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Brief Description of Japanese Swordfish Fisheries and Statistics in the Pacific Ocean[1]

Mio Takahashi and Kotaro Yokawa

National Research Institute of Far Seas Fisheries

5-7-1 Orido, Shimizu City, Shizuoka, 424-8633, Japan

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Brief Description of Japanese Swordfish Fisheries and Statistics in the Pacific Ocean

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Mio Takahashi and Kotaro Yokawa

National Research Institute of Far Seas Fisheries

5-7-1 Orido, Shimizu 424, Japan

Swordfish catch by the Japanese fisheries occupied more than 70% of the total swordfish catch in the Pacific during the 1960s and 1970s(fig.1). Although the Japanese catch has been stable, the catch of other countries, e.g. USA, Philippines and Chile, has been increasing in recent years. This fact causes the decline in percentage of the Japanese catch. During this decade, the Japanese catch occupied only 36-45% of the total, though the Japanese catch is still the biggest one in the Pacific. In this paper, recent status of the Japanese swordfish fisheries is described based on the report of annual statistics of Japanese fisheries published by the Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries, as well as on the logbook data compiled by the National Research institute of Far Seas Fisheries (NRIFSF). The recent research activities and data collection systems are also reviewed.

1. Price of swordfish in the Japanese market

Table 1 shows the average price of frozen and round swordfish at the major fishing ports in Japan. The average price in the 1990s is about 680 yen per kg which is cheaper than the average price in the 1980s (770yen/kg; Anon. 1996). The price has gradually been decreasing during recent four years.

2. Japanese swordfish fisheries

There are three fishing methods of Japanese swordfish fishery, i.e. longline, large-mesh driftnet, and harpoon. These three fisheries have occupied more than 95% of the total Japanese swordfish catch in the Pacific.

A. Longline

Longline fisheries are classified into three categories, i.e. coastal, offshore, and distant water longlines. The sizes of boats range 10-20 GRT, 20-120 GRT and 120-500 GRT for coastal, offshore and distant water longline fisheries, respectively. Table 2 shows the combined catch of offshore and distant water longlines as well as the catch of coastal longlines. The annual catch by offshore and distant water longlines has been stable at around 11,000 tons. In the North Pacific, the catch reached to over 9,000 tons in 1985 and 1987, then decreased to 4,800 tons during1988 and

1991, and since 1992 it has fluctuated between 6,000 and 8,000 tons. In the South Pacific, there were two fishing peaks of over 4000tons in 1988 and 1992, but except for these years, the catches were stable around 3,000 tons.

The catch of coastal longline fluctuated between 600 and 1,000 tons in the 1980s, but increased to about 1,300 tons since 1993.

Fig.2 shows the geographical distribution of swordfish catch by the Japanese longline fisheries in 1995-1997. The swordfish catch is widely distributed in the Pacific. The catch in the north Pacific occupied about 55% of the total. There is a direct longline fishery for swordfish in the coastal and offshore waters around Japan. Around Japan, this direct fishery fished most catch of swordfish, while in the other areas are by-catch by the fisheries which target other species, such as bigeye. Nearly 40% of the swordfish catch in the Pacific and about 60% in the north Pacific is obtained by the swordfish directed fishery. Generally the longline gear of swordfish directed fishery has 3 or 4 branch lines and mackerel is used as bait. Branch lines used for the swordfish directed fishery are much shorter than other tuna longlines. The operation is carried out at night. In recent years, though nylon longline has been introduced to the Japanese longline fishery, this type of gear has not yet been usual in the swordfish directed fishery around Japan.

B. Large-mesh driftnet

The operations of the Japanese large-mesh driftnet fishery has been ceased in the highseas since December 1992 after the UN resolution for a moratorium on the large scaled highseas large-mesh driftnet. Since then, operations have been carried out only in the water within the 200 EEZ of Japan off Tohoku and Hokkaido region (Fig. 2). The fishing effort has been decreasing significantly in these several years and the number of vessels in 1996 declined to ca. 30% of that in 1990. The swordfish catch has been about 400 tons after 1996, which was about 40% of the catch in the 1980s.

C. Harpoon

The logbook data is not available for this fishery, only catch statistics is available for this fishery. Catch fluctuated at around 150 tons in the 1980s. It began to increase from 1991 and reached to about 600 tons in 1996. Fishing grounds have located in the waters around Izu of middle part of Honsyu Island and off Sanriku area of northern Honsyu Island.

3. Fishery Statistics

List on catch effort and size data for each fishery are shown in Tables 3 and 4.

A. Catch and effort statistics

a. Longline

Although logbooks of offshore and distant water longline fisheries have been collected since

1952, systematic collection of logbook for coastal longline fishery started since 1993. The data processing was took place for the data from 1994. The NRIFSF has been in charge of the data processing and compilation. The significant improvements of the longline logbook form were made since 1993, including new information of weight of fish (processed weight), kind of materials used for main and branch lines and so on. Form of logbook is common for those three categories of longline fishery. Coverage rate of the logbook is unknown for coastal logbook (probably more than 50 % of total catch. For the offshore and distant water longline fishery, it is about 80 and 95 %, respectively.

b. Large-mesh driftnet

Logbooks have been collected since 1977. The compilation of statistics for this fishery has been made by the NRIFSF. Coverage rate of the logbook is unknown, supposed to be nearly 50% of total catch.

c. Harpoon

Only the landing statistics shown in Table 2 is available.

B. Size sampling

a. Longline

There are three sources of information on size data caught by longliners, i.e., measurements taken at the unloading sites, sales slips (weight only) obtained from wholesalers at the major unloading ports and on-board measurements undertaken by commercial, training and research vessels. About 70% of size data includes sex information since 1986.

b. Large-mesh driftnet

Size measurements of this fishery (in gutted and gilled weight) were taken at the major unloading ports from 1977 to 1994, and terminated in 1995.

c. Harpoon

There is not any size information for this fishery.

Reference

Anon 1996: Annual report on statistics of distribution of fishery products. Ministry of Agriculture, Forestry, and Fisheries, Statistics and Information Division, Japan 482p.

Table 1. Average price of swordfish (price of frozen and round fish per kg) at the major fishing ports in Japan (Anon 1996).

Unit: Japanese Yen per kg

Year	Swordfish
1980	**773**
1981	**718**
1982	**862**
1983	**747**
1984	**902**
1985	**820**
1986	**791**
1987	**796**
1988	**697**
1989	**596**
1990	**646**
1991	**786**
1992	**691**
1993	**682**
1994	**587**

Table 2. Swordfish catch (tons) by the Japanese fisheries in the Pacific Ocean.

Year	Longline(off-shore and distant water)		Coastal LL	Driftnet	Harpoon	Others	Total
	North Pacific	South Pacific					
1980	6,005	2,850	824	1,746	398	72	11,895
1981	7,039	3,143	675	1,848	129	125	12,959
1982	6,064	2,819	839	1,257	195	102	11,276
1983	7,692	2,568	955	1,033	166	85	12,500
1984	7,177	2,311	1,141	1,053	117	147	11,946
1985	9,335	2,242	980	1,133	191	98	13,978
1986	8,721	2,971	960	1,264	123	133	14,171
1987	9,495	3,287	819	1,051	87	97	14,836
1988	8,574	4,785	665	1,234	173	40	15,471
1989	6,690	2,931	742	1,596	362	41	12,362
1990	5,833	3,493	687	1,026	128	15	11,182
1991	4,809	3,559	799	424	153	33	9,777
1992	7,234	5,862	1,173	840	381	22	15,513
1993	8,298	3,827	1,394	292	309	48	14,168
1994	7,146	3,908	1,357	421	308	41	13,180
1995	6,242	3,065	1,386	561	423	42	11,719
1996	6,724	3,054	1,063	428	597	53	11,919
1997	8,084	3,710	NA	NA	NA	NA	12,200

Table 3. Japanese Pacific Ocean swordfish catch and effort catalog.

Gear	Year	Species	Kind of Catch	Kind of Effort	Time strata	Kind of square
Longline	1952-94	tunas& billfihses	number	hooks	month	5X5
Driftnet	1977-94	tunas&billfishes	number	tans	month	1X1

Table 4. Japanese Pacific Ocean size frequency catalog for swordfish.

Gear	Year	Kind of Measurement	Interval	Time strata	Kind of square
Longline	1970-~~94~~ 97	eye-fork length	5 cm	month	10X20
Driftnet	1977-~~94~~ 96	gilled&gutted weight	1 kg	month	port sampling

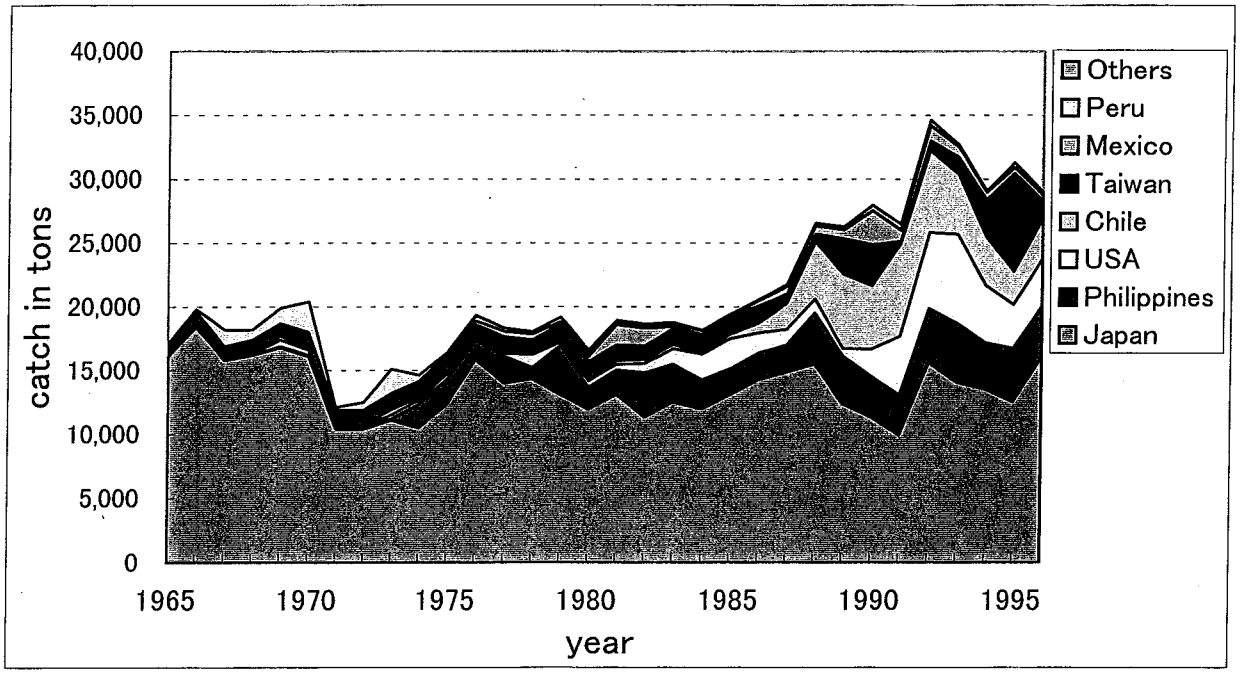

Fig. 1 The catch of swordfish in the Pacific Ocean in 1965-1995.

FAO Yearbook

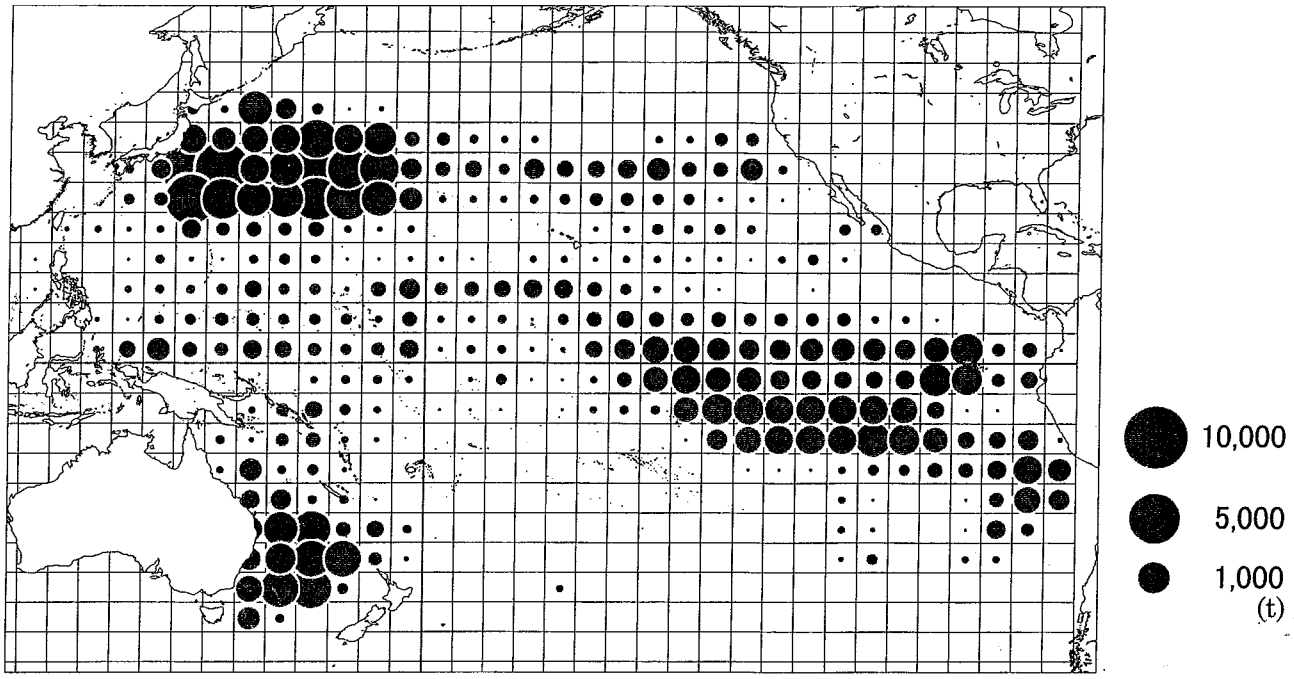

Fig. 2. Geographic distribution of mean swordfish catch per year of the Japanese longline fishery in 1995-1997.

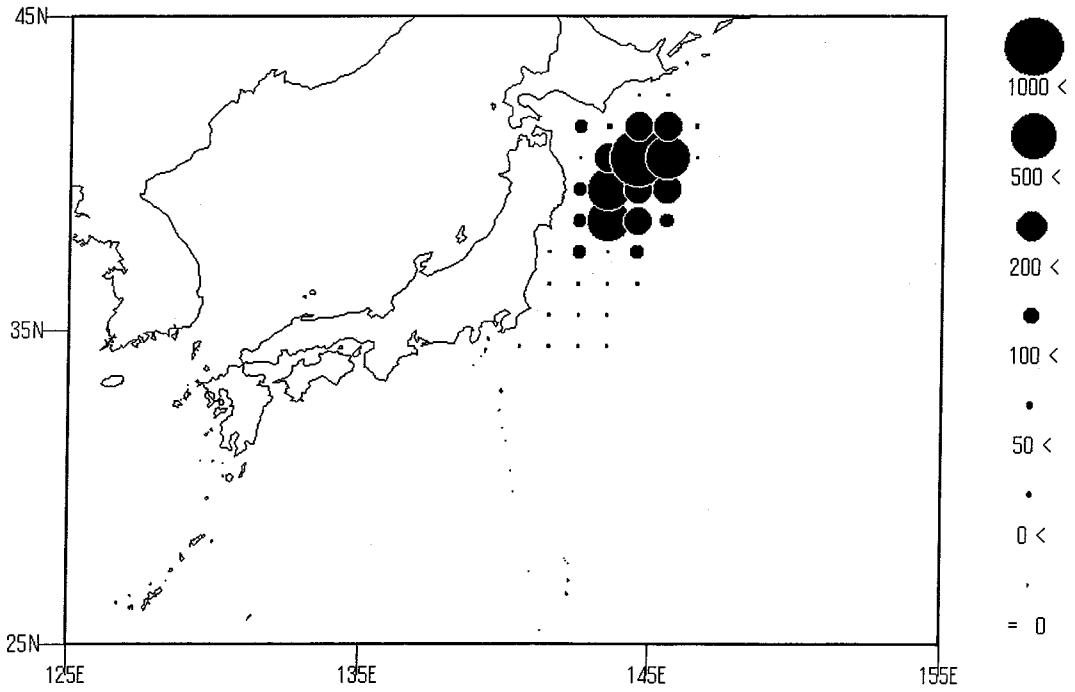

Fig. 3. Geographic distribution of swordfish catch (number) of the Japanese large-mesh driftnet fishery in 1994.