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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 2018–2023, 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 2023 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 246,181 mt, and this is corresponding to 97% of 2022 total tunas catch (252,951 mt). In 2023, the total tuna catch by the purse seine fishery was 154,958 mt (63% of the total), with 52,248 mt (21%) by the pole-and-line fishery, 30,033 mt (12%) 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 2023 and early 2024 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 in section 6 of this report. The catch statistics are 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 2018–2022 data (MAFFJ 2018–2022) and presented in this paper. The statistics for the last two years (2022 and 2023) 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 fished in the WCP-CA during the 2018–2023 period (coastal longline vessels were not included). As this number of active vessels is estimated based on logbooks submitted, some vessels which operated but did not submit logbooks yet were not included. The research and training vessels of longline and pole-and-line are not included. In addition, the vessel size class has changed to match those of WCPFC Annual Catch and Effort Estimates (ACE) Tables.

The number of Japanese commercial longline vessels in total shows a declining trend, from 323 vessels in 2018 to 255 in 2023. The number of vessels for each category, 10–50 GRT, 51–200 GRT, 201–500 GRT and over 500 GRT, generally decreased. The total number of pole-and-line vessels (larger than 20 GRT) has decreased during 2018–2023. The number of vessels for category 20–50 GRT are stable. The number of vessels for 51-150 GRT decreased from 38 in 2018 to 27 in 2023, corresponding to a 30% decrease. The number of vessels for category over 150 GRT ranged from 31 to 27 without trend during the period. The total number of purse seine vessels which are engaged in tuna fishery ranged from 52 to 72 during the 2018–2023 period. The number of vessels of 48–500 GRT showed a slight decreasing trend during the period. The number of vessels of 200–499 GRT shows a decreasing trend during the period and reaches 43 in 2023. The number of vessels of 501–1000 GRT are stable. 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 2023.

4. Trends in catch and effort

The total 2023 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 246,181 mt, and this is corresponding to 97% of 2022 total tunas catch (252,951 mt). In 2023, the total tuna catch by the purse seine fishery was 154,958 mt (63% of the total), with 52,248 mt (21%) by the pole-and-line fishery, 30,033 mt (12%) by the longline fishery, and the remaining (4%) by the other gears.(Tables 2– 6). The following is the description of each fishery in more detail 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 can 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 2018 to 2023 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 1971–2023. 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 last 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 38 million hooks in 2023 (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 has since declined continuously to about 5,000 mt or less in recent years. The yellowfin catch in 2023 was 3,074 mt, which was 74% of the 5–year average (2018–2022) 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 2023 was 3,323 mt which is equal to the 5–year average catch of this species. The average quarterly effort distribution of distant water and offshore longline vessels during 2021–2023 is shown in Fig. 3. The fishing grounds are in the 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 2018–2023 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 57,419 thousand hooks in 2023. The bigeye catch for the small offshore longline shows no apparent trend in this period. The bigeye catch was 4,185 mt in 2023, which is 68% of that in the average of previous 5 years. The yellowfin catch of the fishery in the last five years was stable around 4,000 mt. The yellowfin catch in 2023 was 4,168 mt which is 92% of the recent 5-year 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 2018–2023. In addition to this, historical changes in catch by species and effort are shown in Fig. 7 for the period of 1972–2023. The data for 2023 are preliminary. Both the catch and effort which were at a peak around the late 1970s gradually decreased throughout the 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 a 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 45,044 mt (preliminary) in 2023.

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 2018–2023 period, the number of fishing days (including no catch days) for this fishery shows a decreasing trend. The number of fishing days was 6,713 in 2023 (preliminary) which is 58% of that in the average of the previous 5 years. (Table 3). The total catch of tunas (skipjack, bigeye, yellowfin and albacore) in 2023 (preliminary) was 45,000 mt, which is 61% of that in the average of the previous 5 years. The skipjack catch was 30,860 mt in 2023 which is 55% 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 2021–2023. The fishing ground in the temperate waters (north of around 25˚ N) moved from southwest of Japan toward northeast as time progressed. 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 the 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 areas 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 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 the 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 48 GRT in vessel size) are shown in Table 4 from 2018 to 2023. 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 2022 and 2023 are preliminary. The fishing effort was less than 5,000 days in the 1970s, rapidly increasing 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 2018–2023 period, the number of fishing days (including only searching) for this fishery shows a declining trend. The number of fishing days was 5,063 in 2023 which is 91% of that in the average of the previous 5 years (5,565 days, Table 4). While the total catch of the purse seine fishery was fluctuating between 145,000 and 177,000 mt during the past 5 years. The total catch in 2023 showed a decline of 8% (149,099 mt) from the average of previous 5 years (162,089 mt). Skipjack catch for this fishery was 116,181 mt in 2023, which is 93% of that in the average of the previous 5 years (125,121 mt). Yellowfin catch for this fishery was 30,722mt in 2023, which is 89% of that in the average of the previous 5 years (34,701 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 vicinity 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. The number of purse seines sets that encircled cetaceans in 2023 is currently being added up. To date, 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 7 times.

4.4. Other coastal fisheries

Besides the major tuna fisheries described above, there are miscellaneous coastal fisheries, which also catch tuna and tuna-like species such as troll, setnet and gillnet fisheries. The catch by species and fishery during 2018–2023 is shown in Table 5. The figures in 2022 and 2023 are preliminary. There used to be two kinds of large–scale gillnet (driftnet) fisheries. One is a large–mesh driftnet fishery, which fishes billfishes and tunas, and the other is a squid driftnet fishery, which fishes 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 trips. All catches by troll gear are made within territorial seas. Skipjack is a very important resource 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 tuna by all gears combined, including coastal fisheries (longline, pole-and-line, troll and other miscellaneous gears), are shown in Table 6 for 2018–2023. The total catch of skipjack shows a decreasing trend during this period from 213,969 mt in 2018 to 162,001 mt in 2023. The total catch of bigeye shows a declining trend during this period from 17,546 mt in 2018 to 11,390 mt in 2023. The total catch of yellowfin shows a decreasing trend during this period from 58,506 mt in 2018 to 45,624 mt in 2023.

5. Status of tuna fishery data collection systems

5.1. Logbook data collection and verification

For 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 vessels 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 such as fishing date and location, fishing effort (the number of baskets 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 subareas 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 has been 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 utilization of VMS. But reliable information of coverage rate is not available for the coastal longline yet. Since the catch in weight in the log sheet is in processed weight, conversion factors by species are used to convert processed weight to whole weight.

For pole-and-line,

The license holders of the distant water pole-and-line or the offshore pole-and-line (mostly vessels 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 mandated, 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 the 1990s. The coverage rate in Table 7 for the pole-and-line was calculated by (Number of the vessels which submitted log sheets at least once) / (Number of vessels which 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.

For 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 operate 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 sheet designed for small pelagic, such as mackerel sardines and anchovies, when they operated targeting small pelagic. 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 tuna using the data coming from the new log sheets.

An electronic logbook reporting system for the distant water longline fishery, the offshore and small offshore longline fishery, the pole-and-line fishery and the purse seine fishery mentioned above, have been available since November 2016, August 2022, August 2023 and 2023, respectively. These systems allow fishermen to fill out a logbook in an electronic file and submit the file through a web site to the server running by the Fishery Agency of Japan. Fishermen are moving to change from the traditional reporting system by paper logbook to the electronic 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 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 2 cm or 5 cm through the FRI encouraged measurement at an interval of 1 cm. 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 2023.

• 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, 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 2024). 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.

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. Five purse seine cruises were observed from May to Aug 2023 in the vicinity of Japan. Days spent for these cruises ranged from 3 to 17 days. They returned to their port frequently without filling up their fish wells in one cruise.

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) was fully chartered to conduct the research off Japan in October 2023 . A total of 1,889 skipjack tuna including 80 individuals with archival tags (Lotek LAT2910) were released.

In addition, the FRI has collaborated with Ajinomoto Co., Inc. to conduct skipjack tagging in coastal areas of southwestern Japan. A total of 297 skipjack tuna were released (244 in September 2023 and 53 in March 2024), including 23 individuals with archival tags. Furthermore, three prefectural research and training vessels conducted skipjack tagging in 2023 and 2024. The tagging locations were around Hachijo Island, off Wakayama and Boso area. A total of 164 skipjack tuna were released, including 15 individuals with archival tags.

Shark and swordfish tagging

In 2023, 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 the current main spawning area and period of PBF. In 2023, research cruises were designed to focus on ecological studies of larval/juvenile PBF by Shunyo-Maru, Yoko-Maru, Hokko-Maru of Japan Fisheries Research and Education Agency (FRA) and five prefectural R/Vs. Surveys for larval/juvenile PBF were conducted in the south of Japan around the 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, which is the major spawning ground of PBF, from May to July 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 the Sanriku-Joban area in the coastal area of northeastern Japan in July and August, where it is recognized as the spawning ground of PBF recently. In 2023, PBF larvae were captured by all cruises in the spawning grounds. Small juveniles of PBF around 2-5 cm FL were also captured in the Nansei Island area and the Sanriku-Joban area by small surface-trawl net. In the Sanriku-Joban area, we collected more than 2000 juveniles of tuna species. However, many of these fish were Yellowfin and skipjack and only four PBF juveniles were found in these collected juveniles.

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 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. A research cruise was conducted from 19 August to 26 September 2023 around off Japan areas by R/V Soyo-Maru. The research cruise conducted CTD (XCTD) observations, plankton net and NORPAC and trolling.

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 434 swordfish, 528 striped marlin, and 174 blue marlin for the collaborative study within ISC billfish working group to estimate biological parameters of billfishes and swordfish. For the study of genetic population structure and other ecological study, muscle tissue was collected from 302 swordfish, 396 striped marlin, and 14 blue marlins.

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

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 2023.

6.5. Bycatch species related research

Mitigation studies for bycatch species

A research cruise was conducted from May to June 2024 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

We analyzed longitudinal growth data of 121 captive yellowfin tuna collected in southwestern waters of Japan by pole and line fishery in October 2020 and May 2021. We repeatedly recaptured captive fish, measured their fork length every three to five months and calculated monthly growth rate. To estimate the growth trajectory of individual fish, we developed a growth model that incorporates both seasonal and individual effects based on Richards growth model. To determine the effects of seasonality on growth, we developed two models: one without the seasonal effect and another model with the seasonal effect. We then compared these models using Akaike's information criterion (AIC) to determine if including seasonality improves the model. In comparing the monthly growth rate among different seasons revealed that fish grow faster in summer than in winter. On average, fish showed a monthly growth rate of 3.0 cm during summer, whereas the rate declined to 1.8 cm during winter. According to their AIC values, the model incorporating the seasonal effect provided a better fit to the data. The estimated parameter which indicates the growth rate was higher in summer (0.87) than in winter (0.57), suggesting that fish showed a higher growth rate during summer compared to winter. We found that the fish shows higher growth rate in summer than winter, suggesting that the seasonal variability of water temperature or other associated factors play a key role in shaping the variations in growth. Our findings indicate that the fish in temperate waters may show different growth patterns than that in tropical waters.

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MAFFJ 2018–2022. Annual report of catch statistics on fishery and aquaculture 2018–2022, on the portal site for governmental statistics "e–Stat" (published on Feb 29, 2024). https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00500216&tstat=000001015174&cycle=7&tclass1=000001015175&tclass2=000001214760&tclass3val=0

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	**10–50 GRT**	**51–200 GRT**	**201-500 GRT**	**500+ GRT**	**Total**
2018	230	30	63	0	323
2019	230	30	51	0	311
2020	228	26	42	0	296
2021	202	27	48	0	277
2022	215	22	41	0	278
2023	198	19	38	0	255
Pole-and-line	**20–50 GRT**	**51–150 GRT**	**150+ GRT**	**Total**	
2018	8	38	31	77	
2019	8	36	30	74	
2020	8	32	28	68	
2021	7	30	28	65	
2022	7	27	28	62	
2023	7	27	27	61	
Purse Seine	**48–500 GRT**	**501-1000 GRT**	**1001-1500 GRT**	**1500+ GRT**	**Total**
2018	66	4	0	0	70
2019	67	5	0	0	72
2020	66	6	0	0	72
2021	61	7	0	0	68
2022	52	8	0	0	60
2023	43	9	0	0	52

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
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	36,236	129	5,172	2,617	3,253	3,104	219	428	26	31	11	69
2022	32,749	107	4,051	2,043	4,422	2,310	177	437	28	49	15	110
2023	37,986	103	3,963	3,323	3,074	3,519	209	578	22	51	12	40

Year	BSH	LMD	POR	SMA	OCS	THR	FAL	SPN	RHN	OSHK	Total
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	9,995	203	0	466	0	29	0	0	0	0	25,751
2022	10,362	587	0	529	0	19	0	0	0	5	25,249
2023	12,220	185	0	641	0	3	0	0	0	49	27,994

B. Small offshore longline (10–19 GRT)

Year	hooks	PBF	ALB	BET	YFT	SWO	MLS	BUM	BLM	SFA	SSP	SKJ
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	67,899	–	–	5,694	4,594	1,153	593	748	20	13	0	2
2022	60,305	–	–	4,537	3,843	1,038	324	692	16	38	0	1
2023	57,419	–	–	4,185	4,168	1,107	348	539	16	51	1	5

Year	BSH	LMD	POR	SMA	OCS	THR	FAL	SPN	RHN	OSHK	Total
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	2,186	996	0	64	0	14	0	0	0	16	31,241
2022	2,900	1,376	0	30	0	1	0	0	0	14	25,015
2023	1,816	1,236	0	48	0	1	0	0	0	75	26,839

*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	#ays	#pole	SKJ	YFT	BET	PBF	ALB	Total
2018	13,445	249,145	65,740	1,577	1,276	–	16,998	85,591
2019	12,663	233,758	66,960	1,360	431	–	8,036	76,785
2020	11,273	204,436	39,663	1,283	947	–	36,063	77,957
2021	10,747	191,544	67,721	1,465	1,358	–	11,471	82,015
2022	9,733	180,684	40,366	1,040	1,178	–	3,540	46,124
2023	6,713	114,628	30,861	1,074	1,160	–	11,949	45,044

* 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
2018	5,231	132,838	40,673	3,626	–	–	177,137
2019	5,532	128,082	39,767	2,125	–	–	169,974
2020	5,947	119,047	33,640	2,404	–	–	155,091
2021	5,748	128,666	32,070	1,905	–	–	162,642
2022	5,371	116,972	27,357	1,277			145,605
2023	5,063	116,181	30,722	2,196			149,099

* 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 the 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 for the last two years are provisional.

Coastal longline (miscellaneous coastal longline in MAFFJ report)									
	SKJ	YFT	BET	PBF*	ALB*	SWO	MLS	BUM+BLM	Total
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	1,778	190	–	–	80	115	100	2,272
2022	4	1,412	146	–	–	58	121	65	1,806
2022	4	1,412	146	–	–	58	121	65	1,806

Coastal pole-and-line						
	SKJ	YFT	BET	PBF*	ALB	Total
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	13,374	1,480	185	–	86	15,125
2022	13,374	1,480	185	–	86	15,125

Coastal purse seine						
	SKJ	YFT	BET	PBF*	ALB	Total
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	222	314	13		15	564
2023	222	314	13		15	564

Gillnet						
	SKJ	YFT	BET	PBF*	ALB	Total
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	125	4	0		31	160
2023	125	4	0		31	160

Troll						
	SKJ	YFT	BET	PBF	ALB	Total
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	900	2,180	80		216	3,376
2023	900	2,180	80		216	3,376

Setnet						
	SKJ	YFT	BET	PBF	ALB	Total
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	219	378	1		18	616
2023	219	378	1		18	616

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.

	2018	2019	2020	2021	2022	2023
Skipjack; subtotal	213,969	206,372	170,698	218,153	172,365	162,001
Distant water and Offshore LL	36	43	41	69	110	40
Distant water and Offshore PL	65,740	66,960	39,663	67,721	40,366	30,861
Tuna PS	132,838	128,082	119,047	128,666	116,972	116,181
Small offshore LL	3	2	3	2	1	5
Coastal LL	6	3	2	9	4	4
Coastal PL	13,418	9,343	10,356	18,252	13,374	13,374
Coastal PS	57	102	146	400	222	222
Gill net	91	96	70	144	125	125
Troll	1,154	1,387	949	2,161	900	900
Set net	494	246	335	580	219	219
Unclassified	133	110	86	148	71	71
Yellowfin; subtotal	58,506	59,179	48,413	49,266	43,247	45,624
Distant water and Offshore LL	5,408	5,102	2,504	3,253	4,422	3,074
Distant water and Offshore PL	1,577	1,360	1,283	1,465	1,040	1,074
Tuna PS	40,673	39,767	33,640	32,070	27,357	30,722
Small offshore LL	4,743	5,838	3,567	4,594	3,843	4,168
Coastal LL	1,611	1,987	1,616	1,778	1,412	1,412
Coastal PL	1,942	1,583	1,798	2,265	1,480	1,480
Coastal PS	144	482	1,014	702	314	314
Gill net	6	4	13	7	4	4
Troll	1,738	2,070	2,008	2,160	2,180	2,180
Set net	77	208	125	206	378	378
Unclassified	587	778	846	767	818	818
Bigeye; subtotal	17,546	13,835	12,827	12,167	9,559	11,390
Distant water and Offshore LL	4,565	3,464	2,955	2,617	2,043	3,323
Distant water and Offshore PL	1,276	431	947	1,358	1,178	1,160
Tuna PS	3,626	2,125	2,404	1,905	1,277	2,196
Small offshore LL	7,461	7,175	5,907	5,694	4,537	4,185
Coastal LL	298	298	231	190	146	146
Coastal PL	156	118	178	218	185	185
Coastal PS	0	0	0	22	13	13
Gill net	1	1	0	0	0	0
Troll	80	110	69	78	80	80
Set net	0	0	1	3	1	1
Unclassified	84	113	135	81	100	100
Pacific bluefin; subtotal	6,206	7,509	8,011	8,617	10,112	9,793
Coastal LL (less than 20 GRT)	679	977	1,341	1,432	1,519	1,477
Offshore and distant water LL	21	25	75	80	80	80
PL (unspecified)	9	0	1	0	13	24
PS (unspecified)	4,050	4,464	3,960	4,198	4,702	4,570
Troll	371	720	760	653	1,079	1,160
Setnet	645	951	1,342	1,742	2,126	1,889
Unclassified	431	372	532	512	593	593
Albacore; subtotal	35,778	23,712	57,514	32,061	17,667	17,373
Coastal LL (less than 20 GRT)	10,121	9,375	10,241	14,486	8,278	8,278
Offshore and distant water LL	4,508	4,085	3,695	5,345	4,101	3,841
Coastal PL	119	177	254	224	86	86
Distant water and Offshore PL	17,795	8,356	36,389	11,241	4,052	4,004
PS (unspecified)	3,039	1,045	5,961	92	726	740
Gillnet	35	9	7	3	31	31
Troll	78	543	784	428	216	216
Set net	13	27	25	11	18	18
Unclassified	70	95	159	232	159	159
PS; subtotal	184,427	176,067	166,172	168,055	151,583	154,958
LL; subtotal	39,460	38,374	32,178	39,549	30,496	30,033
PL; subtotal	102,032	88,328	90,869	102,744	61,774	52,248
Miscellaneous; subtotal	6,088	7,840	8,246	9,916	9,098	8,942
Total	332,007	310,609	297,465	320,264	252,951	246,181

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

Type of fishery	2021	2022	2023
Distant water longline	100%	>95%	>90%
Offshore longline	>95%	>95%	>95%
Small offshore longline	>80%	>90%	>95%
Coastal longline	NA	NA	NA
Offshore pole-and-line (20–120 GRT)	100%	100%	>80%
Distant water pole-and-line (over 120 GRT)	100%	90%	>80%
Purse seine (>200GRT)	100%	100%	100%

Table 8. Number of operations and catch number for longline observer program in the western central Pacific in 2023.

	Small offshore longline	Distant water and offshore longline
Number of cruises	70	7
Number of operations	1,026	383
Number of catch observed	54,511	31,106
Catch by species		
Albacore	12,848	6,646
Yellowfin tuna	1,523	1,822
Southern bluefin tuna	0	9,447
Bigeye tuna	5,923	2,157
Pacific bluefin tuna	7	12
Skipjack tuna	558	111
Sailfish	28	107
Black marlin	1	8
Shortbill spearfish	77	36
Striped marlin	193	92
Swordfish	1,730	149
Blue marlin	287	262
Lancetfishes	3,233	1,118
Opah	453	697
Pomfrets	572	708
Dolphinfishes	585	37
Escolar	1,197	415
Other fish	854	659
Thresher sharks	186	63
Shortfin mako	1,121	95
Blue shark	21,411	5,099
Other sharks	129	662
Stingray	1,027	642
Other rays	3	5
Seabirds	361	42
Sea turtles	191	9
Mammals	8	2
Unidentified animals	5	4

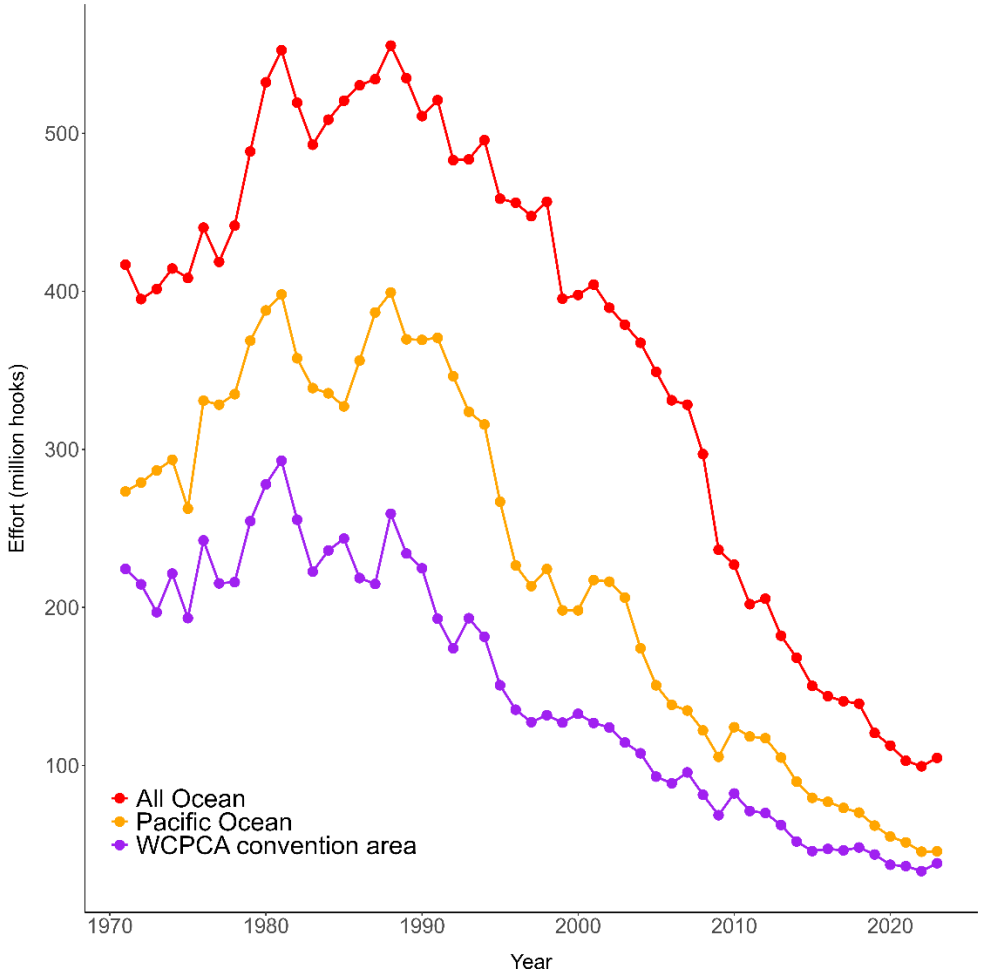

Fig. 1. Time series of fishing effort of the Japanese distant water and offshore longline fishery (not including small offshore) in the WCPFC Convention Area. Values in the last two years are provisional.

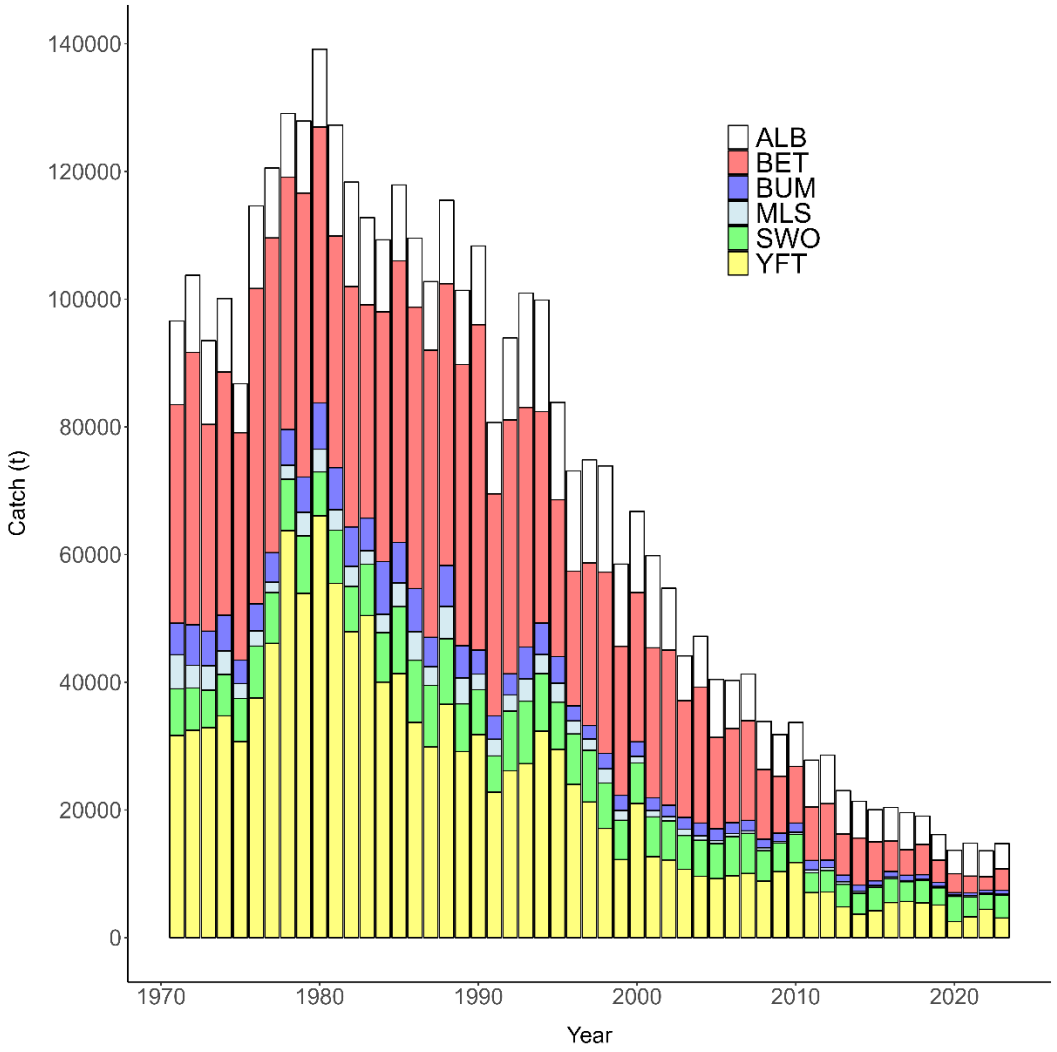

Fig. 2. Time series of catches for major species for the Japanese distant water and offshore longline fishery (not including small offshore) in the WCPFC Convention Area. ALB: albacore, BET: bigeye, YFT: yellowfin, SWO: sword fish, MLS: striped marlin, BUM: blue marlin. Values in the last two years are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

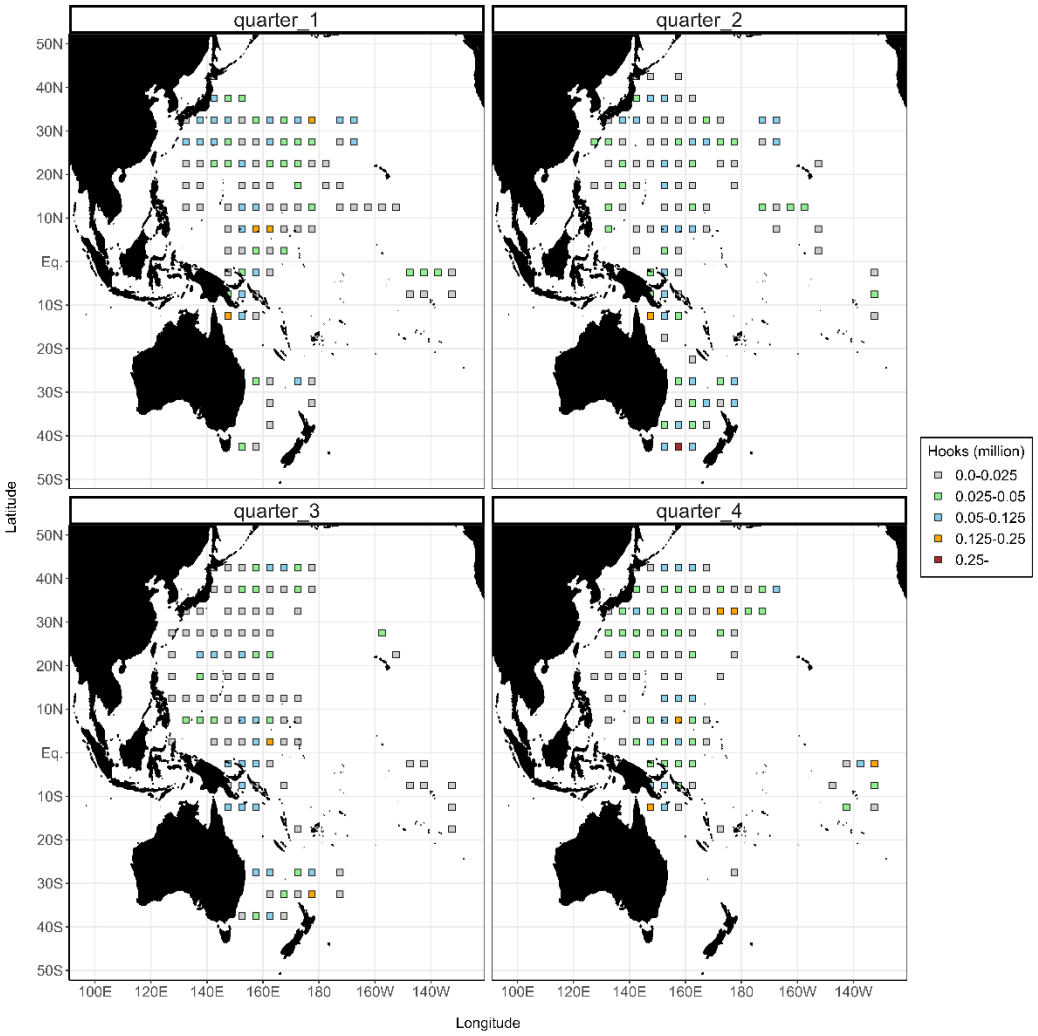

Fig. 3. Quarterly distribution of fishing effort for the Japanese offshore and distant water longline fisheries in the western and central Pacific Ocean in average of 2021–2023.

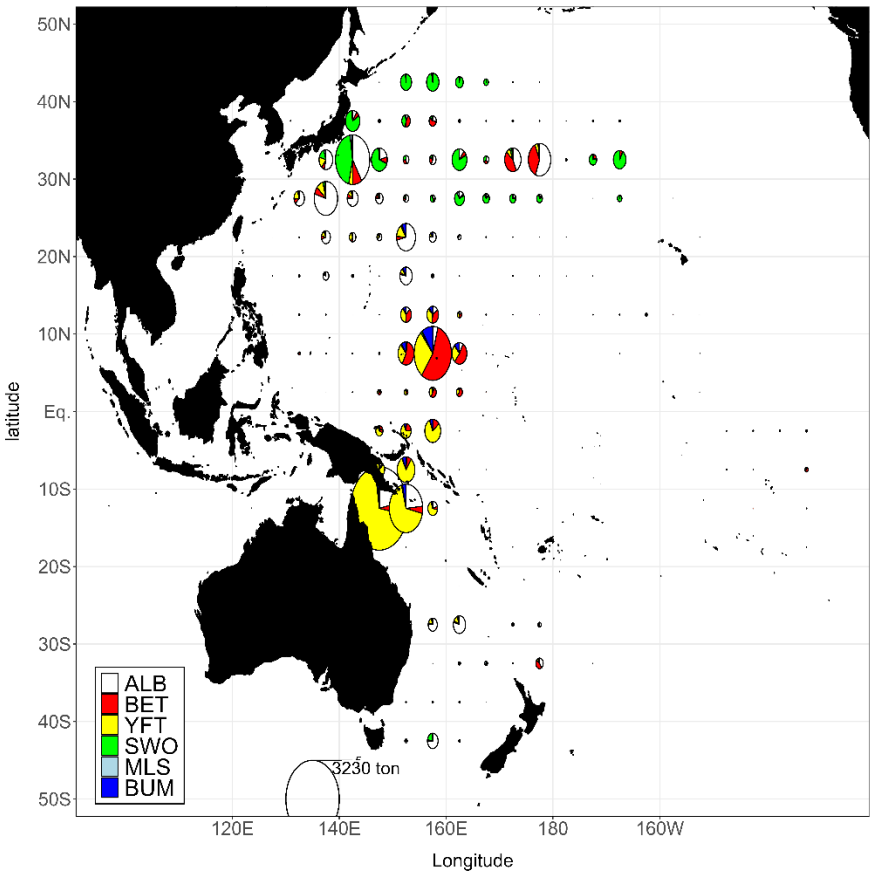

Fig. 4. Distributions of offshore and distant water longline catch (in weight) by species in average of 2021–2023 for six species (ALB: albacore, BET: bigeye tuna, YFT: yellowfin tuna, SWO: swordfish, MLS: striped marlin and BUM: blue marlin).

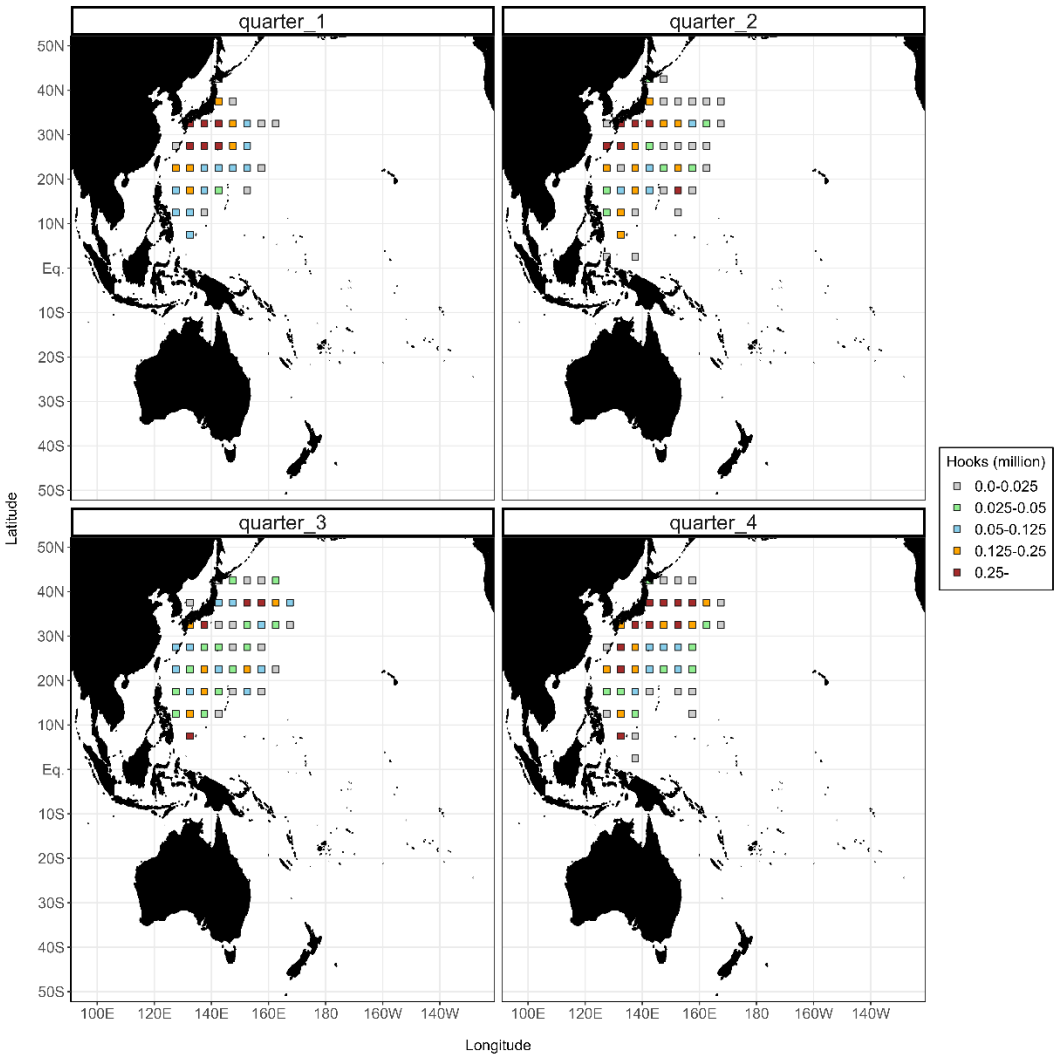

Fig. 5. Quarterly distribution of fishing effort for the Japanese small offshore longline fishery in the western and central Pacific Ocean in average of 2021-2023.

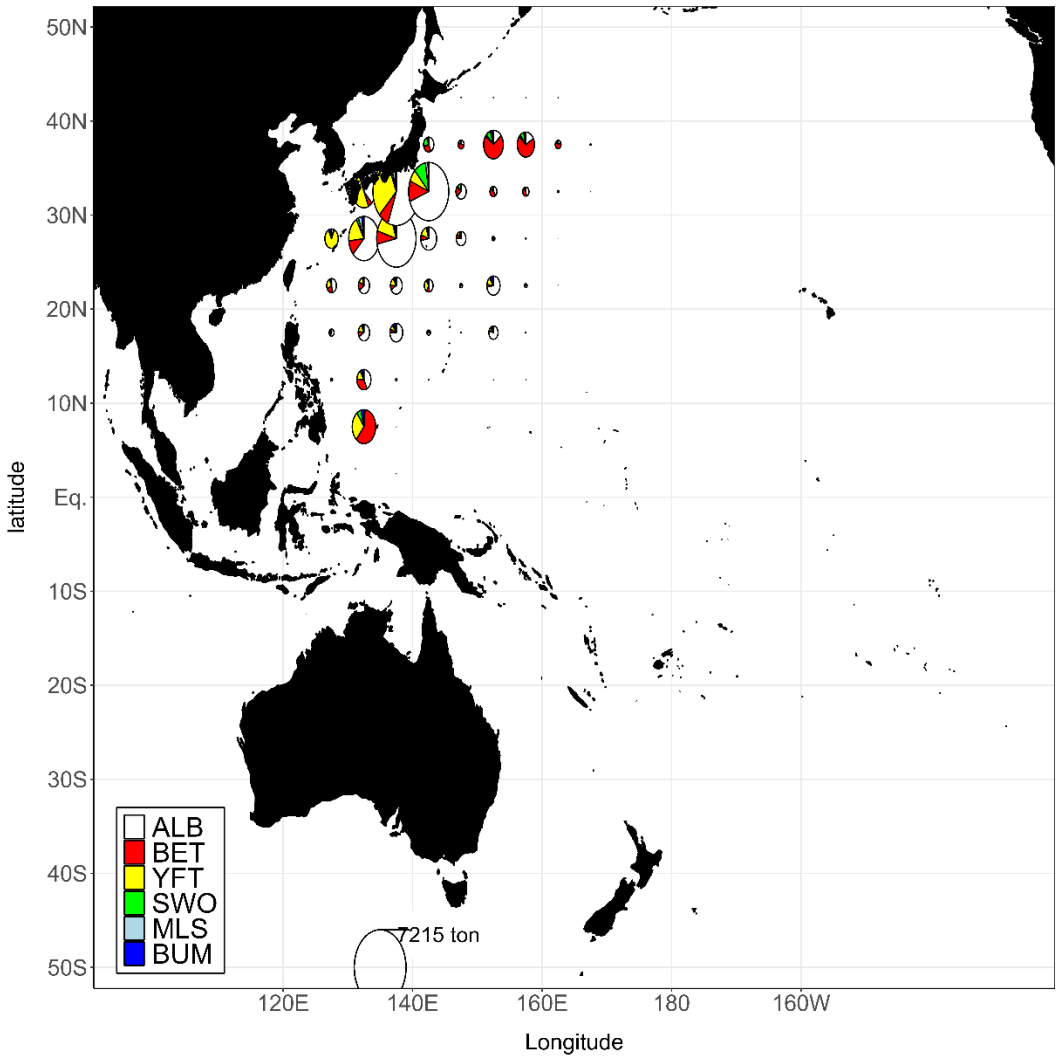

Fig. 6. Distributions of small offshore longline catch (in weight) by species in average of 2021–2023 for six species (ALB: albacore, BET: bigeye tuna, YFT: yellowfin tuna, SWO: swordfish, MLS: striped marlin and BUM: blue marlin).

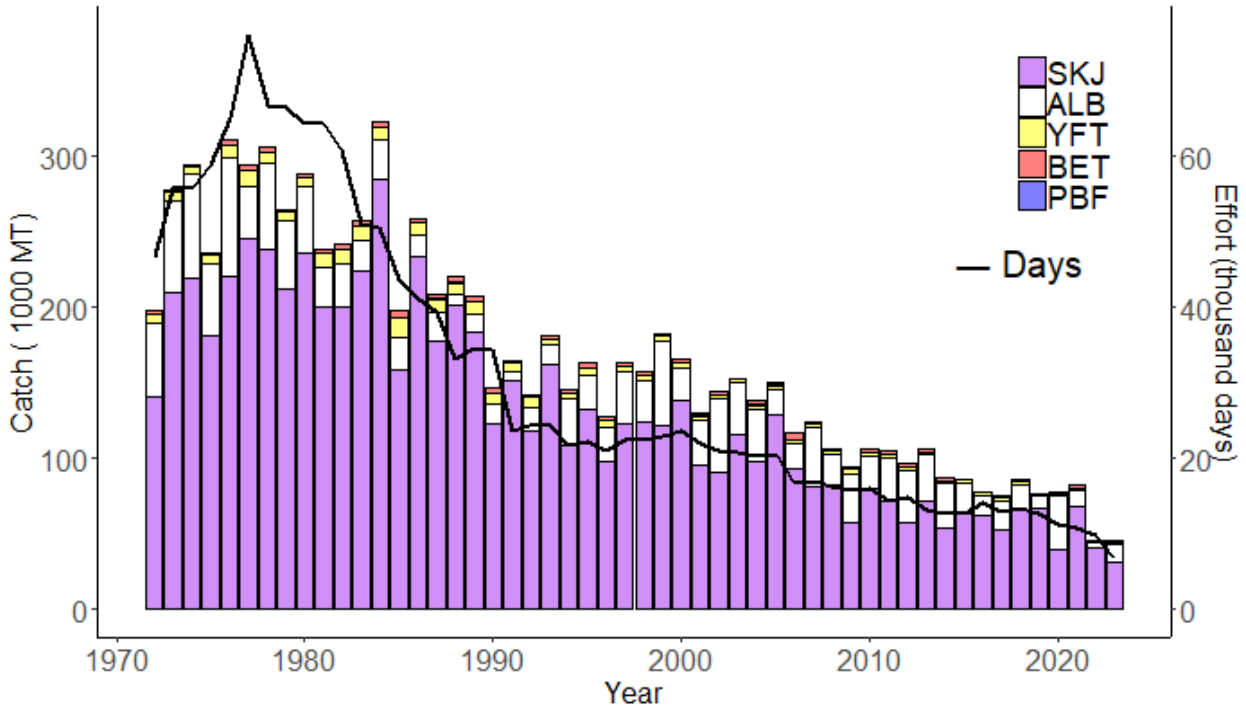

Fig. 7. Time series of fishing effort and catches by species for the Japanese pole-and-line fishery (> 20GRT) in the WCPFC Convention Area. Values in 2023 are provisional.

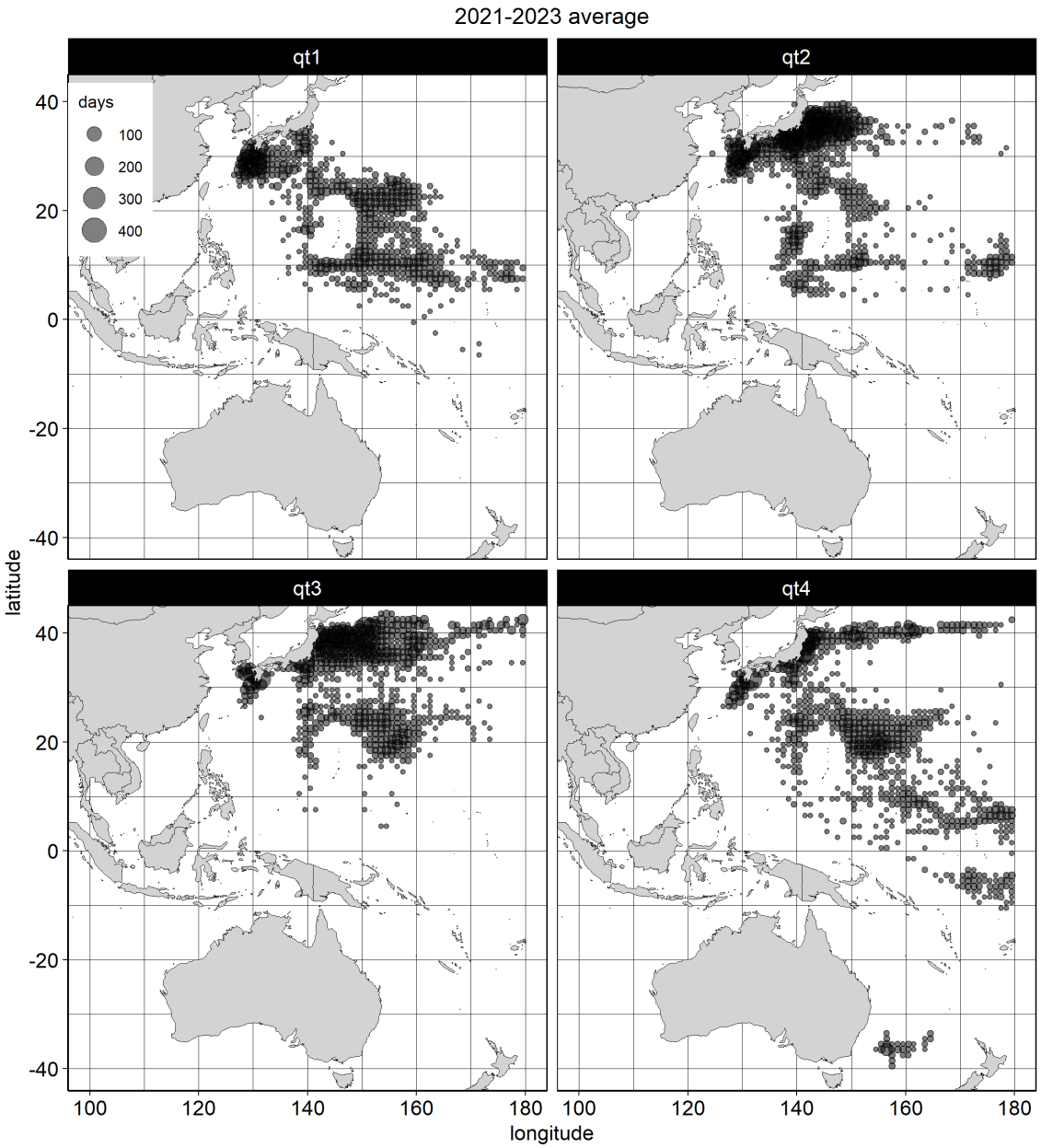

Fig. 8. Quarterly distribution of fishing effort (days) for the Japanese pole-and-line fishery (offshore and distant water licenses) in the Pacific Ocean in average of 2021–2023.

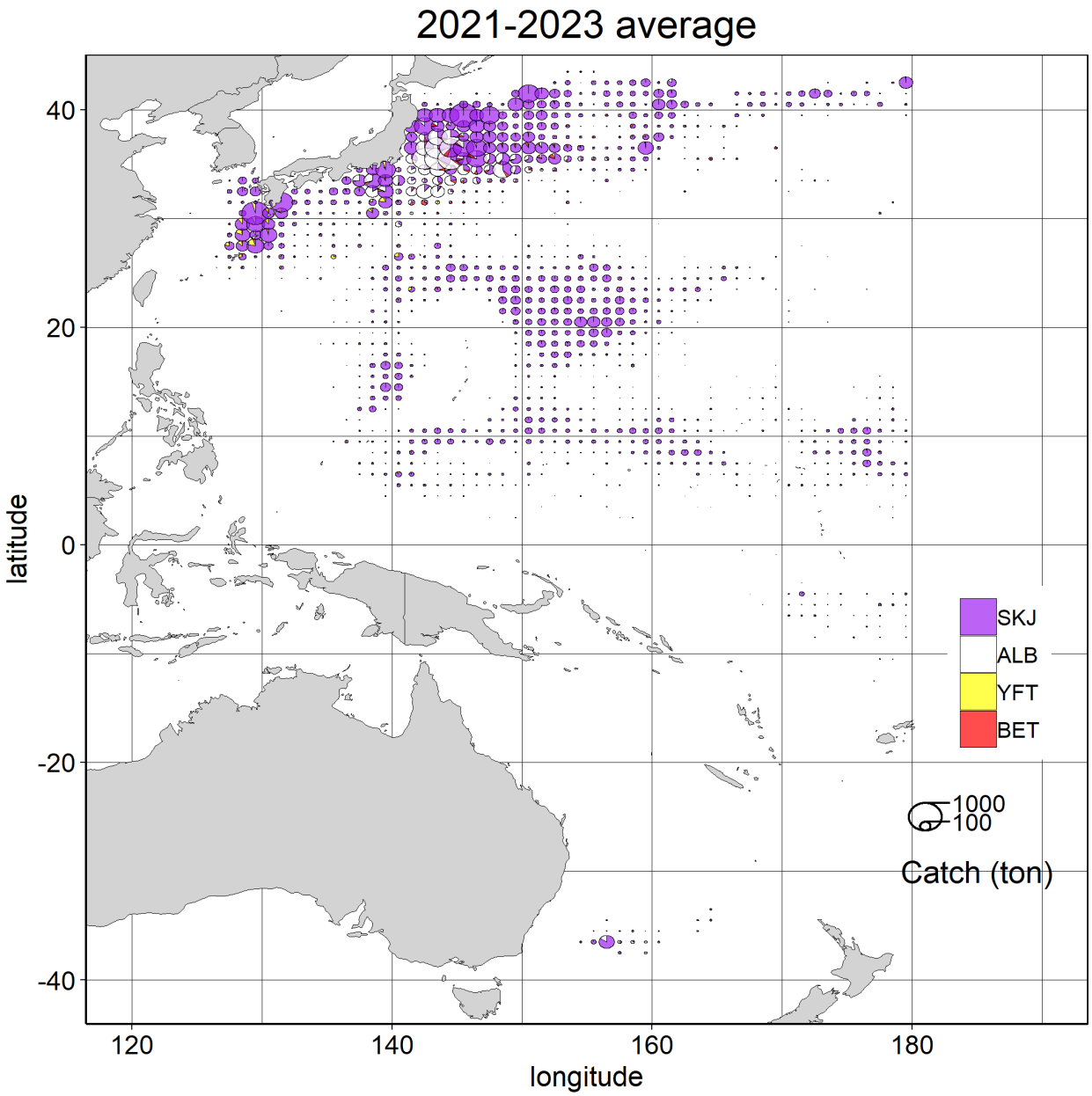

Fig. 9. Distribution of catch and its species composition for the Japanese offshore and distant water pole-and-line fishery in average of 2021–2023.

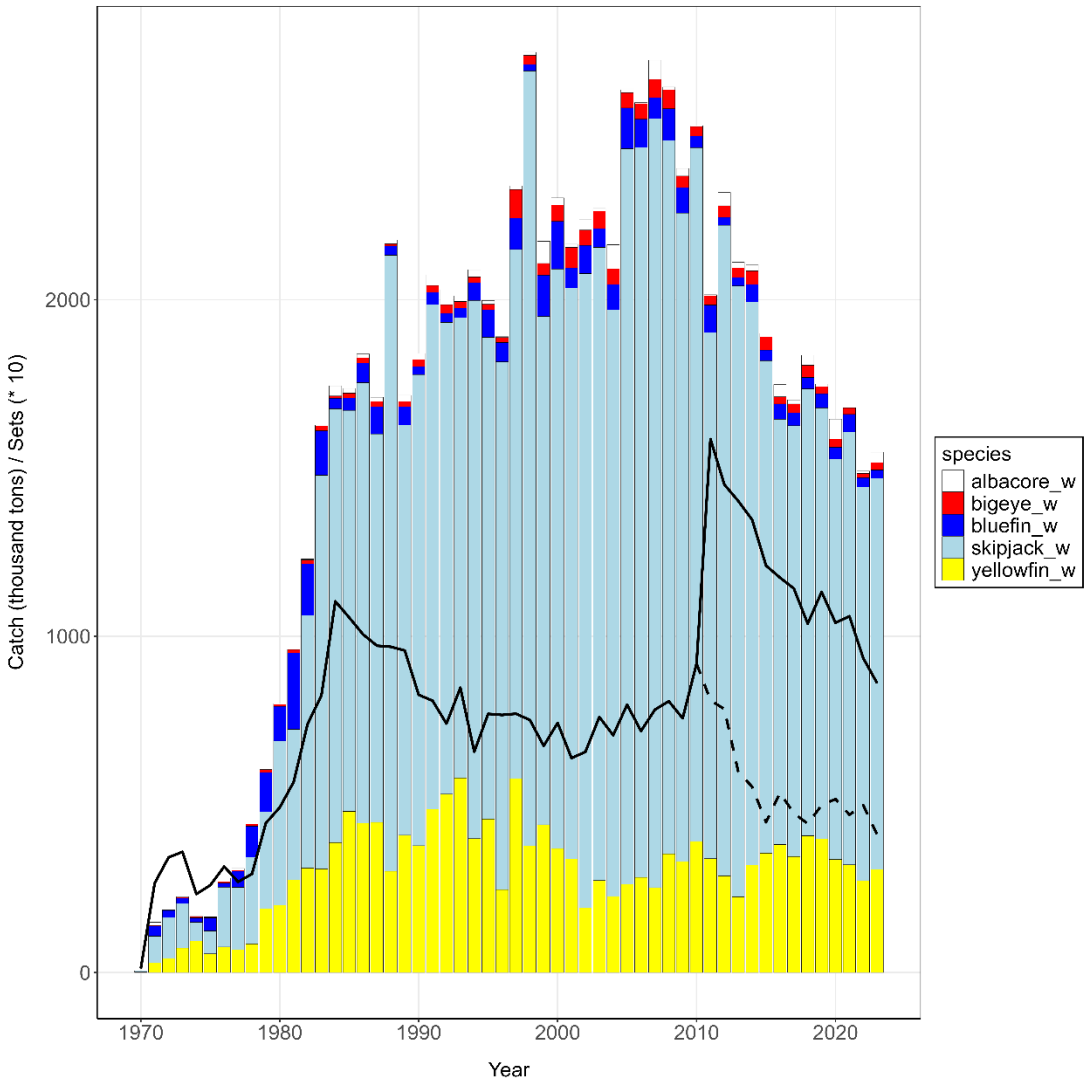

Fig. 10. Time series of fishing effort and catches by species for the Japanese tuna purse seine fishery in the WCPFC Convention Area. Since 2011, Japanese purse seine logbook data collecting system has changed and has included records of purse seine operations that do not specifically target tunas in vicinity of Japan. 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 tuna targeting vessels after 2011. Values in 2022 and 2023 are provisional.

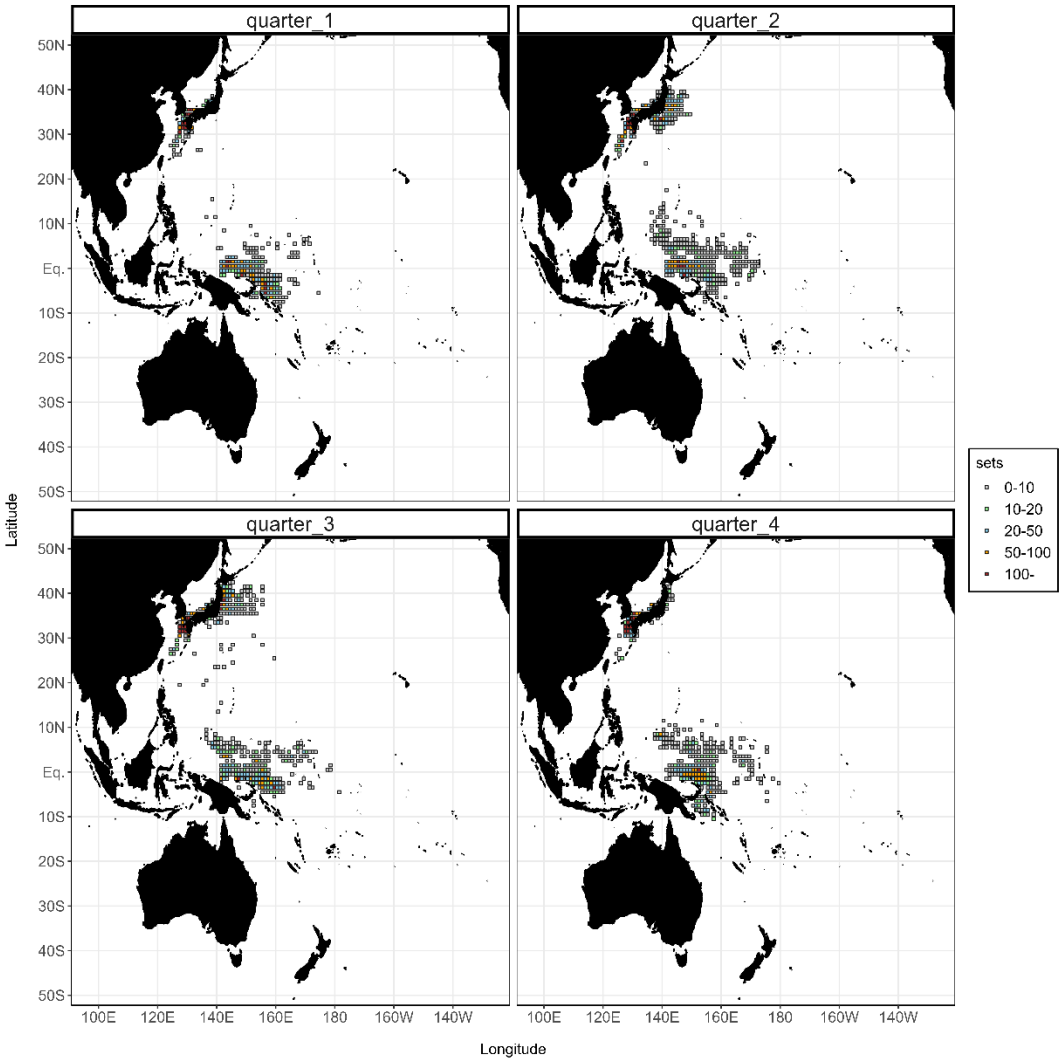

Fig. 11. Quarterly distributions of fishing effort (number of set) for the Japanese tuna purse seine fishery in the Pacific Ocean for 2021–2023.

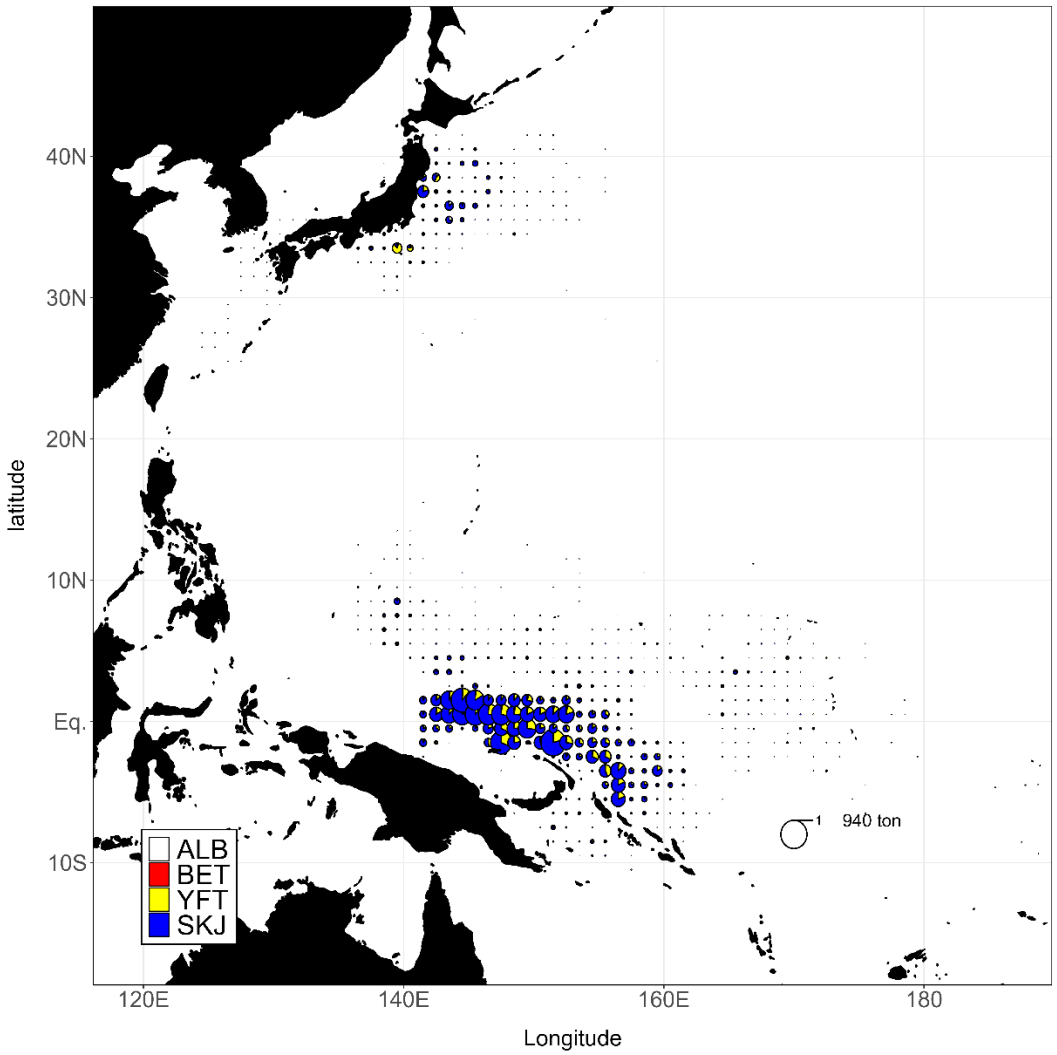

Fig. 12. Distribution of tuna purse seine catch (t) by species (skipjack, yellowfin, albacore and bigeye) combined for 2021–2023.

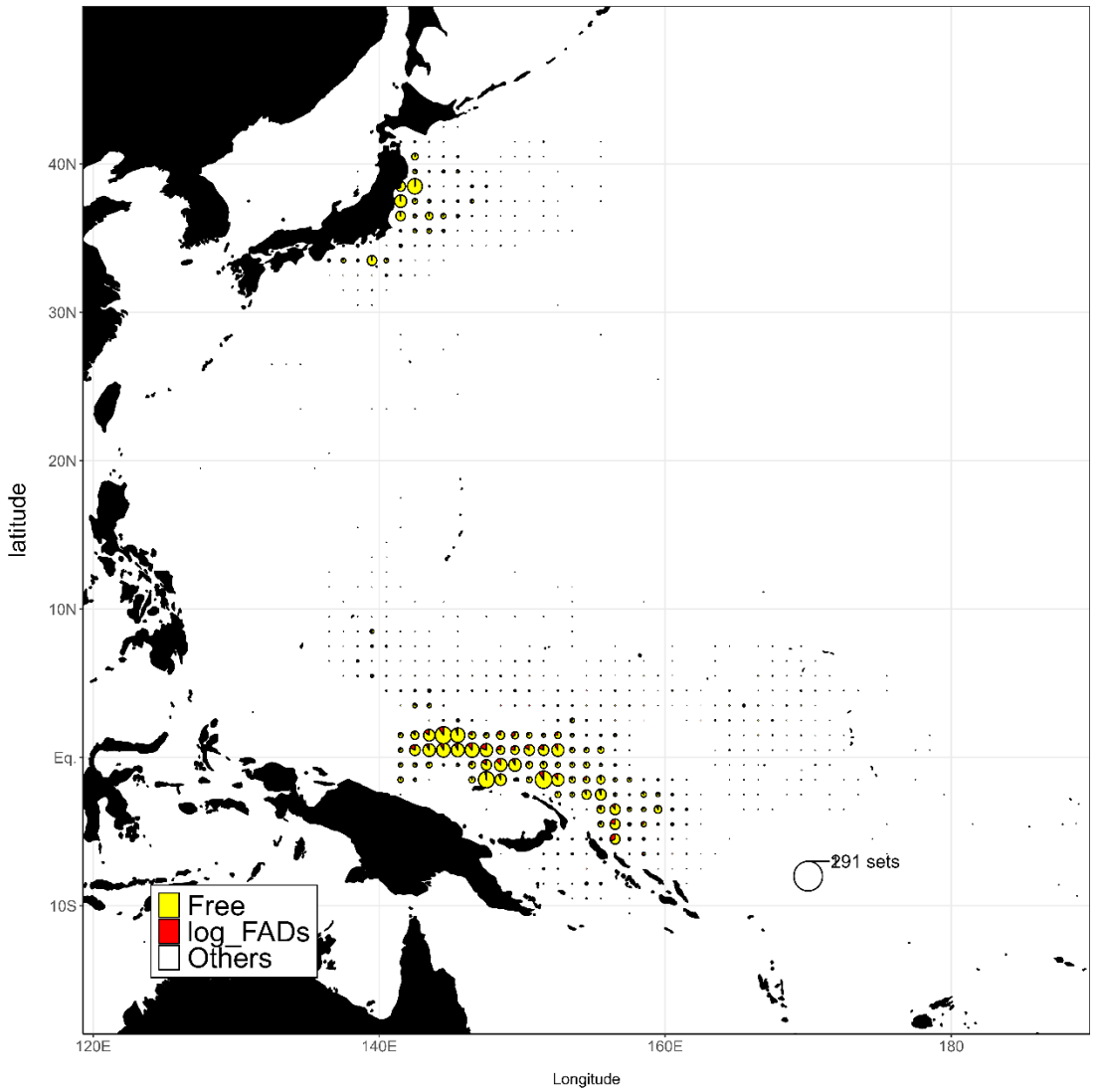

Fig. 13. Distribution of sets by type of school for 2021–2023 deployed by the tuna purse seine fishery by Japan.

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
2018	429	76	0	31	2	33	0	0	0	0	0	0	0	0
2019	28	16	0	4	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
2021	52	16	0	2	1	0	0	0	0	0	0	0	0	0
2022	67	15	1	4	1	0	0	0	0	0	0	0	0	0
2023	40	24	1	5	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
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	1,432	80	0	4,198	653	1,742	512
2022	1,519	80	13	4,702	1,079	2,126	593
2023	1,477	80	24	4,570	1,160	1,889	593

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
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
2023	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
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	1,432	80	0	4,198	653	1,742	512
2022	1,519	80	13	4,702	1,079	2,126	593
2023	1,477	80	24	4,570	1,160	1,889	593

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
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
2023	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
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
2023	0	0	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
2018	10,121	3,071	119	17,756	3,039	35	78	13	70
2019	9,375	2,841	177	8,331	1,045	9	543	27	95
2020	10,241	2,415	254	36,380	5,961	7	784	25	159
2021	14,512	4,157	224	10,912	92	3	428	11	232
2022	8,278	2,756	86	4,004	726	31	216	18	159
2023	8,278	2,756	86	4,004	726	31	216	18	159

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
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
2023	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
2018	10,121	3,071	119	17,756	3,039	35	78	13	70
2019	9,375	2,841	177	8,331	1,045	9	543	27	95
2020	10,241	2,415	254	36,384	5,961	7	784	25	159
2021	14,486	4,226	224	10,912	92	3	428	11	232
2022	8,278	2,756	86	4,004	726	31	216	18	159
2023	8,278	2,756	86	4,004	726	31	216	18	159

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
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
2023	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
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
2023	0	15	0	0	0	0	0	0	0

Appendix Table 2. (Continued)

Swordfish (1) the Pacific Ocean north of the Equator

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	1,979	3,053	2	230	5	747
2019	1,446	2,480	2	242	6	549
2020	1,640	3,679	4	290	7	484
2021	1,373	2,859	8	301	4	521
2022	1,200	2,168	4	459	4	596
2023	1,305	3,273	4	459	4	596

Swordfish (2) the Pacific Ocean south of the Equator

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	2,203	0	0	0	0
2019	0	1,336	0	0	0	0
2020	0	1,545	0	0	0	0
2021	0	1,392	0	0	0	0
2022	0	978	0	0	0	0
2023	0	1,041	0	0	0	0

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	1,979	2,914	2	230	5	746
2019	1,446	2,417	2	242	6	548
2020	1,640	3,632	4	290	7	483
2021	1,373	2,812	8	301	4	521
2022	1,200	2,139	4	459	4	596
2023	1,305	3,199	4	459	4	596

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	357	0	0	0	0
2019	0	150	0	0	0	0
2020	0	133	0	0	0	0
2021	0	179	0	0	0	0
2022	0	109	0	0	0	0
2023	0	156	0	0	0	0

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	95	0	0	0	0
2019	0	3	0	0	0	0
2020	0	4	0	0	0	0
2021	0	5	0	0	0	0
2022	0	27	0	0	0	0
2023	0	7	0	0	0	0

Appendix Table 2. (Continued)

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	742	127	28	278	28	88
2019	938	184	29	241	29	100
2020	963	136	49	155	37	57
2021	761	138	17	95	31	77
2022	476	122	15	138	27	94
2023	503	98	15	138	27	94

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	229	0	0	0	0
2019	0	204	0	0	0	0
2020	0	214	0	0	0	0
2021	0	207	0	0	0	0
2022	0	130	0	0	0	0
2023	0	151	0	0	0	0

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	742	86	28	278	28	88
2019	938	134	29	241	29	100
2020	963	122	49	155	37	57
2021	761	133	17	95	31	77
2022	476	119	15	138	27	94
2023	503	87	15	138	27	94

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	43	0	0	0	0
2019	0	30	0	0	0	0
2020	0	28	0	0	0	0
2021	0	43	0	0	0	0
2022	0	46	0	0	0	0
2023	0	86	0	0	0	0

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

Year	LL			Gillnet	Setnet	Others
	Coastal less than 20 GRT	Offshore and distant water	Others			
2018	0	7	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	2	0	0	0	0
2022	0	1	0	0	0	0
2023	0	1	0	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 relate to **paragraph 8 of CMM 2009–03.** "Vessel number" means number of vessels who caught at least one fish in this area in each year. Values in 2022 and 2023 are provisional.

		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
2018	175	27	0	0	—	—	—
2019	101	27	0	0	—	—	—
2020	111	21	0	0	—	—	—
2021	144	23	0	0	—	—	—
2022	52	21	0	0	—	—	—
2023	138	23	0	0	—	—	—

Appendix Table 4. Observer coverage for the Japanese longline fishery. Values in 2022 and 2023 are provisional. This table was requested 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.	%
2018	Ice / Fresh	**	**	**	25,788	938	3.63	**	**	**	**	**	**
	Frozen	**	**	**	9,447	614	6.49	**	**	**	**	**	**
2019	Ice / Fresh	**	**	**	23,546	1,473	6.25	**	**	**	**	**	**
	Frozen	**	**	**	7,987	888	11.1	**	**	**	**	**	**
2020	Ice / Fresh	**	**	**	21,663	51	0.23	**	**	**	**	**	**
	Frozen	**	**	**	6,082	232	3.81	**	**	**	**	**	**
2021	Ice / Fresh	**	**	**	21,438	20	0.09	**	**	**	**	**	**
	Frozen	**	**	**	6,097	0	0	**	**	**	**	**	**
2022	Ice / Fresh	**	**	**	18,397	0	0	**	**	**	**	**	**
	Frozen	**	**	**	5,741	0	0	**	**	**	**	**	**
2023	Ice / Fresh	**	**	**	17,369	1,041	5.99	**	**	**	**	**	**
	Frozen	**	**	**	7,474	446	5.97	**	**	**	**	**	**

Appendix Table 5-1. The total quantity (mt) of highly migratory fish stocks transshipped by fishing vessels related to **paragraph 11 of CMM 2009-06**.
(1) The total quantities in 2023, 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							106.894
	At sea beyond NJ						106.894
		Inside CA					0
			Outside CA				106.894
				BET			86.287
					GG	Longline	86.287
				YFT			11.599
					GG	Longline	11.599
				SWO			9.008
					FL	Longline	9.008
Received							0

Appendix Table 5-2. The number of transshipments involving highly migratory fish stocks related to **paragraph 11 of CMM 2009-06**.
(1) The number of transhipments in 2023 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 fishing year for Japan [South of 30˚ S, 25˚ S – 30˚ S, 23˚ N – 25˚ S, or North of 23˚ N] related to **paragraph 13 of CMM 2018–03**. 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).

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	371,580	3.4	83	0.223
2020	42	13,860,057	0	0.0	0	0.000
2021	37	13,297,013	0	0.0	0	0.000
2022	33	11,352,660	0	0.0	0	0.000
2023	25	12,309,237	607,846	4.9	150	0.247
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	10,019,178	38,073	0.4	0	0.000
2022	41	11,111,107	0	0.0	0	0.000
2023	40	14,124,539	400,233	2.8	0	0.000
25˚N – 30˚S						
2019	9	844,467	165,091	19.5	4	0.000
2020	14	1,562,742	132,871	8.5	0	0.000
2021	12	937,647	0	0.0	0	0.000
2022	9	732,707	0	0.0	0	0.000
2023	11	1,008,942	148,106	14.7	1	0.007
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	4,036,450	0	0.0	0	0.000
2022	22	2,511,510	0	0.0	0	0.000
2023	23	3,725,090	497,760	13.4	41	0.082

Appendix Table 6-2. 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] related to **paragraph 13 of CMM 2018–03**. 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).

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	216	57,122,757	39,835	0.1	28	0.703
2021	187	57,658,872	0	0.0	0	0.000
2022	212	50,981,067	0	0.0	0	0.000
2023	195	48,352,948	962,972	2.0	208	0.216
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	18,195,263	0	0.0	0	0.000
2022	124	16,567,230	0	0.0	0	0.000
2023	114	15,993,878	543,682	3.4	3	0.006

Appendix Table 7-1. Proportion of mitigation types[1] used by the fleet in 2019–2021 related to **paragraph 13 of CMM 2018–03**.

2019	Combination of mitigation measures	Proportion of observed effort using mitigation measures		
		South of 30°S	25°S to 23°N	North of 23°N
Options required south of 30°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°S – 30°S	TL + MOD	50.6%	0.2%	70.3%
	WB + MOD	1.7%	3.6%	0.0%
Other options north of 23°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°S	25°S to 23°N	North of 23°N
Options required south of 30°S	TL + NS + MOD	0.0%	0.0%	0.0%
	TL + WB + MOD	23.5%	0.0%	0.0%
	WB + NS + MOD	5.9%	0.0%	0.0%
	TL + WB + NS + MOD	47.0%	0.0%	0.0%
Other options 25°S – 30°S	TL + MOD	0.0%	0.0%	4.6%
	WB + MOD	23.5%	0.0%	0.0%
Other options north of 23°N	NS + MOD	0.0%	0.3%	0.6%
	MOD	0.0%	99.7%	94.6%
Total		100.0%	100.0%	100.0%

2021	Combination of mitigation measures	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S – 30°S	25°S to 23°N	North of 23°N
Other options north of 23°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°S	25°S – 30°S	25°S to 23°N	North of 23°N
Total		NA			

2023	Combination of mitigation measures	Proportion of observed effort using mitigation measures			
		South of 30°S	25°S – 30°S	25°S to 23°N	North of 23°N
Options required south of 30°S	TL+NS+MOD	9.8%	13.9%	0.0%	6.3%
	TL+WB+MOD	45.0%	0.9%	1.1%	1.3%
	WB+NS+MOD	0.0%	0.5%	1.2%	0.1%
	TL+WB+NS_MOD	22.2%	0.4%	0.0%	0.1%
Other options 25°S – 30°S	TL+MOD	21.6%	44.3%	3.7%	75.8%
	WB+MOD	0.0%	4.9%	30.3%	2.1%
Other options north of 23°N	NS+MOD	0.5%	4.8%	2.1%	1.3%
	MOD	1.0%	30.4%	61.6%	13.1%
Total		100.0%	100.0%	100.0%	100.0%

[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 Japan longline fisheries in the longliners larger than 20 GRT (approximately >=24m, by year species and area related to **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	NA	0	NA	0
2022					
Total	NA	NA	NA	NA	0
2023					
Black-browed albatross	2	0	0	0	2
Black-browed albatross group	1	0	0	0	1
Black-footed albatross	0	0	0	28	28
Buller's albatross group	6	0	0	0	6
Campbell albatross	2	0	0	0	2
Grey petrel	1	0	0	0	1
Grey-headed albatross	1	0	0	0	1
Large albatrosses	1	0	0	0	1
Laysan albatross	0	0	0	100	100
North Pacific albatrosses	0	0	0	22	22
Other albatrosses	1	0	0	0	1
Parkinson's petrel	1	0	0	0	1
Short-tailed shearwater	0	1	0	0	1
Shy-type albatrosses	6	0	0	0	6
Sooty shearwater	1	0	0	0	1
Southern giant petrel	1	0	0	0	1
Wandering albatross group5	9	0	0	0	9
White-chinned petrel	8	0	0	0	8
Total	41	1	0	150	192

Appendix Table 8-2. Number of observed seabird captures in the longliners less than 20 GRT (approximately < 24m), by year species and area related to **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	NA	NA	NA
2022			
Total	NA	NA	NA
2023			
Black-footed albatross	0	93	93
Brown booby	1	0	1
Laysan albatross	0	107	107
North Pacific albatrosses	0	6	6
Streaked shearwater	2	1	3
Wedge-tailed shearwater	0	1	1
Total	3	208	211

Appendix Table 9-1. Striped marlin catch data for the Japanese offshore and distant water longline fishery in the WCP-CA south of 15˚S relate to **paragraph 4 of CMM 2006-04.**

Year	Striped marlin catch (t)
2018	23
2019	19
2020	24
2021	33
2022	31
2023	80

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 related to **paragraph 4 of CMM 2006–04.**

Year	Number of vessel
2000 – 2004 (as main target species)	0
2023 (as main target species)	0
2023 (as bycatch species)	16

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 related to **paragraph 4 of CMM 2015–02**.

(a) Offshore and distant water longline

Year	Albacore catch (mt)	Number of vessel
2018	608	27
2019	567	27
2020	932	21
2021	689	23
2022	713	22
2023	664	23

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

Year	Albacore catch (mt)	Vessels
2018	39	1
2019	25	1
2020	5	2
2021	328	5
2022	47	2
2023	NA	NA

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 related to **paragraph 4 of CMM 2015–02**. BIL: other billfishes, SHK: sharks.

Year	Vessel	ALB	BET	YFT	SWO	BIL	SHK
2023	A1	54	4	7	7	12	0
2023	A2	27	14	8	4	6	0
2023	A3	7	0	0	2	0	0
2023	A4	4	0	0	0	0	0
2023	A5	1	3	7	1	4	0
2023	A6	9	0	0	7	0	0
2023	A7	34	5	5	1	2	0
2023	A8	3	0	0	0	0	0
2023	A9	100	7	13	4	7	0
2023	A10	24	0	6	2	0	0
2023	A11	7	0	0	0	0	0
2023	A12	3	0	0	1	0	0
2023	A13	5	0	0	1	0	0
2023	A14	22	0	0	1	0	0
2023	A15	20	0	0	0	0	0
2023	A16	35	3	10	2	4	0
2023	A17	49	21	6	2	4	0
2023	A18	3	0	0	3	0	0
2023	A19	69	1	9	2	3	0
2023	A20	19	3	6	1	2	0
2023	A21	1	0	0	1	0	0
2023	A22	3	0	0	1	0	0
2023	A23	23	13	0	2	0	0

Appendix Table 11-1. Albacore catch by fishery in mt in the WCP-CA north of the equator related to **paragraph 3 of CMM 2019–03**. Values in the last two years are provisional.

	LL	LL	PL	PL	PS	PS				
Year	Coastal	Offshore & distant water	Coastal	Offshore & distant water	Coastal	Offshore & distant water	Gillnet	Troll	Setnet	Others
2018	10,121	3,071	119	17,756	3,039	35	78	13	70	10,121
2019	9,375	2,841	177	8,331	1,045	9	543	27	95	9,375
2020	10,241	2,415	254	36,384	5,961	7	784	25	159	10,241
2021	14,486	4,226	224	10,912	92	3	428	11	232	14,486
2022	8,278	2,756	86	4,004	726	31	216	18	159	8,278
2023	8,278	2,756	86	4,004	726	31	216	18	159	8,278

Appendix Table 11-2. Fishing effort in number of vessel and vessel days by fishery directed as albacore in the WCP- CA north of the equator related to **paragraph 3 of CMM 2019–03**. Values in the last two years are provisional. NA indicates data not available.

CCM	Area	Fishery	2002–04 Average		2018		2019		2020		2021		2022		2023	
			No.	days	No.	days	No.	days	No.	days	No.	days	No.	days	No.	days
Japan	WCP=CA North of the Equator.	LL Coastal	319 (266)	40,988 (42,292)	232	35,037	230	34,228	231	35,573	203	36,435	208	32,911	192	31,629
		LL Offshore & distant water	237 (198)	26,850 (22,827)	69	10,126	69	9,977	63	10,182	57	10,216	54	8,880	52	10,478
		PL Coastal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		PL Offshore & distant water	140 (135)	20,828 (18,483)	77	13,439	74	12,321	68	11,093	65	10,531	62	9,676	60	6,713
		PS Coastal	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		PS Offshore & distant water	26 (25)	1,277 (4,208)	15	635	14	692	14	602	18	764	18	482	16	650
		Gillnet	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Troll	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Setnet	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix Table 12. Fishing effort in number of vessel and vessel days by fishery directed as swordfish in the WCP- CA north of the equator related to **paragraph 4 of CMM 2023–03**. Values in the last two years are provisional. NA indicates data not available.

CCM	Area	Fishery	2008–10 Average			2018			2019			2020		
			Catch (t)	No.	days	Catch (t)	No.	days	Catch (t)	No.	days	Catch (t)	No.	days
Japan	WCP=CA North of the Equator.	LL Coastal	3,716	276	38,372	1,979	213	30,880	1,446	214	31,223	1,640	212	29,432
		LL Offshore & distant water	3,463	238	25,652	2,914	69	9,722	2,417	69	9,627	3,632	63	9,535
		LL Others	NA	NA	NA	2	NA	NA	2	NA	NA	4	NA	NA
		Gillnet	608	NA	NA	230	NA	NA	242	NA	NA	290	NA	NA
		Setnet	NA	NA	NA	5	NA	NA	6	NA	NA	7	NA	NA

CCM	Area	Fishery	2021			2022			2023		
			Catch (t)	No.	days	Catch (t)	No.	days	Catch (t)	No.	days
Japan	WCP=CA North of the Equator.	LL Coastal	1,373	183	23,057	1,200	192	23,898	1,305	184	23,985
		LL Offshore & distant water	2,812	57	8,127	2,139	54	7,165	3,199	52	8,337
		LL Others	8	NA	NA	4	NA	NA	4	NA	NA
		Gillnet	301	NA	NA	459	NA	NA	459	NA	NA
		Setnet	4	NA	NA	4	NA	NA	4	NA	NA