–	–	54	222	114	2,678
2020	2	1,616	231	–	–	63	178	91	2,181
2021	9	1778	190			80	115	100	2,272
2022	9	1778	190			80	115	100	2,272

Coastal pole-and-line

	SKJ	YFT	BET	PBF*	ALB	Total
2017	10,441	1,456	203	–	30	12,130
2018	13,418	1,942	156	–	119	15,635
2019	9,343	1,583	118	–	177	11,221
2020	10,356	1,798	178	–	254	12,586
2021	18,252	2,265	218		224	20,959
2022	18,252	2,265	218		224	20,959

Coastal purse seine

	SKJ	YFT	BET	PBF*	ALB	Total
2017	467	376	1	–	17	861
2018	57	144	0	–	2	203
2019	102	482	0	–	274	858
2020	146	1,014	0	–	10	1,170
2021	400	702	22	–	6	1,130
2022	400	702	22	–	6	1,130

Gillnet

	SKJ	YFT	BET	PBF*	ALB	Total
2017	61	7	1	–	40	109
2018	91	6	1	–	35	133
2019	96	4	1	–	9	110
2020	70	13	0	–	7	90
2021	144	7	0	–	3	154
2022	144	7	0	–	3	154

Troll

	SKJ	YFT	BET	PBF	ALB	Total
2017	1,615	1,877	119		107	3,718
2018	1,154	1,738	80		78	3,050
2019	1,387	2,070	110		543	4,110
2020	949	2,008	69		784	3,810
2021	2,161	2,160	78		428	4,827
2022	2,161	2,160	78		428	4,827

Setnet

	SKJ	YFT	BET	PBF	ALB	Total
2017	401	135	0		48	584
2018	494	77	0		13	584
2019	246	208	0		27	481
2020	335	125	1		25	486
2021	580	206	3		11	800
2022	580	206	3		11	800

PBF catches for coastal longline, coastal pole-and-line, coastal purse seine and gillnet were not estimated separately. See also Table 6 and Appendix Table 2 to see statistics for PBF catch. ALB catches for coastal longline was not estimated separately. See also Appendix Table 2 to see statistics for ALB catch.

Table 6. Japanese catches (mt) for five tuna species by gear in the WCPFC Convention Area. LL: longline, PL: pole-and-line, PS: purse seine. Figures in the last two years are provisional.

	2017	2018	2019	2020	2021	2022
Skipjack; Sub–total	193,517	213,969	206,372	170,698	230,709	177,527
Distant water and Offshore LL	64	36	43	41	72	114
Distant water and Offshore PL	52,255	65,740	66,960	39,663	67,721	39,740
Tuna PS	128,122	132,838	128,082	119,047	141,220	115,978
Small offshore LL	4	3	2	3	2	1
Coastal LL	6	6	3	2	9	9
Coastal PL	10,441	13,418	9,343	10,356	18,252	18,252
Coastal PS	467	57	102	146	400	400
Gill net	61	91	96	70	144	144
Troll	1,615	1,154	1,387	949	2,161	2,161
Set net	401	494	246	335	580	580
Unclassified	81	133	110	86	148	148
Yellowfin; Sub–total	52,540	58,506	59,179	48,413	50,221	43,217
Distant water and Offshore LL	5,660	5,408	5,102	2,504	3,285	4,385
Distant water and Offshore PL	1,747	1,577	1,360	1,283	1,465	1,036
Tuna PS	34,475	40,673	39,767	33,640	32,973	27,232
Small offshore LL	4,451	4,743	5,838	3,567	4,614	2,680
Coastal LL	1,666	1,611	1,987	1,616	1,778	1,778
Coastal PL	1,456	1,942	1,583	1,798	2,265	2,265
Coastal PS	376	144	482	1,014	702	702
Gill net	7	6	4	13	7	7
Troll	1,877	1,738	2,070	2,008	2,160	2,160
Set net	135	77	208	125	206	206
Unclassified	690	587	778	846	767	767
Bigeye; Sub–total	16,069	17,546	13,835	12,827	12,278	9,066
Distant water and Offshore LL	3,867	4,565	3,464	2,955	2,679	1,965
Distant water and Offshore PL	1,241	1,276	431	947	1,358	1,157
Tuna PS	2,645	3,626	2,125	2,404	1,918	1,235
Small offshore LL	7,613	7,461	7,175	5,907	5,730	4,117
Coastal LL	291	298	298	231	190	190
Coastal PL	203	156	118	178	218	218
Coastal PS	1	0	0	0	22	22
Gill net	1	1	1	0	0	0
Troll	119	80	110	69	78	78
Set net	0	0	0	1	3	3
Unclassified	89	84	113	135	81	81
Pacific bluefin; Sub–total	8,993	6,206	7,509	8,011	8,585	10,111
Coastal LL (less than 20 GRT)	892	679	977	1,341	1,472	1,506
Offshore and distant water LL	27	21	25	75	80	80
PL (unspecified)	49	9	0	1	0	13
PS (unspecified)	4,540	4,050	4,464	3,960	4,198	4,702
Troll	605	371	720	760	653	1,079
Setnet	2,221	645	951	1,342	1,742	2,126
Unclassified	665	431	372	532	440	605
Albacore; Sub–total	41,870	35,711	23,625	57,492	31,263	29,368
Coastal LL (less than 20 GRT)	13,597	10,121	9,375	10,241	13,663	13,663
Offshore and distant water LL	5,814	4,441	3,998	3,672	5,281	3,667
Coastal PL	30	119	177	254	224	224
Distant water and Offshore PL	20,863	17,795	8,356	36,389	11,241	10,960
PS (unspecified)	1,251	3,039	1,045	5,961	180	180
Gillnet	40	35	9	7	3	3
Troll	107	78	543	784	428	428
Set net	48	13	27	25	11	11
Unclassified	119	70	95	159	232	232
Total	312,989	331,938	310,520	297,441	333,056	269,289

Table 7. Coverage rate of logbook for longline, pole-and-line and Purse seine fisheries. The calculation methods among fishery are not the same. N/A indicates not available.

Type of fishery	2017	2018	2019	2020	2021	2022
Distant water longline	100%	100%	100%	100%	100%	95%
Offshore longline	96%	97%	92%	93%	89%	65%
Small offshore longline	88%	87%	88%	86%	76%	66%
Coastal longline	N/A	N/A	N/A	N/A	N/A	N/A
Offshore pole-and-line (20–120 GRT)	100%	100%	100%	100%	100%	100%
Distant water pole-and-line (over 120 GRT)	100%	100%	100%	100%	100%	90%
Purse seine (>200GRT)	100%	100%	100%	100%	100%	100%

Table 8. Number of operations and catch number for longline observer program in the western central Pacific in 2022.

	Small offshore longline	Distant water and offshore longline
Number of cruises	0	0
Number of operations	0	0

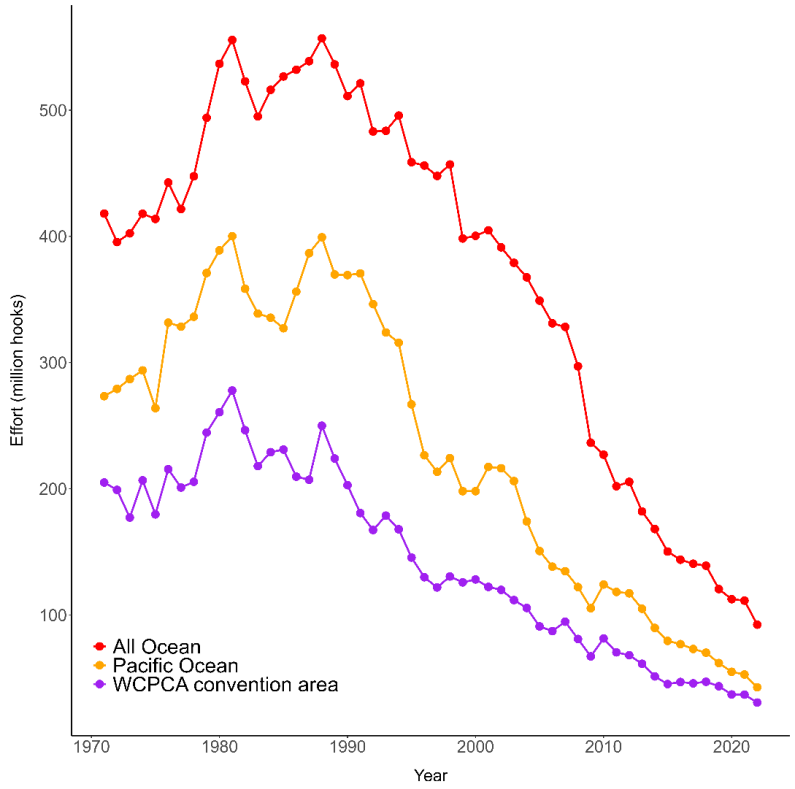

Fig. 1. Time series of fishing effort of the Japanese distant water and offshore longline fishery (not including small offshore) in the WCPFC Convention Area. Values in the last two years are provisional.

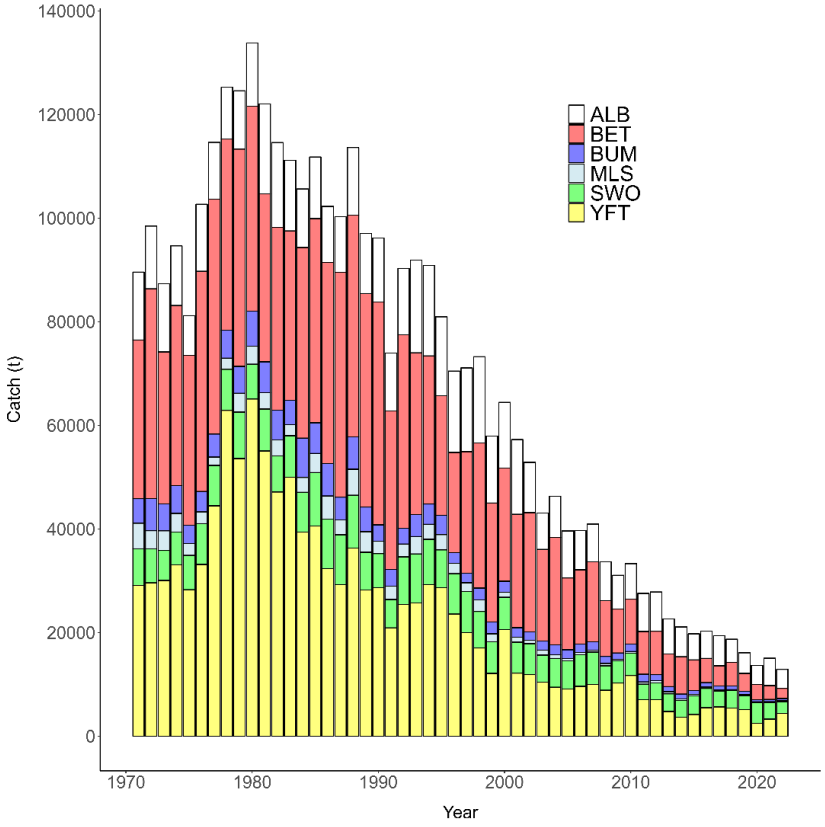

Fig. 2. Time series of catches for major species for the Japanese distant water and offshore longline fishery (not including small offshore) in the WCPFC Convention Area. ALB: albacore, BET: bigeye, YFT: yellowfin, SWO: sword fish, MLS: striped marlin, BUM: blue marlin. Values in the last two years are provisional.

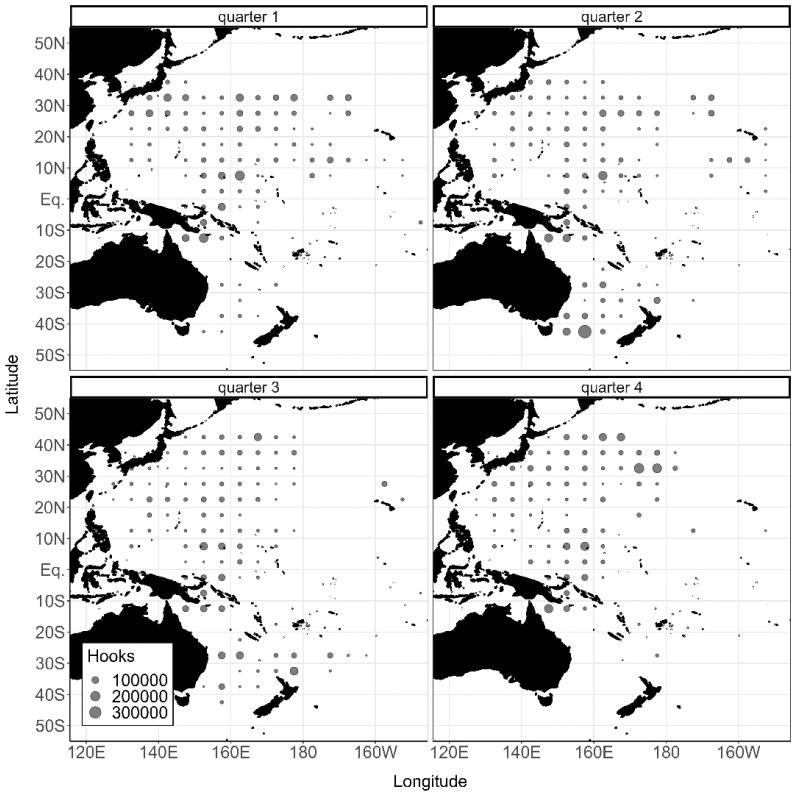

Fig. 3. Quarterly distribution of fishing effort for the Japanese offshore and distant water longline fisheries in the western and central Pacific Ocean in average of 2020–2022.

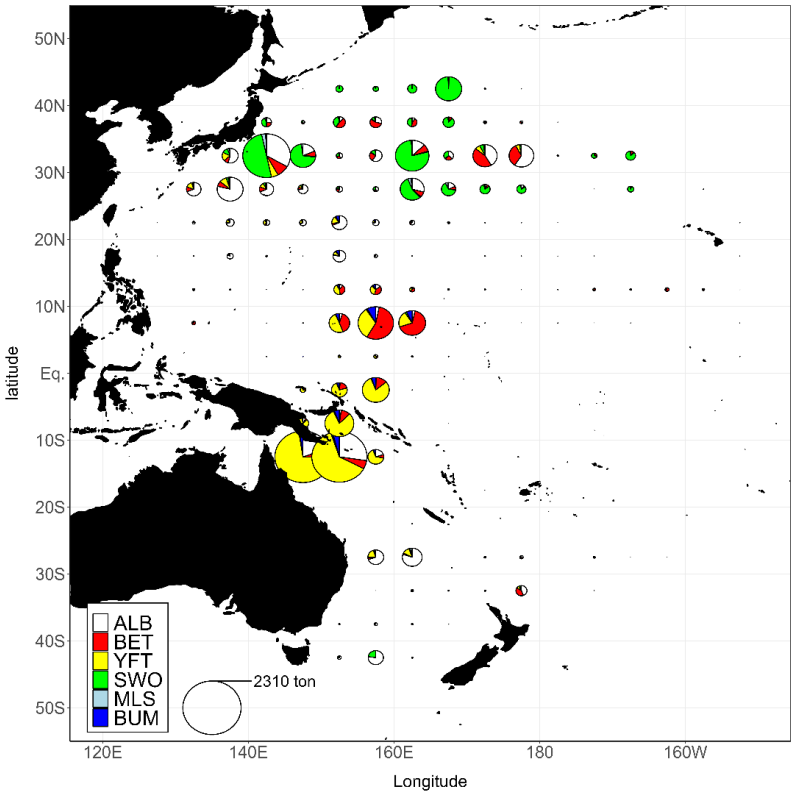

Fig. 4. Distributions of offshore and distant water longline catch (in weight) by species in average of 2020–2022 for six species (ALB: albacore, BET: bigeye tuna, YFT: yellowfin tuna, SWO: swordfish, MLS: striped marlin and BUM: blue marlin).

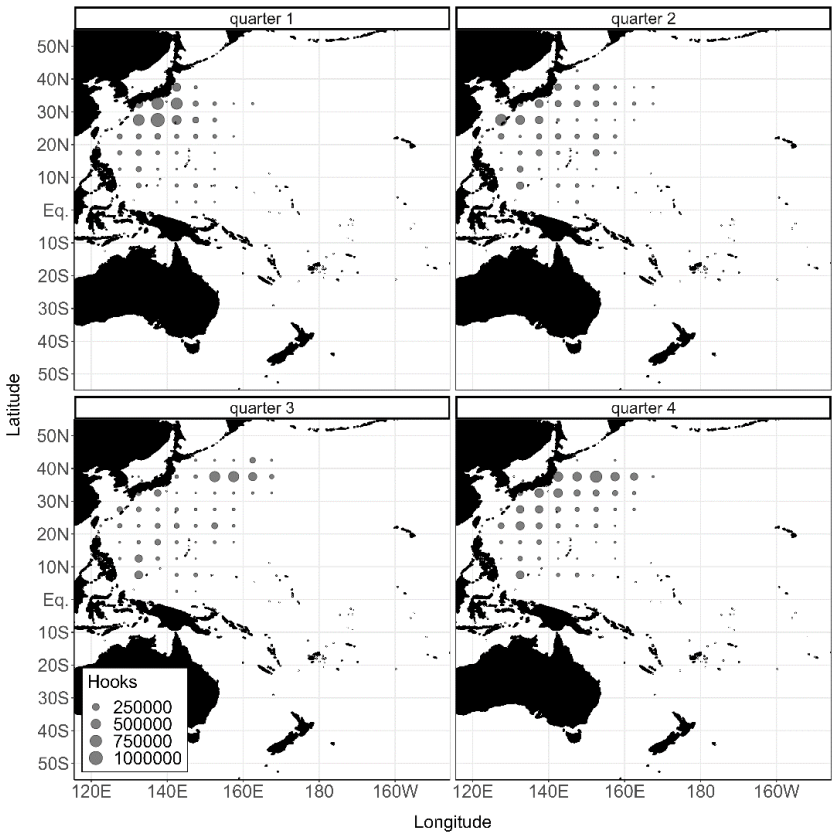

Fig. 5. Quarterly distribution of fishing effort for the Japanese small offshore longline fishery (10–19 GRT) in the western and central Pacific Ocean in average of 2020-2022.

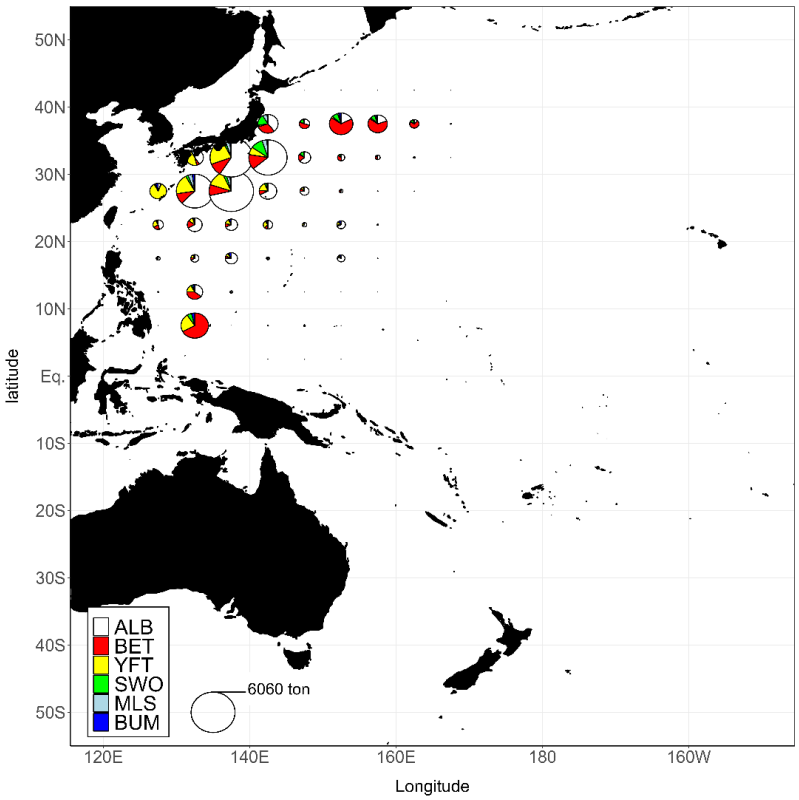

Fig. 6. Distributions of small offshore longline catch (in weight) by species in average of 2020–2022 for six species (ALB: albacore, BET: bigeye tuna, YFT: yellowfin tuna, SWO: swordfish, MLS: striped marlin and BUM: blue marlin).

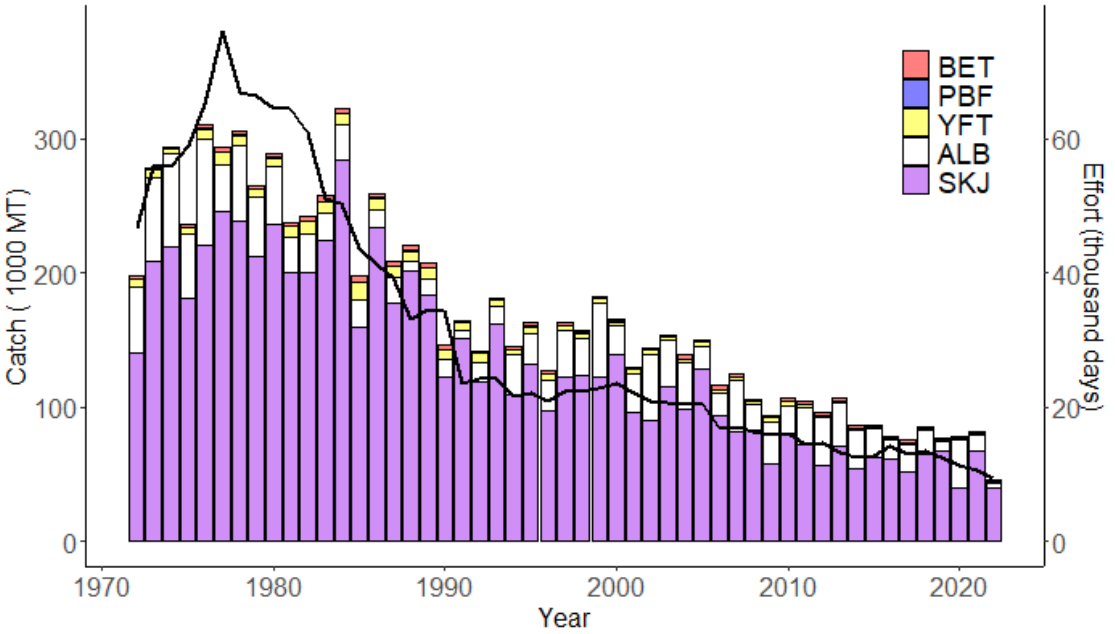

Fig. 7. Time series of fishing effort and catches by species for the Japanese pole-and-line fishery (> 20GRT) in the WCPFC Convention Area. Values in 2022 are provisional.

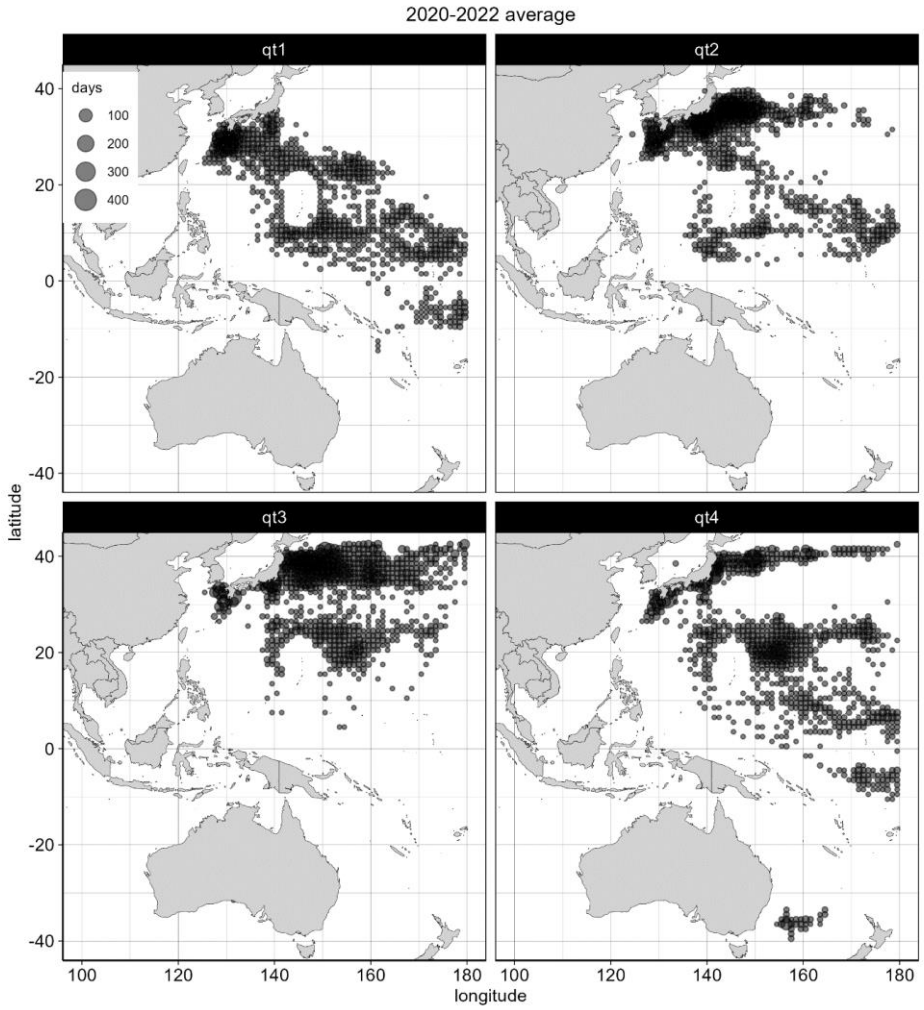

Fig. 8. Quarterly distribution of fishing effort (days) for the Japanese pole-and-line fishery (offshore and distant water licenses) in the Pacific Ocean in average of 2020–2022.

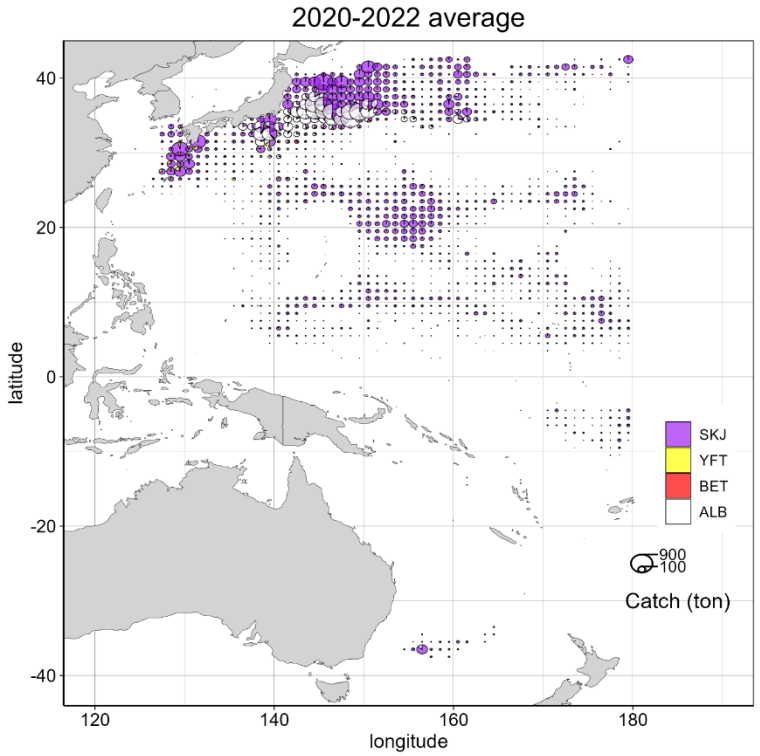

Fig. 9. Distribution of catch and its species composition for the Japanese offshore and distant water pole-and-line fishery in average of 2020–2022.

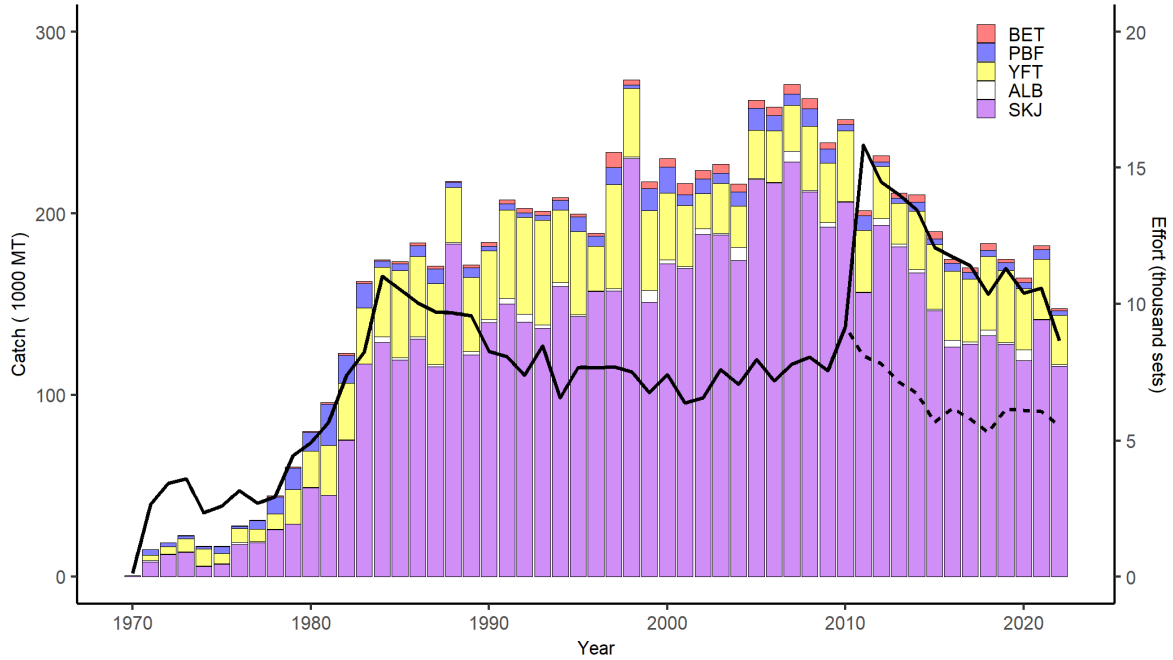

Fig. 10. Time series of fishing effort and catches by species for the Japanese tuna purse seine fishery in the WCPFC Convention Area. Since 2011, Japanese logbook data has included records of purse seine operations that do not specifically target tunas. The solid line represents the overall number of sets by target and non-target tunas. The dashed line denotes the total number of sets by targeting vessels after 2011. Values in and 2021 and 2022 are provisional.

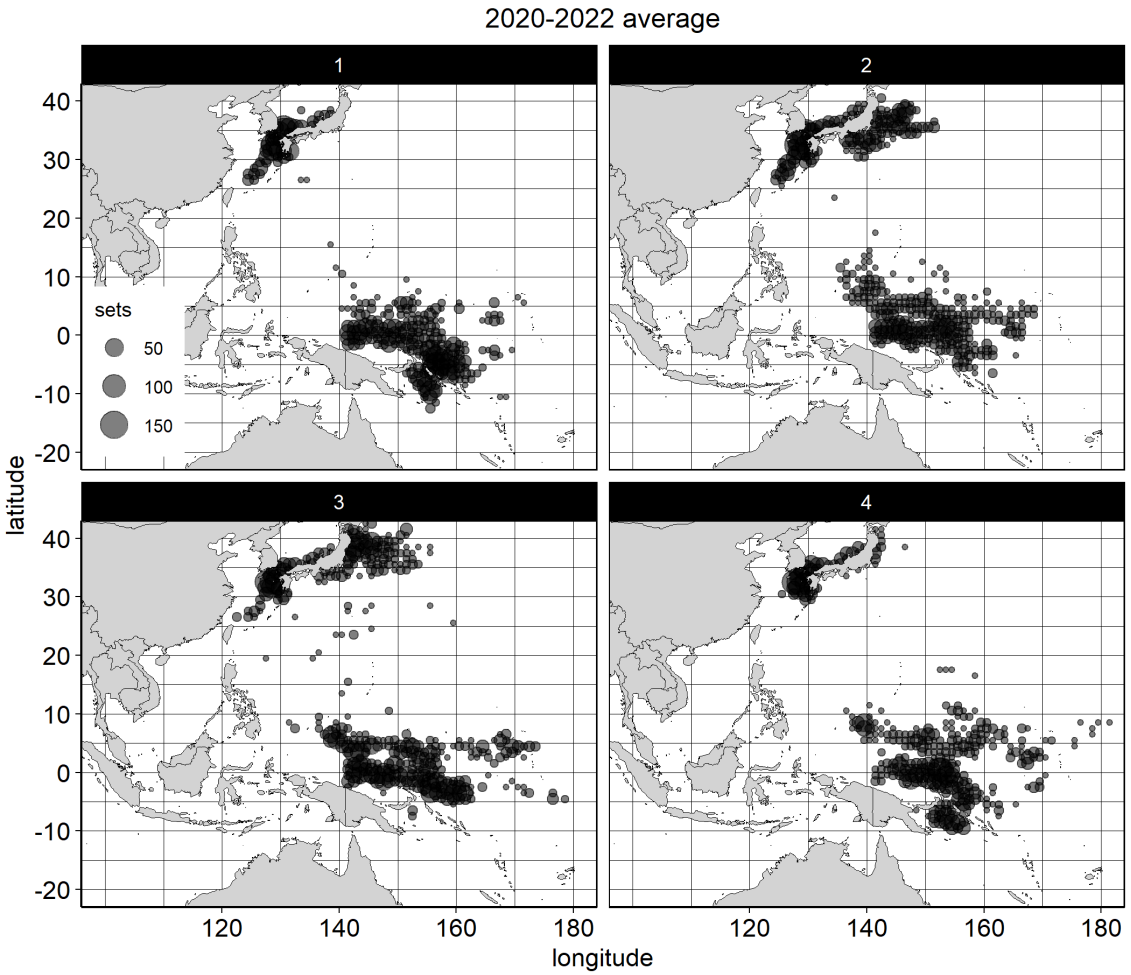

Fig. 11. Quarterly distributions of fishing effort (number of set) for the Japanese tuna purse seine fishery in the Pacific Ocean for 2020–2022.

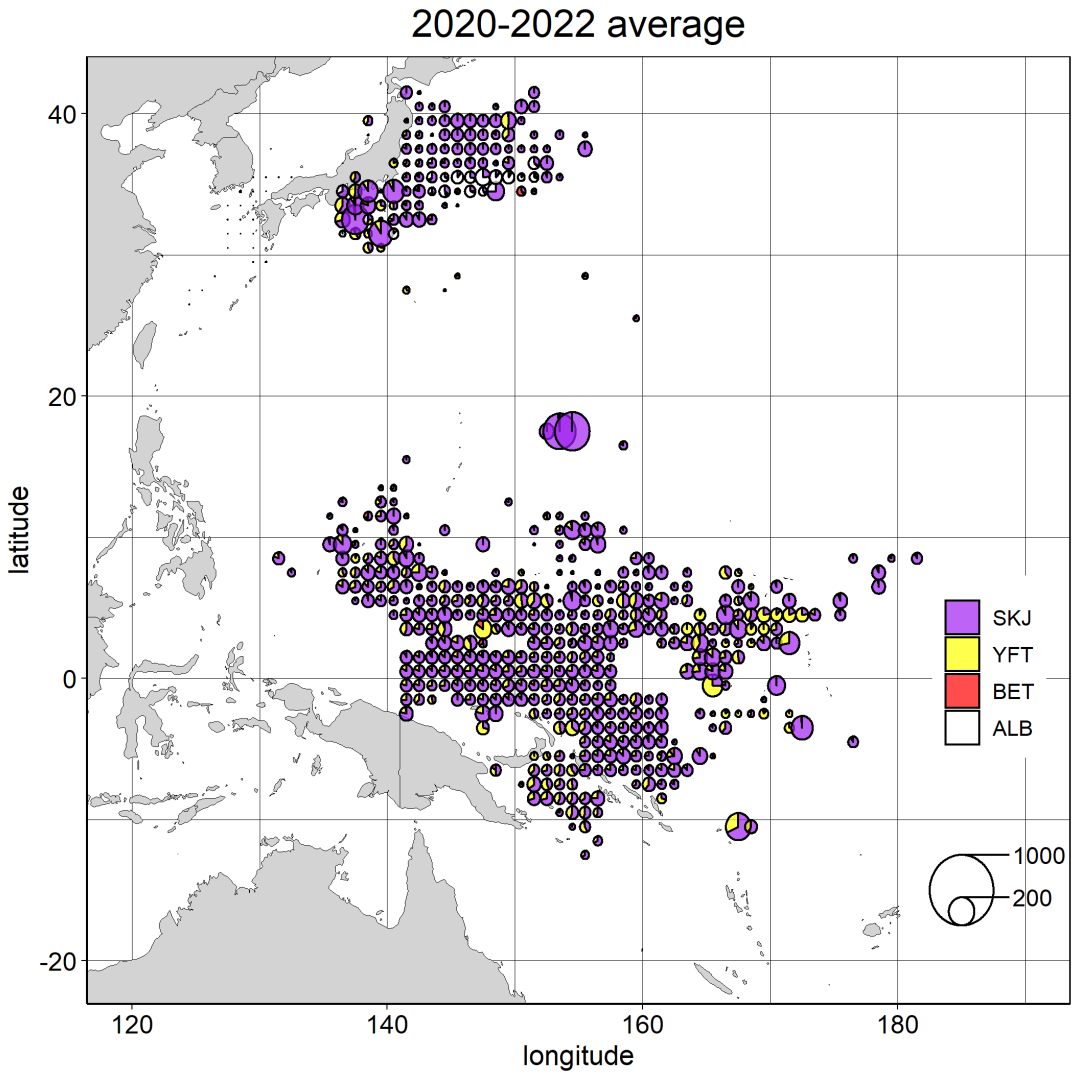

Fig. 12. Distribution of tuna purse seine catch (t) by species (skipjack, yellowfin and bigeye) combined for 2020–2022.

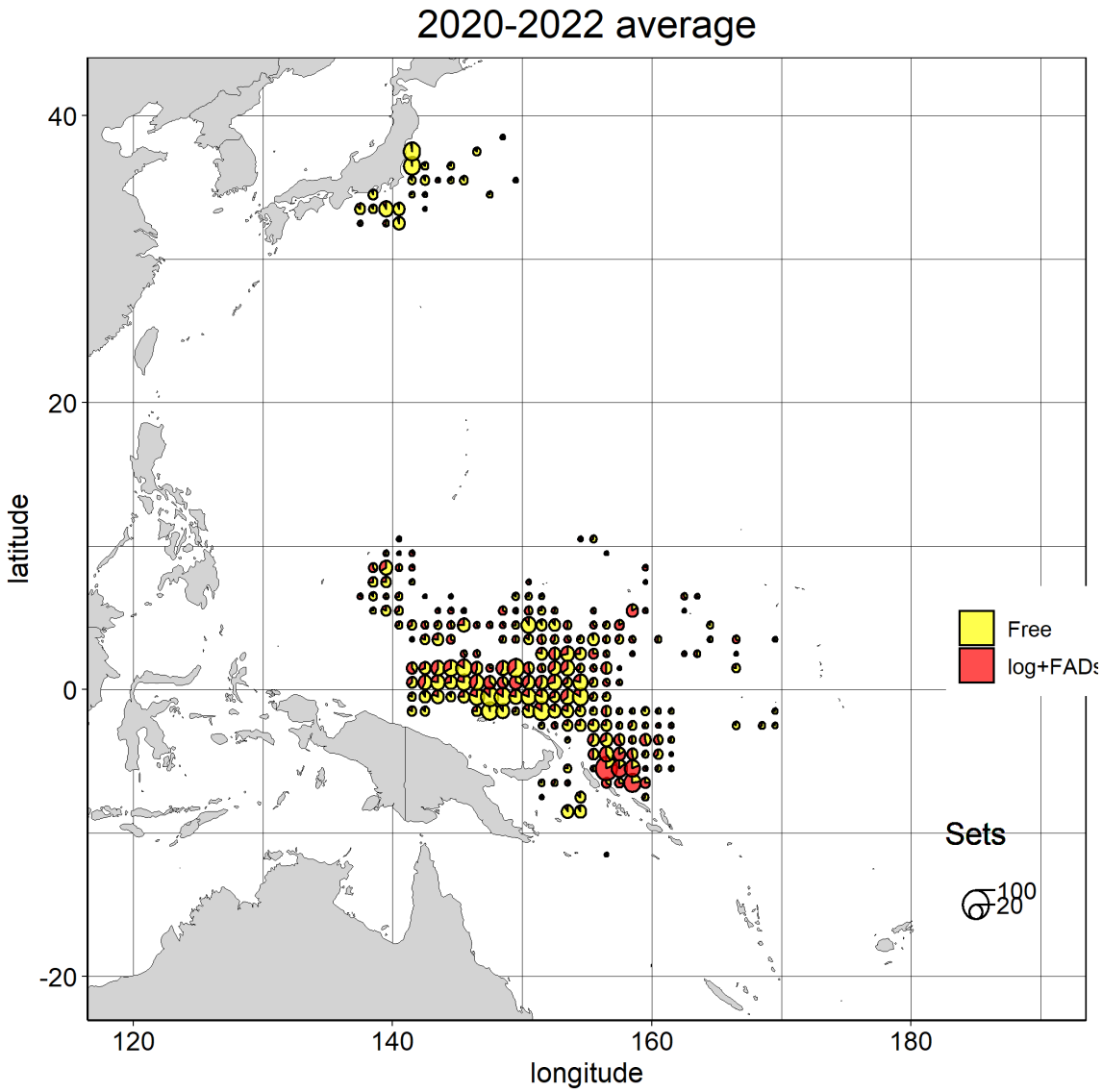

Fig. 13. Distribution of sets by type of school for 2020–2022 deployed by the tuna purse seine fishery by Japan.

Appendix Table 1. Catches (mt) for tunas, billfishes and sharks in the portion of the WCPFC Convention Area east of the 150˚ meridian of west longitude caught by distant-water and offshore longline fisheries.

Year	BET	YFT	SKJ	BUM	BLM	BSH	LMD	POR	SMA	OCS	THR	FAL	SPN	RHN	o-SHK
2017	224	43	0	24	1	10	0	0	0	0	0	0	0	0	0
2018	429	76	0	31	2	33	0	0	0	0	0	0	0	0	0
2019	28	16	0	4	0	0	0	0	0	0	0	0	0	0	0
2020	9	6	0	2	0	0	0	0	0	0	0	0	0	0	0
2021	56	17	0	2	1	0	0	0	0	0	0	0	0	0	0
2022	72	18	1	4	1	0	0	0	0	0	0	0	0	0	0

Appendix Table 2. Catches (mt) for Pacific bluefin, albacore, swordfish and striped marlin in the Pacific Ocean north of the Equator, the Pacific Ocean south of the Equator, the WCPFC Convention Area north of the Equator and the WCPFC Convention Area south of the Equator. In this table, definition of "Coastal longline" is vessel size less than 20 GRT, which is different from that in Table 5. Values in the last two years are provisional.

Pacific bluefin tuna (1) in the Pacific Ocean north of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL (unspecified)	PS (unspecified)	Troll	Setnet	Others
2017	892	21	49	4,540	605	2,221	665
2018	679	21	9	4,050	371	645	431
2019	977	25	0	4,464	720	951	372
2020	1,341	75	1	3,960	760	1,342	532
2021	1,472	80	0	4,198	653	1,742	440
2022	1,506	80	13	4,702	1,079	2,126	605

Pacific bluefin tuna (2) in the Pacific Ocean south of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL (unspecified)	PS (unspecified)	Troll	Setnet	Others
2017	0	6	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0

Pacific bluefin tuna (3) in the WCPFC Statistical Area north of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL (unspecified)	PS (unspecified)	Troll	Setnet	Others
2017	892	21	49	4,540	605	2,221	665
2018	679	21	9	4,050	371	645	431
2019	977	25	0	4,464	720	951	372
2020	1,341	75	1	3,960	760	1,342	532
2021	1,472	80	0	4,198	653	1,742	440
2022	1,506	80	13	4,702	1,079	2,126	605

Pacific bluefin tuna (4) in the WCPFC Statistical Area south of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL (unspecified)	PS (unspecified)	Troll	Setnet	Others
2017	0	6	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0

Pacific bluefin tuna (5) the portion of the WCPFC Statistical Area east of the 150°meridian of west longitude

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL (unspecified)	PS (unspecified)	Troll	Setnet	Others
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	6	0	0	0	0	0

Appendix Table 2. (Continued)

Albacore (1) the Pacific Ocean north of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL Coastal	PL Offshore and distant-water	PS (unspecified)	Gillnet	Troll	Setnet	Others
2017	13,597	3,673	30	20,861	1,251	40	107	48	119
2018	10,121	3,004	119	17,756	3,039	35	78	13	70
2019	9,375	2,754	177	8,331	1,045	9	543	27	95
2020	10,241	2,393	254	36,384	5,961	7	784	25	159
2021	13,663	4,162	224	10,912	180	3	428	11	232
2022	13,663	2,323	224	10,912	180	3	428	11	232

Albacore (2) the Pacific Ocean south of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL Coastal	PL Offshore and distant-water	PS (unspecified)	Gillnet	Troll	Setnet	Others
2017	0	3,217	0	2	0	0	0	0	0
2018	0	2,537	0	39	0	0	0	0	0
2019	0	2,242	0	25	0	0	0	0	0
2020	0	2,120	0	5	0	0	0	0	0
2021	0	2,044	0	329	0	0	0	0	0
2022	0	2,525	0	48	0	0	0	0	0

Albacore (3) the WCPFC Statistical Area north of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL Coastal	PL Offshore and distant-water	PS (unspecified)	Gillnet	Troll	Setnet	Others
2017	13,597	3,673	30	20,861	1,251	40	107	48	119
2018	10,121	3,004	119	17,756	3,039	35	78	13	70
2019	9,375	2,754	177	8,331	1,045	9	543	27	95
2020	10,241	2,393	254	36,384	5,961	7	784	25	159
2021	13,663	4,162	224	10,912	180	3	428	11	232
2022	13,663	2,322	224	10,912	180	3	428	11	232

Albacore (4) the WCPFC Statistical Area south of the Equator

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL Coastal	PL Offshore and distant-water	PS (unspecified)	Gillnet	Troll	Setnet	Others
2017	0	2,141	0	2	0	0	0	0	0
2018	0	1,437	0	39	0	0	0	0	0
2019	0	1,244	0	25	0	0	0	0	0
2020	0	1,280	0	5	0	0	0	0	0
2021	0	1,119	0	329	0	0	0	0	0
2022	0	1,345	0	48	0	0	0	0	0

Albacore (5) the portion of the WCPFC Statistical Area east of the 150°meridian of west longitude

Year	LL Coastal less than 20 GRT	LL Offshore and distant-water	PL Coastal	PL Offshore and distant-water	PS (unspecified)	Gillnet	Troll	Setnet	Others
2017	0	6	0	0	0	0	0	0	0
2018	0	30	0	0	0	0	0	0	0
2019	0	5	0	0	0	0	0	0	0
2020	0	1	0	0	0	0	0	0	0
2021	0	9	0	0	0	0	0	0	0
2022	0	15	0	0	0	0	0	0	0

Appendix Table 2. (Continued)

Swordfish (1) the Pacific Ocean north of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	1,975	2,860	2	291	3
2018	1,801	3,212	2	230	5
2019	1,307	2,601	2	242	6
2020	1,471	3,842	4	290	7
2021	1,243	3,016	8	301	4
2022	1,034	2,226	8	301	4

Swordfish (2) the Pacific Ocean south of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	3,081	0	0	0
2018	0	2,203	0	0	0
2019	0	1,336	0	0	0
2020	0	1,545	0	0	0
2021	0	1,392	0	0	0
2022	0	978	0	0	0

Swordfish (3) the WCPFC Statistical Area north of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	1,975	2,779	2	291	3
2018	1,801	3,073	2	230	5
2019	1,307	2,539	2	242	6
2020	1,471	3,795	4	290	7
2021	1,243	2,968	8	301	4
2022	1,034	2,190	8	301	4

Swordfish (4) the WCPFC Statistical Area south of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	287	0	0	0
2018	0	357	0	0	0
2019	0	150	0	0	0
2020	0	133	0	0	0
2021	0	179	0	0	0
2022	0	109	0	0	0

Swordfish (5) the portion of the WCPFC Statistical Area east of the 150°meridian of west longitude

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	56	0	0	0
2018	0	95	0	0	0
2019	0	3	0	0	0
2020	0	4	0	0	0
2021	0	5	0	0	0
2022	0	27	0	0	0

Appendix Table 2. (Continued)

striped marlin (1) the Pacific Ocean north of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	764	160	53	241	28
2018	711	147	28	278	28
2019	889	222	29	241	29
2020	896	196	49	155	37
2021	708	185	17	95	31
2022	397	144	17	95	31

striped marlin (2) the Pacific Ocean south of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	271	0	0	0
2018	0	229	0	0	0
2019	0	204	0	0	0
2020	0	214	0	0	0
2021	0	207	0	0	0
2022	0	130	0	0	0

striped marlin (3) the WCPFC Statistical Area north of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	764	130	53	241	28
2018	711	106	28	278	28
2019	889	173	29	241	29
2020	896	181	49	155	37
2021	708	180	17	95	31
2022	397	140	17	95	31

striped marlin (4) the WCPFC Statistical Area south of the Equator

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	51	0	0	0
2018	0	43	0	0	0
2019	0	30	0	0	0
2020	0	28	0	0	0
2021	0	43	0	0	0
2022	0	46	0	0	0

striped marlin (5) the portion of the WCPFC Statistical Area east of the 150°meridian of west longitude

Year	LL	LL	Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant-water			
2017	0	2	0	0	0
2018	0	7	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	2	0	0	0
2022	0	1	0	0	0

Appendix Table 3. Catch in weight, of swordfish at south of 20˚ South of WCPFC statistical area by year with vessel statistics. "Vessel number" means number of vessels who caught at least one fish in this area in each year. Figures in parentheses indicate provisional data. That was request written in paragraph 8 of CMM–2009–03.

	Japan–flagged vessels south of 20S		Chartered vessels			Other vessels fishing within the Japan's waters south of 20S	
Year	Catch (mt)	Vessel numbers	Catch (mt)	Vessel numbers	Flag	Catch (mt)	Vessel numbers
2017	172	26	0	0	—	—	—
2018	175	27	0	0	—	—	—
2019	101	27	0	0	—	—	—
2020	111	21	0	0	—	—	—
2021	152	23	0	0	—	—	—
2022	(61)	(21)	0	0	—	—	—

Appendix Table 4. Observer coverage for the Japanese longline fishery. Values in 2021 and 2021 are provisional. This table was request written in WCPFC 11 decision – para 484(b). Ice/Fresh; short–trip. Frozen; long–trip.

		No. of Hooks			Days Fished			Days at Sea			No. of Trips		
Year	Fishery	T.	O.	%	Total	Observer	%	T.	O.	%	T.	O.	%
2016	Ice/Fresh	***	***	***	26256	874	3.33%	***	***	***	***	***	***
	Frozen	***	***	***	8392	690	8.22%	***	***	***	***	***	***
2017	Ice/Fresh	***	***	***	24166	919	3.80%	***	***	***	***	***	***
	Frozen	***	***	***	8110	586	7.23%	***	***	***	***	***	***
2018	Ice/Fresh	***	***	***	24688	938	3.80%	***	***	***	***	***	***
	Frozen	***	***	***	8508	614	7.22%	***	***	***	***	***	***
2019	Ice/Fresh	***	***	***	24945	1473	5.90%	***	***	***	***	***	***
	Frozen	***	***	***	7394	888	12.01%	***	***	***	***	***	***
2020	Ice/Fresh	***	***	***	21814	51	0.23%	***	***	***	***	***	***
	Frozen	***	***	***	5407	232	4.29%	***	***	***	***	***	***
2021	Ice/Fresh	***	***	***	23795	20	0.08%	***	***	***	***	***	***
	Frozen	***	***	***	6328	0	0%	***	***	***	***	***	***
2022	Ice/Fresh	***	***	***	17658	0	0%	***	***	***	***	***	***
	Frozen	***	***	***	5903	0	0%	***	***	***	***	***	***

Appendix Table 5-1. The total quantity (mt) of highly migratory fish stocks transshipped by fishing vessels. That was request written in **paragraph 11 of CMM-2009-06**.
(1) The total quantities in 2022, by weight, of highly migratory fish stocks covered by this measure that were transhipped by fishing vessels the CCM is responsible for reporting against, with those quantities broken down by:

a) offloaded and received;	b) transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	c) transhipped inside the Convention Area and transshipped outside the Convention Area;	d) caught inside the Convention Area and caught outside the Convention Area;	e) Species	f) Product Form	g) Fishing gear	Quantity (mt)
Offloaded							54.625
	At sea beyond NJ						54.625
		Inside CA					54.625
			Outside CA				54.625
				BET			34.523
					GG	Longline	34.523
				YFT			4.626
					GG	Longline	4.626
				SWO			3.544
					DR	Longline	0.5
					FL	Longline	3.044
				Others			11.932
					GG	Longline	0.34
					DR	Longline	8.793
					Whole	Longline	2.799
Received							0

Appendix Table 5-2. The number of transshipments involving highly migratory fish stocks. That was request written in **paragraph 11 of CMM-2009-06**.
(1) The number of transhipments in 2022 involving highly migratory fish stocks covered by this measure by fishing vessels that is responsible for reporting against, broken down by:

a) offloaded and received;	b) transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction	c) transhipped inside the Convention Area and transshipped outside the Convention Area;	d) caught inside the Convention Area and caught outside the Convention Area;	e) Species	f) Product Form
Offloaded					1
	At sea beyond NJ				1
		Inside CA			1
			Outside CA	Longline	1
Received					0

Appendix Table 6-1. Effort, observed and estimated seabird captures by the longliners larger than 20 GRT (approximately >= 24m) by years for Japan [South of 30˚ S, 23˚ N – 30˚ S, or North of 23˚ N]. For each year, the table gives the total number of hooks; the number of observed hooks; observer coverage (the percentage of hooks that were observed); the number of observed captures (both dead and alive); the capture rate (captures per thousand hooks). This table was request written in **paragraph 9 of CMM–2017–06.**

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
North of 23˚N						
2017	39	11,644,673	194,758	1.7%	63	0.323
2018	36	11,842,387	328,315	2.8%	61	0.186
23˚N – 30˚S						
2017	75	22,023,754	803,403	3.6%	2	0.002
2018	78	22,283,031	900,841	4.0%	0	0.000
South of 30˚S						
2017	26	6,559,955	516,347	7.9%	27	0.052
2018	27	7,003,023	170,738	2.4%	37	0.217

Appendix Table 6-2. Effort, observed and estimated seabird captures by the longliners less than 20 GRT (approximately < 24m) by years for Japan [South of 30˚ S, 23˚ N – 30˚ S, or North of 23˚ N]. For each year, the table gives the total number of hooks; the number of observed hooks; observer coverage (the percentage of hooks that were observed); the number of observed captures (both dead and alive); the capture rate (captures per thousand hooks). This table was request written in **paragraph 9 of CMM–2017–06**.

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
North of 23˚N						
2017	208	53,257,572	771,342	1.4%	215	0.279
2018	209	50,681,381	860,447	1.7%	55	0.064
23˚N – 30˚S						
2017	138	19,078,101	708,005	3.7%	2	0.003
2018	154	20,655,114	630,881	3.1%	7	0.011

Appendix Table 6-3. Effort, observed and estimated seabird captures by the longliners larger than 20 GRT (approximately >= 24m) by fishing year for Japan [South of 30˚ S, 25˚ S – 30˚ S, 23˚ N – 25˚ S, or North of 23˚ N]. For each year, the table gives the total number of hooks; the number of observed hooks; observer coverage (the percentage of hooks that were observed); the number of observed captures (both dead and alive); the capture rate (captures per thousand hooks). This table was request written in **paragraph 13 of CMM–2018–03**.

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
North of 23˚N						
2019	36	11,239,151	379,310	3.4%	83	0.219
2020	42	13,860,057	0	0.0%	0	0.000
2021	37	13,589,842	0	0.0%	0	0.000
2022	33	10,678,392	0	0.0%	0	0.000
23˚N – 25˚S						
2019	65	20,049,682	798,284	4.0%	4	0.005
2020	49	11,434,498	0	0.0%	0	0.000
2021	49	10,134,269	38,073	0.4%	0	0.000
2022	41	11,182,757	0	0.0%	0	0.000
25˚N – 30˚S						
2019	9	844,467	165,091	4.0%	4	0.005
2020	14	156,2,742	132,871	0.0%	0	0.000
2021	12	970,649	0	0.4%	0	0.000
2022	9	711,375	0	0.0%	0	0.000
South of 30˚S						
2019	27	5,388,415	962,377	17.9%	1,140	1.185
2020	21	3,704,810	205,451	5.5%	13	0.063
2021	23	4,331,933	0	0.0%	0	0.000

2022	22	2,978,089	0	0.0%	0	0.000

Appendix Table 6-4. Effort, observed and estimated seabird captures by the longliners less than 20 GRT (approximately < 24m) by fishing year for Japan [South of 30˚ S, 25˚ S – 30˚ S, 23˚ N – 25˚ S, or North of 23˚ N]. For each year, the table gives the total number of hooks; the number of observed hooks; observer coverage (the percentage of hooks that were observed); the number of observed captures (both dead and alive); the capture rate (captures per thousand hooks). This table was request written in **paragraph 13 of CMM–2018–03**.

Year	Fishing effort				Observed seabird captures	
	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number	Rate
North of 23˚N						
2019	208	49,638,964	1,570,492	3.2%	437	0.278
2020	215	57,122,757	39,835	0.1%	28	0.703
2021	186	57,701,587	0	0.0%	0	0.000
2022	225	43,375,110	0	0.0%	0	0.000
23˚N – 25˚S						
2019	148	20,579,533	792,447	3.9%	1	0.001
2020	130	16,083,126	51,456	0.3%	2	0.039
2021	114	18,193,315	0	0.0%	0	0.000
2022	121	12,416,377	0	0.0%	0	0.000

Appendix Table 7-1. Proportion of observed effort by seabird bycatch mitigation types[1] used by longliners in 2017–2018. This table was request written in **paragraph 9 of CMM–2017–06**.

Combination of mitigation measures	Proportion of observed effort using mitigation measures	
	2017	2018
No mitigation measure	0.0%	0.0%
TL + NS	0.0%	0.0%
WTL + NS	0.0%	0.0%
TL + NS + MOD	3.3%	1.1%
WTL + NS + MOD	0.3%	2.6%
TL + WB + MOD	6.5%	0.0%
WTL + WB + MOD	3.1%	0.0%
TL + WB + NS + MOD	3.6%	0.0%
WTL + WB + NS + MOD	2.8%	0.0%
NS	0.0%	0.0%
TL	0.0%	0.0%
WTL	0.0%	0.1%
TL + MOD	25.4%	19.4%
WTL + MOD	1.2%	12.5%
NS + MOD	0.8%	2.6%
WB + MOD	7.4%	0.0%
MOD	45.6%	61.7%
Total	0.0%	0.0%

Appendix Table 7-2. Proportion of mitigation types[1] used by the fleet in 2019–2021. This table was request written in **paragraph 13 of CMM–2018–03**.

2019	Combination of mitigation measures	Proportion of observed effort using mitigation measures		
		South of 30^{0}S	25^{0}S to 23^{0}N	North of 23^{0}N
Options required south of 30^{0}S	TL + NS + MOD	23.8%	0.0%	3.8%
	TL + WB + MOD	11.4%	0.0%	0.0%
	WB + NS + MOD	1.0%	0.7%	0.0%
	TL + WB + NS + MOD	5.8%	0.0%	0.0%
Other options 25^{0}S – 30^{0}S	TL + MOD	50.6%	0.2%	70.3%
	WB + MOD	1.7%	3.6%	0.0%
Other options north of 23^{0}N	NS + MOD	2.1%	1.9%	0.7%
	MOD	3.5%	93.6%	25.2%
Total		100.0%	100.0%	100.0%

2020	Combination of mitigation measures	Proportion of observed effort using mitigation measures		
		South of 30^{0}S	25^{0}S to 23^{0}N	North of 23^{0}N
Options required south of 30^{0}S	TL + NS + MOD	0.0%	0.0%	0.0%
	TL + WB + MOD	23.5%	1.8%	0.0%
	WB + NS + MOD	5.9%	26.8%	0.0%
	TL + WB + NS + MOD	47.0%	0.0%	0.0%
Other options 25^{0}S – 30^{0}S	TL + MOD	0.0%	0.0%	0.0%
	WB + MOD	23.5%	71.4%	0.0%
Other options north of 23^{0}N	NS + MOD	0.0%	0.0%	0.3%
	MOD	0.0%	0.0%	99.7%
Total		100.0%	100.0%	100.0%

2021	Combination of mitigation measures	Proportion of observed effort using mitigation measures			
		South of 30^{0}S	25^{0}S – 30^{0}S	25^{0}S to 23^{0}N	North of 23^{0}N
Other options north of 23^{0}N	MOD	NA	NA	100.0%	NA
Total		NA	NA	100.0%	NA

2022	Combination of mitigation measures	Proportion of observed effort using mitigation measures			
		South of 30^{0}S	25^{0}S – 30^{0}S	25^{0}S to 23^{0}N	North of 23^{0}N
Total		NA			

[1]TL = tori line, NS=night setting, WB = weighted branch line, SS = side setting, BC = bird curtain, BDB = blue dyed bait, DSLS = deep setting line shooter, MOD = management of offal discharge, HS=hook-shielding device.

Appendix Table 8-1. Number of observed seabird captures in the longliners larger than 20 GRT (approximately >= 24 m), by year, species and area. This table was request written in **paragraph 9 of CMM2017–06**.

2017				
Species	South of 30S	23N-30S	North of 23N	Total
Black-browed albatross	1	0	0	1
Black-footed albatross	0	0	16	16
Buller's albatross group	14	0	0	14
Campbell albatross	2	0	0	2
Laysan albatross	0	0	22	22
Masked booby	0	2	0	2
Shy-type albatrosses	4	0	0	4
Southern Buller's albatross	1	0	0	1
Unidentified albatrosses	0	0	25	25
Wandering albatross group3	1	0	0	1
White-chinned petrel	4	0	0	4
Total	27	2	63	92
2018				
Species	South of 30S	23N-30S	North of 23N	Total
Black-browed albatross group	4	0	0	4
Black-footed albatross	0	0	18	18
Buller's albatross group	14	0	0	14
Campbell albatross	4	0	0	4
Gibson's albatross	1	0	0	1
Laysan albatross	0	0	43	43
Northern giant petrel	1	0	0	1
Other albatrosses	1	0	0	1
Shy-type albatrosses	5	0	0	5
Sooty shearwater	1	0	0	1
Wandering albatross	1	0	0	1
Wandering albatross group3	1	0	0	1
White-chinned petrel	4	0	0	4
Total	37	0	61	98

Appendix Table 8-2. Number of observed seabird captures in the longliners less than 20 GRT (approximately < 24m), by year species and area. This table was request written in **paragraph 9 of CMM 2017–06**.

2017			
Species	23N-30S	North of 23N	Total
Black-footed albatross	0	19	19
Laysan albatross	0	169	169
Streaked shearwater	2	9	11
Unidentified albatrosses	0	18	18
Total	2	215	217
2018			
Species	23N-30S	North of 23N	Total
Black-footed albatross	0	15	15
Flesh-footed shearwater	1	0	1
Laysan albatross	0	40	40
Streaked shearwater	6	0	6
Total	7	55	62

Appendix Table 8-3. Number of observed seabird captures in Japan longline fisheries in the longliners larger than 20 GRT (approximately >=24m, by year species and area. This table was request written in **paragraph 13 of CMM 2018–03**.

Species	South of 30S	25S-30S	23N-25S	North of 23N	Total
2019					
Black-browed albatross	4	0	0	0	4
Black-browed albatross group	39	0	0	0	39
Black-footed albatross	0	0	1	12	13
Brown booby	0	0	2	0	2
Buller's albatross group	339	0	0	0	339
Campbell albatross	51	0	0	0	51
Gibson's albatross	7	0	0	0	7
Laysan albatross	0	0	0	35	35
Light-mantled albatross	2	0	0	0	2
Northern giant petrel	4	0	0	0	4
Other albatrosses	2	0	0	0	2
Parkinson's petrel	2	0	0	0	2
Red-footed booby	0	0	1	0	1
Shy-type albatrosses	328	0	0	0	328
Southern fulmar	1	0	0	0	1
Southern giant petrel	1	0	0	0	1
Unidentified albatrosses	176	0	0	36	212
Unidentified birds	8	0	0	0	8
Unidentified giant petrels	1	0	0	0	1
Unidentified petrels	36	0	0	0	36
Wandering albatross	18	0	0	0	18
Wandering albatross group2	2	0	0	0	2
Wandering albatross group3	7	0	0	0	7
Wandering albatross group5	10	0	0	0	10
White-chinned petrel	102	0	0	0	102
Total	1140	0	4	83	1227
2020					
Buller's albatross group	2	0	0	0	2
Parkinson's petrel	6	0	0	0	6
Shy-type albatrosses	4	0	0	0	4
Wandering albatross	1	0	0	0	1
Total	13	0	0	0	13
2021					
Total	NA	0	NA	NA	0
2022					
Total			NA		

Appendix Table 8-4. Number of observed seabird captures in the longliners less than 20 GRT (approximately < 24m), by year species and area. This table was request written in **paragraph 9 of CMM 2018–03**.

Species	23N-25S	North of 23N	Total
2019			
Black-footed albatross	0	82	82
Laysan albatross	0	338	338
Streaked shearwater	1	2	3
Unidentified albatrosses	0	15	15
Total	1	437	438
2020			
Laysan albatross	0	28	28
Streaked shearwater	2	0	2
Total	2	28	30
2021			
Total	0	0	0
2022			
Total		NA	

Appendix Table 9-1. Striped marlin catch for the Japanese offshore and distant water longline fishery in the WCP-CA south of 15˚ S. This table was request written in **paragraph 4 of CMM–2006–04.**

Year	Striped marlin catch (t)
2017	30
2018	23
2019	20
2020	25
2021	(37)
2022	(33)

Appendix Table 9-2. Number of vessels that have fished for striped marlin in the Convention area south of 15˚ S, during the period 2000 – 2004 and 2022. This table was request written in **paragraph 4 of CMM–2006–04.**

Year	Number of vessel
2000 – 2004 (as fishing for)	0
2022 (as fishing for)	0
2022 (as a bycatch)	13

Appendix Table 10-1. Fishing effort and albacore catch for the Japanese offshore and distant water longline and pole-and-line fisheries in the south of 20˚ S in the WCP-CA. This table was request written in **paragraph 4 of CMM–2015–02**.

(a) Offshore and distant water longline

Year	Albacore catch (mt)
2017	974
2018	608
2019	567
2020	933
2021	(743)
2022	(745)

(b) Offshore and distant water pole-and-line

Year	Vessels	Albacore catch (mt)
2017	2	2
2018	1	39
2019	1	25
2020	2	5
2021	(5)	(329)
2022	(3)	(48)

Appendix Table 10-2. Catch (mt) by vessel for the Japanese offshore and distant water longline fishery in the south of 20˚ S in the WCP-CA. BIL: other billfishes, SHK: sharks. This table was request written in **paragraph 4 of CMM–2015–02**.

Year	Vessel	ALB	BET	YFT	SWO	BIL	SHK
2022	A01	111	3	7	3	3	0
2022	A02	16	0	1	2	1	0
2022	A03	31	53	4	6	2	0
2022	A04	4	0	0	0	0	0
2022	A05	22	0	1	1	0	0
2022	A06	10	0	0	1	0	0
2022	A07	6	0	0	0	0	0
2022	A08	12	0	0	0	0	0
2022	A09	39	1	7	1	2	0
2022	A10	5	0	0	1	0	0
2022	A11	76	2	3	2	2	10
2022	A12	20	1	3	1	2	0
2022	A13	17	3	3	1	8	0
2022	A14	24	0	0	1	0	0
2022	A15	9	0	0	1	0	0
2022	A16	70	9	3	2	4	0
2022	A17	96	5	18	2	8	0
2022	A18	14	0	4	1	0	0
2022	A19	23	3	0	2	1	0

2022	A20	3	0	0	0	0	0
2022	A21	3	0	0	1	0	0
2022	A22	19	0	0	2	0	0

Appendix Table 11-1. Albacore catch by fishery in mt in the WCP-CA north of the Equator. Figures in parentheses indicate provisional data. That was request written in **paragraph 3 of CMM2019–03**.

Year	LL Coastal	LL Offshore & distant water	PL Coastal	PL Offshore & distant water	PS Coastal	PS Offshore & distant water	Gillnet	Troll	Setnet	Others
2017	13597	3673	30	20861	17	1234	40	107	48	119
2018	10121	3004	119	17756	2	3037	35	78	13	70
2019	9375	2754	177	8331	274	771	9	543	27	95
2020	10241	2393	254	36384	10	5951	7	784	25	159
2021	(13663)	(4162)	(224)	(10912)	(6)	(174)	(3)	(428)	(11)	(232)
2022	(13663)	(2277)	(224)	(10912)	(6)	(174)	(3)	(428)	(11)	(232)

Appendix Table 11-2. Fishing effort in fishing days by fishery directed as albacore in the WCP-CA north of the Equator. Figures in parentheses indicate provisional data. NA indicates data not available. That was request written in **paragraph 3 of CMM2019–03**.

Year	LL Coastal	LL Offshore & distant water	PL Coastal	PL Offshore & distant water	PS Coastal	PS Offshore & distant water	Gillnet	Troll	Setnet	Others
2017	35668	10154	NA	12797	NA	6766	NA	NA	NA	NA
2018	35037	10126	NA	13439	NA	6920	NA	NA	NA	NA
2019	34228	9977	NA	12321	NA	6297	NA	NA	NA	NA
2020	35573	10182	NA	11093	NA	5108	NA	NA	NA	NA
2021	(36418)	(10308)	NA	(10531)	NA	(5636)	NA	NA	NA	NA
2022	(29135)	(7533)	NA	(9487)	NA	(4881)	NA	NA	NA	NA

Appendix Table 11-3. Fishing effort in number of vessel and vessel days by fishery directed as albacore in the WCP- CA north of the Equator. Figures in parentheses indicate provisional data. NA indicates data not available. That was request written in **paragraph 3 of CMM2019–03**.

CCM	Area	Fishery	2002–04 Average		2019		2020		2021		2022	
			No. of vessels	Vessel days	No. of vessels	Vessel days	No. of vessels	Vessel days	No. of vessels	Vessel days	No. of vessels	Vessel days
Japan	WCP =CA North of the Equator.	LL Coastal	266	42292	230	34228	227	35573	(201)	(36418)	(227)	(29135)
		LL Offshore & distant water	198	22827	68	9977	62	10182	(56)	(10308)	(52)	(7533)
		PL Coastal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		PS Coastal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		PS Offshore & distant water	25	4208	14	6297	14	5108	(18)	(5636)	(16)	(4881)
		Gillnet	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Troll	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Setnet	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA