# National Report of JAPAN, 2005

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## 1. General Fisheries Statistics

### 1-1. Longline fishery

The latest available longline data is that of 2004 although it is quite preliminary. The data of 2003 is almost final, but also preliminary one. All catch and effort statistics were compiled using logbook data.

#### 1-1-1. Fishing vessels

Japanese longline fishery is classified into three categories (coastal, offshore and distant water) according to the operation area and boat size (coastal: 10-20 GRT (gross tonnage) within Japan's EEZ, offshore: 10-120GRT, mainly in the Western Pacific Ocean (for 10-20 GRT excluding Japan's EEZ) and distant: 120-500GRT, all oceans). Basically, longline vessels operating in the Indian Ocean have been the distant water category. Although some offshore longliners are also allowed to operate in this Ocean, there is no operation by them recently. In the last fifteen years, the number of vessels operated in this Ocean was around 180-250 vessels per year. Although the number of operating vessel was relatively large in number (224-251) during 1995-1999, after when it decreased to less than 200 except for 217 in 2002 (Table 1).

#### 1-1-2. Fishing effort

Although the total fishing effort (the number of hooks) by Japanese longliners (including offshore and distant water longliners) in all Oceans has been decreased from 556 million hooks in 1988 to 400 million hooks in 1999, that in the Indian Oceans has been kept relatively in similar level in the latest decade, i.e. around 100 million hooks, which is about 20 - 25% in the total effort (Fig. 1 and 2).

Yearly distributions of longline effort from 1999 to 2004 are shown in Fig. 3 and quarterly distributions of that in 2003 and 2004 are shown in Fig. 4. Although the geographical distributions of the effort are basically similar in the recent years, the effort off Tanzania seems relatively large in the latest two years (2003 and 2004) probably by aggregation of longliners due to high yellowfin catch (formation of good yellowfin fishing ground).

#### 1-1-3. Catch

Catch statistics in weight from 2000 to 2004 by Japanese longliners in the Indian Ocean is shown in Table 2 (Data of 2003 and 2004 are preliminary), and geographical quarterly distributions of catch in 2003 and 2004 for major tuna and billfish species are shown in Fig. 5 and Fig. 6, respectively. Total catch includes the catch of southern bluefin tuna, albacore, bigeye, yellowfin, swordfish, striped marlin, blue marlin, black marlin, sailfish, shortbill spearfish, and skipjack. Catches of each species in 2004 (2002) were 5,246MT (2,272MT) for southern bluefin, 3,183MT (2,422MT) for albacore, 10,193MT (10,284MT) for bigeye and 14,318MT (17,966MT) for yellowfin. In Fig. 7, historical change in species composition in the eastern and western Indian Ocean is shown. In the eastern Indian Ocean, the percentage of bigeye has increased and that of yellowfin has become lower since around 1991. The opposite trend is observed in the western

Indian Ocean where the ratio of yellowfin has increased steadily since early 1990s. As a result, the total catch in weight of yellowfin in the Indian Ocean has exceeded that of bigeye since 1999. The ratio of yellowfin catch in weight in the total of yellowfin and bigeye catch was about 60% in 2003 and 2004. This high yellowfin ratio in recent years seems to be derived from the concentration of the fishing effort at the African coastal region from Equator to 25°S where yellowfin is abundant, especially in the 1st quarter (Fig. 5).

### 1-2. Purse Seine Fishery

The latest available data for Japanese purse seine fishery is that for 2004. The catch and effort data in 2004 is preliminary.

#### 1-2-1. Fishing vessels

Japanese purse seine vessels operating in the Indian Ocean are 350-700 GRT class (700-1000 carrying capacity). Change in the number of purse seine vessels in the latest five years is shown in Table 1. Although more than 10 Japanese purse seiners operated in 1991-1993, it decreased year by year and the last commercial purse seiner retreated from the Indian Ocean in 2001. Now, only Nippon-Maru, the research vessel of Fisheries Research Agency (FRA), is operating in this Ocean.

#### 1-2-2. Fishing Effort

Total fishing effort (operation days + searching days) was 228 days in 2003 and 130 days in 2004 (Table 3). Geographical distribution of Japanese purse seine effort in 2004 was shown in Fig. 8.

#### 1-2-3. Catch

Catch in weight of skipjack, yellowfin and bigeye in 2004 (2003) was 1,459MT (2,443MT), 327MT (651MT) and 524MT (812MT), respectively. Geographical distribution of Japanese purse seine catch in 2004 is shown in Fig. 9.

## 2. Progress on the implementation of recommendations of the Scientific Committee

Progress on the implementation of recommendations of the past Scientific Committees relating to Japan is as below:

### (1) Collection of more size data

Tuna longline fisheries industries in Japan have been collecting size data based on the request made by the Fisheries Agency of Japan. As it is not mandatory, the fisheries have been collecting size data voluntary basis in the past. Collecting the size data is extra work loads for tuna longliner skippers who are already occupied by busy fishing operations with limited man powers.

For the Indian Ocean, the size data have been collected mainly by the high school training vessels off Java Island, Indonesia. For example, the coverage of size data of bigeye tuna was 10-20% of the total catch in the Indian Ocean before 1992, but afterwards it sharply decreased to only a few percents. This is mainly because these training vessels shifted their operation to the Pacific Ocean due to the pirate problems. Under such situation, size data sampled are limited to the particular waters and not from the whole area. Theirfore, they are not effective for the stock assessments.

Thus, it will not be anticipated to be able to collect more size data under the current situation. To solve this problem Japan now considers to use the robot (unmanned) observes system in the future.

### (2) Search for the historical weight data

To solve the problem mentioned in the previous Section, it was suggested by the past IOTC SC to

search historical weight data recorded by the skippers of the longline vessels. The situation is explained as follows:

Scientists in the Yaizu tuna fishing port branch of the NRIFS( National Research Institute of Far Seas Fisheries) were collecting fishers' notes regarding their longline fishing operations from the middle of 1980's, which included individual fish weight (gilled and gutted). Such weight data had been entered to our database. However, these notes are confidential information of these fishers, hence scientists need to have trusts of fishers, and need strong personal will and effort to get the data. Therefore,the amounts of these weight data depend on the personal efforts of the scientists. In recent years, collection of these kinds of data has become more difficult because of decreasing fishing effort. Under such circumstances, we can not expect to obtain similar amount of such weight data from the fishers' confidential notes without extra voluntary efforts made by scientists.

However, according to the Japanese tuna industry, they can contact with skippers and can get such historical confidential weight data on a voluntary basis and some efforts have already been done. As a result, some amount of bigeye size data have been collected through the Japanese tuna industry.

Besides the fishers' notes, it was informed that other sources of the historical fish weight data could be found from the sales slips at tuna fishing ports or the tuna fishing companies. But we realized that these data are not useful because of two reasons, i.e., (a) the weight data in the sale slips do not describe precise areas of the fish caught, but they indicate rather larger scale waters such as the eastern or the western Indian Ocean and (b) precise time such as month or season of the weight (catch) collected is not indicated. As a result, these weight data are not at a satisfactory level to be used for tuna resources analyses.

As a conclusion, the industries effort to get the historical confidential weight data from the skippers of the longliners seems to be only possible solution at this stage.

### (3) Improvement of the CPUE Standardization

Three relevant studies have been accomplished , i.e., (a) "Recent trend of Japanese longline fishery in the Indian Ocean with special reference to the targeting" (IOTC-WPTT-2005-11), (b) "Estimation of longline gear configuration using species composition in the operation of which the gear structure are already known" (IOTC-WPTT-2005-12) and "Study on affect of Japanese tuna prices on targeting practices and CPUE of tuna longline fisheries" (IOTC-WPTT-2005-29).

### (4 ) Progress of the predation survey

The five years survey on the predation for the longline caught tuna and tuna like species have been conducted since September 2000 using some 500 Japanese tuna longliners in three Oceans. The survey summary up to December, 2004 was reported at the 2005 WPTT meeting (IOTC-WPTT-2005-28). Table 4 shows the schedule of this survey and relevant activities.

## 3. Progress on national research programs currently in place

### 3-1 Tag and release research for tunas and skipjack in the eastern Indian Ocean.

2004

Tag and release research using Taikei-Maru No.2 was conducted in the eastern Indian Ocean from February to March 2004 by the scientists of NRIFSF of FRA as the contribution of Japan to the IOTTP (Indian Ocean Tuna Tagging Program). Fishing gears used to catch fishes to be tagged were pole and line, hand line and trolling. A total of 606 fishes (572 skipjack, 11 yellowfin and 23

bigeye) was tagged and released. Detail results were reported at WPT in July, 2004 (IOTC/WPT-04-02).

2005-2006

There are two collaborative tagging plans in two areas using the Japanese funds to the IOTC, i.e., (a) off Sumatra by Japan, Australia and Indonesia and (b) the waters around the Andaman Sea and the Nicobar Island by Japan and India. These plans have been approved by respective Governments and also the IOTC. Now the IOTC is preparing the Memorandum of Understanding (MOU) to implement these tagging experiments in 2006. After the MOU are signed, a workshop is planed in 2006 by relevant scientists and officers to discuss detail plans before starting the tagging.

### 3-2 Tag and release research for tuna and skipjack

Nippon-Maru (JAMARC, Fisheries Research Agency) started the cooperation with the IOTC tagging project in 2004 for three years to 2006 (end of the project). In 2005 as its second year, Nippon-Maru conducts tagging in the Indian Ocean using the spaghetti tags provided by the IOTC. In 2004 and 2005 (until end of July), 214 (39 SKJ, 89 YFT and 86 BET) and 127 (36 SKJ, 44 YFT and 47 BET) fishes were tagged and released using spaghetti tags from its purse seine catch.

## 4. Other relevant information.

None

Table 1. Number of Japanese-vessels operated in the Indian Ocean. Data of 2003 and 2004 for longliner are preliminary.

| Fleet/Year | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Longliner | 193 | 199 | 217 | 152 | 108 |
| Purse seiner | 2 | 2 | 1 | 1 | 1 |

Table 2. Fishing effort and catch in weight (MT) by the Japanese longline fishery in the Indian Ocean (IOTC statistical area), 2000-2004. Data of 2003 and 2004 are preliminary. Sets and hooks are in thousand. "Total" includes skipjack catch.

| Year | Sets | Hooks | Total | SBF | ALB | BET | YFT | SWO | MLS | BLZ | BLM | SPF | SFA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | 35 | 103340 | 38442 | 3639 | 2566 | 13579 | 15474 | 1569 | 337 | 949 | 142 | 155 | 29 |
| 2001 | 36 | 109669 | 36866 | 4834 | 3033 | 13042 | 13941 | 1222 | 134 | 447 | 73 | 109 | 30 |
| 2002 | 35 | 104997 | 36257 | 3030 | 3227 | 13835 | 14032 | 1264 | 132 | 526 | 77 | 103 | 32 |
| 2003 | 27 | 81673 | 34684 | 2272 | 2422 | 10284 | 17966 | 1094 | 70 | 368 | 95 | 94 | 19 |
| 2004 | 30 | 90267 | 34811 | 5246 | 3183 | 10193 | 14318 | 1198 | 79 | 399 | 86 | 80 | 27 |

Table 3. Catch and effort statistics for the Japanese purse seine fishery in the Indian Ocean from 2000 to 2004. The unit of catch and effort are metric ton and days (search and operation days), respectively.

| Year | Days F. | Total | SKJ | YFT | BET |
|---|---|---|---|---|---|
| 2000 | 321 | 4032 | 2332 | 953 | 747 |
| 2001 | 262 | 3025 | 1830 | 603 | 592 |
| 2002 | 211 | 3031 | 1937 | 445 | 649 |
| 2003 | 228 | 3906 | 2443 | 651 | 812 |
| 2004 | 130 | 2310 | 1459 | 327 | 524 |

Table 4. The schedule of predation survey.

<table>
<tr><td>year</td><td>IOTC</td><td>Japan</td></tr>
<tr><td>1998</td><td>Predation survey was recommended in the 2nd Scientific Committee.</td><td></td></tr>
<tr><td>1999</td><td>Resolution 00/02 (Resolution on a survey of predation of longline caught fish) was adopted in the 4th Commissioner's meeting.</td><td></td></tr>
<tr><td>2000</td><td rowspan="5">(Jan : survey started)<br>↓<br>(Dec: end of the survey)</td><td rowspan="6">(Sept: survey started)<br>↓<br>(Aug : end of the survey)</td></tr>
<tr><td>2001</td></tr>
<tr><td>2002</td></tr>
<tr><td>2003</td></tr>
<tr><td>2004</td></tr>
<tr><td>2005</td><td></td></tr>
<tr><td rowspan="3">2006</td><td></td><td>By middle of the year:<br>All survey data will be collected.</td></tr>
<tr><td colspan="2">Collaborative data compilation and processing</td></tr>
<tr><td>Later period or 2007: workshop</td><td></td></tr>
</table>

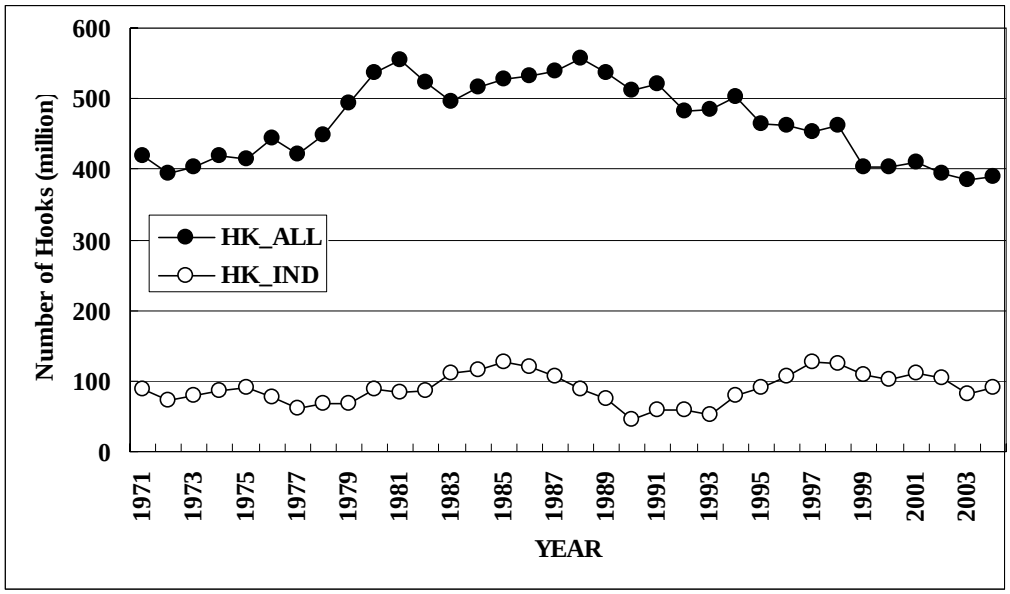


Fig. 1. Historical change in total Japanese longline effort in the all Oceans (solid circle) and the Indian Ocean (open circle)

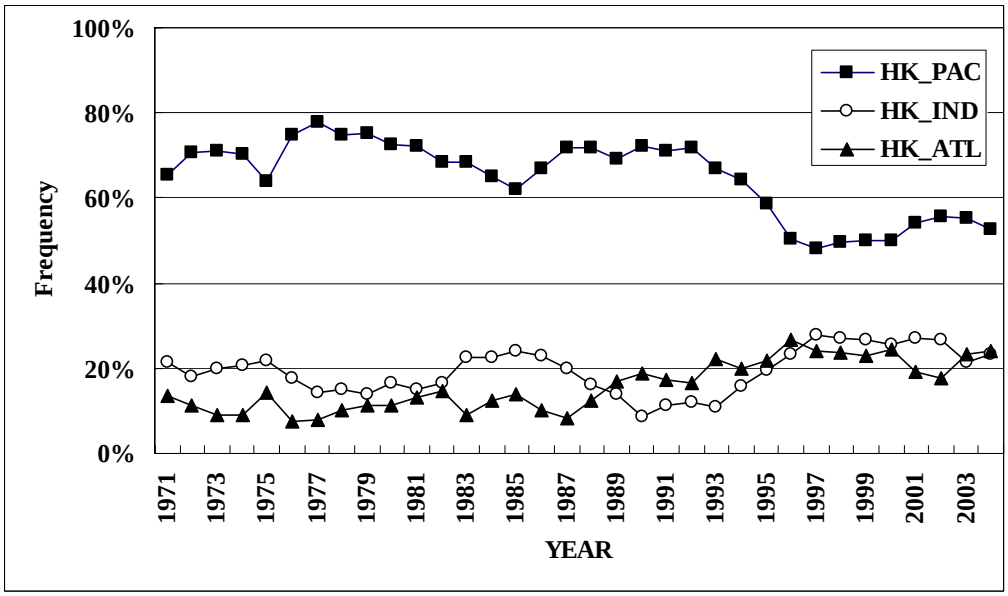


Fig.2. Historical change in the percentage of effort exerted into each Ocean basin.

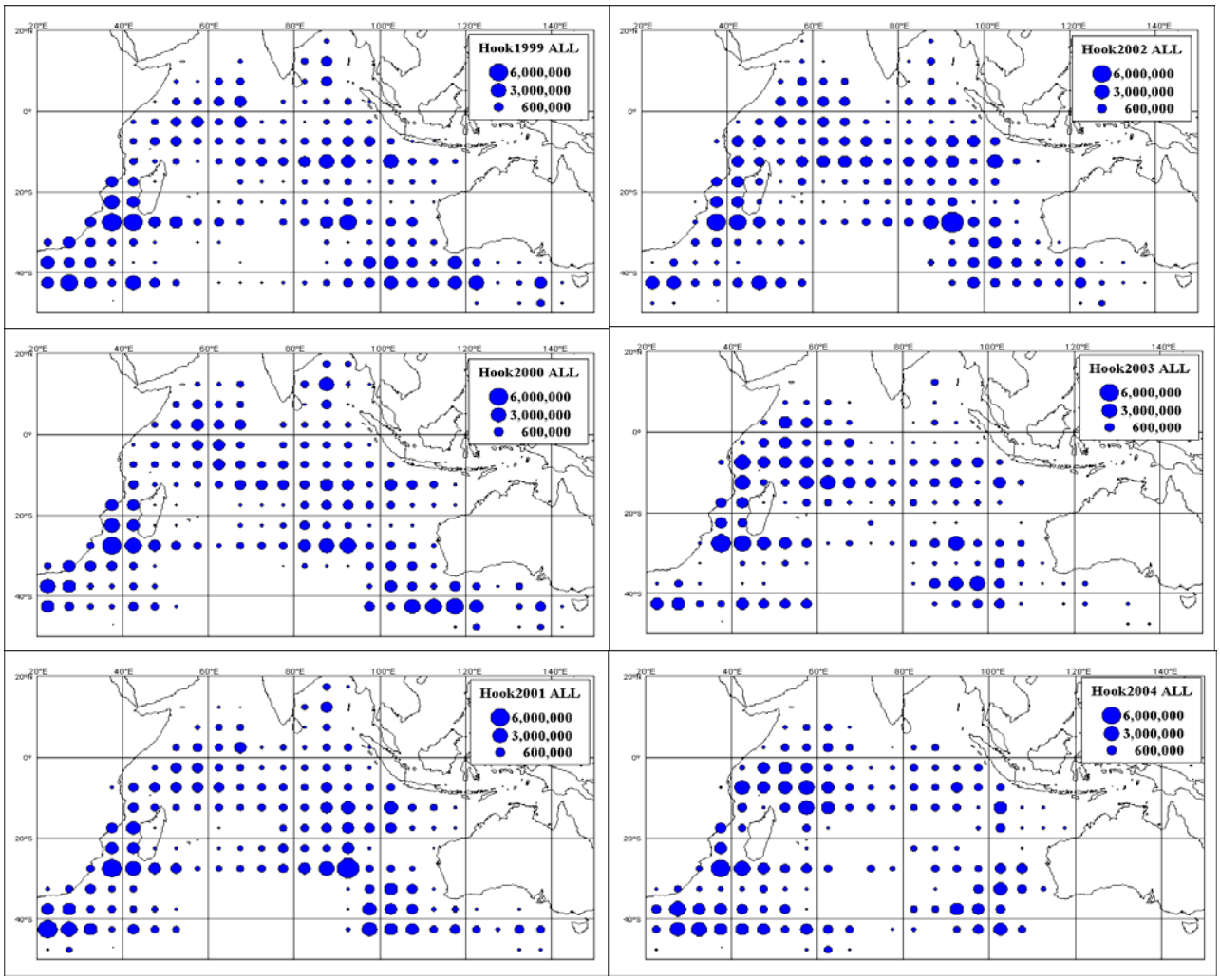


Fig. 3. Distribution of longline effort in the Indian Ocean from 1999 (left- up) to 2004(right- down).

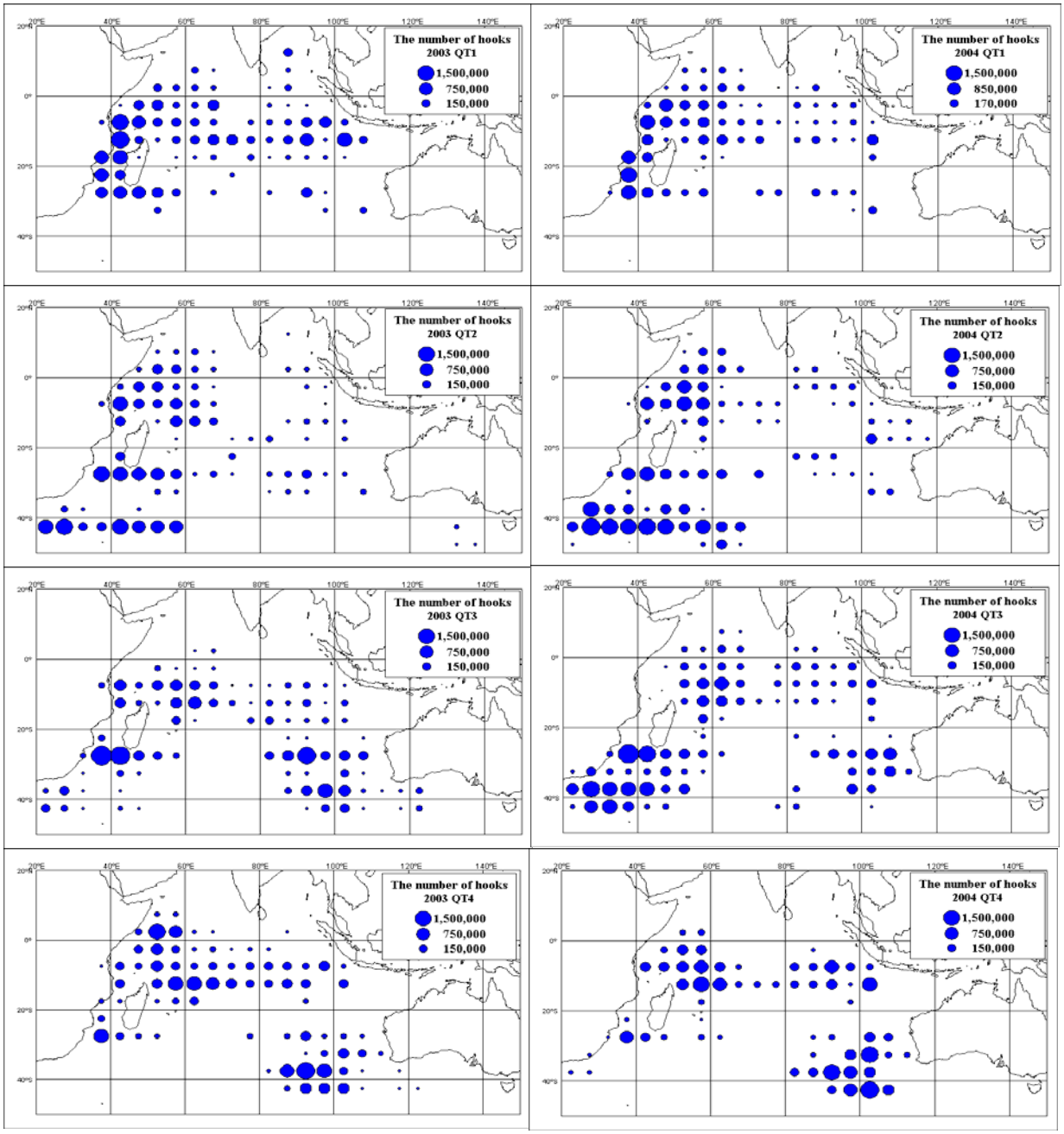


Fig. 4. Quarterly longline effort distribution in the Indian Ocean in 2003 (left) and 2004 (right).

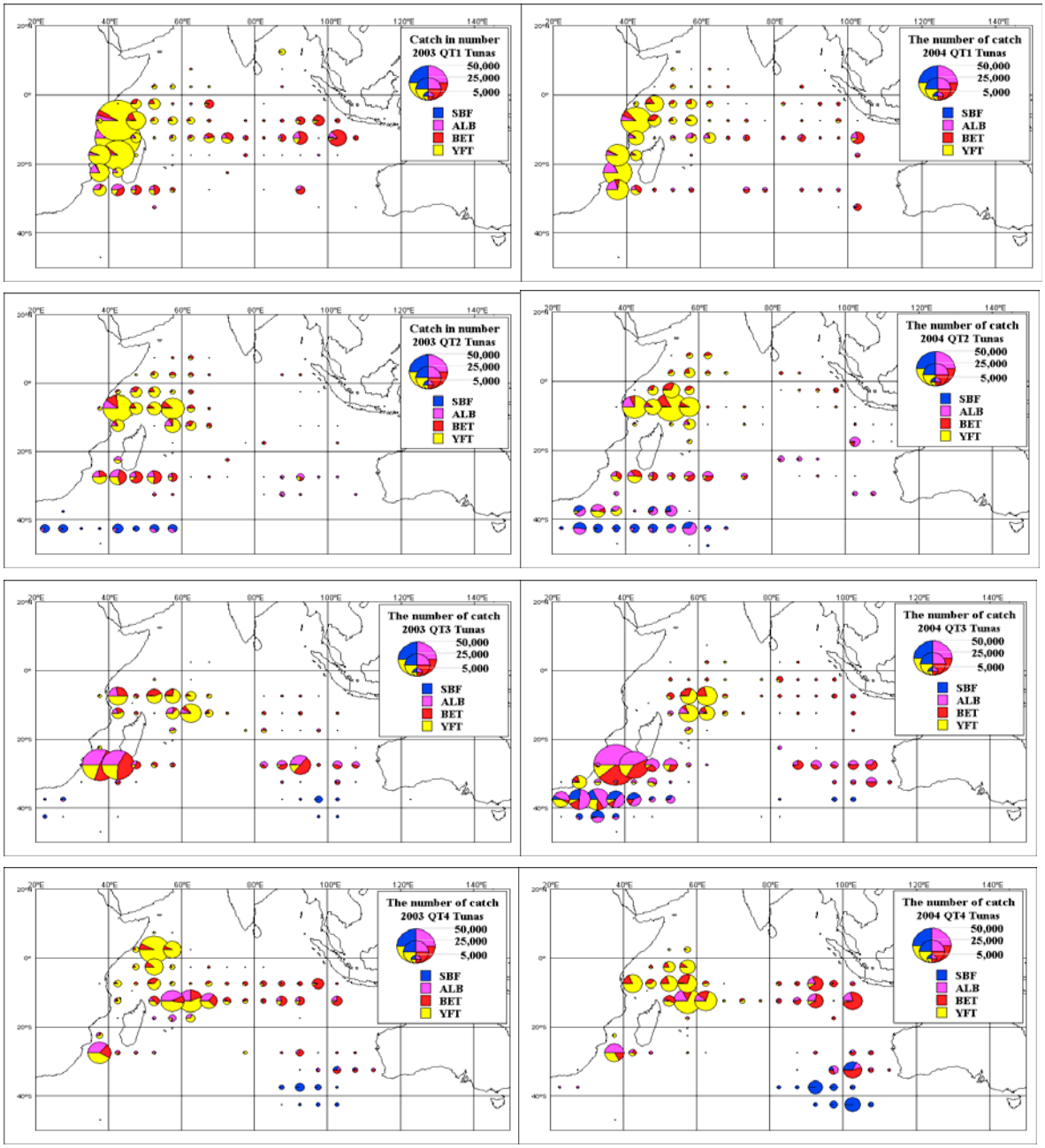


Fig. 5. Geographical quarterly distributions of catch in number of major tuna species caught by Japanese longline fishery in 2003 (left) and 2004 (right). SBF: southern bluefin, ALB: albacore, BET: bigeye, and YFT: yellowfin.

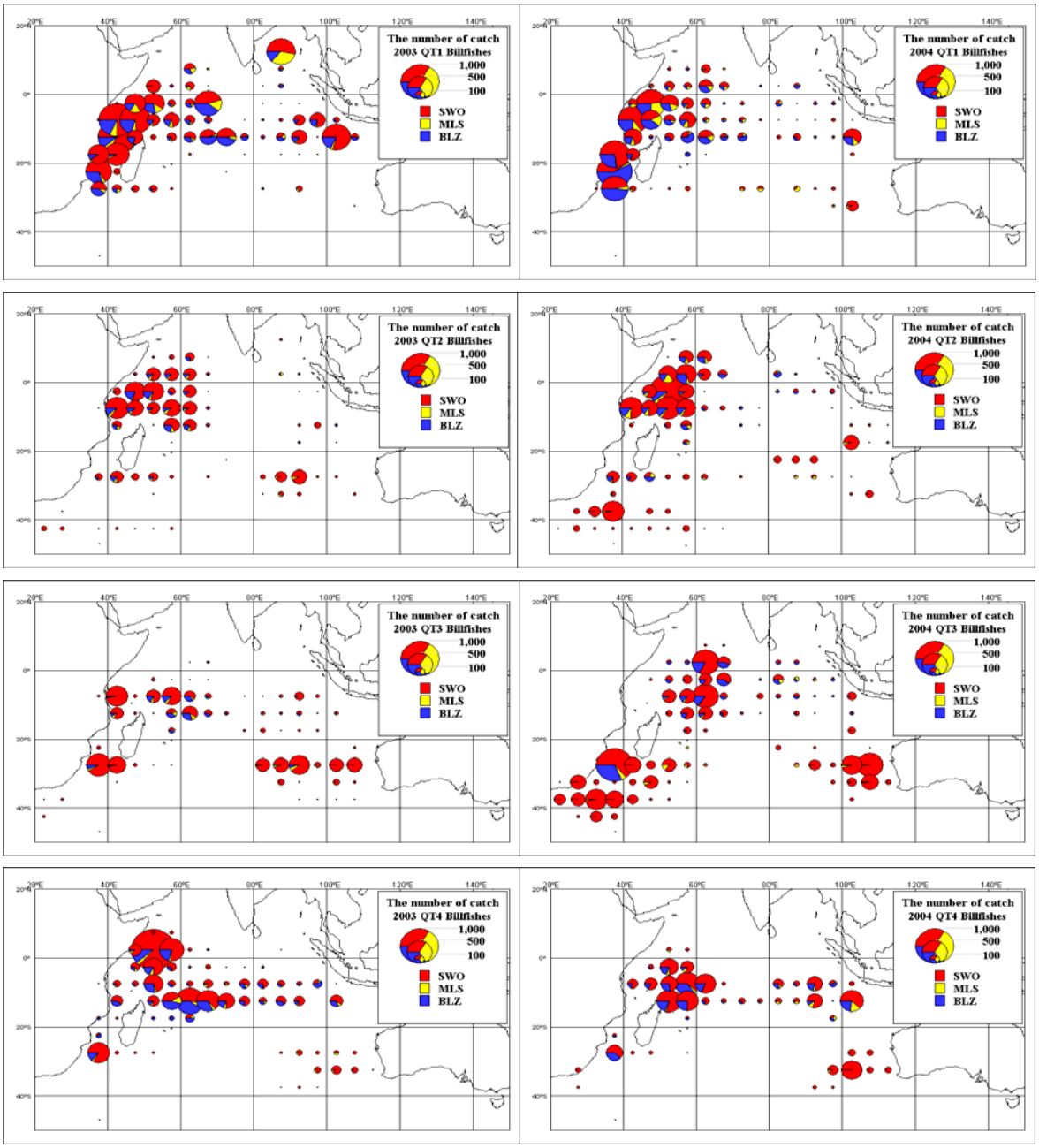


Fig. 6. Geographical quarterly distributions of catch in number of major billfish species caught by Japanese longline fishery in 2003 (left) and 2004 (right). SWO: swordfish, MLS: striped marlin, and MLZ: Indo-Pacific blue marlin.

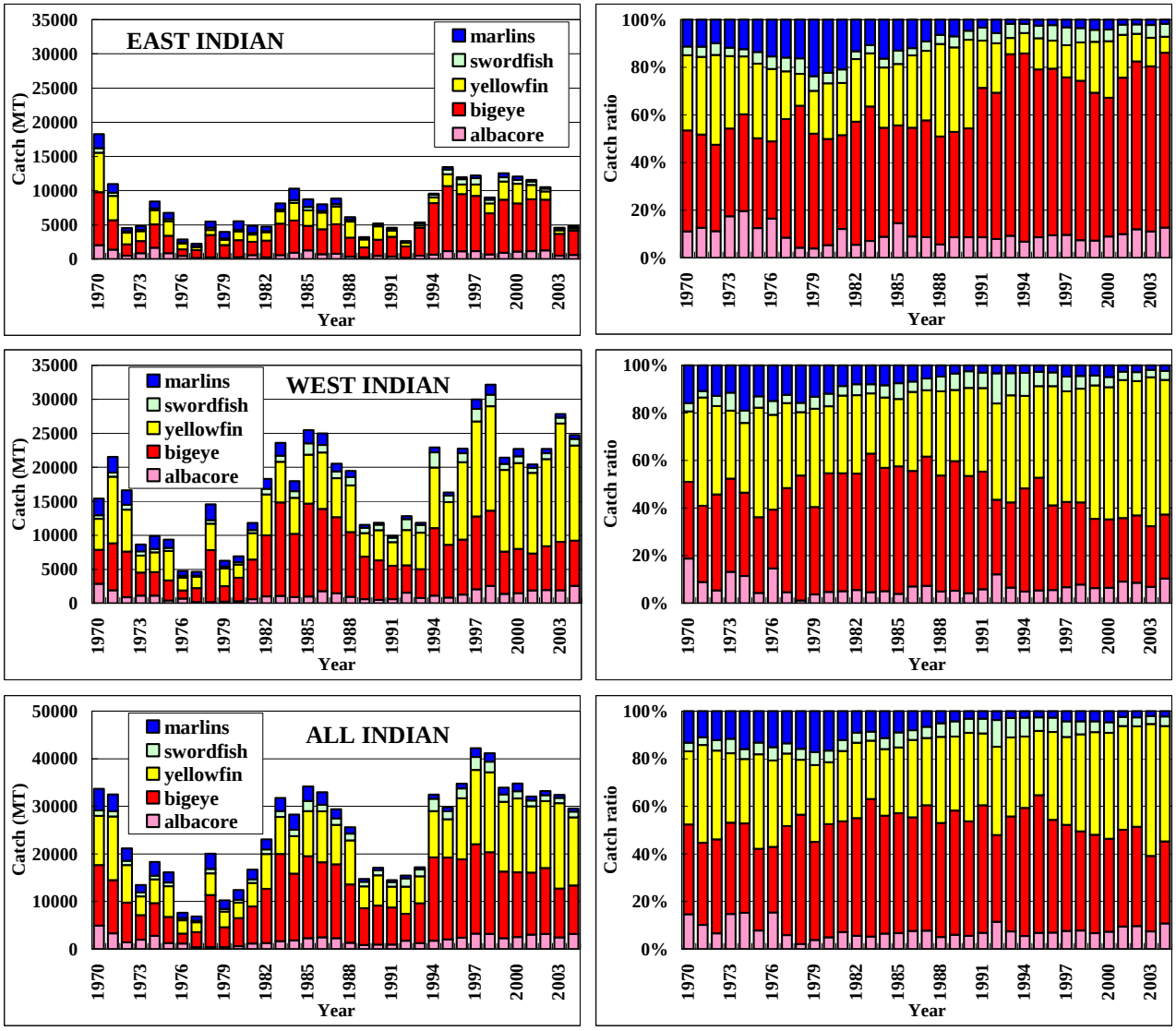


Fig. 7. Historical change of species composition of major tunas, swordfish and marlins in the Indian Ocean.

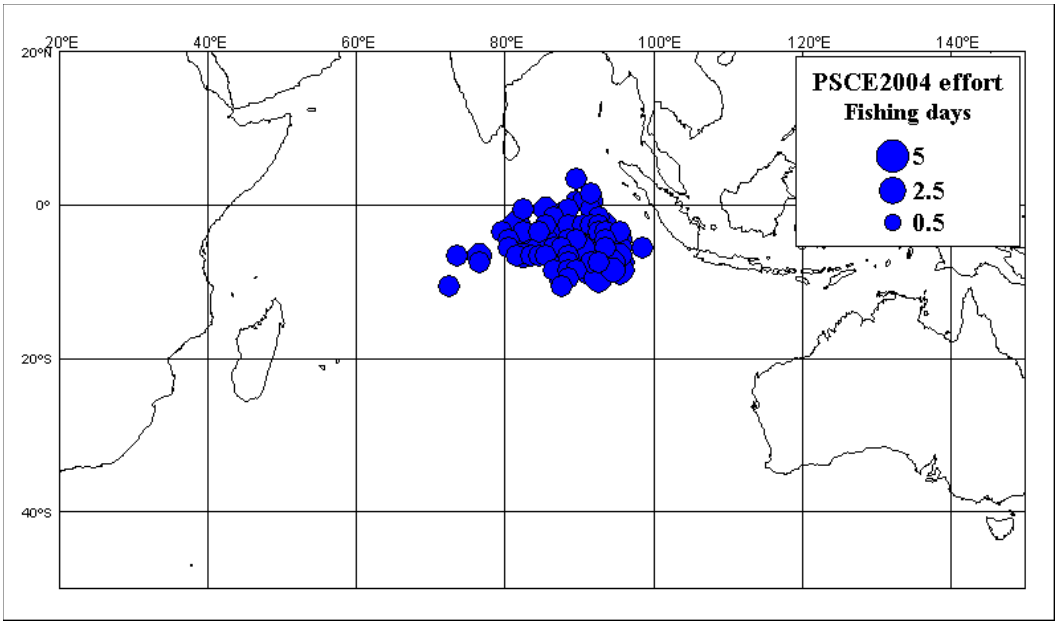


Fig. 8. Distribution of Japanese purse seine effort (days) in the Indian Ocean in 2004.

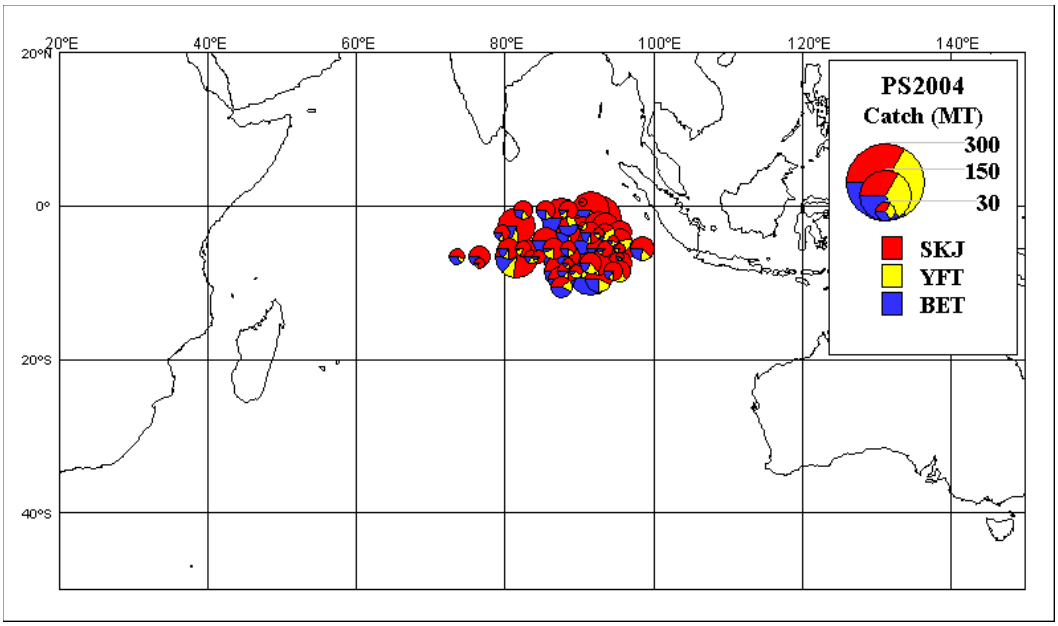


Fig. 9. Distribution of Japanese purse seine catch (MT) in the Indian Ocean in 2004.
SKJ: skipjack, YFT: yellowfin, and BET: bigeye.