

Legal, Political, and Economic Constraints on Japanese Strategies for Distant-Water Tuna and Skipjack Fisheries in Southeast Asian Seas and the Western Central Pacific*

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Abstract

Together with cost inflation and stagnant market prices, the new 200-nautical-mile regime has hit the conventional tuna and skipjack fishing industry very hard. Japanese countermeasures consist of domestic adjustments such as cost and risk-reducing devices, withdrawals of fishing vessels, employment of purse-seine fisheries, nearshore fishing ground adjustments, and demand expansion; and external strategies such as historical fishing rights, legal-*Informal Composite Negotiating Text (ICNT)*, and bilateral arrangements.

The Japanese claim on historical tuna and skipjack fishing rights in the EEZs and archipelagic waters of coastal states in Southeast Asia and the western central Pacific is based on 1) discovery of the fishing grounds by the Japanese, 2) risk-taking for development by the Japanese, 3) continuous and habitual Japanese fishing activities in the region, 4) long legal practices under the Japanese fisheries licensing system, and 5) the importance of the fishery.

Although most coastal nations in Southeast Asia and the western central Pacific treat tuna and skipjack in their EEZs as their national properties, the position of the ICNT emphasizes that highly migratory species such as tuna and skipjack are managed by cooperation among the countries concerned and international cooperation is essential to manage those fishery wisely.

Bilateral arrangements such as fee fishing and joint-ventures, associated with overseas cooperation, have been successful in terms of fishing access to the EEZs and archipelagic waters of coastal states in the region, but current arrangements become increasingly difficult due to coastal nations' desires to increase fishing fees and take part in joint-ventures. Emergence of subregional management schemes will become more important for dealing with highly migratory species like tuna and skipjack, but Japan is not yet ready for such schemes. The legal, political, and economic constraints on each of the

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strategies are numerous and combine to aggravate the problem. Although the Japanese government has committed to easing the adjustment of Japanese fishermen to the new ocean regime, the job is not easy.

The problem involves not only the Japanese, but also coastal, resource-owning nations as well. Joint arrangements have many advantages over attempts by any one nation to go it alone. However, in order to arrive at successful arrangements, it is essential for each party to understand the interests, capabilities, and limitations of the other. A new international cooperation toward sound tuna and skipjack management can emerge only if each sets reasonable goals and recognizes a gradual growth process while seeking benefits for the welfare of both.

Introduction

The United Nations Law of the Sea Conference has led to an "extended maritime jurisdictions" boom all over the world. Although extended maritime jurisdictions have been declared unilaterally and require further refinement, they are already part of customary international law. Despite the position of the Informal Composite Negotiating Text (ICNT) at the third United Nations Law of the Sea Conference (UNCLOS III) that highly migratory species such as tuna and skipjack are a common heritage of mankind, most nations of Southeast Asia and the western central Pacific treat them as their own national property. Skipjack belongs to the tuna family, but the Japanese traditionally treat skipjack separately from other tuna due to differences in production, processing and marketing. Skipjack tuna are conventionally caught by pole-and-line vessels, processed to "katsuobushi" (a smoke-dried fish) and marketed as an essence, whereas other tuna are caught by longline vessels, kept fresh or frozen, and marketed as "sashimi" (raw fish).

It is realistic to recognize that most tuna and skipjack fishing grounds in the world eventually will be controlled by coastal states under the new regime. On the other hand, there is a large number of Japanese tuna and skipjack fishermen who have depended on fishing in the extended maritime jurisdictions of coastal nations, particularly in Southeast Asia and the western central Pacific. In addition to cost inflation and stagnant market prices, the new 200-nautical-mile regime has hit the conventional tuna and skipjack fishing industry very hard. This industry has been very important in Japan because of its leading role in Japanese distant-water fisheries. However, the industry is now confronted with serious problems of survival.

The purpose of this study is to review critically Japanese strategies for distant-water tuna and skipjack fishing in Southeast Asia and the western central Pacific under the new maritime regime. An interdisciplinary approach was employed, drawing upon economic information and legal claims in order to identify Japanese strategies and review the legal, political, and economic constraints associated with these strategies.

The elements of Japanese strategies consist of domestic adjustments such as cost- and risk-reducing devices, withdrawals of fishing vessels, involvement in purse-seine fishing, nearshore fishing ground adjustments and demand expansion; and external

strategies such as historical fishing rights, legal-*Informal Composite Negotiating Text* (ICNT), and bilateral arrangements. Our inquiry first reviews the practices of Japanese fishermen in Southeast Asian seas and the western central Pacific to reveal how intense and continuous they have been, to clarify the "historical or habitual rights" which entitle Japan to certain privileges under the new Law of the Sea. Secondly, we review representative countries' claims to extended maritime jurisdictions and the Japanese current fishing access to such extended maritime jurisdictions. Thirdly, we survey the current strategies of Japanese distant-water tuna and skipjack fisheries with special attention given to external strategies. Can Japan successfully establish the historical tuna and skipjack fishing right in the region? If not, what are the alternatives? Can the highly migratory species clause in ICNT help Japan? If not, what are the alternatives? Can bilateral arrangements of fee fishing and joint-ventures combined with overseas technical and economic cooperation be the only solution for the continuation of Japanese tuna and skipjack fishing in the region? If not, what are the alternatives? Finally, we discuss all conceivable constraints—legal, political, economic, or otherwise—that any desirable method of Japanese fishery participation in Southeast Asian seas and the western central Pacific regions will have to face.

I. History of Japanese Tuna and Skipjack Fishing Activities in Southeast Asian Seas and the Western Central Pacific

Development of tuna and skipjack fisheries in Japan has been closely tied to Japanese development policy since the Meiji Era (1868-1912). Fisheries policy of the Meiji government was characterized by maintenance of order in coastal fisheries and the promotion of distant-water fisheries. Foreign whaling by English, American and French whalers had been undertaken in waters around Japan since the beginning of the Meiji Era. Their activities increased drastically after 1892, while Japanese whaling and fisheries remained at subsistence levels. For national security purposes, the government had to promote coastal fisheries, whaling and distant-water fisheries. In 1897, the Distant-Water Fisheries Promotion Act was enacted. Since then, tuna and skipjack fisheries have been directly or indirectly aided by the government. Since 1906, availability and/or improvement of power-driven boats, larger vessels, line hauler, live-bait tanks, and cold storages contributed to the fisheries development (36).

1) Pre-war Fishing Activities

Southeast Asian and Pacific countries and islands have long colonial histories. Except for the Japanese, colonial leaders never paid attention on fisheries. Thus, fishing activities were mostly traditional and subsistence oriented before Japanese involvement in these areas. Further, traditional fisheries had established a consumer preference for small fish in local markets, not large tuna. Thus, except for juvenile tuna and skipjack in the Philippines and Indonesia, there was little demand for large tuna in Southeast Asia and the western central Pacific.

In spite of government support, small scale tuna and skipjack fisheries were limited

to the nearshore fisheries around Japan before World War I. In 1914, Japan occupied islands in the western central Pacific. After World War I, all islands in the area bounded by 130°E, 170°E, 0°N, and 22°N (an area about 2,700 miles from east to west and 1,300 miles from north to south) were put under Japanese trusteeship which continued until the Japanese surrender at the end of World War II in 1945 (114). This area has more than 1,400 islands including the Marianas, Carolines, and Marshall islands. Japanese interest in tuna and skipjack resources increased greatly along with this territorial expansion (42). The main interest was in "Katsuobushi (a smoke-dried skipjack)" supply for domestic markets, fish supply for the overseas Japanese in Southeast Asia and the western central Pacific, and of foreign exchange earnings from canned tuna which later became of use to its military force.

i) Japanese distant-water fishery policy

In 1922, Nanyō Chō (Agency for the Southwestern North Pacific) was established to manage the area under the Japanese trusteeship. The Japanese government took, directly or indirectly, various promotion measures for distant-water tuna and skipjack fisheries development. These included subsidies for fishing and construction of fishing vessels beginning in 1922, grants for fish supply for the overseas Japanese beginning in 1923, subsidies for fish processing beginning in 1924, grants for the "Katsuobushi" export to mainland Japan beginning in 1929, grants for tuna fisheries development beginning in 1933, and revision of the Fisheries Promotion Act in 1935. The 1935 revision emphasized integrated fisheries promotion to coordinate all necessary factors for effective development such as types of fishing, processing, ice making, cold storages, freezer carriers, transportation, fisheries organization, utility and common use of instruments and facilities (115).

The government also constructed two base ports in the western central Pacific: Saipan and Koror (Palau). By 1935, the piers were improved so that 3,000 gross metric ton (gmt) vessels could land without difficulty at both ports. At Saipan two oil tanks of 500 metric tons (mt) and 2,000 metric tons, an ice plant (capacity: 15 mt/day), a freezer room (2.9 mt), a cold storage (5.3 mt), and two shipyards (capacity: 20-30 gmt vessel construction) served the fishing industry while fish landing and storing places, two oil tanks (500 mt and 3,000 mt), an ice plant (20 mt/day) and 12 shipyards were operating at Koror (114).

In addition, the government initiated fisheries research in the western central Pacific in 1924. With two small research vessels, the 10 gmt Hakuō-maru I and II, fisheries investigations were first conducted in coastal waters around Palau and Truk islands. The Zuihō-maru (a 183 gmt iron vessel) was built in 1931 and used for extensive fisheries research in Southeast Asian seas and the western central Pacific. A fisheries experiment station (with 57 staff) was established at Koror on Palau in 1937. Their investigations included fisheries surveys in waters around the Marianas (1924), Palau (1925-29), Marshalls (1926-27), Ponape (1927-29), Truk (1930-35), Celebes and Halmahera (1931), Irian Jaya (1932), the Arafura Sea (1934) and the Banda and Arafura Seas (1936). By 1941, fisheries resource surveys had covered the Sulu Sea, the Flores Sea, the South China Sea and the area south of Dutch

East Indies (3 and 4). Other Japanese research and training vessels studied coastal areas of New Guinea and the Solomon Islands, Sumatra, and the Andaman and Nicobar islands.

The average and highest catch per unit effort (number of fish caught per 100 hooks) for tuna longline during the prewar period are shown in Figure 1. Together with the government promotion policy, these research and actual fishing results encouraged the development of tuna and skipjack fisheries in Southeast Asian seas and the western central Pacific.

ii) Japan-based tuna and skipjack fisheries

The history of tuna and skipjack fisheries in Japan can be traced back as far as the Stone Age. However, development of offshore fisheries started in the Meiji Era. Traditional tuna and skipjack fisheries gradually expanded from coastal to offshore areas and to distant-waters after 1909. With non-power-driven boats, Chiba fishermen extended their skipjack fishing grounds to waters around Hachijō-jima in 1909; Yaizu (Shizuoka) fishermen went to 80 to 90 miles off Yaizu in 1895; Bōnotzu (Kagoshima) fishermen went to 40 to 50 miles off Bōnotzu at the beginning of the Meiji Era and to 90 to 100 miles off Bōnotzu in 1891. A successful operation of Fuji-maru (a 25 gmt power-driven vessel) in 1906 led to rapid development of offshore skipjack fisheries. By 1913, waters around Smith Island became good skipjack fishing grounds for Shizuoka fishermen and by 1916 Bōnotzu fishermen had extended their fishing grounds up to 150 miles off Bōnotzu (36).

With the government promotion, Japanese fishermen had, by 1922, explored skipjack fishing grounds around Saipan, Truk and Ponape (114). Due to problems associated with shortages of live-bait and cold storage, fishing grounds for Japan-based vessels were limited to the North Pacific within 2,000 miles from Misaki (Kanagawa). Initially skipjack pole-and-line fishing was the dominant form of fishing in the western central Pacific, and tuna were an incidental catch. However, skipjack fishing was seasonal, and some fishermen found that the periods before and after the skipjack fishing season were good for tuna fishing. Thus, skipjack pole-and-line fishermen applied the same techniques to tuna fishing. Eventually, tuna pole-and-line fishing became popular in the western central Pacific. The best example was tuna fishing with motherships in waters around the Marianas developed by Omaezaki (Shizuoka) fishermen in the 1920s (55).

Although offshore tuna fishing had been regarded until the 1930s as a secondary winter activity after the summer (skipjack) season, the introduction of power-driven tuna longliners (Seishin-maru) in 1914 opened a new era for tuna longline fishing. Almost all tuna longliners were converted to power-driven vessels (30 to 70 gmt) by 1926 (36). Using Shinmei-maru (1,537 gmt), the first mothership operation for tuna longline fishing was also conducted by the government in waters south of Dutch East Indies from Nicobar islands to Timor in 1932-33, and proved the economic feasibility of the operation. By 1939, the number of Japan-based tuna vessels (60 to 270 gmt) operating in the western central Pacific increased to 72. In that year, they made 270 round trips between the fishing grounds and Japan bases, taking yellowfin, bigeye,

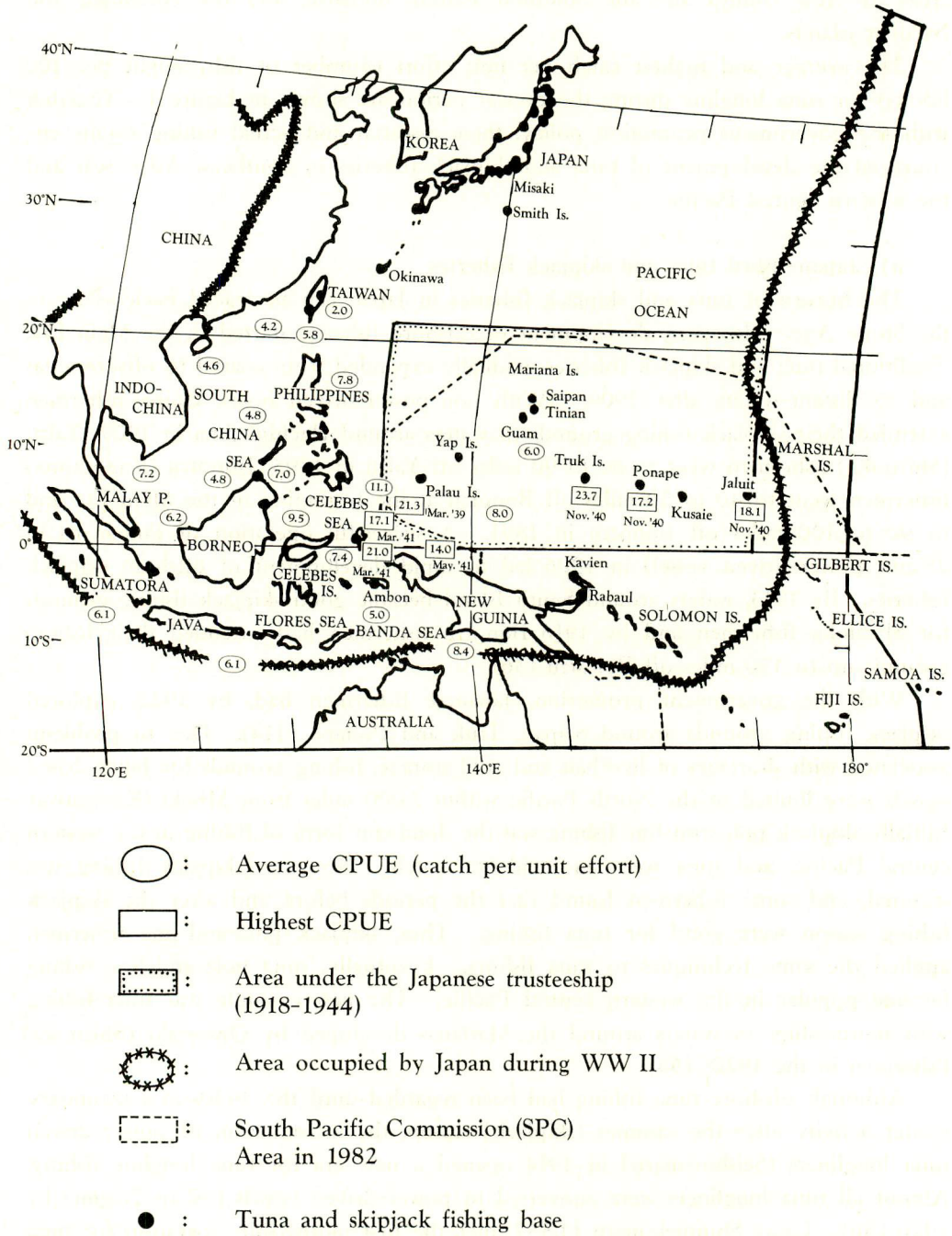


Figure 1. Catch per unit effort (number of fish caught per 100 hooks) for tuna longline fishing in Southeast Asian seas and the western central Pacific before world war II (modified from BAN 1941)

and swordfish, which yielded 4,815,927 yen at the market price (42). The best example was tuna longline fishing in waters around the Carolines developed by Misaki fishermen. From October 1938 to March 1939, 39 Misaki vessels took 145 round trips between these fishing grounds and Japan, and yielded over 1,600,000 yen worth of tuna (55). In the Sulu Sea, Yaizu skipjack pole-and-line vessels were actively involved in skipjack fishing during the off-season. In 1938, 8 vessels made 19 trips, producing a catch worth 166,775 yen.

iii) Non-Japan-based tuna and skipjack fisheries

The South China, Sulu, Celebes and Philippine seas were explored by Taiwan-based tuna and skipjack vessels. At the same time, many fisheries companies were established to fish tuna and skipjack in Southeast Asian seas and the western central Pacific.

Taiwan

In 1895, after the Sino-Japanese War, Taiwan was ceded to Japan. Japanese colonial policy in Taiwan continued until 1945. During this period, Taiwan played an important role in the Japanese industrial development supplying raw materials, providing capital and product markets, and serving as a base for further political and economic expansion in Southeast Asia and the western central Pacific.

Although statistics are not available, Taiwan-based tuna and skipjack vessels fished in the South China, Sulu, and Celebes seas and east of Taiwan and the Philippines. Kaohsiung base was established in around 1928-29. The average size of tuna and skipjack vessels was about 14 to 15 gross metric tons. By 1937, a number of vessels increased to 200 and fishing grounds were expanded to waters within 1,000 miles from Kaohsiung. Major species caught were yellowfin and swordfish. Some of these enterprises became large fisheries companies like Nanyō Kaihatsu Kumiai (Southern Ocean Development Association). In 1939, Tōbu Suisan Co., Ltd., was established. Based at Hualien, this company in 1940 initiated a mothership operation with 6 tuna fishing vessels (each about 17 gmt) and 4 factory ships (2-500 gmt, 1-100 gmt and 1-50 gmt) in the Celebes Sea (43). At the same time, Takuyō Suisan Co., Ltd. also conducted tuna fishing in the South China Sea with the Seifuku-maru (172 gmt) and 7 small tuna fishing vessels (each about 20 gmt) (36).

Borneo

In 1918, a Taiwan-based Japanese organization, Nanyō Kaihatsu Kumiai was granted rights for coastal fishing from the Borneo government, leased an island 60 miles east of Taiwan, and established a tuna longline and processing base (41). Although the operation of this association once ceased in 1923, Nanyō Kaihatsu Kumiai re-organized and became Borneo Suisan Kōshi (Borneo Fishing Association) in 1926. Borneo Suisan Kōshi successfully operated tuna and skipjack fishing and "Katsuobushi" processing and in 1933 became Borneo Suisan Co., Ltd. With 16 powered boats (10 to 50 gmt) based on Tawau, Sheamil and Banggi, about 290 fishermen from Okinawa and Kōchi harvested skipjack throughout the year in the coastal waters of Borneo, the Celebes Sea, and the South China Sea. Further, about 280 employees worked at these

“Katsuobushi” processing factories. In 1934, canning factories, ice plants, cold storages and hospitals were added.

British Malaya

S. SAKAMOTO from Yamaguchi started longline, pole-and-line and gill net fishing in 1913 based at Singapore and Japanese fishing from Singapore increased since that time (24), reaching 1,752 Japanese fishermen in 1936. Japanese landings at Singapore's fish market comprised 45.8 % of total landings (11,828 mt) in 1938. However, tuna and skipjack were not the major target species as only 179 tons of tuna and skipjack were included (65).

Indonesia

Japanese skipjack fishing in Indonesia was initiated in 1927 by K. HARA of Makurazaki, a Japanese medical doctor and congressman who experimentally fished skipjack near Menado, Sulawesi, and north Celebes. The successful operation led to a fishing base at Menado, and four years later the base was moved to Ambon, where Dr. HARA trained the local people in skipjack fishing and processing techniques (1). At about the same time, KINJŌ, TAMASHIRO, NIWA and KOKUBA from Okinawa also undertook skipjack pole-and-line fishing in the Banda Sea. Based on Ambon, they used many native crews (40). Other Japanese organizations also established fishing bases at Menado and Ternate though the years of establishment are unknown. These included Ōiwa Gyogyō Kumiai (Menado and Ternate), Nichiran Gyogyō Kaisha (Menado), and Bijack Gyogyō Kumiai (Menado). Ōiwa Gyogyō Kumiai amalgamated with Bijack Gyogyō Kumiai in 1939 and with Nichiran Gyogyō Kaisha in 1940, and eventually established Tōin Suisan Co., Ltd., at Butung with a capital of 1.5 million yen. Tōin Suisan Co., Ltd. operated tuna and skipjack fishing under an agreement with the Dutch East Indies Authority. The agreement provided that 1) skipjack pole-and-line fishing must be operated on the high seas under the Japanese flag; 2) the fishermen must purchase bait fish from native fishermen; and 3) export and import duties on fish and processed goods be exempted. In 1941, 6 vessels (9 to 26 gmt) fished with 130 Japanese (mainly Okinawan) fishermen and 500 native employees. The fishing season was year-round, but the best season was from July to September. On-shore facilities provided by the company included a fish landing place, skipjack storage, a “Katsuobushi” processing plant (3,000 to 4,000 pieces per day) and a canning factory. In Ternate, Ōiwa Gyogyō Kumiai undertook skipjack pole-and-line fishing with 2 vessels, employing 26 Japanese and 110 natives (10).

Philippines

K. SAKUHARA initiated tuna longline fishing based on Davao in 1928, and I. NEGAMIYA started skipjack pole-and-line fishing with a 13 gmt vessel in 1933. Further, with a capital of 300,000 yen, Seafood Corporation, a Japan-Philippines joint-venture was established at Zamboanga in 1937. Seafood Corporation was involved in tuna and skipjack pole-and-line fishing, processing (canning) and marketing. In 1940, 4 vessels (2 of 27 gmt each and 2 of 42 gmt each) joined the tuna and skipjack fishery

off Zamboanga, employing 21 Japanese and many Filipinos, while 10 vessels (1-23 gmt and 5 less than 3 gmt tuna longline vessels, and 4 less than 3 gmt skipjack pole-and-line vessels) operated off Davao. Tuna fishing was year-round operation, but skipjack fishing was good only from May to July. Some Japanese tuna longline fishermen were also involved in fishing off Negros Island. The harvest was good but the market was not and this operation folded (117, 118 and 119).

The western central Pacific

Based on Saipan, Truk and Ponape, Japanese skipjack pole-and-line fishing started in the western central Pacific in 1922 (116). These activities were at a low level until 1927, when Tamashiro Gumi from Okinawa joined the skipjack pole-and-line fishery based in Truk (12). Since then, many Okinawan fishermen emigrated to the islands under the Japanese trusteeship in the western central Pacific, eventually bringing their families to the islands settling there (28).

In 1930, Shizuoka fishermen joined the skipjack pole-and-line fishing fleet based in Palau, establishing the Nankō Kōhatsu Co., Ltd., in 1931, which in turn was the foundation of Nankō Suisan Co., Ltd., established at Koror, Palau in 1935. With an initial capital of 2 million yen (which increased to 2.7 million yen in 1938, 5 million yen in 1939, and 10 million yen in 1941), Nankō Suisan Co., Ltd., developed branches in Saipan, Truk, Ponape, Kusaie, Jaluit, Ambon, Kavieng, and Rabaul; and became involved in tuna and skipjack fishing and "Katsuobushi" processing in Saipan, Palau, Truk and Ponape in 1935, canning in Palau in 1936 and in Truk and Kusaie in 1941; ice making, freezing and cold storage in Palau, Truk, Saipan, Ponape, Kusaie, Jaluit, Ambon, Kavieng and Rabaul and marketing, marine transportation, shipbuilding and repair yards, iron works, fisheries finance and research (44).

In addition, three fisheries companies (Nanyō Bōeki Co., Ltd., Hamaichi Shōji Co., Ltd., and Kimi Suisan Gōshi Co.) became involved in tuna and skipjack fishing, processing and marketing. Nanyō Boeki Co., Ltd. (a trading company) was established at Koror in 1899, and branches were established in Truk and Ponape. Earlier Japanese skipjack fisheries in the western central Pacific were more or less associated with this company. In 1931, Hamaichi Shōji Co., Ltd. (a trading company) was also established at Koror, and branches were later established in Truk. The company started a canning industry in addition to tuna and skipjack fishing. In 1932, Kimi Suisan Gōshi Company was also established at Koror, and joined the "Katsuobushi" processing as well as tuna and skipjack fishing (116).

Development of these companies stimulated emigration of Japanese fishermen to the western central Pacific. As a result, 4 tuna and skipjack fisheries cooperatives and one federation (the Japanese Federation of Southern Islands Fisheries Cooperatives) were formed during the 1930s. The cooperatives included the Palau Fisheries Cooperative at Koror (1932), the Truk Islands Skipjack Fisheries Cooperative (1936), the Saipan Skipjack Fisheries Cooperative (1937), and the Tinian Fisheries Cooperative (1937) (116). The number of Japanese fishermen in the western central Pacific increased from 475 in 1930 to 7,616 in 1938; many were involved in skipjack fishing. In 1940, licensed skipjack vessels reached 128, 69 of which belonged to Nankō Suisan

Co., Ltd. Eighty percent of these licensed vessels were involved in year-round fishing. The highest skipjack catch was recorded as 28,688 metric tons in 1937. Most of the catch was processed into "Katsuobushi," of which 50 to 60% were produced by Nankō Suisan Co., Ltd. alone (12). By 1937, the number of "Katsuobushi" processing plants in the area increased up to 63. With 1,810 employees, they produced 5,812 tons of "Katsuobushi" in 1937 and earned 5,081,774 yen (116). Tuna were also canned. Palau canneries received 681 metric tons of tuna (mainly yellowfin) in 1937.

iv) A summary

Table 1 shows the prewar Japanese tuna and skipjack production. As early as 1894, Japanese production of tuna and skipjack was 14,300 metric tons and 34,315 metric tons, respectively. Statistics for production of offshore tuna and skipjack before 1904 are not available. Nevertheless, statistics for offshore fisheries development began to be reported with the introduction of power-driven boats (for skipjack in 1906 and for tuna in 1914). Rapid increases in offshore production in 1915 corresponded with the Japanese territorial expansion to the western central Pacific. In Table 1, it is difficult to identify the share of production from Southeast Asian seas and the western central Pacific on the total offshore fisheries production. However, these offshore fisheries production figures certainly included the production from that region. Skipjack pole-and-line fishing activity was again accelerated by construction of "Katsuobushi" processing plants in the region during the 1920s, while tuna longline activity was promoted by canning and/or mothership operations in the 1930s. With oil, water, live-bait and food supply bases in the region, distant-water tuna and skipjack fisheries became year-round operations. The size of vessels were increased, and fishing grounds were extended to almost all fishing areas under the Japanese trusteeship, and waters around New Guinea, the Solomon islands, and major fishing grounds in Southeast Asian seas including the area south of the Dutch East Indies, and in the Andaman Sea (36).

Before World War II, Japanese fishermen have long fished continuously and habitually in Southeast Asian seas and the western central Pacific and developed most of the tuna and skipjack fishing grounds in the region. Their fishing did not conflict with local fishermen in the region because there was little demand for tuna and skipjack in most of the region. Through fishing base construction, the Japanese provided local employment opportunities and technology transfer.

2) Postwar Fishing Activities

Japan's involvement in World War II marked the transfer of the tuna and skipjack fisheries to military government control in 1942. As a result of the war, sixty percent of tuna and skipjack vessels and all overseas bases were lost (36). Many fisheries emigrants to Southeast Asia and the western central Pacific were forced to return to Japan after the war. Consequently, only a few Japanese remained in the region. Immediately after the war, production of food and export commodities became one of the most important objectives under the occupational policy of General McArthur. With the government promotion policy, including fishing ground expansion and

Table 1. Japanese tuna and skipjack production before World War II: 1894-1945 (modified from JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES *et al*, *ed.*, 1979)

Year	Grand total			Offshore fisheries		
	Skipjack mt	Tuna ¹ mt	Total mt	Skipjack mt (%)	Tuna ¹ mt (%)	Total mt (%)
1894	34,315	14,300	48,615	—	—	—
1905	41,943	10,683	52,626	3,014 (7.2)	325 (3.0)	3,339 (6.3)
6	43,736	10,241	53,977	3,108 (7.1)	236 (2.3)	3,344 (6.2)
7	33,041	10,250	43,291	5,551 (16.8)	1,124 (11.0)	6,675 (15.4)
8	50,102	11,158	61,260	7,569 (15.1)	860 (7.7)	8,429 (13.8)
9	51,530	14,836	66,366	6,625 (12.9)	1,197 (8.1)	7,822 (11.8)
10	41,392	13,773	55,165	8,580 (20.7)	1,192 (8.7)	9,772 (17.7)
11	49,470	15,983	65,453	9,463 (19.1)	813 (5.1)	10,276 (15.7)
12	49,867	12,017	61,884	8,266 (16.6)	559 (4.7)	8,825 (14.3)
13	42,283	14,159	56,442	5,859 (13.9)	637 (4.5)	6,496 (11.5)
14	53,768	16,403	70,171	7,052 (13.1)	537 (3.3)	7,589 (10.8)
15	101,750	18,509	120,259	29,730 (29.2)	3,607 (19.5)	33,337 (27.7)
16	60,917	14,481	73,398	25,376 (41.7)	3,293 (22.7)	28,669 (38.0)
17	82,802	11,164	93,966	49,551 (59.8)	4,281 (38.3)	53,832 (57.3)
18	70,098	17,425	87,523	41,238 (58.8)	4,899 (28.1)	46,137 (52.7)
19	64,396	20,038	84,434	39,345 (61.1)	9,038 (45.1)	48,383 (57.3)
20	88,201	21,360	109,561	52,432 (59.4)	8,074 (37.8)	60,506 (55.2)
21	81,614	18,780	100,394	50,946 (62.4)	7,524 (40.0)	58,470 (58.2)
22	65,285	17,759	83,044	45,872 (70.3)	7,003 (39.4)	52,875 (63.7)
23	67,791	26,133	93,924	47,760 (70.5)	15,937 (61.0)	63,697 (67.8)
24	68,282	31,935	100,217	45,415 (66.5)	16,528 (51.8)	61,943 (61.8)
25	69,541	33,060	102,601	47,568 (68.4)	18,429 (55.7)	65,997 (64.3)
26	68,768	44,258	113,026	54,030 (78.6)	27,343 (61.8)	81,373 (72.0)
27	85,706	40,516	126,222	72,217 (84.3)	29,470 (72.7)	101,687 (80.6)
28	76,989	43,864	120,853	64,847 (84.2)	28,734 (65.5)	93,581 (77.4)
29	72,137	60,327	132,464	60,151 (83.4)	42,564 (70.6)	102,715 (77.5)
30	68,793	63,102	131,895	57,667 (83.8)	42,306 (67.9)	99,973 (75.8)
31	80,347	65,133	145,480	68,979 (85.9)	45,769 (70.3)	114,748 (78.9)
32	67,148	59,937	127,085	53,441 (79.6)	39,968 (66.7)	93,409 (73.5)
33	77,309	63,173	140,482	65,153 (84.3)	41,683 (66.0)	106,836 (76.0)
34	84,917	58,120	143,037	68,942 (81.2)	36,010 (62.0)	104,952 (73.4)
35	72,885	68,476	141,361	61,968 (85.0)	34,217 (50.0)	96,185 (68.0)
36	101,035	75,963	176,998	85,802 (84.9)	42,178 (55.5)	127,980 (72.3)
37	105,909	62,169	168,078	93,076 (87.9)	36,997 (59.5)	130,073 (77.4)
38	120,818	57,376	178,194	104,465 (86.5)	39,953 (69.6)	144,418 (81.0)
39	100,522	85,919	186,441	86,263 (85.8)	51,342 (59.8)	137,605 (73.8)
40	116,349	86,090	202,439	96,110 (82.6)	42,923 (49.9)	139,033 (68.7)
41	91,626	46,128	137,754	?	?	?
42	79,715	46,685	126,400	?	?	?
43	51,691	38,902	90,593	?	?	?
44	39,642	23,310	62,952	?	?	?
45	19,653	12,386	32,039	0	0	0

1) Excluding skipjack and billfish.

government finance for vessel construction, tuna and skipjack fisheries recovered quickly.

i) Expansion of fishing grounds and conventional tuna and skipjack fisheries

Although any movement of Japanese fishing vessels was prohibited immediately after the war, fishing by wooden vessels was allowed within 12 miles off Japan's coasts on as early as September 14, 1945 (49). Subsequently, four successive expansions were allowed under the General Headquarters Administration (Figure 2). The first large expansion was on September 27, 1945; the second on June 22, 1946; the third on September 19, 1949; and the fourth on May 11, 1950. These new boundaries were called McArthur's lines. The last expansion was for mothership operations. The last McArthur's line was removed on April 25, 1952.

After the removal of the McArthur's line, Southeast Asian seas and the western central Pacific were divided by "A", "B", and "C" zones for tuna and skipjack fisheries (Figure 3), and less than 20 gmt vessel operation were left as free fisheries. Zone "A" was for 20-100 gmt vessels (medium scale tuna and skipjack fisheries); zone "B" was for vessels over 100 gmt (distant-water tuna and skipjack fisheries); and zone "C" was for mothership operations. All of these fisheries were under the licensing system created by the 1949 New Fisheries Law. On July 10, 1953, the government enacted a special law for licensing to promote distant-water tuna and skipjack fisheries. As a result, vessels over 70 gmt were allowed to fish in the "B" zone, and enlargement of fishing vessels was promoted (36).

The tuna and skipjack fisheries administration has been revised many times since, but the zoning of A and B has almost succeeded. The 1957 revision made less than 40 gmt vessel operation as free fisheries, 40 to 100 gmt vessel operation as medium scale tuna and skipjack fisheries, and over 100 gmt vessel operation as distant-water fisheries (83). The 1963 revision created a nearshore tuna and skipjack fisheries system for 20 to 50 gmt vessel operation in zone "A". A 1967 revision raised the upper limit of vessel tonnage to 70 gmt for zone "A" operations, and divided the zone into "A-I" (north of 10°N and west of 160°E) for 20 to 50 gmt vessels and "A-II" (the rest) for 50 to 70 gmt vessel operation as shown in Figure 4. A 1972 revision raised the upper limit to 60 gmt for zone "A-I" and 80 gmt zone for "A-II" operations, and lowered the limit to 80 gmt for zone "B". A 1977 revision expanded zone "A-II" in the Banda Sea according to the agreement between Indonesia and Japan. The nearshore tuna and skipjack fisheries in Japan in zone "A" were rooted in the original free fisheries for less than 20 gmt vessels in 1949. The distant-water tuna and skipjack fisheries fish in zone "B" were rooted in the original medium scale tuna and skipjack fisheries (83). In addition to conventional Japan-based tuna longline and skipjack pole-and-line fisheries, there are three different types of Japanese tuna and skipjack fisheries in the region: the tuna longline fishery with motherships, foreign-based fisheries, and purse-seine fisheries.

ii) Tuna longline fishery with mothership operations

Taiyō Gyogyō Co., Ltd. conducted a tuna fishing feasibility study with a mothership *Banshū-maru* (1,066 gmt) in 1948, and *Nihon Suisan Co., Ltd.* did so with the

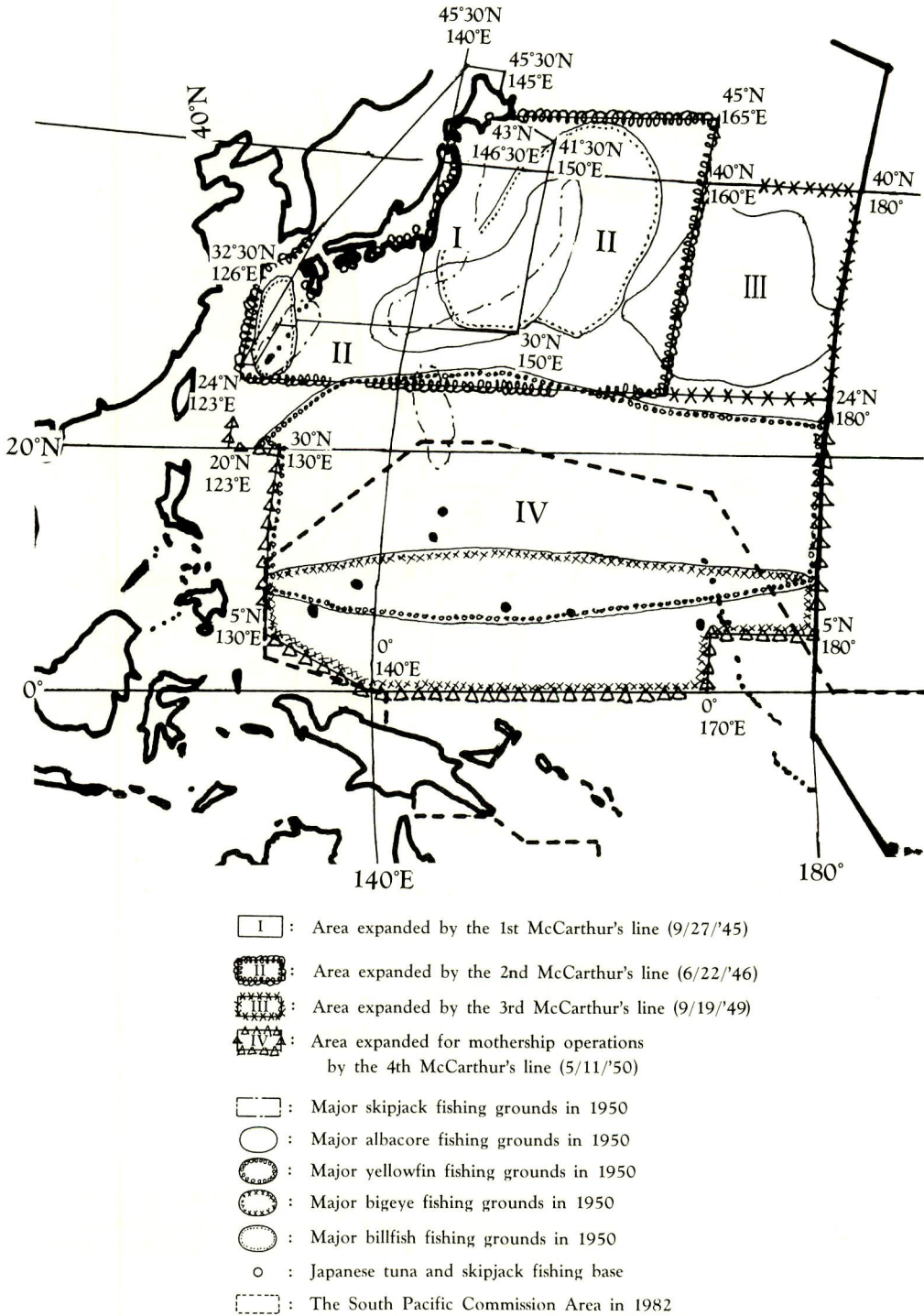


Figure 2. Legal expansions of the Japanese tuna and skipjack fishing grounds: 1945-1952 (modified from KATSUO MAGURO 1951 and 1956)

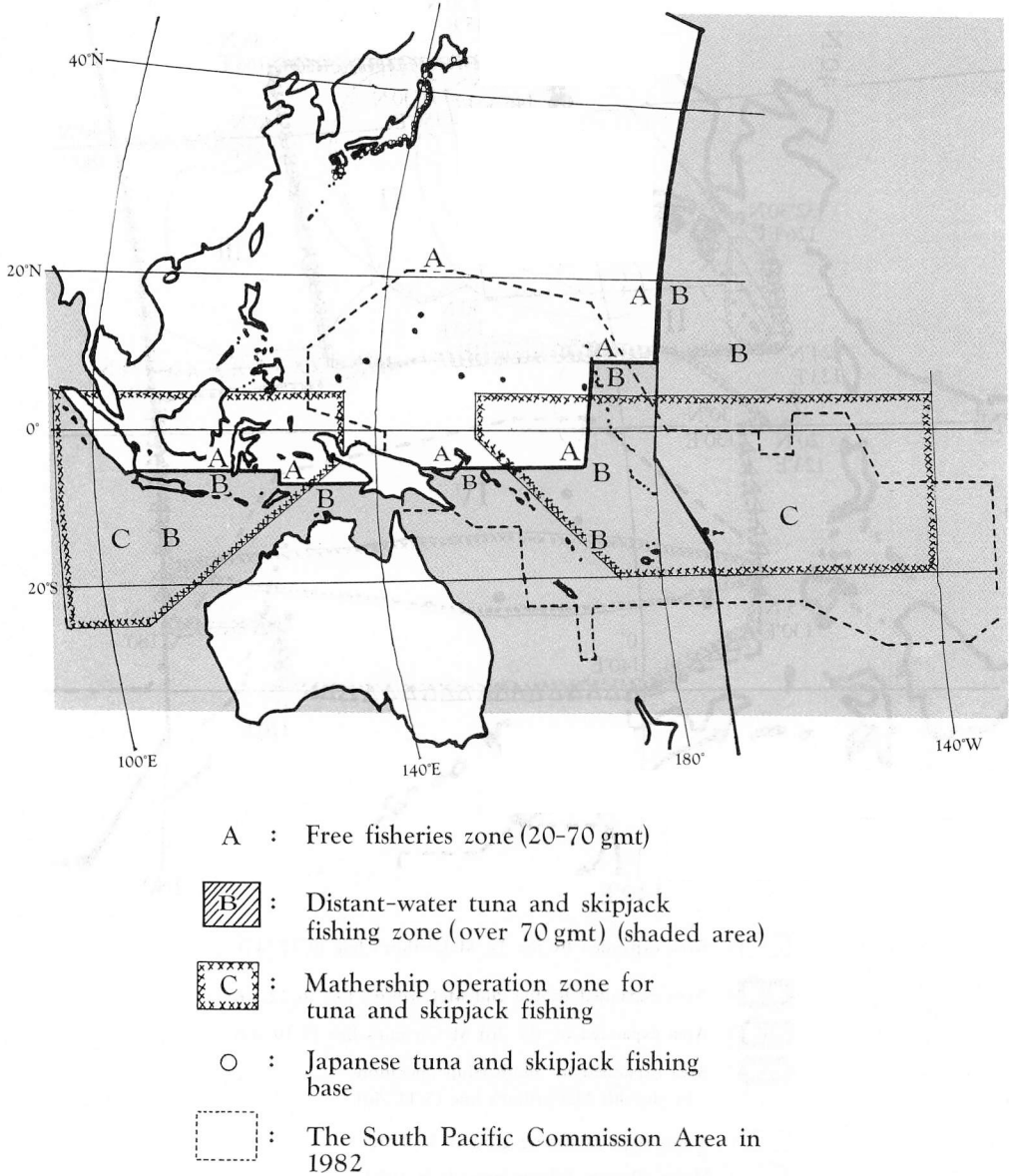
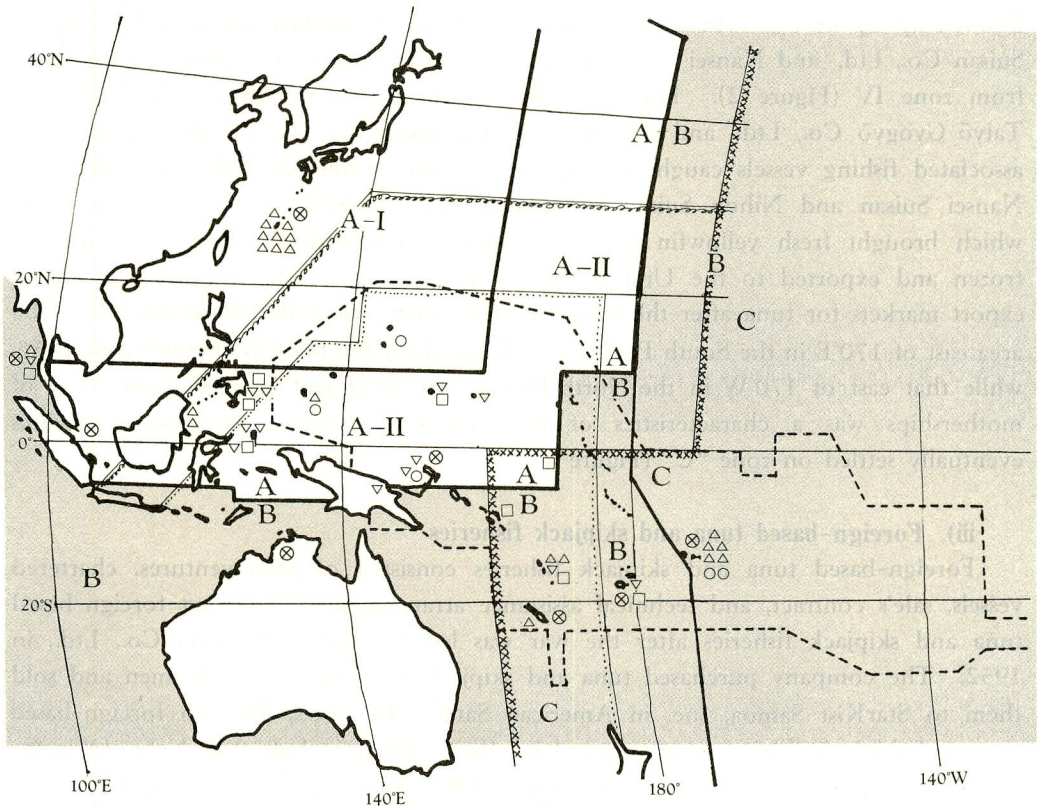


Figure 3. Legal framework of the Japanese tuna and skipjack fishing grounds in Southeast Asian seas and the western central Pacific after the removal of the McArthur's line on April 25, 1952: 1952-1953 (modified from MASUDA 1963)



- A-I : Nearshore tuna and skipjack fishing zone I (20-60 gmt)
- A-II: Nearshore tuna and skipjack fishing zone II (60-80 gmt)
- : Distant-water tuna and skipjack fishing zone (over 80 gmt) (shaded area)
- : Mothership operation zone for tuna and skipjack fishing
- : Tuna and skipjack purse-seine fishing zone
- : Tuna and skipjack purse-seine fishing zone for transferred vessels from other fisheries

- : The South Pacific Commission Area in 1982
- : Overseas tuna and skipjack fishing base in 1962
- : Overseas tuna and skipjack fishing base in 1974
- : Overseas tuna and skipjack fishing base in 1980
- : American tuna and skipjack purchasing base
- : Oil supply base

Figure 4. Legal framework of the Japanese tuna and skipjack fishing grounds in Southeast Asian seas and the western central Pacific in 1980 (modified from SUISAN-SHA 1984)

mothership *Kaikō-maru* (2,940 gmt) in 1949. Although the economic feasibility was not proven, the expansion of McArthur's line in 1950 provided an opportunity for mothership operations. In 1950, three fleets from Taiyō Gyogyō Co., Ltd., Hōkō Suisan Co., Ltd. and Nansei Suisan Co., Ltd. fished about 6,500 metric tons of tuna from zone IV (Figure 2). Further, 3 fleets from Nansei Suisan Co., Ltd., 2 from Taiyō Gyogyō Co., Ltd. and one from Nihon Suisan Co., Ltd., with a total of 96 associated fishing vessels caught 11,000 metric tons of tuna in 1951. In particular, Nansei Suisan and Nihon Suisan Companies' fleets included 8 small catcher boats which brought fresh yellowfin to their respective motherships, which were quickly frozen and exported to the United States. The success of this venture opened up export markets for tuna after the war. After the removal of the McArthur's line, the area east of 170°E in the South Pacific was included for mothership operations in 1956, while that east of 170°W in the North Pacific was developed in 1957 (36). Use of motherships was a characteristic of the post-war activities, and these activities eventually settled on zone "C" (Figure 4).

iii) Foreign-based tuna and skipjack fisheries

Foreign-based tuna and skipjack fisheries consisted of joint-ventures, chartered vessels, sale's contract, and technical assistance arrangements. The first foreign-based tuna and skipjack fisheries after the war was led by Mitsubishi Shōji Co., Ltd., in 1952. The company purchased tuna and skipjack from Japanese fishermen and sold them to StarKist Samoa, Inc. in American Samoa. By 1962, 39 such foreign-based tuna and skipjack fishing were operated in effect. These include 9 in Naha, Okinawa (*Kaikō Gyogyō-Ryūkyū Suisan*, *S. Sumie-Nankai Gyogyō*, *Taiyō Gyogyō-Ryūkyū Gyogyō*, *Wada Shōten-Ryūkyū Gyogyō*, *Uchida Zōsen-Hichiyō Suisan*, *Nankō Gyogyō Okinawa Reitō Shokuhin*, *Sanbe Fisheries Cooperative-Kōyō Suisan*, *Z. Masuda-Kyūyō Suisan*, *Uchida Zōsen-Nankai Gyogyō*); one in Malaysia (*Kaigai Gyogyō-NIKKA-TSUREN*); two in Sabah (*Taiyō Gyogyō-North Borneo Taiyō*); five in American Samoa (*Nihon Reizō-Van Camp*, *Nihon Reizō-Van Camp*, *Mitsubishi-Van Camp*, *Nichiro*, *Chūō Kōsha*); and two in New Hebrides (*Mitsui Bussan-Taiheiyō Suisan-D. J. Gubboy*, *Taiheiyō Gyogyō Suisan-Minami Taiheiyō*) (Figure 4) (36 and 45). An additional 14 bases were established by 1974. These include *Hōkoku Suisan-Itōchū Shōji*, *Madang*, New Guinea; *Kyokuyō-Mitsubishi Shōji*, *Kavieng*, New Guinea; *Kaigai Gyogyō-Mitsubishi Shōji*, *Rabaul*, New Guinea; *Nichiro Gyogyō-Mitsubishi Shōji* and *Hōko Suisan-Tōmen*, *Ternate*, Indonesia; *Takeda Kigyō*, *Truk*; *Yanagida Honten-Okura Shōji*, *Bangkok*, Thailand; *Nichimen Jitsugyō*, *Sumatora*, Indonesia; *Nankō Bussan*, *Ternate*, Indonesia; *Taiyō Gyogyō*, *Solomon islands*; *Sanyō Gyogyō-Mitsui Bussan*, *Ponape*; *Kumejima Suisan*, *Palau*; and *Ajinomoto-Yanagiya Honten and Sugabu Fishing Company* in the Philippines (71 and 78). Further, oil supply bases were established in *Penang*, Malaysia; *Singapore*; *Darwin*, *Fremantle*, *Hobart*, *Sydney* in Australia; *Wellington*, *Auckland*, and *Littleton* in New Zealand; *Noumea* in New Caledonia; *Suva* in Fiji; *Rabaul* in P.N.G.; *Papeete* in Tahiti; and *Honolulu* in the United States by 1974 (70). Furthermore, Japanese fishermen have also used American tuna and skipjack purchasing bases such as *Pago Pago* in American Samoa; *Rabaul*

in Papua New Guinea ; Koror in Palau ; and Guam and Honolulu in the United States.

iv) Tuna and skipjack purse-seine fisheries

Purse-seines are regarded as more economical than conventional tuna and skipjack fishing methods based on longline and pole-and-line, because they do not require bait and have a higher labor efficiency and lower fuel consumption. However, Japanese tuna and skipjack fishermen long hesitated to adopt purse-seines because of inexperience, competition among conventional pole-and-line or longline tuna fishermen and with conventional purse-seiners, the lack of suitable fishing grounds, insufficient technological development for deep water purse-seining, high construction costs, and the stock conservation implications of purse-seines. Some of these problems have been overcome after a number of years of trial and error.

Purse-seine test operations in the western central Pacific began around 1960. After a successful operation of *Taikei-maru* (210 gmt) by *Taiyo Gyogyō* in 1964, three 300 gmt purse-seiners joined the operation (70). However, economic feasibility was still not proven. In 1967, the Japanese government conducted an investigation of potential fishing grounds for tuna and skipjack purse-seiners. The Japan Marine Resource Research Center was established in 1971, and conducted an economic feasibility study of year-round tuna and skipjack purse-seine fishery in the western central Pacific since 1974. Since then, the number of Japanese purse-seiners in the western central Pacific has increased, reaching fourteen in 1980 (102).

Landings amounted to 31,000 metric tons of tuna and skipjack in 1979, the average catch per fishing day being about 12-15 metric tons, as compared to 2.6 metric tons for conventional pole-and-line vessels. Their catch was skipjack (80%), yellowfin and others (96).

v) Statistical summary

Japanese tuna and skipjack fisheries quickly expanded their activities within the framework of the legal limits on fishing grounds and limited entry schemes. With low interest loans from the government, fishermen often enlarged their vessels. Zones within McArthur's lines quickly became smaller so that the government frequently had to extend the fishing grounds. By 1950, the fishing grounds were extensively used (Figure 2). The 1951 tuna and skipjack catch of 235,912 metric tons (Table 2) exceeded the prewar highest catch of 202,439 metric tons in 1940 (Table 1). As of May 1958, there were 1,104 Japanese tuna and skipjack fishing vessels over 20 gmt in operation. Due to the rapid expansion of the tuna longline fishery, total tuna and skipjack fisheries production reached 722,364 metric tons in 1962. By then, Japanese tuna longliners were fishing throughout Southeast Asian seas and the western central Pacific (Figures 5, 6 and 7). Their activities continued year-round to date except for the southeastern portion of the region. Although the major fishing grounds were in the western central Pacific, Southeast Asian seas were also important.

Immediately after the war, the growth of skipjack production was faster than tuna production, but because of limited fishing grounds for skipjack, tuna production exceeded skipjack production in 1952. The gap widened until 1965 when production

Table 2. Japanese tuna and skipjack production after World War II (1945-1982)

Year	Unit : metric ton (mt)			
	Tuna	Skipjack	Billfish	Total
1945	12,386	19,653	—	32,039
46	15,080	41,447	3,424	59,951
47	24,639	48,732	8,790	82,161
48	15,953	40,720	9,598	66,271
49	33,468	46,471	—	79,938
50	58,740	84,637	1,546	144,923
51	92,595	117,817	25,500	235,912
52	127,848	109,626	24,778	262,252
53	134,592	88,279	29,112	251,983
54	154,250	120,442	38,897	313,589
55	181,370	123,092	42,085	346,555
56	232,661	123,914	48,055	404,630
57	279,866	117,904	53,867	451,637
58	280,310	170,693	59,607	510,610
59	331,658	186,599	57,903	576,160
60	389,551	94,363	55,627	539,541
61	431,033	162,587	61,484	655,104
62	449,844	191,348	81,172	722,364
63	453,027	161,226	82,305	696,558
64	427,161	193,663	86,034	706,858
65	430,290	166,802	90,442	687,534
66	398,330	258,816	81,721	738,867
67	367,324	211,202	73,692	652,218
68	352,861	191,439	70,233	614,533
69	332,749	209,378	68,773	610,900
70	291,017	231,865	66,733	589,615
71	307,965	191,656	52,506	552,127
72	318,090	253,936	48,357	620,383
73	341,818	356,343	46,693	744,864
74	348,950	373,573	48,712	771,235
75	310,616	273,640	50,561	634,817
76	367,793	351,248	45,155	764,196
77	336,530	322,703	41,548	700,781
78	384,674	384,621	46,627	815,922
79	362,917	346,518	43,357	752,792
80	378,496	376,739	44,120	799,355
81	360,270	305,486	47,455	713,220
82	372,143	320,106	44,479	736,728

Sources : Modified from JAPAN MINISTRY OF AGRICULTURE, FORESTRY, AND FISHERIES 1977-1984 (22) and JAPAN MINISTRY OF AGRICULTURE, FORESTRY, AND FISHERIES *et al ed.*, 1979 (23).

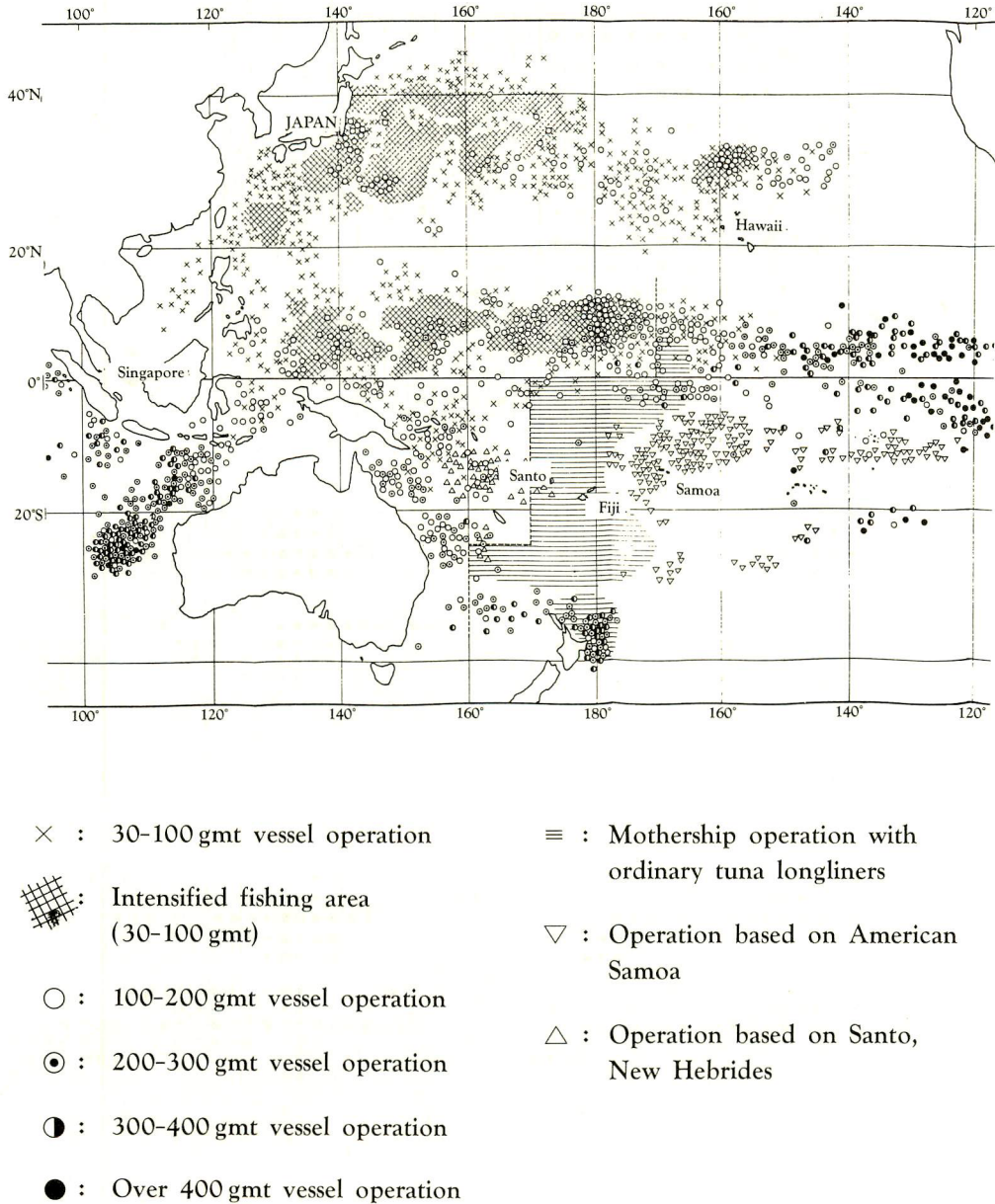


Figure 5. Operation map of the Japanese tuna longliners in 1960-1961 (modified from MASUDA 1963)

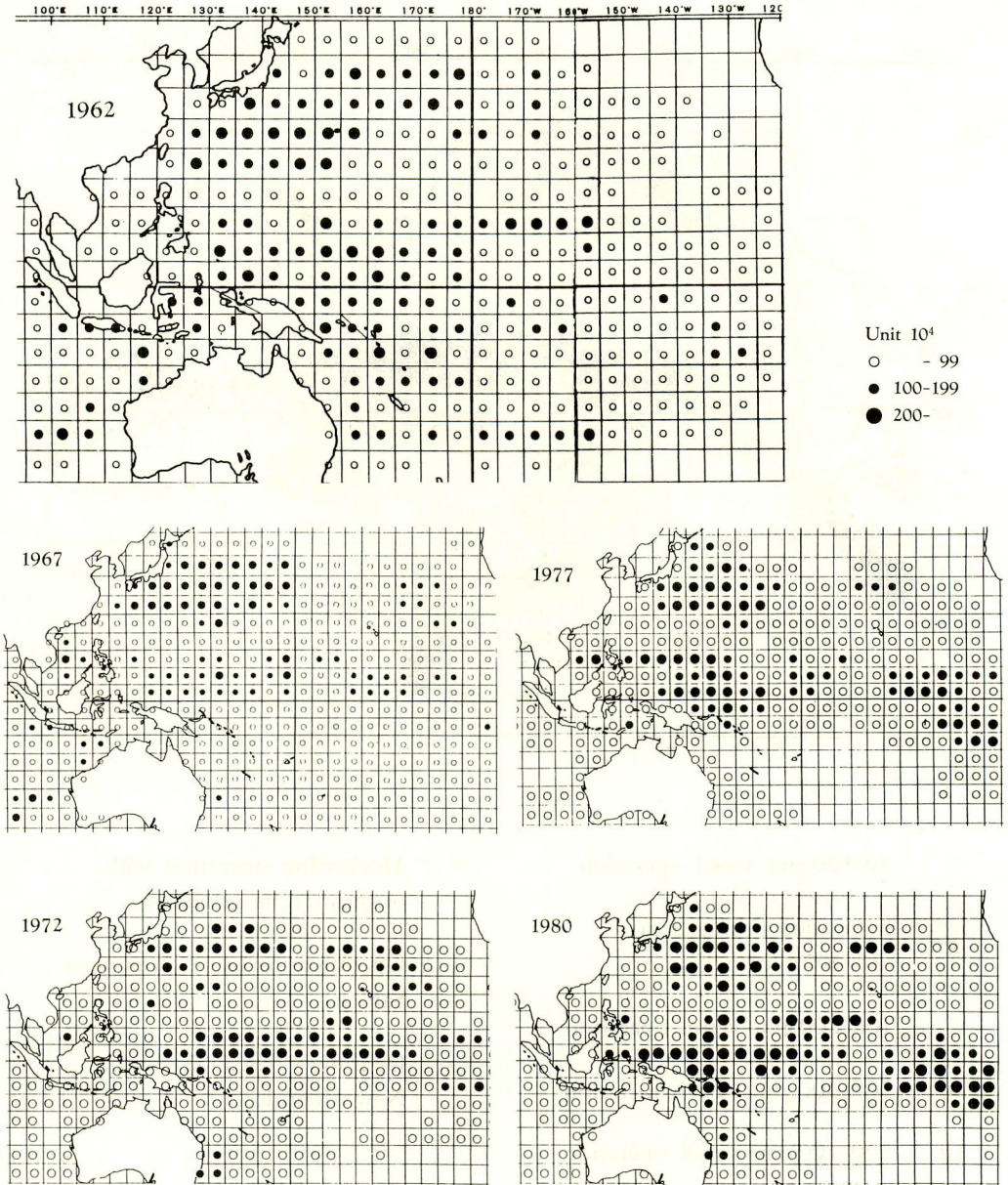


Figure 6. Distribution of estimated Japanese total tuna longline fishing effort in hook number in Southeast Asian seas and the western central Pacific (1962-1980)
 Sources : JAPAN FISHERY AGENCY 1965-1982 (16).

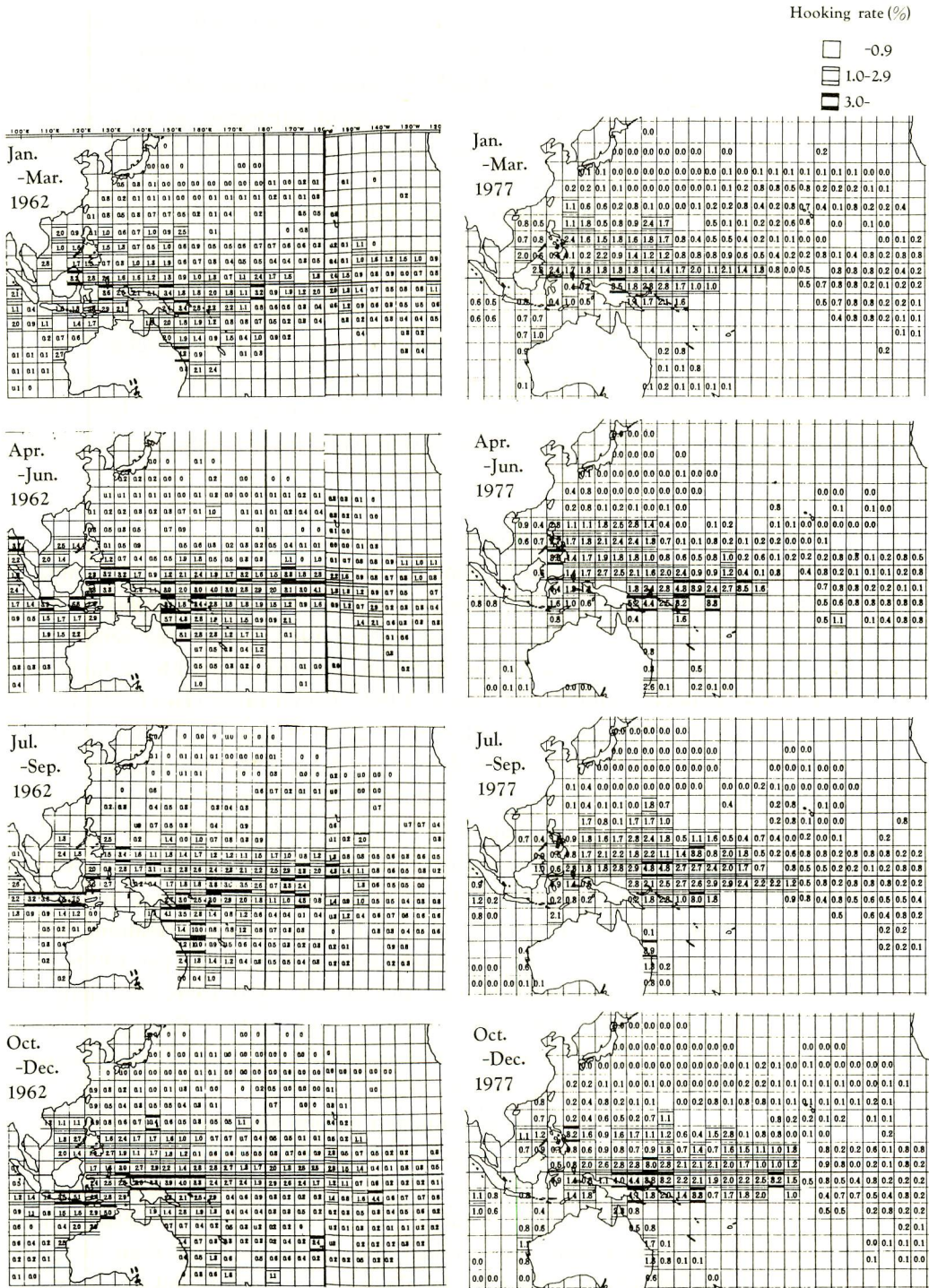


Figure 7. Yellowfin catch per unit effort (CPUE by hooking rate in %) by Japanese tuna longliners in Southeast Asian seas and the western central Pacific in 1962 and 1977

Sources: JAPAN FISHERY AGENCY 1965-1982 (17).

of tuna decreased due to lower productivity, and skipjack production increased due to improvement in live-bait transportation and overseas base development. In 1980, production of tuna and skipjack were almost the same (as about 380,000 mt). The rapid growth in production corresponded to the rapid expansion of tuna longline fishing activities during the 1950s and of skipjack pole-and-line fishing activities during the early 1970s (Table 2, Figures 2, 6 and 8).

However, fishing grounds for skipjack were limited to the western North Pacific before 1970 and are limited to the western central Pacific today because of the live-bait requirement for skipjack pole-and-line fishing.

Table 3 summarizes Japanese tuna and skipjack production in Southeast Asia and the Pacific from 1951-1981 except for that Japan-based tuna longline fishing includes production from the Indian Ocean. Production from foreign-based skipjack fishing and purse-seine fishing activities have been increasing since the late 1970s. Mothership operations ceased in 1965 while foreign based fishing shifted from tuna to skipjack activities in the early 1970s.

vi) Tuna and skipjack fishing activities in Southeast Asian seas

Statistics are not available for tuna longline operations before 1962 and for skipjack pole-and-line operation before 1968. However, Japanese tuna and skipjack fishing activities in Southeast Asian seas were present before 1962. After the removal of McArthur's line in 1952, *Kaikō-maru* (Nihon Suisan 2,940.61 gmt) with 10 longliners fished in Celebes, Moluccas, and Banda Seas in 1952. *Ginyō-maru* (Hokkaidō Kōsha, 3,840 gmt) with 10 small catcher boats (less than 20 gmt) and *Saipan-maru* (Taiyō Reitō, 3,737.89 gmt) with 5 longliners fished south of Java while *Tenyō-maru* (Taiyō Gyogyō, 3,689.31 gmt) with 16 catcher boats fished in the Andaman Sea and in waters off the Nicobar islands in 1954. In addition to those mothership operations, *Kushikino* tuna longliners and *Makurazaki* pole-and-line vessels were active. The South China Sea was also regarded as good fishing grounds for large tuna, especially from September to May. The average catch per unit effort of tuna longline fishing operations in the South China Sea varied from 1.5 to 4.5% (catching rates of fish caught per 100 hooks) by month except for June to August during the period 1930-1956, excluding the period 1942-50 (36). Figures 6 and 8 show Japanese tuna longline fishing operation in Southeast Asian seas from 1962 to 1980 and skipjack pole-and-line fishing operations in the South China, Sulu and Celebes seas in 1970.

Available statistics show there were continuous tuna longline fishing operations in Southeast Asian seas from 1962 and skipjack pole-and-line operations from 1968 (Table 4). These fishing grounds have been considered by the Japanese, however, to be nearshore, not distant-water, fishing grounds, (see Figure 4), for the Japanese tuna and skipjack fishery, as the fishing was seasonal and vessels used less than 80 gross metric tons. The major species caught by longline were yellowfin and bigeye tuna, with annual production fluctuating between 17,000 and 21,000 metric tons for large tuna, and 1,000 to 6,000 metric tons for skipjack.

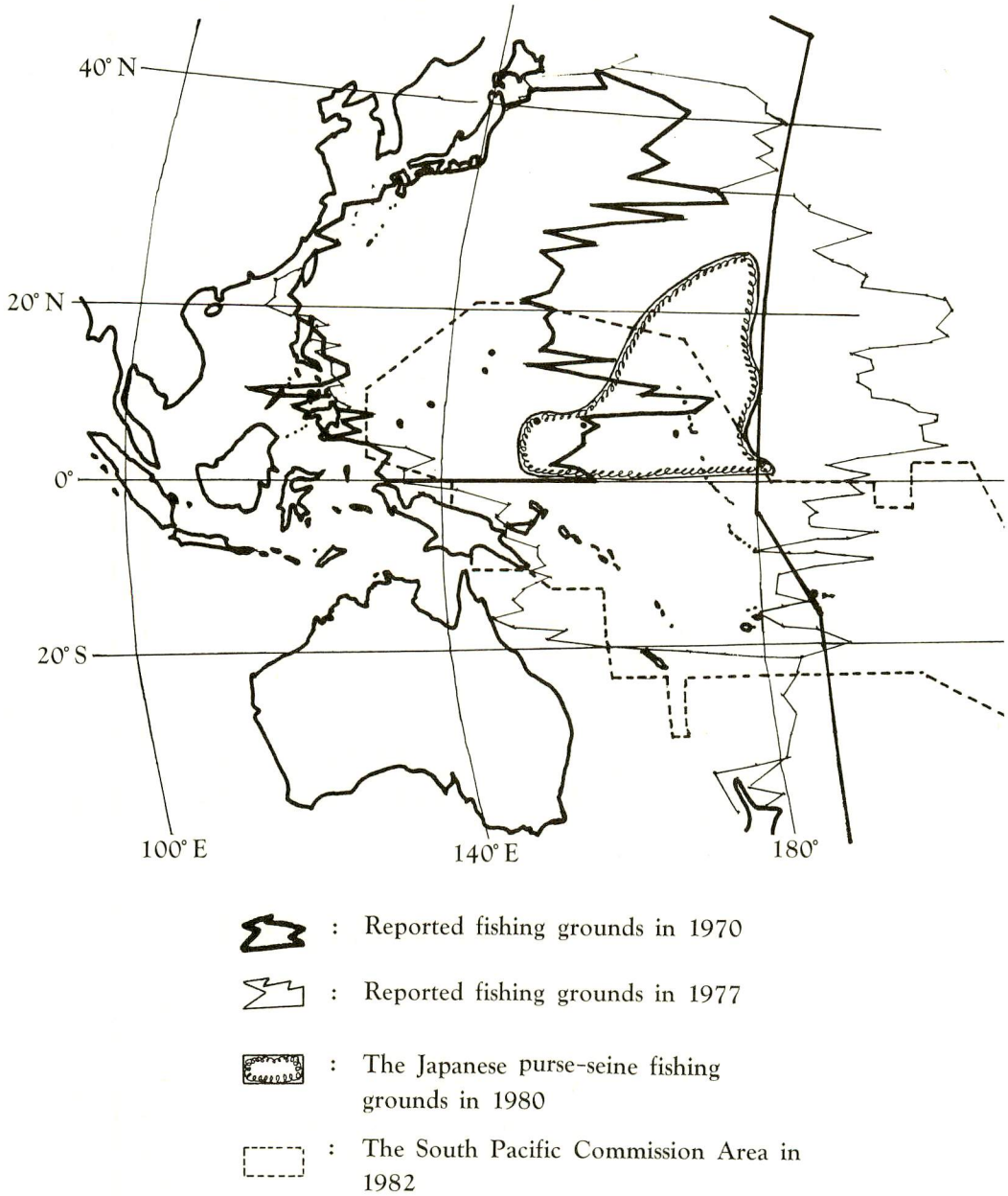


Figure 8. Fishing grounds for the Japanese skipjack pole-and-line fishery in 1970 and 1977 (modified from JAPAN FISHERY AGENCY 1970-1979)

Table 3. Japanese tuna skipjack production in Southeast Asian seas and the Pacific by type 1951-81

Year	Type		Japan-based tuna		Japan-based skipjack		Tuna longline fishing		Foreign-based		Purse-seine	
	longline fishing ¹	Skipjack	Tuna ³	Skipjack	Tuna ³	Skipjack	Tuna ³	Skipjack	Tuna ³	Skipjack	Tuna ³	Skipjack
1951	90,199	203	27,135	96,214	9,915	18	—	—	—	375	289	
52	109,375	642	48,705	78,518	5,641	28	?	?	—	675	394	
53	128,366	244	43,625	65,546	7,006	11	?	?	—	927	907	
54	148,208	450	37,647	88,073	15,000	15	?	?	—	7,977	4,230	
55	175,842	536	35,207	92,524	11,699	28	7,245	—	—	13,163	2,363	
56	212,813	416	55,737	91,950	9,550	—	7,095	—	—	17,338	1,942	
57	237,882	791	61,861	92,156	12,542	—	8,816	—	—	16,876	2,757	
58	257,756	1,054	37,113	131,441	12,872	—	15,849	—	—	11,048	10,318	
59	290,827	1,210	25,355	145,447	18,473	—	15,943	—	—	14,720	16,641	
60	321,507	1,267	32,193	70,428	21,716	—	14,909	—	—	11,152	3,620	
61	350,034	1,004	28,790	127,011	26,050	—	14,748	—	—	11,414	11,169	
62	384,968	1,175	21,057	152,387	21,736	—	77,851	—	—	16,554	11,267	
63	369,311	1,082	37,715	94,757	12,351	—	20,989	—	—	10,314	9,149	
64	319,156	1,441	36,298	136,081	13,025	—	34,878 ⁴	—	17 ⁴	12,175	24,950	
65	309,463	1,092	51,698	127,436	4,251	—	31,473 ⁴	—	35 ⁴	14,208	4,637	
66	345,230	1,236	33,646	212,986	—	—	32,226 ⁴	—	30 ⁴	14,804	10,844	
67	339,930	898	43,735	165,492	—	—	23,236 ⁴	—	73 ⁴	9,608	10,835	
68	324,409	948	27,776	157,340	—	—	20,250 ⁴	—	15 ⁴	16,390	7,415	
69	325,207	1,202	43,059	163,455	—	—	13,623 ⁴	—	16 ⁴	7,757	10,628	
70	302,608	1,544	34,390	187,438	—	—	8,744 ⁴	—	27 ⁴	8,582	7,081	
71	279,458	392	62,927	157,380	—	—	4,975 ⁴	—	4,718 ⁵	8,302	11,429	
72	271,848	504	76,425	199,836	—	—	2,505 ⁴	—	12,867 ⁵	9,530	16,105	
73	272,015	538	89,958	291,856	—	—	574 ⁴	—	22,978 ⁵	11,595	18,616	
74	265,445	283	95,423	333,281	—	—	355 ⁴	—	33,185 ⁵	16,493	6,942	
75	260,484	224	67,264	244,348	—	—	—	—	15,379 ⁵	13,490	8,504	
76	265,143	284	112,877	302,632	—	—	—	—	40,952 ⁵	14,399	21,028	
77	286,123	223	56,267	277,435	—	—	—	—	15,046 ⁵	16,177	24,510	
78	294,287	192	80,159	326,915	—	—	—	—	50,531 ⁵	24,830	32,097	
79	289,919	99	58,927	292,167	—	—	—	—	43,992 ⁵	31,977	29,443	
80	301,904	82	65,209	295,568	—	—	—	—	46,531 ⁵	32,976	49,982	
81	281,555	66	44,778	237,685	—	—	—	—	14,098 ⁶	52,051	43,904	

1) Including Indian Ocean operations

2) American Samoa, Santo islands, and Noumea bases, not including all foreign-based fishing in the Pacific

3) Including billfish

4) Including bases along Indian Ocean coasts

5) Including only Irabu-mura Okinawa fishermen's landings

6) Including only Okinawa fishermen's landings to Solomon Taiyō Co. Ltd., alone.

Sources: Compiled from IRABU MURA 1981 (13), JAPAN MINISTRY OF AGRICULTURE, FORESTRY, AND FISHERIES 1977-1984 (22), and KATAOKA AND MATSUDA 1983 (25).

Table 4. Japanese tuna and skipjack catch in Southeast Asian seas: 1962-1978 (modified from JAPAN FISHERY AGENCY 1965-1982 and 1970-1978)

Unit: metric ton (mt)

Year	Tuna longline operation				Skipjack pole-and-line operation			
	South China Sea ²	Near the Philippines ³	Banda Sea ⁴	Total ⁵	South China Sea ²	Near the Philippines ³	Banda Sea ⁴	Total ⁵
1962	875	?	?	?	?	?	?	?
63	783	1,304 ⁶	6,623 ⁶	?	?	?	?	?
64	776	1,652 ⁷	5,363 ⁷	?	?	?	?	?
65	1,833	2,303 ⁷	6,536 ⁷	?	?	?	?	?
66	1,618	4,481	7,810	11,909	?	?	?	?
67	7,134	2,891	3,273	13,298	?	?	?	?
68	3,744	2,947	7,226	13,917	?	1,273	0	?
69	4,830	4,049	6,459	15,338	?	4,092	0	?
70	2,397	1,587	3,556	7,540	345	3,537	0	3,537
71	3,299	1,193	3,672	8,164	225	4,884	0	4,884
72	3,803	1,965	1,142	6,910	1,654	5,540	246	5,786
73	5,104	4,362	3,814	13,380	503	2,280	157	2,437
74	3,351	7,691	4,759	15,791	472	6,018	63	6,081
75	4,819	7,580	9,055	21,454	891	1,814	69	1,883
76	5,222	3,702	2,035 ⁸	10,959	1,581	1,331	0	1,331
77	2,323	3,240	5,087 ⁸	10,650	1,318	2,804	0	2,804
78	?	?	2,022 ⁸	?	?	?	?	?

1) Unless specified, tuna longline catch includes the following eleven species: Bluefin, Southern Bluefin, Albacore, Bigeye, Yellowfin, Broadbill Swordfish, Striped Marlin, Blue Marlin, Black Marlin, Sailfin, and Skipjack. Conversion ratios were adapted from KUME 1973 (33) and ZINGU 1978 (127) unless specified: 53 kg./fish for Bluefin, 62 kg. for Southern Bluefin, 22 kg. for Albacore, 39 kg. for Bigeye, 34 kg. for Yellowfin, 47 kg. for Broadbill Swordfish, 48 kg. for Striped Marlin, 101 kg. for Blue Marlin, 78 kg. for Black Marlin, 26 kg. for Sailfin and 2 kg. for Skipjack.

2) Including an area surrounded by 5°N 105°E, 5°N 120°E, 25°N 120°E, and 25°N 105°E.

3) Including an area surrounded by 5°N 115°E, 5°N 130°E, 20°N 130°E, and 20°N 115°E.

4) Including an area surrounded by 10°S 120°E, 10°S 135°E, 0°S 135°E, and 0°S 120°E.

5) Double accounting of tuna longline catch from an area surrounded by 5°N 115°E, 5°N 120°E, 20°N 120°E, and 20°N 115°E is assumed to be offset by catch from other parts of Southeast Asian seas. For skipjack pole-and line operations, catch from South China Sea is included in catch from near the Philippines. Figures include all species caught by pole-line operation. Skipjack comprises approximately 90% of total catch.

6) Catch estimates concern only four species: Bluefin, Albacore, Bigeye, and Yellowfin tuna.

7) Excludes Southern Bluefin.

8) Data from ZIMBO (126).

Table 5. Japanese tuna longline fishing operations with motherhips in the western central Pacific: 1950-1961

Year	Company	Name of mothership	Gross tonnage (gmt)	Attached no. of vessels	Longliners average tonnage	Operating period (mothership)	Ending	Beginning	CPUE ¹ (%)	Fishing area	No. of operations	Total catch (mt)	Reference (mt)
1950	Taiyō	2 Tenyō-maru	10,619.69	25	141	6/17	9/5	81	3.9	Area bounded by 130°E, 170°E, 0°N, and 22°N	1,417	3,681	Exported to U.S.: frozen yellowfin 188, fillet 341
"	Hoko	Kaikō-maru	2,940.17	13	160	7/20	10/1	74	4.2	"	671	2,531	Exported to U.S.: yellowfin cans 35,000 cases
"	Nansei	Tenyū-maru	557.11	6	157	12/5	12/19	15	4.7	"	99	269	
1951	Nansei	Tenyū-maru	557.11	11	156	2/1	2/24	24	4.1	1°-8°N, 156°-162°E	223	595	
"	Taiyō	3 Tenyō-maru	3,689.31	16	112	3/22	6/14	85	3.9	1°-7°N, 138°-162°E	829	1,985	Exported to U.S.: frozen yellowfin 800
"	Nansei	Tenyū-maru	557.11	8	145	4/20	5/23	34	3.9	"	230	525	
"	Nissui	Settsu-maru	9,329.06	25	142	6/5	8/26	83	4.5	1°-8°N, 153°-170°E 6°-12°N, 168°-177°E	1,312	4,186	
"	Taiyō	2 Tenyō-maru	10,619.69	25	133	8/2	10/24	84	3.8	1°-12°N, 151°-179°E	1,349	3,634	Exported to U.S.: frozen yellowfin 905
"	Nansei	Tenyū-maru	557.11	3	173	9/7	10/20	44	3.4	1°-8°N, 158°-169°E 6°-13°N, 169°-179°E	126	237	
1952	Taiyō	Tenyō-maru	11,224.20	28	130	6/22	8/25	65	7.8	Waters around Solomon Islands	1,065	4,625	Exported to U.S.: frozen yellowfin 2,045, fillet 250
1953	Taiyō	Tenyō-maru	11,224.20	30	136	6/9	9/4	88	6.4	"	1,538	5,870	Yellowfin 688, 3,216
"	Taiyō Reitō	Saipan-maru	3,737.89	7	140	8/5	10/24	80	5.9	Southeastern waters off Gilbert Is.	604	1,451	Yellowfin 688
1944	Taiyō	Tenyō-maru	11,224.20	34	111	5/19	8/3	77	6.8	Eastern portion of Coral Sea	1,531	4,862	Albacore 2,026, yellowfin 1,246.
"	"	"	"	29	119	9/12	10/24	43	5.7	"	744	2,467	Albacore 876, yellowfin 447
"	"	3 Tenyō-maru	3,721.96	28	118	10/13	11/17	36	4.9	Southern and western waters off New Hebrides	545	1,920	Albacore 476, yellowfin 314
1955	Taiyō Reitō	Saipan-maru	3,737.89	15	103	11/29/54	2/22	84	6.2	Waters around New Hebrides	619	1,960	Yellowfin 861, albacore 462
"	Taiyō	Tenyō-maru	11,224.20	38	03	6/8	9/25	110	6.9	Waters around Fiji Islands	2,287	6,751	Albacore 2,943, yellowfin 1,414
"	"	Kōyō-maru	7,658.53	50	128	9/23	11/17	56	4.8	"	1,613	4,851	Albacore 1,509, yellowfin 646
1956	Taiyō	3 Tenyō-maru	3,689.31	30	129	5/20	8/12	85	6.3	Northwestern waters off Fiji Islands	1,799	4,665	Yellowfin 1,373, albacore 667
"	Nissui	Kaikō-maru	2,940.61	20	93	10/10	11/23	45	4.6	Southeastern waters off Fiji Is.	494	1,661	Albacore 355, bigeye 332
"	Taiyō	Tenyō-maru	11,581.60	44	122	9/2	11/2	62	5.5	Southern waters off Fiji Is.	1,593	4,856	Albacore 1,668, bigeye 635

1957	Taiyō	3 Tenyō-maru	3,721.96	34	129	5/27	9/3	100	7.3	Northwestern waters off Fiji Is.	1,746	5,630	Yellowfin 1,936, albacore 1,820
"	Nissui	Kaikō-maru	2,940.67	17	89	6/17	11/10	147	5.4	Northwestern and southeastern waters off Fiji Is.	1,149	3,143	Yellowfin 913, albacore 543
"	Taiyō	Tenyō-maru	11,581.60	45	126	9/4	11/13	71	5.1	Northwestern waters off Fiji Is.	1,939	5,332	Yellowfin 2,305, bigeye 821
1958	Taiyō	3 Tenyō-maru	3,732.59	29	140	5/26	9/7	105	7.8	Northwestern waters off Fiji Is.	1,609	5,646	Yellowfin 2,007, albacore 1,877
"	Nissui	Kaikō-maru	2,940.67	17	93	6/12	10/6	117	6.1	Waters around Gilbert Is., Phoenix Is. & Palmyra Is.	1,108	3,208	Yellowfin 1,661, bigeye 742
"	Taiyō	Kōyō-maru	7,658.53	42	120	9/9	11/15	68	6.0	Southern waters off Fiji Is.	1,629	5,530	Albacore 2,139, yellowfin 989
1959	Taiyō	3 Tenyō-maru	3,732.59	35	123	5/31	8/31	93	7.7	Southeastern waters off Gilbert Is., south and southwestern waters off Fiji Is.	1,581	5,035	Albacore 2,203, yellowfin 1,108
"	Taiyō	Kōyō-maru	7,658.53	48	113	9/3	11/9	68	6.9	Southern waters off Fiji Is., off New Zealand	1,790	6,218	Southern bluefin 3,994, albacore 984
"	Nissui	Nojima-maru	8,503.87	37	104	5/25	10/1	130	7.3	Southern waters off Gilbert Is. and Fiji Is.	2,148	6,306	Southern bluefin 1,692, albacore 1,514
"	Hokaidō Kōsha	Ninyō-maru	7,207.13	42	115	9/17	11/12	57	4.9	Southwestern waters off Fiji Is.	1,225	3,128	Southern bluefin 906, albacore 854
1960	Taiyō	3 Tenyō-maru	3,732.59	45	125	5/16	9/1	109	7.2	Southern waters off Fiji Is. and Gilbert Is.	2,234	6,425	Albacore 2,395, yellowfin 2,364
"	"	Kōyō-maru	7,658.53	44	113	9/2	11/11	71	5.1	Northwestern and Southern waters off Fiji Is.	1,772	4,489	Albacore 1,940, yellowfin 829
"	"	3 Tenyō-maru	3,732.59	42	101	11/21	2/9/61	81	5.1	Northern waters off Fiji Is.	1,240	3,292	Yellowfin 1,270, albacore 1,040
"	Nissui	Nojima-maru	8,503.87	46	117	5/27	8/25	91	7.0	Southern waters off Fiji Is. and Gilbert Is.	2,261	6,286	Yellowfin 3,228, albacore 1,443
"	Hokaidō Kōsha	Ninyō-maru	7,207.13	38	98	9/12	11/12	62	5.4	" "	1,431	3,510	Albacore 1,153, yellowfin 897
1961	Taiyō	3 Tenyō-maru	3,710.59	40	121	5/6	8/23	110	6.3	Southern and Northern waters off Fiji Is.	2,162	6,541	Albacore 2,868, yellowfin 1,974
"	"	Kōyō-maru	7,653.53	35	127	8/25	11/13	81	5.3	Southern waters off Fiji Is.	1,400	4,515	Albacore 1,987, yellowfin 486
"	"	Tenyō-maru	3,753.70	49	108	11/20	3/24/62	125	4.5	" "	2,718	6,527	Albacore 2,778, yellowfin 1,298
"	Nissui	Nojima-maru	8,815.02	49	127	5/24	9/23	123	6.5	Southern and Northern waters off Fiji Is.	2,971	8,267	Albacore 3,416, yellowfin 2,418
"	Hokaidō Kōsha	Ninyō-maru	7,207.13	36	93	8/25	11/15	83	4.6	" "	1,465	3,083	Albacore 1,091, yellowfin 856

1) Catch per unit effort (rate of fish caught per 100 hooks).

Source: MASUDA, 1963 (36).

vii) Tuna and skipjack fishing activities in the western central Pacific

The western central Pacific have been a major fishing ground for Japanese tuna and skipjack fisheries. Tuna longline fishing with a mothership commenced in 1948 and extended their fishing activities in the area IV in Figure 2 as early as 1950 and 1951. Further expansion of these activities is observed in Table 5. By 1961, the industry grew to use 5 fleets with 209 associated tuna longliners and ice supply vessels, to fish for 522 total fishing fleet-days from May to next March, and to catch 28,933 metric tons of fish (including 26,050 tons of tuna) in the South Pacific. However, this kind of fishing activities gradually declined due to the increase in number of larger longliners with quick freezers on board, consequently the decrease in number of small longliners to join the fleets, and the development of foreign-based tuna and skipjack fisheries. As a result, in 1965, only one mothership with 37 attached vessels joined fishing in the South Pacific and harvested 4,700 metric tons of fish (including 4,251 mt of tuna). This was the end of the tuna longline operation with motherships in the South Pacific.

By the end of 1952, Japan-based tuna longliners had expanded their fishing grounds in the western central Pacific. Development of American Samoa-based tuna fishing in 1952 was a by-product of such activities. Foreign-based tuna fishing from 1952 to 1974 (Table 3) indicates Japanese habitual fishing based on American Samoa, Santo island, Noumea and Fiji while Japanese tuna longline operations in the western central Pacific were continuous (Table 3, Figures 5 to 7) Makurazaki pole-and-line vessels fished in waters off Okinawa, Taiwan and the Philippines soon after the removal of McArthur's line in 1952. However, southward expansion of fishing grounds for Japanese skipjack pole-and-line vessels was long limited to the southwestern North Pacific, and expansion to the South Pacific came only after 1970. Nevertheless, that expansion was rather rapid when it did begin, and the skipjack catch from the South Pacific Commission area jumped from 59,112 metric tons in 1972 to 134,891 metric tons in 1974 (Table 6).

Although annual tuna and skipjack catch from the South Pacific Commission area varied from 30 to 42 thousand metric tons for tuna and 60 to 135 thousand metric tons of skipjack, Japanese fishermen continued to fish in the South Pacific Commission area, particularly in waters around Guam and the Trust Territories, Kiribati, Papua New Guinea, the Solomon islands, Nauru, French Polynesia, Tuvalu, Howland, Baker, Palmyra and Jarvis islands, New Caledonia, and Pitcairn island (Table 6). Purse-seine activities in the region should also be included (Table 3 and Figure 8). Furthermore, both Japanese and American tuna and skipjack purchasing and oil supply bases have supported continuous and habitual Japanese tuna and skipjack fishing activities in the western central Pacific.

II. Coastal Countries' Claims to Extended Maritime Jurisdictions

As of March 1, 1982, 92 countries out of 137 independent coastal countries in the world had declared their own 200-nautical-mile (nm) territorial seas or fisheries

Table 6. Estimates of catches of tuna and skipjack by Japanese longliners and pole-and-line vessels from within the so-called 200 mile economic zone of the member countries of the South Pacific Commission : 1972-1976 (modified from KLAWE 1978 and KEARNEY 1979)

Countries	Catch by year												Unit: metric ton (mt)		
	Tuna						Skipjack						1975	1976	
	1972	1973	1974	1975	1976	1972	1973	1974	1975	1976					
American Samoa	0	0	0	0	0	0	0	0	0	0	0	35	29		
Cook Islands	33	11	41	104	36	0	0	1	16	10	233	0	0		
Fiji	324	116	4	16	13	2	0	222	962	233	0	0	0		
French Polynesia	613	675	1,832	1,830	2,400	0	0	0	66	0	0	0	0		
Gilbert Islands (Now Kiribati)	10,961	2,973	3,679	2,635	5,029	4,164	799	11,771	4,527	16,570	0	0	0		
Guam and Trust Territories	17,885	16,405	18,921	19,042	19,520	42,587	90,029	55,839	59,148	38,360	0	0	0		
Kingdom of Tonga	90	4	0	0	0	0	0	0	77	18	0	0	0		
Nauru	2,549	1,383	1,051	908	1,417	959	1,162	3,247	531	8,224	0	0	0		
New Caledonia	751	663	409	230	132	0	0	27	375	58	0	0	0		
New Hebrides (Now Vanuatu)	115	60	9	4	2	0	0	64	189	93	0	0	0		
Niue	0	0	0	0	0	0	0	0	1	4	0	0	0		
Norfolk Islands	108	258	252	82	167	0	0	0	0	2	0	0	0		
Papua New Guinea (P. N. G.)	4,147	8,346	3,993	3,095	4,466	10,858	22,228	56,595	18,076	10,533	0	0	0		
Pitcairn Island	119	235	339	349	981	0	0	0	0	0	0	0	0		
Solomon Islands	808	1,876	380	578	759	96	364	6,890	6,813	17,248	0	0	0		
Tokelau	7	5	0	8	1	0	0	0	111	1,645	0	0	0		
Tuvalu	543	122	14	138	112	297	3	89	162	7,611	0	0	0		
Futuna	13	1	0	1	0	0	0	13	60	155	0	0	0		
Western Samoa	0	0	0	0	0	0	0	0	28	24	0	0	0		
Hawland, Baker, Palmyra & Jarvis Islands	3,340	1,051	1,393	743	1,394	149	0	133	161	1,946	0	0	0		
Total	42,406	34,184	32,317	29,763	36,429	59,112	114,585	134,891	91,338	102,763	0	0	0		

zone or EEZs (59). Although various minor adjustments are still necessary, the concepts of archipelagic waters, exclusive economic zones, and highly migratory species have been defined and sanctioned by the Convention on the Law of the Sea. On December 10, 1982, 117 countries and 2 quasi-government bodies including the Cook Islands signed the treaty. However, the United States, United Kingdom, West Germany, Italy, Belgium, Luxembourg, Japan and South Korea were among 23 countries which did not sign the treaty. Except for the United States, no country officially objected to the treaty and most countries which did not sign the treaty will sign it sooner or later. The treaty is valid among countries which ratified it and Fiji was the first to ratify it (39).

In Southeast Asia and the western central Pacific territorial sea claims are limited to 12 nm from baselines of each country, except for the Philippines and Kingdom of Tonga (Table 7 and Figure 9). Prescott has reviewed the various claims in the region (61, 62 and 63). Such extension of jurisdiction has affected Japanese tuna and skipjack fisheries in the region because aside from the United States, these countries and dominions regard tuna and skipjack in the zones as their own resources, regardless of their highly migratory characteristics. Further, some coastal countries have claimed archipelagic waters.

Indonesia recognized the need to solve problems that might arise from the traditional fishing activities of immediately-adjacent neighboring countries in Indonesian waters (7) and Indonesia has already begun discussions on the matter with Malaysia and Thailand (120). Indonesia has sought to nullify the Philippines claim of historic waters in the archipelagic waters and the EEZ already claimed by Indonesia, around Palmas Island in the Celebes Sea (121). In the Philippines claimed areas, tuna, skipjack and bonito may be caught only by joint-venture fishing or through bilateral agreement (60).

Under the U.S. Fisheries Conservation and Management Act of 1976 (FCMA), an exclusive fisheries management authority was established to manage: 1) all fish within the fisheries conservation zone except for highly migratory species (that is, species of tuna and skipjack which, in the course of their life cycle, spawn and migrate over great distances in waters of the ocean); 2) all anadromous species throughout the migratory range of each such species beyond the fishery conservation zone, except that such management authority shall not extend to such species during the time they are found within any foreign nation's territorial sea or fisheries conservation zone, to the extent that such sea or zone is recognized by the United States; and 3) all continental shelf fisheries resources beyond the fishery conservation zone (125).

Thus, tuna and skipjack were not regarded as national resources. Nevertheless, shark and billfish management in the fishery conservation zone affects foreign tuna and skipjack fishing because of incidental catch problems. Further, exclusion of tuna and skipjack from the act upset island dominions of the United States in the western Pacific which were preparing for their independence. For example, the Marshall Islands enacted the Marshall Islands Marine Resources Jurisdiction Act of 1978 before its independence from the United States in 1980. The act established an exclusive fishery zone and an extended fishery zone. Tuna and skipjack were intentionally

Table 7. Extended maritime claims in Southeast Asia and the South Pacific

	Territorial sea (nm, date)	200 nm ext- ended fish- eries zone (date)	200 nm EEZ (date)	Approximate size of EEZ (sq. nm)
A. Southeast Asia :				
Brunei				
Burma	12 (1968)		1977	148,600
China	12 (1958)			281,000
Hong Kong	3			
Indonesia	12 (1957)		1980	1,577,300 ¹
Kampuchea	12 (1969)		1978	16,200
Malaysia	12 (1969)		1980	138,700
The Philippines	30-350 (1961) ²		1978	520,700 ²
Singapore	12 (1980)		1980	
Thailand	12 (1966)			25,000
Taiwan	12 (1979)		1979	114,400
Vietnam	12 (1977)		1977	210,600
B. The South Pacific Commission Area :				
American Samoa (U.S.)	3	1977	1983	
Belau, the Republic of (Formally Palau)	3 (1945)	1977		
Cook Islands (New Zealand)	12 (1978)		1978	
Fiji	12 (1977)		1981	331,000 ¹
French Polynesia (France)	12 (1971)		1977	
Guam (U.S.)	3 (1945)	1977	1983	
Howland, Baker, Palmyra and Jarvis Islands (U.S.)	3	1977	1983	
Kiribati (Formally Gilbert Is.)	3	1978		770,000
Marshall Islands	3 (1945)	1978		
Micronesia, Federal States of	3 (1945)	1977		
Nauru, Republic of	12 (1972)		1979	125,700
New Caledonia (France)	12 (1971)		1977	
Niue (New Zealand)	12 (1978)	1977		
Norfolk Islands (Australia)	3	1979		
Northern Mariana Islands, Commonwealth of the (U.S.)	3 (1945)	1977	1983	
Papua New Guinea	12 (1979)		1978	690,000
Pitcairn Island (U.K.)	3	1977		
Solomon Islands	12 (1979)	1978		325,400 ¹
Tokelau	12 (1978)		1978	
Tonga, Kingdom of	over 200 (1880)		1979	173,800
Tuvalu	3	1979		
Vanuatu (Formally New Hebrides)	12 (1971)		1977	106,100
Wallis and Futura (France)	12 (1971)		1977	
Western Samoa	12 (1971)	1977		

1) Including archipelagic waters' claim

2) All treaty waters included

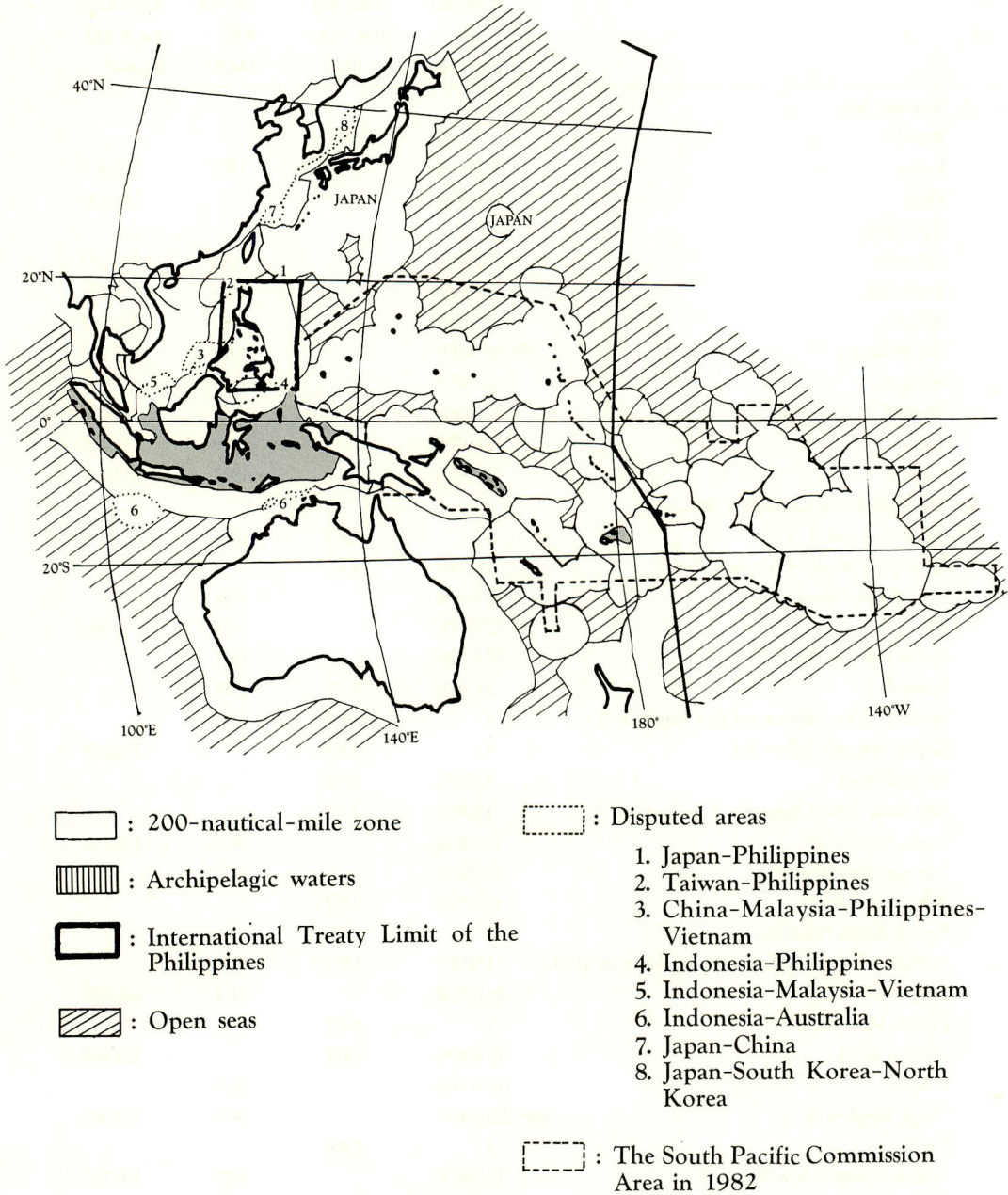


Figure 9. Extended maritime claims and disputed areas in Southeast Asian seas and the western central Pacific (modified from SATO 1977, KLAWE 1978 and PRESCOTT 1981)

treated as ordinary fish subject to coastal state jurisdiction (34). Other island entities in the U.S. Trust Territories (the Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, and the Republic of Belau) have taken similar positions while American Samoa and Guam follow the U.S. position because of their economic and political dependence on the United States based on military activities (57, 70, 87, and 97).

The South Pacific Forum Fisheries Agency was formed in Honiara, Solomon Islands in 1979. The membership of the agency consists of regional states and extra-regional interests, but the purpose and functions are restricted to the living marine resources, in particular management and utilization of highly migratory species including tuna and skipjack for the benefit of the people in the region. The Forum states will cooperate in the administration of the 200 nm fishing limit. They will also consider preferential access rights to surplus stocks for fishing vessels fully owned and operated by states of the region. However the basic management, licensing, surveillance and enforcement are the responsibility of the individual countries (67). For example, the Solomon Islands, as a condition of access of its 200 nm zone requires that flag owners of foreign fishing vessels: 1) pay appropriate fees; 2) recognize the laws of Solomon Islands; and 3) recognize the authority of the Government of the Solomon Islands over all fish resources within the 200 nm fishing limit. These conditions are applied to all parties wishing to gain access for fishing (66).

III. Japanese Fishing Access

Other than the Banda Sea agreements between Indonesia and Japan, there was no bilateral tuna and/or skipjack fee fishing agreement between Japan and any other country before 1977. Japanese tuna and skipjack fishing extended to the coastal waters of nearly 60 countries and with extended jurisdictions, the government and industry had to reach agreements for access. By July 1979, Japan gained access to the waters of 15 countries: Canada, the United States, Mexico, Peru, Ecuador, New Zealand, Australia, Papua New Guinea, the Solomon Islands, Kiribati (formerly Gilbert Islands), the Federated States of Micronesia, the Republic of Belau (formerly Palau), Marshall Islands, French Polynesia and Indonesia. By 1981, agreements had also been reached with South Africa, Tuvalu, Fiji, Chile and Portugal. However, conditions for access were increasingly severe. Further, the Nauru Agreement signed in 1981 by Federated States of Micronesia, Kiribati, Nauru, the Republic of Belau, Papua New Guinea, and the Solomon Islands will require Japan to respect not only bilateral agreements but also the regional agreement.

1) The Banda Sea Agreement

When the Philippines and Indonesia claimed archipelagic waters in the middle 1950s, problems concerning tuna and skipjack fisheries between these nations and Japan intensified because Japan did not officially accept this archipelagic waters. There has been neither informal nor formal negotiations on this matter between the Philippines

and Japan. However, Indonesia and Japan have formally negotiated the matter since 1968 in the context of the Banda Sea Agreements between the government of the Republic of Indonesia and representatives of the National Federation of Fisheries Cooperatives of Japan and the Federation of Japanese Tuna and Skipjack Fisheries Cooperative Associations.

The 1968 interim arrangement specified conditions for Japanese fishing in the Banda Sea. The fishing area was specified as the area bounded by 124°E 2°S, 129°E 2°S, 132°E 3°S, 132°E 8°S, 124°E 8°S, and 124°E 2°S (Figure 10). The number of fishing vessels was limited to 250, not more than one-third of which would consist of vessels of 70-300 gross metric tons (gmt) and not more than 13 vessels of 200-300 gmt. The catch quota was set at 15,000 metric tons. The Japanese fishing vessels were not allowed to make use of motherships or transporting vessels and the fishing method was limited to tuna longline. The fees were fixed at U.S. \$ (\$ unless specified hereafter) 300 per vessel of 40-70 gmt class, and at \$ 390 per vessel of 70-300 gmt.

The arrangement had to be renewed annually, and negotiations for renewal often bogged down. Because the Indonesian were not satisfied with revenues realized from the agreement, they insisted on various modifications. The Japanese accepted these modifications because of the importance of the Banda Sea fishery for the livelihood of a significant number of people in the fishing industry, and because of the importance of Indonesia to Japanese economic activities.

The arrangement was renewed five times between 1968 and 1975 and brought about \$ 10 million to the Indonesian government during those years: \$ 147,640 from license fees, \$ 1,929,186 from grants, and \$ 7,856,285 in the form of credit project aid (8). During the same period, Japanese fishermen caught 20,459 metric tons of tuna from the Banda Sea (16), valued at about \$ 10 million assuming an average price of \$ 500 per metric ton.

The agreement was revised in 1975 to include pledges of economic assistance and a profit-sharing system. According to this agreement, Indonesia received 40 percent of the profit from the arrangement. The profit declared by the Japanese, however, was only 2.5 percent of the gross value of the catch so Indonesia received only 1 percent of gross value, not enough to cover administrative costs (7). Although a quota was set at 8,000 metric tons per year, the average annual catch was only 3,048 metric tons during 1976 and 1978 (126). While up to 100 vessels were permitted to operate under the contract, there were only 23 reporting in 1975-76, 35 in 1976-77; 77 applied between September 1977 and June 1978. Between September 1977 and April 1978, only 35 vessels reported for verification and checking at Ambon (7). During the three-year period of the revised agreement, besides profit sharing, the Indonesians obtained grants in the form of one training vessel and its equipment valued at \$ 1.8 million, and a repair shop valued at \$ 200,000. The Japanese also trained Indonesian fishermen.

The last Banda Sea Agreement, based on a catch fee of 3.75 percent of the standard landed value at Japanese ports, was established in 1979. Besides a fixed catch quota of 7,000 metric tons per year, restrictions on boat size and number of trips, exclusive fishing rights for Japan, and obligations for in-depth training, it required reporting of

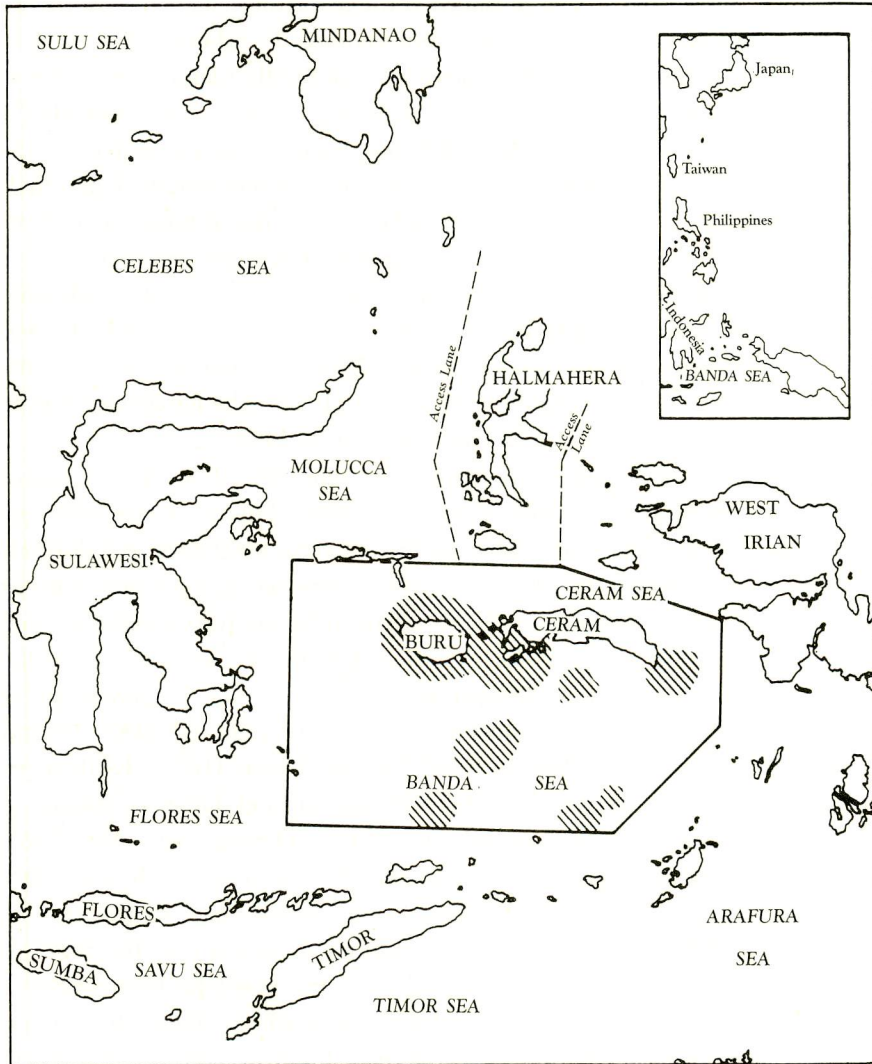


Figure 10. Area covered by Banda Sea agreements between Indonesia and Japan. The shaded areas are off-bounds to Japanese fishing (modified from ZIMBO 1979)

catches and inspection of boats at Ambon. Although the last Banda Sea Agreement was an improvement from the Indonesian point of view, the fishing activity was economically marginal for Japan, though politically important. In 1980, the agreement was not renewed because Indonesia wanted to develop a joint-venture operation rather than fee fishing in the Banda Sea while Japan could not accept such a proposal.

2) Other Bilateral Fee Fishing Arrangements

Negotiations with Indonesia and the Philippines have not developed at the governmental level because Indonesia has not developed a legal framework for the EEZ and the Philippines had many unsolved boundaries. However, temporary access to the

zones of both countries have been arranged through private channels. Both Indonesia and the Philippines have strongly sought joint-ventures in fisheries.

The first interim agreement with western central Pacific island nations was reached with Papua New Guinea on May 16, 1978, extending for 9 months from May 1, 1978 to January 31, 1979. The terms and conditions included an access fee of 22.5 kina (\$32)/m of vessel length/9 months (or 7.5 kina/m of vessel length/3 months) and a lump sum payment of 1 million kina (\$1,411,700) as the fishing fee (48 and 91). Upon expiration of this agreement, a new agreement was not reached until August 1, 1979 when a per-vessel payment system based on types and sizes of vessels supplanted the lump sum payment was introduced. The agreement, valid until December 31, 1979, became non-governmental and included Japanese responsibilities for entry and exit reporting and for adopting an observer system (102). The agreement was renewed four times and automatically extended since August 1, 1982.

Japan reached an agreement with Kiribati on June 26, 1978. The agreement was valid for 2 years from July 1, 1978 to June 30, 1980, but the terms and conditions were valid only for the first year. The number of tuna longliners and skipjack pole-and-line vessels was limited to 400. The basic access fee was a lump sum payment of \$600,000 for the basic quota of 2,000 metric tons for tuna longliners and 9,500 metric tons for skipjack pole-and-line vessels. For the excess catch over the basic quota, additional payments of \$67.50 per metric ton for tuna longliners and \$25.00 per metric ton for skipjack pole-and-line vessels were required (48). Further, the agreement included gifts equivalent to \$300,000 for 2 years (102). Kiribati proposed an increase in the lump sum payment by 100 percent, and Japanese fishing activities in the zone were discontinued from July 1, 1981 to October 30, 1981 (106). The agreement, valid from November 1, 1981 to October 30, 1982, included a lump sum payment of \$930,000 and gifts. Further, fishing vessels had to pay for 570,000 yen (\$2,651) per additional vessel when the number of vessels into the zone exceeded 370 (107). The Kiribati government agreed on a per-vessel payment system instead of the lump sum system. But Kiribati required Japan to use higher fish prices as the base for fee calculation, in addition to an advance lump sum payment of \$1,000,000 as the minimum guarantee for the change. As a result, the agreement was not renewed (109) and it took for ten months before Japanese fishing began again on September 1, 1983 under the new one year agreement. The terms and conditions included a lump sum payment of \$884,000 and gifts equivalent to \$105,000 (101). A pervessel payment system was adopted from September 1, 1984.

The first agreement with the Solomon Islands was reached after a 9 month (from January 1 to September 30, 1978) lapse of Japanese fishing in the zone. The terms and conditions included the basic access fee of a lump sum payment of Solomon \$350,000 for the basic quota of 2,000 metric tons for tuna longliners and 6,000 metric tons for skipjack pole-and-line vessels in addition to supply of development equipment equivalent to Solomon \$50,000. For the excess catch over the basic quota, additional payments of Solomon \$57 per metric ton for tuna longliners and Solomon \$21 for skipjack pole-and-line vessels were required. The agreement was valid from October 1, 1978 to September 30, 1979 and renewed for another year. However, it was difficult

for the Japanese government to collect enough money from the fishermen to pay even the basic access fee: only 40 percent of the basic fee was collected from the fishermen for the second term (9). Consequently, a per-vessel payment system was introduced in the new one year agreement beginning October 1, 1979 and the agreement changed from governmental one to non-governmental one. The agreement was renewed for another year, but the Solomon Islands proposed an access fee increase by 200-300 percent. After a lapse of 4 months, Japanese fishing in the Solomons Islands began again on February 1, 1983. The terms and conditions included an increase in access fee for less than 100 gmt tuna longliners by 20 percent and gifts equivalent to 6 million yen (approximately \$ 25,398). The agreement was valid only for 6 months. Japanese fishing began again in the Solomon Islands jurisdiction under the new one year agreement, valid from January 1, 1984 to December 31 (101).

Agreements with the Republic of Belau, the Federated States of Micronesia (FSM), and the Marshall Islands have been non-governmental except for the agreement with the Marshall Islands since 1981. The first agreement with the Republic of Belau required a lump sum payment of \$ 400,000 for the first year from January 1 to December 31, 1979. During the same period, FSM required a lump sum payment of \$ 2,000,000 per year under the first agreement. The first agreement with the Marshall Islands asked Japan for a lump sum payment of \$ 400,000 for the first six months from July 1 to December 31, 1979. The terms and conditions of these agreements also included adoption of an observer system, catch reporting, and technical assistance. These agreements were renewed three to five times. However, they expired October 1, 1982 with the Republic of Belau and July 31, 1983 with the FSM. On January 1, 1984, Japanese fishermen regained access to the Republic of Belau waters under the new one year agreement. The terms and conditions included a lump sum payment of \$ 274,000 and limited entry of 290 vessels. On the other hand, Japanese fishermen regained access to the FSM waters on February 10, 1984. The terms and conditions included a lump sum payment of \$ 1.2 million and gifts equivalent to \$ 842,000 (101). The last agreement with FSM, valid from August 10, 1984, adopted a per-vessel payment system.

The 1983 agreement with the Marshall Islands, valid from April 1, 1983 to March 31, 1984, adopted a per-vessel payment system. The terms and conditions included an annual registration fee of \$ 150 per vessel, access fees of \$ 2,100 per trip per tuna longliner and of \$ 1,400 per trip per skipjack pole-and-line vessel, and an entry fee for Majuro port, of \$ 450 per entry. Currently, Japanese are fishing in the Marshall Islands waters under the renewed one year agreement, valid from April 1984. Access fees per trip were raised for \$ 100 per tuna longliner and \$ 500 per pole-and-line vessel (101).

A governmental agreement with French Polynesia was first reached on July 20, 1979. The terms and conditions included a lump sum payment of about 1,900,000 francs (\$ 446,586). At the same time, Japanese fishermen gained their access to other French dominions in the Pacific. The agreement were renewed 5 times. Terms and conditions included lump sum payments, ranging from 1,320,000 to 3,556,000 francs, with limited number of vessels and gifts requirement (101).

Although a governmental agreement does not exist, Japanese fishermen can fish in the zones of Fiji and Tuvalu under the domestic laws of each country. At present, foreign tuna fishing is allowed in Fijian waters, but the fishermen must pay a fishing fee and land the tuna catch at the pier of Pacific Fishing Company, Ltd. (PAFCO), a Fiji government-Japanese trading companies processing joint-venture (38). Special attention was paid by Japanese fishermen to the first governmental fisheries agreements with Australia (valid from November 1, 1979 to October 31, 1981) and New Zealand (valid from September 1, 1978 to June 30, 1982) due to their proposals to include exports of agricultural and forest products to Japan. Access fees per year for the Australia and New Zealand were a lump sum payment of Australian \$ 140,000,000 (\$ 1,547,700), and New Zealand \$ 9,000 (\$ 9,340) per vessel for the southern bluefin license and New Zealand \$ 1,500 (\$ 1,557) per vessel for the albacore and yellowfin license, respectively. Both countries also requested Japanese fisheries cooperation in information exchange on resources, personal exchange, expansion of market access of fish and fish products to Japan, and processing and marketing of domestic catches from the zones (47 and 50). Negotiations with Western Samoa, Nauru, the Kingdom of Tonga and Vanuatu have not produced agreement.

3. The Nauru Agreement

Increases in access fees and other requirements have made Japanese fishing expensive. In order to gain more benefits from negotiations with distant-water fishing nations, there is a trend to develop a regional approach among nations with common interests. The Nauru agreement is the first example.

At the South Pacific Forum Conference, FSM called for a meeting on sub-regional cooperation in fisheries management. The first meeting was held in Nauru in April 1981. After several preparatory meetings, a draft proposal was signed in November 1981 by FSM, Kiribati, the Marshall Islands, the Republic of Belau, Nauru, Papua New Guinea, and the Solomon Islands. The agreement came into force on August 14, 1983 (58) (Figure 11).

The purpose of the agreement is to wisely manage fisheries resources, particularly highly migratory species, with a sub-regional approach based on the spirit of the Convention on the Law of the Sea. Under the agreement, all fishing vessels which intend to enter into the common management area of the above seven countries must apply for a regional access license, and pay an access fee to enter the region. The registers will be kept at the South Pacific Forum Fisheries Agency which acts as the common office. The priority of awarding licenses is first to member neighboring states, next to other member states, and then to distant-water fishing nations. Vessels of non-member countries must accept the common terms and conditions required by the agreement. These include conditions for the license application, adoption of the on-board observer system, the form of fishing operation log books, reports on entry to and exit from the common management area, other information necessary for the fishing operation and the common vessel mark.

The role of South Pacific Forum Fisheries Agency in the Nauru Agreement has

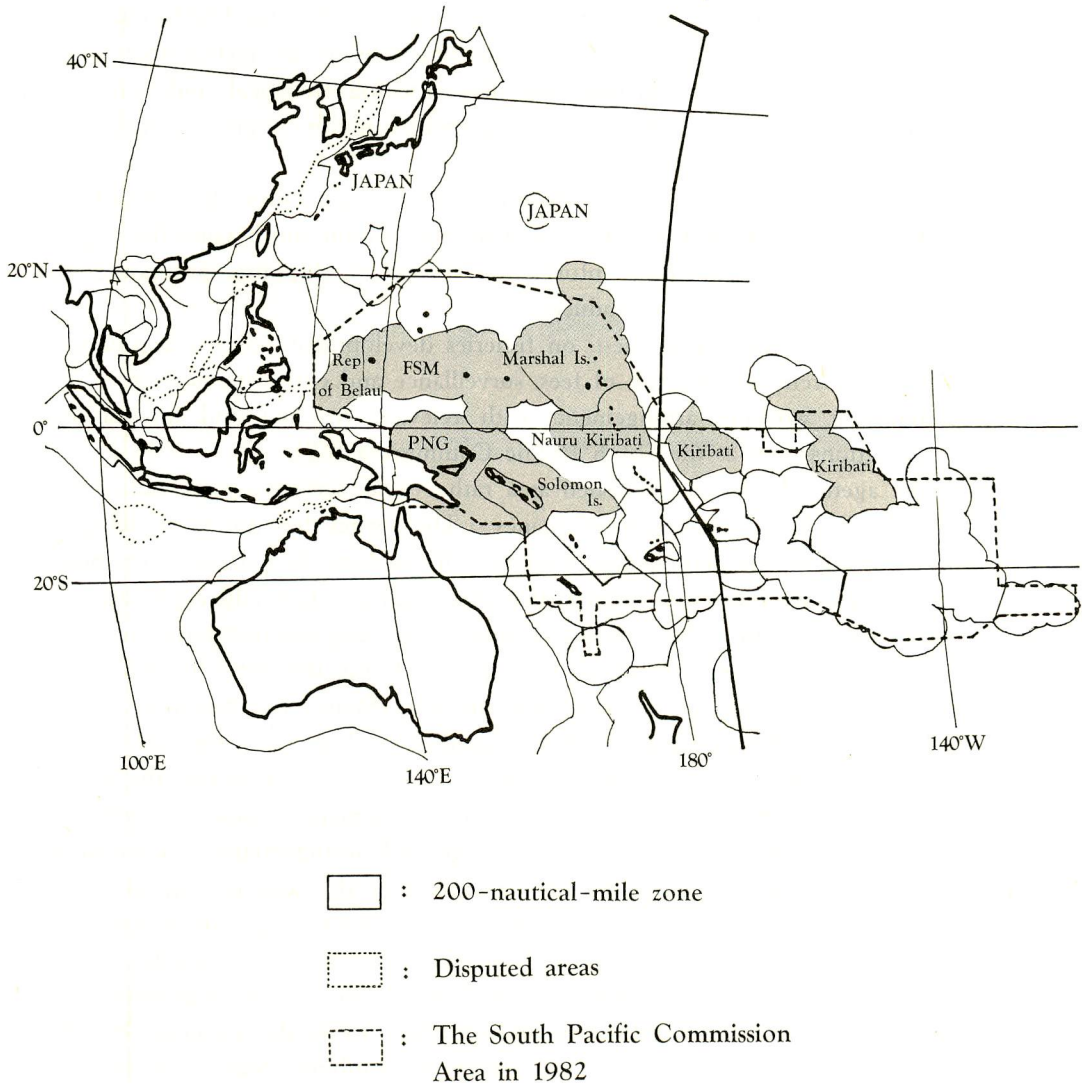


Figure 11. Proposed waters of the common management area covered by the Nauru agreement (shaded areas)

been important and the agreement is the first result of the South Pacific Forum Fisheries Agency philosophy. The South Pacific Forum Fisheries Agency was established in 1979 for the purpose of promoting the conservation and rational utilization of the fish stocks of the South Pacific region. The agency is open to all Forum countries and all coastal state countries in the South Pacific who support the sovereign rights of the coastal state to conserve and manage living resources including highly migratory species, in its 200 nautical mile zone. The major functions of the agency are :

- a) collecting, analyzing, evaluating, and disseminating statistical and biological information on fisheries resources, in particular highly migratory species, of the region ;
- b) collecting and disseminating information on management procedures, legislation and agreements adopted by other countries both within and beyond the region ;
- c) collecting and disseminating information on prices, shipping, processing and marketing of fish and fish products ;
- d) providing assistance on request, on fisheries development policies, negotiations, issuing of licenses, collection of fees, surveillance and enforcement ; and
- e) establishing working arrangements with relevant regional and international organizations such as the South Pacific Commission (67).

Thus, the agency has been established as a rather weak service agency rather than as anything approaching a management agency. The agency has not been delegated any positive powers by the participating nations (30). In fact, the nations of the South Pacific have enormous differences among themselves. Distribution and exploitation of fish resources are uneven. As a result, bilateral tuna negotiations have been the dominant form of tuna management in the region. During the 1980/81 period, the agency assisted nine countries (Vanuatu, Kiribati, Fiji, Nauru, the Solomon Islands, FSM, the Republic of Belau, Tuvalu, and the Kingdom of Tonga) on the 200 nautical mile zone management and related bilateral negotiations. (68). However, the agency feels a great responsibility for regional fisheries management because of problems dealing with highly migratory species through bilateral arrangements. A proposed regional management program for the tuna resources of the western central Pacific produced by the agency (69) is almost the same as the Nauru Agreement except for the member states (the Nauru Agreement is signed by only seven countries, not all member countries of the agency) and financial benefits (the Nauru Agreement does not indicate how to calculate access fees and royalties, while the proposal indicates this explicitly and includes royalties not only from the combined zones, but also from the enclosed high seas).

The agency perceives the objectives of coastal states as the protection of the sovereign rights of coastal states to manage the resources which occur within their fisheries zones and to coordinate and harmonize their fisheries policies to effectively implement the Regional Management Plan ; to allow distant-water fishing nations' access to the region on terms and conditions more favorable to the coastal states than is presently the case and thus to obtain a fair return from the resources for members ; to promote involvement by coastal states in all phases of the tuna industry ; to promote profitable and efficient fishing operations within the region ; and to promote the

conservation and national utilization of the fisheries stocks of the region.

The Agency also recognizes the interests of distant-water fishing nations as the gaining of access to the combined fisheries zones at a reasonable cost; to obtain simple entry and exit procedures to and from the region; to obtain access to ports for supplies and recreation; to be able to stay on the fish as they move from one zone to another without having to seek new licenses from each country; and to pay a reasonable fee for fish taken. The plan includes the following proposition as a model: jurisdiction over highly migratory species swimming within respective fisheries zones of coastal states; cooperation in the research, management and conservation of stocks in their combined fisheries zones to ensure optimum yields and maximum benefits; common office for coordinating this plan, fishing licenses and access priority with the agreed terms and conditions for fishing with the combined zones of member states; restricted areas; financial benefits including access fees, royalties from the combined zones and the enclosed high seas, and grants to member nations; methods of catch verification; and enforcement.

The Nauru Agreement was first introduced to Japan at the negotiating table with Papua New Guinea in July 1982. Since then, this agreement was explained at the negotiating table by the Solomon Islands, the Republic of Belau, Kiribati, FSM, and the Marshall Islands. The negotiations were made more difficult because the concept of a regional access license was not familiar to the Japanese.

IV. Current Strategies of Japanese Distant-Water Tuna and Skipjack Fisheries

In recent years there has been an increase in the bargaining power of coastal states vis-a-vis Japanese fisheries. Japan's distant-water fisheries have been forced to pay fishing fees to coastal states or engage in joint-ventures with them. Japanese distant-water tuna and skipjack fisheries are in serious transition, because of cost inflation due to oil price increases beginning in 1973 and a stagnant demand for the fish though the earlier confrontation with the oil crisis has reduced some of the impacts of stresses later brought on by extended maritime jurisdictions. The current strategies of the industry consist in domestic adjustment, which lessens economic burdens of the fishermen and/or strengthens their economic viability, and external strategies concerning other coastal nations. During 1976-1980, the conventional tuna and skipjack fisheries received government-subsidized-low interest loans of 53,980,556,000 yen (\$ 202,598,000) (698 cases) to cope with the transition (102).

1) Domestic Adjustment

The Japanese tuna and skipjack fisheries industry took drastic steps in the 1970s and early 1980s with government assistance. These steps included measures for saving fuel, tuna and skipjack price stabilization, withdrawal of fishing vessels from the fleet, switching to purse-seine fishing, and adjustment of nearshore fishing grounds.

i) Energy saving operations and devices

Following the oil crisis in 1973, the importance of energy saving operations and devices was strongly felt by tuna and skipjack fishermen (Table 8). Hence the fishermen have tended to avoid unnecessary trips to far seas, choose optimum routes, take advantage of ocean currents, and operate at optimum speeds. At the same time, other energy saving efforts resulted in the construction of energy-efficient tuna and skipjack fishing vessels that are slenderer than ordinary ones. The following innovations have been considered: improvement in the shape of the front and rear of the vessel, enlargement of the deck area, use of larger propellers at low revolutions, and recently developed self-polishing paint for vessel bottoms, auxiliary sailing devices, reduction of auxiliary engine dependence, use of lower-quality oil, and utilization of exhausted heat. Intensified research efforts have provided a further scientific basis for energy saving devices. Although freezing and storing usually consume 30 to 40 percent of fuel consumed by tuna vessels, and about 80 percent of energy is lost as heat, partial additions of heat resistant materials for currently in use can reduce heat loss by 20 percent. Changes in freezer covers can increase heat efficiency by 20 percent, changes from air freezing to CaCl (calcium chloride) brine freezing can save 50% of the energy, and careful handling can save additional energy. These principles can also be applied to the construction of new vessels.

Starting in 1976, the government provided a special interest subsidy for fuel oil purchased by tuna and skipjack fishermen. As a result, fishermen were able to borrow money at low interest rates of 3.5% to 5.7% from 1976 to 1981 period (102).

ii) Tuna and skipjack price support programs

A pre-impact of the extended maritime jurisdictions was speculation in tuna and skipjack prices. As a result, prices of tuna and skipjack increased up to a point in 1977 where consumers stopped buying them. Such impacts were particularly severe in albacore, yellowfin and skipjack fishing (Table 9). In addition, yen-appreciation due to an increasing Japanese trade balance against the United States (one of the largest export markets for Japan) beginning in late 1977 reduced the revenue of tuna and skipjack processors for export. To compensate for this reduction in the revenue, the processors forced the producer prices of tuna and skipjack down. Moreover, continuously good harvests of skipjack in the Pacific during the 1970s and the early 1980s have increased the domestic stock in the United States, and further in May 1978 the FDA eased its guideline (originally set in December 1970) for the mercury content in imported tuna from 0.5 ppm to 1.0 ppm. As a result, the demand for imported skipjack for tuna canning in the United States was substantially reduced. They have kept skipjack prices at the producer's level quite low in Japan (Tables 9 and 10).

To improve the skipjack price, the Fisheries Production Adjustment Association Act was revised to establish the Skipjack Production Adjustment Association on October 17, 1978. The revised act applied to 251 vessels out of 292 distant-water skipjack pole-and-line vessels in Japan. Except for some vessels registered to Kagoshima prefecture, these vessels ceased their fishing operations for 30 successive days from

Table 8. Cost inflation in tuna and skipjack fishing in Japan : 1972-1982

Category	Item Year	Nominal costs (\$)	Index (1972=100)					% in total costs	
			1972	1974	1976	1978	1980	1982	1972
	Wholesale price index (all items)	100	152	165	164	207	213	—	—
	Consumer price index (all items)	100	139	170	175	213	224	—	—
Fuel cost	(Skipjack 50-100 gmt)	8,377	338	542	584	1372	1672	5.7	24.7
	(Skipjack 200-500 gmt)	39,760	264	399	331	748	841	8.2	32.1
	(Longline 50-100 gmt)	12,195	271	427	390	827	945	7.1	24.3
	(Longline 200-500 gmt)	36,643	199	371	367	703	837	9.4	24.3
Wage	(Skipjack 50-100 gmt)	71,951	128	258	213	257	252	49.1	32.0
	(Skipjack 200-500 gmt)	222,925	113	163	121	154	146	46.2	31.1
	(Longline 50-100 gmt)	74,571	133	186	201	204	202	43.6	31.8
	(Longline 200-500 gmt)	158,873	142	196	226	248	287	40.5	35.8
Bait cost	(Skipjack 50-100 gmt)	23,182	118	189	207	210	223	15.8	9.1
	(Skipjack 200-500 gmt)	40,825	121	146	151	149	140	8.5	5.5
	(Longline 50-100 gmt)	8,922	178	256	336	273	305	5.2	5.7
	(Longline 200-500 gmt)	41,539	94	161	196	178	182	10.7	6.0
Other supplies cost	(Skipjack 50-100 gmt)	9,114	187	271	303	347	409	6.2	6.6
	(Skipjack 200-500 gmt)	24,081	173	239	304	334	360	5.0	8.3
	(Longline 50-100 gmt)	21,032	178	256	245	214	195	5.2	8.6
	(Longline 200-500 gmt)	38,321	135	187	219	245	278	9.8	8.5
Service charges	(Skipjack 50-100 gmt)	13,714	226	320	501	594	821	9.3	19.9
	(Skipjack 200-500 gmt)	49,052	131	176	311	397	372	10.2	17.5
	(Longline 50-100 gmt)	14,211	203	252	433	609	639	8.3	19.1
	(Longline 200-500 gmt)	45,263	137	195	278	353	479	11.6	17.2
Total operating costs	(Skipjack 50-100 gmt)	126,334	154	254	274	366	414	86.2	92.3
	(Skipjack 200-500 gmt)	376,640	128	175	183	259	262	78.1	94.5
	(Longline 50-100 gmt)	130,932	157	223	260	312	325	76.6	89.5
	(Longline 200-500 gmt)	319,643	136	212	245	305	362	82.1	91.8
Total fixed costs	(Skipjack 50-100 gmt)	20,201	122	192	237	212	214	13.8	7.7
	(Skipjack 200-500 gmt)	105,536	83	72	64	66	54	21.9	5.5
	(Longline 50-100 gmt)	40,036	126	104	138	177	124	23.4	10.5
	(Longline 200-500 gmt)	69,792	120	93	110	133	149	17.9	8.2
Total costs	(Skipjack 50-100 gmt)	146,532	150	245	269	344	386	100.0	100.0
	(Skipjack 200-500 gmt)	482,172	118	152	157	217	216	100.0	100.0
	(Longline 50-100 gmt)	170,968	150	195	231	280	278	100.0	100.0
	(Longline 200-500 gmt)	389,435	134	191	221	275	324	100.0	100.0

1) Exchange rate used : 308.00 yen/\$ for 1972.

Sources : Compiled from JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES 1973-1984a (20) and THE BANK OF JAPAN 1981 (5).

Table 9. Major tuna and skipjack stocks and landings with average market prices in Japan : 1976-1982

Items	1976			1978			1980			1982		
	Stocks and landings (mt)	Price (yen/kg)	Stocks and landings (mt)	Price (yen/kg)	Stocks and landings (mt)	Price (yen/kg)	Stocks and landings (mt)	Price (yen/kg)	Stocks and landings (mt)	Price (yen/kg)	Stocks and landings (mt)	Price (yen/kg)
Albacore:												
Fresh	8,083	—	8,956	—	5,990	—	8,913	—	28,281	482	28,281	482
Frozen	30,831	399	21,661	340	28,239	449	28,239	449	39,359	401	39,359	401
Frozen fillet	73,993	396	59,207	292	41,457	396	41,457	396	12	—	12	—
Frozen fillet	117	443	172	—	19	—	19	—	—	—	—	—
Other tuna: Stock	—	—	28,542	—	26,355	—	31,695	—	—	—	31,695	—
Bigeye: Fresh	17,144	996	17,899	1,044	14,086	1,175	11,863	1,348	14,086	1,175	11,863	1,348
Frozen	74,868	712	84,254	719	80,484	831	81,656	933	80,484	831	81,656	933
Frozen fillet	240	562	152	554	110	890	30	816	110	890	30	816
Bluefin: Fresh	3,025	1,207	14,817	639	7,618	1,286	19,620	1,067	7,618	1,286	19,620	1,067
Frozen	25,606	1,556	28,138	1,879	27,310	2,066	18,494	2,980	27,310	2,066	18,494	2,980
Frozen fillet	1,735	1,141	1,446	1,152	1,145	1,648	169	2,278	1,145	1,648	169	2,278
Yellowfin: Fresh	28,363	584	34,527	457	35,825	674	18,447	812	35,825	674	18,447	812
Frozen	40,976	482	37,521	479	49,748	519	68,694	474	49,748	519	68,694	474
Frozen fillet	100	436	172	417	19	591	12	564	19	591	12	564
Skipjack: Stock	8,938	—	14,505	—	7,903	—	14,694	—	14,694	—	14,694	—
Fresh	72,200	284	78,261	242	96,436	324	70,167	335	96,436	324	70,167	335
Frozen	158,302	217	173,241	181	162,128	305	169,473	235	162,128	305	169,473	235
Wholesale price index (1975=100)		105.0		104.3		133.6		137.9		133.6		137.9
Consumer price index (1975=100)		109.3		122.6		137.2		147.8		137.2		147.8
Foreign exchange rates (yen/\$)		296.55		210.44		226.74		249.05		226.74		249.05

Sources: Compiled from JAPAN FISHERY AGENCY 1976-1984 (18), THE BANK OF JAPAN 1981 (5) and IMF 1982-1984 (11). Although landings are total landings of major 67 ports in Japan, the price are average market prices excluding Tokyo prices.

Table 10. Tuna and skipjack for domestic consumption in Japan : 1972-1982¹

	Unit : metric ton (mt)					
	1972	1974	1976	1978	1980	1982
Total tuna and skipjack catches ²	620,383	771,235	764,196	815,922	799,355	741,000
Imports by country :						
Korea	21,696	37,752	69,664	77,001	55,235	55,754
Taiwan	14,817	14,976	18,104	27,614	28,514	30,955
Panama	874	2,612	2,558	1,903	5,653	4,917
Italy	4,088	824	13	—	—	—
U. S. A.	985	260	1,292	1,463	—	—
Others	10,380	7,837	16,184	9,658	7,563	45,368
Subtotal	52,842	64,261	107,815	117,629	98,965	136,994
Total Supply	673,225	835,496	872,011	933,551	898,320	877,994
Exports : Frozen	99,307	139,357	70,304	88,532	91,200	41,060
(to the U. S. A.)	(89,284)	(99,147)	(44,694)	(38,732)	(34,634)	(9,592)
Canned ³	125,688	108,940	110,000	99,600	88,260	87,000
(to the U. S. A.)	(58,696)	(46,405)	(47,579)	(38,796)	(29,752)	(31,595)
Subtotal	224,995	248,297	180,304	185,132	179,460	128,085
Tuna and skipjack for domestic market (Total)	448,230	587,199	691,707	748,419	718,860	749,909
(1972 = 100)	100	131	154	167	160	167
Per capita supply (kg)	4.17	5.23	6.13	6.51	6.16	6.33

1) Compiled from JETRO 1972-1984 (15).

2) Modified from JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES 1977-1984 (22).

3) Converted to live weight by multiplying canned tuna weight in metric tons (1 case = 9.6 kg) by 2.38.

November 20, 1978 to February 28, 1979. Assisting this program, the Japanese government financed 3,400 million yen (\$ 16,156,624) which was used to ease the fishermen's interest burden from the borrowings. As a result, skipjack fishermen could borrow money at interest rates of less than 4.6%. The upper limits of such borrowings were 11 million yen (\$ 50,196) for less than 200 gmt vessels, 13 million yen (\$ 59,323) for 200-300 gmt vessels and 14 million yen (\$ 63,886) for 300-500 gmt vessels.

On the other hand, the industry put an emphasis on promoting sales, through direct sales and advertisement and on albacore fishing, which directly improved the fishermen's gross income. To reduce impacts of tuna imports on tuna prices, the government also purchased imported tuna and some frozen tuna for two months from December 1, 1980 to January 31, 1981. These tuna were sold after March, 1981, i.e., after storing more than two months. Through direct sales, 4,722 metric tons of tuna and skipjack were marketed in 1980 while 4,671 metric tons of tuna were handled by government purchase.

In addition, ways were examined to increase value added, decrease production costs, and adopt more efficient gear. Since consumption of fresh skipjack is limited to landing areas for nearshore fishing season from March to July, there is a potential to market frozen skipjack for "sashimi" (rawfish) and "tataki" (lightly cooked fish) during the off-season, the potential demand being estimated at 30,000 to 40,000 metric tons. Two factory ships for such purposes were operated for the first time in 1979. The result was promising, and more than twenty such vessels are expected to be operating profitably in this way. In addition to energy-saving operations and devices, adoption of automatic pole-and-line operations (to reduce labor costs), low temperature bait-stocking tanks (to decrease bait mortality), and artificial baits have been explored.

With the revision of the Fisheries Special Reconstruction and Adjustment Act in April 1982, a tax benefit (30% extra-depreciation) associated with energy-saving vessel operations was allowed, and the industry has proposed the construction of 577 tuna and skipjack fishing vessels (353 distant-water fishing vessels and 224 nearshore tuna and skipjack fishing vessels) during 1982-1986 (111).

iii) Withdrawals of fishing vessels from the fleet

The Fisheries Special Reconstruction and Adjustment Act was enacted on June 1, 1976 to reconstruct small and medium scale fisheries, including tuna and skipjack fisheries. Under the act, new government loans and subsidies have been provided for withdrawals of fishing vessels from the fleet. Since the financial state of tuna and skipjack fishing enterprises was extremely poor (Table 11), expectations for the act were great among fishermen. According to the Japanese Federation of Tuna and Skipjack Fisheries Cooperatives' plan, 164 longliners (47,400 gmt) out of 887 cooperative distant-water longliners (237,075 gmt) and 55 pole-and-line vessels (19,460 gmt) out of 157 cooperative distant-water pole-and-line vessels (58,208 gmt) were withdrawn from fishing during 1980-1982. Under the act, 150 million yen (\$ 661,551) per average size vessel (278 gmt) were paid in compensation for withdrawal, except for 21 skipjack pole-and-line vessels withdrawn in 1980 (163 million yen or \$ 718,885). Withdrawals of skipjack pole-and-line vessels during 1980-1981 were associated with

Table 11. Rates of return on gross income and capital investment by type: fulltime operation (1972-1982)

Categories	Unit: %											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	
Rates of return on gross income ¹												
Skipjack pole-and-line (50-100 gmt)	8.2	9.3	0.9	-0.3	5.3	-1.2	-7.6	-6.4	-2.5	-14.5	-11.2	
Skipjack pole-and-line (200-500 gmt)	4.2	3.9	-0.2	-14.1	5.4	-4.7	-21.1	-15.8	-6.5	-14.6	-18.6	
Tuna longline (50-100 gmt)	8.0	2.2	-11.3	-8.3	1.2	-0.3	-16.7	-9.8	-24.6	-17.7	-12.6	
Tuna longline (200-500 gmt)	5.8	6.3	2.0	5.6	3.3	1.6	1.5	6.7	-9.8	-13.8	-8.1	
Rates of return on capital investment ²												
Skipjack pole-and-line (50-100 gmt)	8.0	9.5	0.9	-0.3	6.5	-1.2	-5.7	-5.2	-2.5	-12.9	-9.8	
Skipjack pole-and-line (200-500 gmt)	3.0	2.8	-0.1	-8.1	4.1	-3.5	-12.9	-10.2	-5.4	-11.8	-13.9	
Tuna longline (50-100 gmt)	6.7	1.8	-9.8	-6.8	1.2	-0.3	-14.9	-9.3	-19.2	-12.6	-9.3	
Tuna longline (200-500 gmt)	4.1	4.7	1.6	5.2	3.3	1.7	1.7	8.4	-10.0	-13.7	-8.6	

$$1) \text{ Rate of return on gross income (\%)} = \frac{\text{Gross income} - \text{Total costs}}{\text{Gross income}} \times 100$$

$$2) \text{ Rate of return on capital investment (\%)} = \frac{\text{Gross income} - \text{Total costs}}{\text{Capital investment}} \times 100$$

Source: JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES 1973-1984 (20).

the construction of more economically efficient skipjack purse-seiners. As a result, 10 new purse-seiners (499 gmt/vessel) were constructed. These new purse-seiners contributed to the special compensation fund of 770 million yen (\$ 3,395,960) while the pole-and-line vessels remaining in the fleet owed 10,000 yen (\$ 441) per vessel (108). Withdrawals of 12 skipjack pole-and-line vessels and 164 tuna longliners in 1982 were compensated by the cooperative vessels remaining in the fleets. Under the act, 80% of the compensation money was borrowed from the Nōrin Gyogyō Kinyū Kōko (a quasi-governmental financial institution for agriculture, forestry, and fisheries) at a low interest rate of 5% for 15 years on a three-year account, and the rest had to be paid by the fishermen who remained. However, they could also borrow money from other sources such as Nōrin Chūkin (another quasi-governmental financial institution for agriculture and forestry) at relatively low interest rates. The average payment of the remaining fishermen amounted to about 50 million yen (\$ 220,517) per vessel for tuna fishermen (including 36 million yen or \$ 157,772 on the principal), and 25 million yen (\$ 110,258) per vessel for skipjack fishermen (including 18 million yen or \$ 79,386 on the principal) (108).

As of August 1, 1982, 318 tuna and skipjack fishing vessels had been withdrawn from fishing during 1981-1982. This number includes the official withdrawals mentioned before and vessels taken out of operation primarily because of bankruptcy (110). The total number of tuna and skipjack vessels decreased from 2,652 (424,784 mt) in 1975 to 2,075 (360,010 gmt) in 1982, and an additional 13 distant-water skipjack pole-and-line vessels (4,490 gmt) were withdrawn in 1983. For this new withdrawal, 1,347 million yen or \$ 5,408,552 (\$ 1,205 or 300 thousand yen mt) were compensated by the Japanese government while another 1,347 million yen (\$ 5,408,552) will be owed by 77 vessels remaining in the fleet (\$ 180 or 44,900 yen/gmt/remaining vessel) (113).

iv) New legal framework for nearshore tuna and skipjack fishing grounds

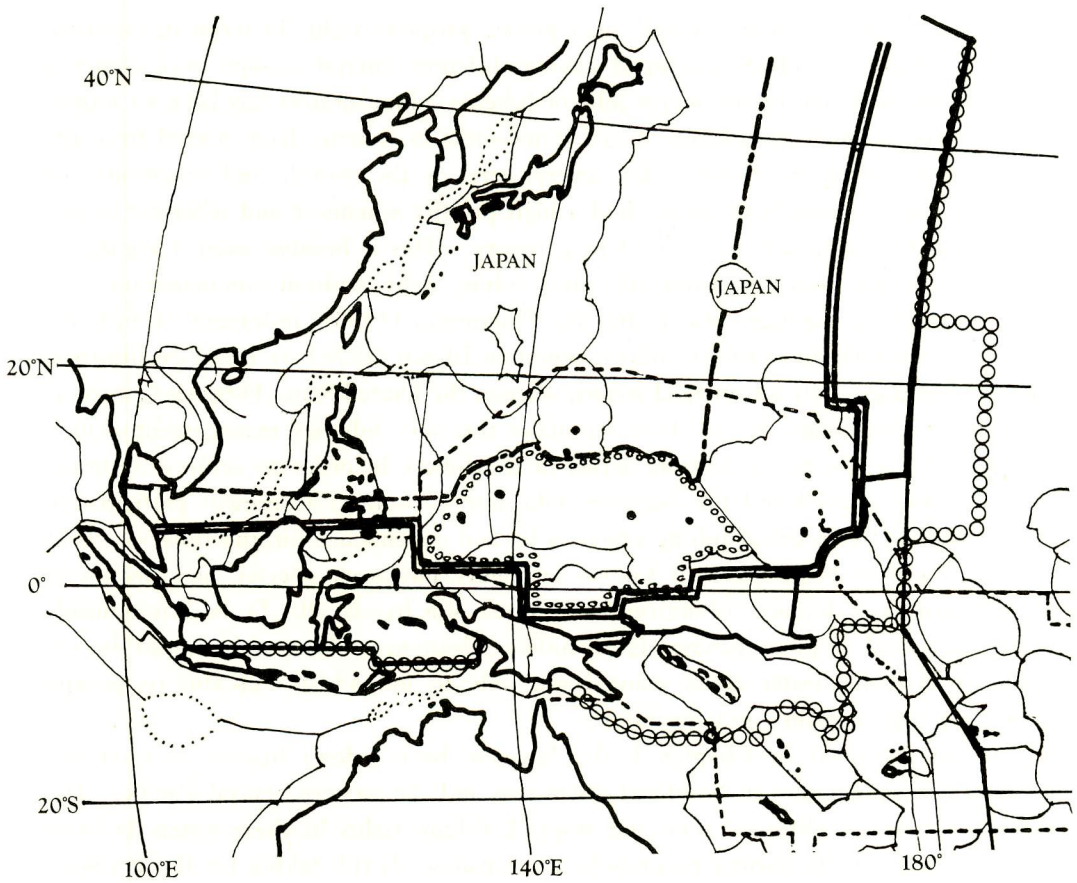
Along with vessel withdrawals, a new legal framework for nearshore tuna and skipjack fishing grounds was adopted at the 4th renewal of tuna and skipjack fisheries licences in 1981 (Figure 12). As a result, nearshore fishing grounds were expanded to the east and the south, and nearly 120 KINKAI OTSU, 20-30 KINKAI KŌ, and 7-8 distant-water tuna and skipjack fishing vessels were withdrawn. KINKAI HEI area is for Okinawan vessels. The entry to the KINKAI KŌ I area east of 180° was also limited to 90 vessels. This thinning-out strategy has increased the mobility of remaining fleets.

2) External Strategies

External strategies for access to extended maritime jurisdictions include historical fishing rights, legal-*Informal Composite Negotiating Text (ICNT)*, and bilateral agreements.

i) Historical fishing rights

Fishing rights are common property use rights, not private property rights. There-



External boundaries

- : KINKAI KŌ A vessels (80-120 gmt)
- : KINKAI KŌ B vessels (80-120 gmt)
- === : KINKAI OTSU A vessels (20-80 gmt)
- - - : KINKAI OTSU B vessels (20-80 gmt)
- ⊠ : KINKAI HEI vessels (20-80 gmt)
- : 200-nautical-mile zone
- ⋯ : Disputed areas
- ⋯ : The South Pacific Commission Area in 1982

Figure 12. New legal framework on the nearshore tuna and skipjack fishing grounds (as of September, 1, 1981) (modified from SUISAN SHINCHO SHA 1983)

fore, fishing rights are more flexible than private property rights in terms of common use. Conflicts have often developed among different interest groups over common property use, and one of the major jobs of fisheries administrators has been to reduce the conflicts as much as possible. Legal frameworks in fisheries have started from the adoption of customary fisheries law everywhere in the world, and traditional or historical fishing rights have always had a high priority whenever and wherever a new limited entry scheme was introduced to a fishery. This is because even a regulatory scheme for public use should not take away fishing rights without compensation.

Claims on archipelagic waters by the Philippines (1955), Indonesia (1960), Fiji and Papua New Guinea (1977), and the Solomon Islands (1978) are based on historical rights in geographically advantaged waters, whereas the United States Fisheries Conservation and Management Act of 1976 stipulates that any fisheries management plan... may establish a system for limiting access to the fishery in order to achieve optimum yield if... the council and the Secretary take into account... a) present participation in the fishery ; b) historical fishing practices in, and dependence on, the fishery...(125).

Tuna and skipjack are well known as highly migratory species, and until very recently tuna and skipjack fishing on the high seas was free to all. To be economically viable, tuna and skipjack fishing rights, unlike subsistence fishing rights, must be use rights of extensive water areas, granted not only to individuals but also to groups, permitting high mobility and flexibility.

As we described in Chapter 1, the Japanese have a long history of tuna and skipjack fishing activities in Southeast Asian seas and the western central Pacific. The Japanese claim on historical tuna and skipjack fishing rights in these waters is based on 1) discovery of the fishing grounds by the Japanese, 2) risk-taking for the development by the Japanese, 3) continuous and habitual Japanese fishing activities in the region, 4) long legal practices under the Japanese fisheries licensing system, and 5) the importance of the fishing.

Japanese tuna and skipjack fishing in the region have been closely tied with distant-water fishing promotion and adjustment policies of the governments and fishing federations in Japan. Therefore, it is appropriate to consider the fishing activities as aggregate rather than individual. Japanese research, training and individual fishing vessels have discovered tuna and skipjack fishing grounds in the region. Except for the Sulu, Celebes, and Banda Seas, there has been little local tuna and skipjack fishing, because there has not been a good market. Directly or indirectly, the Japanese took risks to develop tuna and skipjack fishing in the region. It takes many years to make profits through fishing even at overseas fishing bases. The Japanese have not only worked through all the problems associated with production, processing, and marketing of tuna and skipjack in the region, they have also fostered local skipjack fisheries. Further, based on both domestic and overseas bases, the Japanese have continuously and habitually fished tuna and skipjack in the region except during war. The importance of the Japanese tuna and skipjack fishery in the region is highlighted by the fact that it will be difficult for the fishermen to get out of fishing. However, they now have to pay access fees and/or other royalties to fish tuna and skipjack in the 200-nautical-mile zones and archipelagic waters of coastal states in the region.

Despite the fact that the new 200-nautical-mile regime has consisted of unilateral claims until ratification of the new law of the sea treaty, the Japanese historical tuna and skipjack fishing rights in the region have been taken away by coastal states without adequate compensation. The Philippines claim on "International Treaty Limits", signed by the United States and Spain in 1868 and 1900 and by the United States and Great Britain in 1930, applied only to the signatory countries, not to Japan.

ii) Legal-Informal Composite Negotiating Text (ICNT)

A tendency toward establishing national control over more than just fishing for tuna and skipjack was facilitated by the declaration of 200-nautical-mile exclusive economic zone (EEZ) and archipelagic regimes. After the 5-year-long deliberations of the United Nations Conference of the Law of the Sea (UNCLOS III), the first Informal Composite Negotiating Text (ICNT) was drafted in 1978 (122). It was revised four times, and the final protocol was signed by 140 countries and 8 quasi-governmental bodies in Jamaica on December 10, 1982. The contents of the 200-nautical-mile EEZ and archipelagic regimes in the ICNT were almost unchanged after revision 2 and have become an assumed customary international law (39, 122, 123 and 124).

Assuming that Japan has established historical tuna and skipjack fishing rights in the EEZs and archipelagic waters in Southeast Asia and the western central Pacific, can such rights be expected to continue in the future after the new treaty is concluded? This question is accompanied by two related questions: 1) Which should be given priority, historical fishing countries or land-locked or geographically disadvantaged states? 2) Is a coastal state free to choose any country it wants in allowing entry to catch its surplus from the maximum allowable catch, as prescribed in the ICNT (Revision 2) (124)? To find answers to these questions, it is imperative to compare some relevant provisions in the ICNT (Revision 2) with their counterparts in the original ICNT.

The ICNT (Revision 2) creates the EEZ beyond and adjacent to territorial seas (Art. 55). The coastal state has "sovereign rights over the EEZ for the purpose of exploring and exploiting, whether living or non-living, of the sea-bed and subsoil and the superadjacent waters" (Art. 56).

According to Art. 61, the coastal state shall by itself determine the allowable catch of living resources in its EEZ (Art. 61 (1)). If the coastal state does not have the capacity to harvest the entire allowable catch, it shall give other states access to the surplus of the allowable catch (Art. 62 (1)(2)). In this case, the coastal state shall take into account the significance of the living resources of the area to its economy and its other national interests, the requirements of developing states in the region or subregion, and the need to minimize economic dislocation in states whose nationals have habitually fished in the zone or who have made substantial efforts in research and identification of stocks (Art. 62 (3)).

It is not clear if other countries will be allowed access to the surplus of the living resources on an order of priority basis determined by the coastal state, if the coastal state is free to choose any country for access, or if the coastal state is required to

allow access to all countries indiscriminately.

It is well known that land-locked and geographically disadvantaged (LL-GD) states have tenaciously insisted throughout the UNCLOS III that access to living resources within the EEZ of their neighboring coastal states be guaranteed. Has this fact, i.e., the concerted effort of LL-GD states, made any impact on the treaty-making? If it has, one should interpret Article 62 and other provisions more favorably toward those states, and the coastal state will be somewhat bound by the treaty to give priority to such states to enter its economic zone, even if it should wish otherwise, e.g., to give first access to a country traditionally or habitually fishing in the coastal state's waters.

As we saw above, the revised ICNT, Art. 62 (Utilization of the living resources) (2) is partially different from the same article and paragraph in the original ICNT in that the former added the following words at the end of the paragraph: "...having particular regard to the provisions of articles 69 (Right of land-locked states) and 70 (Right of states with special geographical characteristics), especially in relation to the developing states mentioned therein".

Articles 69 and 70 have been partially modified to the advantage of LL-GD states. According to the original texts, these states were to have the right to participate in exploiting the surplus of the living resources of the exclusive economic zones of adjoining coastal states on an equitable basis; whereas the revised texts give such states access to the surplus of living resources of the EEZ of coastal states of the same subregion or region.

More important change in the text is seen in the entirely modified paragraph (3) of Article 69 and the identical paragraph (4) of Article 70 (3). In the original text, the paragraph simply provided that the coastal states may grant to land-locked states of the same region equal or preferential rights for the exploitation of the living resources in the EEZ, but in the revised paragraph, even "when the harvesting capacity of a coastal state approaches a point which will enable it to harvest the entire allowable "catch", the coastal state and other states concerned shall cooperate in the establishment of equitable arrangements to allow for participation of developing land-locked states in the same subregion or region on terms satisfactory to all parties.

It must be mentioned, however, that while the position of land-locked and geographically disadvantaged states seems to have been strengthened considerably by these articles, they play only a secondary role beside Article 71, which clearly stipulates that Articles 69 and 70 "shall not apply in the case of a coastal state whose economy is overwhelmingly dependent on such resources."

The revision of these provisions as discussed above implies that Article 62 (3) should be interpreted as giving priority to LL-GD states in harvesting the surplus of living resources, leaving on the waiting list those states whose nationals have habitually fished the area.

Thus, within the context of the new ocean treaty, Japanese fishing vessels can no longer be sure that coastal states will allow them to continue their fishing activities, even if the latter are willing to do so, insofar as other neighboring states are interested in the surplus of fish off the coasts of those states. For instance, the Philippines will not be able to grant access to Japanese fishing vessels without protest from other

countries (LL-GD states) of the same region if the latter wish to fish in the Philippines EEZ. Such a possibility is not purely academic, as fish are becoming increasingly scarce in the region and countries like Thailand are rapidly developing their long-distance fishing technology.

While Japanese historical tuna and skipjack fishing rights within the EEZs are circumvented by factors not exclusively controllable by the coastal states, the same rights should not confront similar obstacles within archipelagic waters. Inasmuch as such waters are subject to a more complete sovereign control, their judicial status is similar to territorial waters and possibly internal waters, as both Indonesia and the Philippines have long claimed.

There is no provision granting to LL-GD states special access to living resources within archipelagic waters, while Article 51 recognizes and requires archipelagic states to recognize traditional fishing rights and other legitimate activities of immediately adjacent neighboring states within archipelagic waters. In other words, the archipelagic states may exclude all other states except adjacent states which have traditionally been fishing therein. They are free also to bring in any other states as they so desire.

Another important issue pertains to the interpretation of highly migratory species (Art. 64). According to the ICNT (Rev. 2), "The coastal state and other states whose nationals fish in the region for the highly migratory species... shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone. In regions where no appropriate international organization exists, the coastal state and other states whose nationals harvest these species in the region shall cooperate to establish such an organization and participate in its work" (Art. 64(1)).

These highly migratory species include albacore (*Thunnus alalunga*), bluefin (*Thunnus thynnus*), bigeye (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*), yellowfin (*Thunnus albacares*), blackfin (*Thunnus atlanticus*), little tuna (*Euthynnus alletteratus*; *Euthynnus affinis*), frigate mackerel (*Auxis thazard*; *Auxis rochei*), pomfrets (Family *Bramidae*), marlins (*Tetrapturus angustirostris*; *Tetrapturus belone*; *Tetrapturus pfluegeri*; *Tetrapturus albidus*; *Tetrapturus audax*; *Tetrapturus georgei*; *Makaira mazara*; *Makaira indica*; *Makaira nigricans*), sail fishes (*Istiophorus platypterus*; *Istiophorus albicans*), swordfish (*Xiphias gladius*), sauries (*Scomberesox saurus*; *Cololabis saira*; *Cololabis adocetus*; *Scomberesox saurus scombroides*), dolphin (*Coryphaena hippurus*; *Coryphaena equiselis*), oceanic shark (*Hexanchus griseus*; *Cetorhinus maximus*; Family *Alapiidae*; *Rhincodon typus*; Family *Carcharhinidae*; Family *Sphyrnidae*; Family *Isunida*), cetaceans (Family *Physeteridae*; Family *Balaenopteridae*; Family *Balaenidae*; Family *Eschrichtiidae*; Family *Monodontidae*; Family *Ziphiidae*; Family *Delphinidae*), and southern bluefin tuna (*Thunnus maccoyii*).

However, "the provisions of paragraph 1 apply in addition to other provisions of this part." (Art. 64(2)). Interpretations of this paragraph are different among coastal nations. Should highly migratory species of fish in the EEZ be excluded from the coastal states' jurisdictions like the United States? or included like many coastal states in Southeast Asia and the western central Pacific?

Regardless of these differences, if the new international law of the sea treaty becomes effective, all management strategies at present must be changed from bilateral approaches to multi-lateral approaches in which highly migratory species should be regarded as common heritage, and both coastal and distant-water fishing nations are responsible for ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone. This is a difficult task and a weighty responsibility, but Japan can make a significant contribution with its experience, technology, research capability, and marketing networks.

iii) Bilateral agreements

Bilateral agreements are the dominant form of current tuna and skipjack fishing access to the EEZs of the coastal nations in Southeast Asia and the western central Pacific. These include fee fishing, joint-ventures, and technical and economic cooperation. Fee fishing has been preferred by conventional tuna longline and skipjack pole-and-line fishermen who belong to ZENGYOREN (Japanese Federation of Fisheries Cooperatives) and NIKKATSUREN (Japanese Federation of Tuna and Skipjack Fisheries Cooperatives), whereas joint-ventures have been of interest to large companies that are involved in fishing, processing, and trading. Technical and economic cooperation have often been provided in association with fee fishing and joint-venture negotiations.

Fee fishing

Total tuna and skipjack fishing access fees paid by Japan amounted to \$5,736,077 in 1978, of which 37.8% were for the region. This amount increased to \$12,830,325 in 1981, of which 56.3% were for the region. In 1982, Japan paid \$9,917,768, of which 62.9% were for the region. If we include New Zealand and Australia, this portion increased from 51.4% in 1978 to 89.0% in 1982 (Table 12). Thus, relative importance of the region for Japanese tuna and skipjack fisheries has been increasing. These fee payments basically take the form of lump sum access fees, per-vessel entry fees, catch fees, royalties, or combinations of these. We have found four distinct types of contracts, as exemplified in Indonesia, New Zealand, Papua New Guinea, and the Solomon and Kiribati Islands (Table 13).

The Indonesian arrangement (Banda Sea) is characterized by a catch fee, technology transfer, economic cooperation, and on-board inspection in return for exclusive Japanese fishing rights. The New Zealand arrangement requires expansion of the export of agricultural and forest products to Japanese markets, combined with a per-vessel entry fee. The Papua New Guinea arrangement receives a lump sum payment of an annual fishing fee from three Japanese parties (the Japanese government, ZENGYOREN and Japanese Federation of Nearshore Tuna and Skipjack Fisheries Cooperatives) and an entry fee according to vessel and crew size. Finally, the Solomon-Kiribati arrangement has a two tier quota system, i. e., a fishing fee is charged for a basic quota and an additional catch fee is charged for excess catch.

Although most coastal nations prefer simple fee arrangements such as lump sum

Table 12. Tuna and skipjack fishing access fees paid by Japan: 1978-1982

Year	Unit: US dollars				
	1978	1979	1980	1981	1982
Exchange rate (yen/\$)	210.44	219.14	226.74	220.54	249.05
Southeast Asia & western central Pacific:					
Indonesia	76,506	342,247	—	—	—
Papua New Guinea	1,206,995	114,082	877,657	1,382,062	1,694,760
Kiribati Is.	570,234	821,393	727,706	1,247,846	—
Solomon Is.	313,629	93,548	405,751	449,805	327,123
The Republic of Belau	—	415,260	498,368	264,351	200,763
Fed. States of Micronesia	—	2,099,115	2,167,681	2,187,812	2,288,697
Marshall Is.	—	438,076	873,247	1,105,468	1,234,210
French Polynesia	—	518,390	1,018,788	582,207	497,330
Subtotal	2,167,364	4,842,111	6,569,198	7,219,551	6,242,883
New Zealand & Australia:					
New Zealand	779,320	547,791	577,754	1,924,367	962,216
Australia	—	1,724,925	1,984,652	1,824,612	1,621,040
Others:					
Canada	4,752	100,392	105,848	96,581	167,276
Equador	2,328,455	511,089	493,958	318,310	252,560
Peru	389,660	1,605,366	1,552,439	1,135,848	351,415
Portugal	—	—	171,121	214,474	151,255
South Africa	66,527	92,179	95,263	96,581	169,123
Total	5,736,078	9,473,852	11,550,233	12,830,324	9,917,767

Sources: Modified from SUISAN SHINCHO SHA 1975-83 (102) and SUISAN SHA 1984 (101).

Table 13. Characteristics of tuna and skipjack fee fishing in the EEZs of Southeast Asia and the western central Pacific (as of 1979)

Characteristics by type	Fishing fee	Entry fee	Quotas	Catch fee	No. of vessels	Size of vessels	No. of trips	Species	Fishing zone	Exclusive fishing rights	Period of contract	No. of trawlers	Observer	Non-fisheries requirement
1. Indonesian style	None	None	7,000 mt	3.75 % of standard catch ¹	Less than 30 (B vessels)	A: Less than 80 gmt B: 80-300 gmt	90	Underutilized species (tuna)	Banda Sea	Japanese ¹	1 year (7/2/79-7/1/80)	4-60 ¹	Inspection at Ambon ¹	None
2. New Zealand style	None	\$ 9,000 per vessel (SBF); \$ 11,500 per vessel (others)	9,000 mt	None	150	None	None	Underutilized species (tuna)	Underexploited zone	None	4 years (9/1/78-8/31/82)	None	None	Exports of agricultural and forest products ^{1(*)}
3. P. N. G. style	\$ 1.6 ¹ million per year. (\$3,750 ZENGYOREN operation \$4,000 NIKKAI-SUREN)	\$ 37.50/ metre of vessel for 9 mos.	None	None	None	None	None	Underutilized species (tuna)	Underexploited zone	None	9 months (5/1/78-1/31/79)	None	None	None
4. Solomon-Kiribati style ²	\$ 350,000 for basic quota: 6,000 mt-skipjack; 2,000 mt-tuna longline ¹	None	15,000 mt skipjack pole-and-line; 3,000 mt for tuna longline	For over the basic quota, \$ 21 per mt skipjack; \$ 57 per mt of tuna ¹	None	None	3,500 fishing days for skipjack pole-and-line; 2,500 fishing days for tuna longline	Underutilized species (tuna)	EEZ except for the enclosed sea	None	1 year (10/1/78-9/30/79)	None	None	Supply of development equipment (Solomon \$ 50,000) ¹

1) Distinguished features. (*) Not-materialized.

2) Figures show the case of Solomon Islands.

Sources : Compiled from AKAI 1979 (1), JAPAN FISHERY AGENCY 1980 (19), NORIN KEIZAI KENKYU SHO 1977-1980 (46, 47, 48, 50, 51 and 52), SUISAN SHA 1977-1980 (70, 81, 82, 87, 89, 93, 96 and 97), SUISAN SHINCHO SHA 1975-1983 (102), and ZIMBO (126).

payments to quota assignments or catch fees, not only because of surveillance and enforcement problems but also because of income stability, Japan prefers a per-vessel entry fee to the lump sum payment system because of difficulties to collect enough money for lump sum payments from fishermen. Since catch and prices are unstable and unpredictable, the fishermen's decisions are quite flexible, i.e., they do not fish in a particular area at a particular time if they foresee that the fishing is unprofitable or less profitable than other fishing no matter how they registered. On the other hand, a per-vessel entry fee scheme based on individual responsibility for the risk of the fishing is the fairest in term that direct beneficiaries must pay for their own benefits. As we described earlier, the per-vessel entry fee scheme has been successfully applied for negotiations with New Zealand in 1978, Papua New Guinea and Solomon Islands in 1979, Marshal Islands in 1983, FSM and Kiribati in 1984.

In order to ease tuna and skipjack fishermen's burden associated with the new 200-nautical-mile regime, Japanese governments have subsidised a part of the interest for the loan. This includes the South Pacific Fisheries Promotion Fund and Fisheries Management Stabilization Fund for New Zealand Waters Fisheries. Under the South Pacific Fisheries Promotion Fund, fishermen who paid a portion of the lump sum payment, but did not fish there or did not meet the quota, are eligible to receive loans without interest for 3 years on a one-year account. From April 1, 1980 to March 31, 1981, members of NIKKATSUREN, ZENGYOREN and Overseas Purse-Seine Fisheries Group borrowed 218 million yen (\$961,454) (189 cases) from the fund. On the other hand, under the Fisheries Management Stabilization Fund for New Zealand Waters Fisheries, distant-water tuna and skipjack fishermen borrowed 2,068 million yen (\$9,120,579) (94 cases) at low interest rates, less than 3.3% for 5 years on a one-year account (102).

Joint-ventures

Tuna and skipjack fisheries joint-ventures refer to tuna and skipjack fisheries enterprises (for fishing, processing and marketing) which are jointly established by Japanese and local companies. Capital sharing is the basis for profit sharing. However, the management of tuna and skipjack fisheries joint-ventures seems to be quite difficult due to catch, as well as low price and live-bait problems for pole-and-line fishing. As a result, many joint-ventures have failed (Table 14).

A Japanese company was once allowed by coastal countries to establish a local fishing company with 100% capital investment on the condition that the company sold fish to the local counterpart, trains the counterpart's staff, and/or develops new fishing grounds. A typical example is a skipjack venture established in North Borneo in 1960, where Taiyō Gyogyō invested 100% and engaged in skipjack pole-and-line fishing and processing. Despite the many advantages of this type of joint-ventures for Japan, it has been increasingly difficult because of an increasing desire by Southeast Asian and western central Pacific countries to participate in profit sharing and management (78, 84 and 98).

In 1980, there were 30 Japanese fisheries joint-ventures in the world for tuna and skipjack. Eighteen of them were based on fishing and the rest on purchasing and

Table 14. Japanese tuna and skipjack fisheries joint-ventures: 1959-1983

Country	Name	Date of license issued	Japanese investors	Initial capital (US \$)	Japanese investment (%)	Operation	Reference (as of March 1983)
Belau, Rep. of	*Caroline Fishing Co. (CFC)**	6/77	Nantaku	n. a.	40.0	Skipjack processing	
Belau, Rep. of	*Upper and Lower Mortlock**	11/77	Nichinan Kaihatsu	n. a.	n. a.	Bait & skipjack fishing	
Brazil	Suisan S. A. Pesca Industria de la Patagonia**	1/78	Nichihaku Suisan Kōshō	n. a.	n. a.	Tuna longline fishing	Suspended
Columbia	Int'l Maritima Pesquera Ltd.**	7/74	Kōonan Suisan & Kanematsu Kōshō	n. a.	n. a.	Skipjack pole-and-line fishing	Suspended
Fiji	*PAFCO**	8/76	Itoh-Chū Shōji	600,000 (Fiji \$)	70.0	Skipjack canning	
French Antilles Is.	Curacao Pioneering N. V.**	5/63	Nihon Reizō	281,000	100.0	Tuna purchasing	
French Polynesia	*Societe de Commercialisation et al. Exploitation du Poisson**	12/76	Shinei Bōeki	66 million (Pac. Franc)	28.5	Tuna & skipjack set net fishing	
Ghana	Ghana Marine Enterprises Ltd.**	2/74	Taiyō Gyōgyō	43,500	50.0	Skipjack pole-and-line fishing	
Ghana	Ghana Tuna Fishing Development Ltd.**	3/73	Nichiro Gyogyo	360,000	33.0	Skipjack pole-and-line fishing	
Indonesia	*P. T. Toyo Fishing Industry Co., Ind.**	6/69	Hokō Suisan & Tōmen Shōji	2.7 million	94.0	Tuna transshipment	
Indonesia	*P. T. Central Java Marine Products**	12/69	Sumitomo Shōji	1 million	90.0	Tuna transshipment	
Indonesia	*P. T. East Indonesia Fishery**	3/73	Nichiro Gyōgyō & Mitsubishi Shōji	1.35 mill.	80.0	Skipjack pole-and line fishing	
Indonesia	*P. T. Momoyama Iran Development**	12/77	Momoyama Development	n. a.	n. a.	Skipjack processing	
Indonesia	*Sabang Suisan Kōgyō	12/78	Kaigai Shokusan	120,000	60.0	Trawling & processing	Failure
Indonesia	*P. T. Minaraya Ache Fishing Industry Co.**	3/80	Kaigai Shokusan	n. a.	n. a.	Skipjack processing	
Italy	Tuna Societe Perla Pesca Oceanic S. P. A.	9/64	Hōkō Suisan	500 million (Lira)	13.0	Tuna longline fishing	Closed
Ivory Coast	Societe Ivoirieme Des Pecheries	5/62	Taiyō Gyogyō	320,000	50.0	Tuna longline fishing	Dismissed
Madagascar	Societe Industrielle des Comestibles de Madagascar	8/72	Nishō-Iwai & Itoh Shokuhin	1,760	100.0	Tuna canning and marketing	Failure

Malaysia		8/59	Kaigai Gyogyō	1.5 mill. (Mal. \$)	24.5	Tuna longline & canning	Tuna fishing has discontinued since 1972
Maldive	*Malayan Marine Industries Ltd.**	7/75	Hōko Suisan & Marubeni Shōji	350,000	100.0	Skipjack marketing	
Maldive	Hōkō-Maldive Corp.**	3/78	Nihon Suisan & Tōei Line	n. a.	60.0	Skipjack canning	Closed
Mexico	Maldive Nippon**	1/79	Kōsei Shōji	n. a.	49.0	Tuna longline fishing	
Micronesia, Fed. S.	Pesqueria Integral S. A., De C. V.**	5/78	Oceania Suisan	40,000	60.0	Skipjack pole-and-line fishing	
Micronesia, Fed. S.	*Ponape Ocean Products**	1/79	Kyokuyō Gyogyō	n. a.	n. a.	Bait fishing	Suspended
Nauru Rep.	*Micronesia Ocean Development Co.**	12/76	Hassui Reizō	100,000 (A. \$)	40.0	Skipjack purse seine fishing	
Papua New Guinea	*Nauru Fishing Corp.**	?/71	Kyokuyō	320,000 (A. \$)	55.0	Skipjack pole-and-line fishing and processing	Closed in 1982
Papua New Guinea	*Gollin Kyokuyō Niugini Pty. Ltd.**	1/72	Hōkoku Suisan Nihon Suisan & Itoh-Chū Shōji	121,000 (A. \$)	90.0	Skipjack pole-and-line fishing and shrimp trawling	Shifted to shrimp fishing in Aug. 1975
Papua New Guinea	*New Guinea Marine Product Pty. Ltd.	7/72	Kaigai Gyogyō	400,000 (A. \$)	75.0	Skipjack pole-and-line fishing and processing	Closed in 1982
Papua New Guinea	*New Britain Fishing Industry Pty. Ltd. (Formerly Carpenter Kaigai PNG Pty. Ltd.)**	8/72	Kyokuyō Kaigai G. Hōkoku S., Nihon S. & Itoh-Chū Shōji	1 million (A. \$)	n. a.	Tuna canning	Closed
Philippines	*Papua New Guinea Canning Co.	6/72	Sugabu Fishing Co.	33,000	33.3	Tuna and skipjack fishing	Fishing is suspended
Philippines	*Sugabu Fishing Co.**	10/73	Ajinomoto & Yanagiya Honten	720,653	40.0	Skipjack pole-and-line fishing	Fishing is suspended
Seychelles	*Oceanic Fisheries (Phil.) Inc.**	5/70	Kaigai Gyogyō & Mitsubishi Shōji	1.4 million (Rupee)	42.0	Tuna purse-seine fishing and canning	
Solomon Islands	Mauritius Tuna Fishing & Canning Enterprises Ltd.**	7/73	Taiyō Gyogyō	500,000 (A. \$)	75.0	Skipjack pole-and-line fishing and processing	
Solomon Islands	*Solomon Taiyo Ltd.**	?/78	Solomon Taiyo Ltd.	1.5 million (A. \$)	25.0	Skipjack pole-and-line fishing	
Tailand	*Solomon Fisheries Development Corp.**	7/71	Yanagiya Honten & Okura Shōji	57,693	66.7	Skipjack processing	
Vanuatu	Ryu-Tai Suisan**	11/57	Mitsui Bussan & Taiheyō Suisan	1.14 million	90.8	Tuna purchasing	
Venezuela	*South Pacific Fishing Co.**	7/59	Chiba Prefecture	182,700	3.0	Tuna longline	Closed
Venezuela	Flota Pestuera Atamore C. A.						

* Located in Southeast Asia and the western central Pacific.

** Active in 1980.

Sources: SUISAN SHA 1968-1984 (70, 71, 72, 77, 78, 79, 80, 84, 85, 86, 88, 90, 92 and 101)

processing. Twenty of them were located in Southeast Asia and the western central Pacific.

In 1982, both Kyokuyō and Kaigai Gyogyō, however, withdrew from tuna joint-ventures in Papua New Guinea due to new corporation tax requests in addition to overall depressed activities owing to stagnant world tuna market. Unemployed Okinawan fishermen have recently contracted with the Government of Papua New Guinea for the development of a new tuna joint-venture. The path will not be easy, and this is more or less true for most tuna and skipjack joint-ventures.

On the other hand, some, but a few, of the operations have been successful. Solomon Taiyō Fishing Co., Ltd. being one of them. This joint-venture was founded in 1973 after a 1.5 year preliminary feasibility study by Taiyo Gyogyō. It is said that at least 10 years is needed for such a joint-venture to become profitable. Unlike short-term contracts that reflect investors' fears of political and economic instability such as nationalization, the Solomon Taiyō venture is a 10-year contract. The joint-venture is long enough to allow its partners to coordinate resources effectively. The problem of ensuring a supply of bait (one of the most serious problems in skipjack pole-and-line fisheries) has been successfully solved in the contract by a clause to include Okinawan fishermen, and the problem of reaching an appropriate market has been solved by a clause to use the Taiyo Gyogyō network. Two-thirds of the crews (more than 1,000 people or 5.2% of paid employees in the Solomon Islands) are Solomon Islanders, and technology transfer problems have been solved by relying on Okinawan fishermen, who seem particularly capable of working with people of other nationalities in the tropics. Each year about 20 of the best local participants are given the opportunity to visit Japan for a month in the winter, particularly encouraging people with supervisory potential. At present one-third of the total exports from Solomon Islands consists of tuna and skipjack exports through this joint-venture, and the second 10-year contract were signed in 1982.

Pacific Fishing Co., Ltd. (PAFCO) is another interesting example. Based on this joint-venture, founded in 1976, the Government of Fiji has developed a quasi-governmental tuna industry, consisting of PAFCO for processing and marketing, Ika Corporation for fishing in cooperation with Hōkoku Suisan Co., Ltd. (a Japanese fisheries company), and Fiji Can Co., Ltd. (a joint-venture with a Japanese can company: Tōyō Seikan Co., Ltd.). Owing to successful Japanese cooperation, Fisheries Division believes in more benefits from bilateral cooperations than regional cooperation in terms of fisheries development. At present, foreign tuna fishing is allowed in Fijian waters, but the fishermen must land all tuna catch at the PAFCO's pier, Levuka, Ovalau Island.

As a GDP component, fisheries sector is still relatively small. In 1980, Fiji exported F\$ 14,895,500 (4.9% of total) in fisheries, of which tuna, monopolized by PAFCO, consisted of more than 90%. Paid employees in fisheries are also small or about 1,000 (1.2%), of which 300 are working at the PAFCO's cannery in Ovalau Island. However, PAFCO's employment is the almost only way to get cash for women so that the labor union equalizes the opportunity to all Fiji villages in Ovalau Island (25 and 38).

Current Japanese participation in tuna and skipjack fisheries joint-ventures in the global arena is classified in Table 15 according to the type of business entities incorporated in Japan. Although profits are very important for success, conventional fishermen have been obliged first to minimize losses. As a result, the value of the foreign joint-ventures for Japan can be fishing employment for fishermen, relocation of the fishermen to other employment, and expansion of their company's overall business activities.

Table 15. Japanese interests in tuna and skipjack fisheries joint-ventures by type of participants

Participants	Major interests	Fishing employment	Relocation to other work	Business expansion
Fisheries cooperatives	Fishing	++	0	0
Large fishing companies	Fishing-processing-marketing	0	++	+
Processing companies	Processing-marketing	+	0	+
Trading companies	Marketing	0	0	++
Related industries	Supply of equipment	0	0	++

0 None or negligible motivation

+ Positive motivation

++ Strong positive motivation

Japanese fishery cooperatives engaged in distant-water fishing are at present confronted with a serious problem of employing their fishermen and have little time to consider business expansion. Relocating their fishermen to work other outside fishing is beyond their competence. Large fishing companies first seek to relocate employees who have lost their fishing grounds. They are also naturally interested in expansion by multiplying and diversifying their business activities. Japanese processing companies are least interested in relocating their employees through joint-ventures. Trading companies and related industries are rather recent participants in fishing joint-ventures. They have gone into the fishing industry to expand their business activities and face no serious question of employment.

Overseas technical and economic cooperation

Japanese companies under a private fisheries technical cooperation contract lend counterparts, fishing vessels, and/or a minimum number of operators and mechanics. The Japanese company generally receives a rental for the vessel, wages for operators and mechanics, and the residual profit (gross earnings minus total cost), while the counterpart receives a certain proportion of the gross earnings as a rebate. Although the total number of cases is unknown, they must be numerous. As early as 1957, nine cases were reported in this category: two each in Burma, Hong Kong and Vietnam, and three in Singapore. At present, private fisheries technical cooperation

has been carried out through joint-ventures, fee fishing, or fish purchasing in order to secure business.

The Japanese government spent \$ 30 million (7.5 billion yen) in 1982 on obligation-free grants, for the purpose of gaining mutual benefits from fisheries development cooperation with developing nations. Included as gifts were fishing boats, ports and processing facilities. These funds were used also for consultation, training, and feasibility studies through the Japan International Cooperation Agency (JICA) (14).

Since 1973, the government has subsidized the Overseas Fishery Cooperation Foundation (OFCF), which promotes Japanese private cooperation with developing nations in order to secure Japanese fishing activities in historical Japanese fishing grounds near their coasts. The Foundation provides low-interest loans (0%-3.5%) to Japanese fisheries organizations or companies which undertake fisheries cooperation overseas, provided that these funds are used for: (1) construction of fishing boats, processing facilities, refrigeration, fishing ports, etc.; (2) feasibility studies on fishing development or related technical cooperation; or (3) joint-venture fishing operations with Japan. Forty-seven such cases were financed during 1973-1981, amounting to \$ 131 million (27.3 billion yen). The OFCF also provides assistance by technical specialists (136 professionals to 27 countries by the end of 1980), training of foreign trainees (144 persons), subsidized equipment (less than 3/4 of market value), and consultation to promote international fishery cooperation (14, 35, 56, 73, 74, 75 and 76).

Japan has been one of few countries which offers technical cooperation to developing nations concerning tuna and skipjack fisheries. Major involvement by the Japanese government in tuna and skipjack fisheries development in Southeast Asia and the western central Pacific is in cooperation with Fiji, French Polynesia, the Federal States of Micronesia, Indonesia, Kiribati Islands, Marshal Islands, the Philippines, Papua New Guinea, Solomon Islands, Australia, New Zealand, Sri Lanka, the Southeast Asia Fisheries Development Center (SEAFDEC) in Bangkok, the FAO South China Sea Fisheries Development Programme (SCS programme) and the Asian Development Bank (ADB) in Manila, and the World Bank in Washington, D. C.

V. Legal, Political, and Economic Constraints on Options Available to Japanese Tuna and Skipjack Fisheries

As we have described, the options available to Japanese tuna and skipjack fisheries in Southeast Asia and the western central Pacific are very limited. In addition, there are constraints from legal, political, and economic points of view which limit Japanese fishing activities.

Legal constraints include the following: 1) unilateral legislation and its validity to Japan; 2) various interpretations and applications of Law of the Sea Treaty text provisions and other treaties; 3) enforceability of broad jurisdictional claims; 4) coastal states' control of scientific research on living resources; 5) short-term bilateral agreements; 6) various measures in preparation for nationalization; 7) absence of laws

relating to joint-ventures, such as investment guarantees and phasing out, or compensation; 8) preferential rights of regional or subregional developing countries; 9) boundary disputes among coastal states on EEZs and continental shelves; and 10) lack of a system for dispute settlements through a third party.

Political constraints include: 1) ambiguous diplomatic relations, such as recognition of states; 2) Law of the Sea conference politics; 3) power play among interest groups; 4) political instability of a coastal state; 5) the gap between a government's interest and the business community's interest; and 6) Japan's extra-regional states.

Economic constraints include: domestically 1) oil price inflation, 2) high wages, 3) export difficulties and import pressure, 4) decreasing catch per unit effort, 5) low managerial skill of small and medium scale fishermen, 6) increasing debts as a result of government subsidy and other protective arrangements, 7) displacement or unemployment, 8) changes in consumers' preference toward more meats, 9) the minimum acceptable return of profit on investment; and internationally, 1) the minimum acceptable term of joint-venture ownership, 2) increasing local demand for de facto control of management in joint-venture arrangements, 3) employment and appointment patterns of Japanese companies abroad, 4) centralized management patterns of Japanese companies at remote areas, 5) increasing costs for keeping industrial secrets, 6) lack of concern among local employees for the economic growth and independence of developing countries, 7) concern for balance of payments, 8) foreign aid burden, and 9) difficulties in the distribution of benefits and its impact on the overall economy.

These constraints are often combined. As a result, legal and political constraints tend to aggravate economic constraints. Preconditions for successful bilateral arrangements are the political stability of the coastal state and the region, economic viability of the venture, and mutual trust among the parties. Boundary disputes among the coastal states on EEZs and continental shelves may wipe out fisheries development potential. Law of the Sea conference politics will not improve the current situation unless it makes a more realistic assessment of these legal, political, and economic constraints.

1) Industrial Trends

The Japanese tuna and skipjack fishery achieved a remarkable expansion after World War II, because it was supported by low oil prices and a government food policy that encouraged distant-water fishing (Figure 13). However, the path was not smooth. For example, the "Fukuryū-Maru V incident" occurred in the Pacific on 1 March 1954. The Fukuryū-Maru V, a tuna longliner, encountered radioactive fallout from a U.S. hydrogen bomb test over Bikini Atoll in the Marshall Islands. An increasing number of polluted tuna catches were landed in Japanese ports following the bomb test, causing a panic in the tuna market (104).

In less than a month, tuna prices in Tokyo dropped by 21.9% for nearshore tuna, 29.4% for yellowfin, and 49.4% for bigeye. All 425 polluted vessels were subsequently identified, and 326.3 metric tons of tuna were abandoned. Polluted tuna was also reported in the eastern seas of the Philippines and Taiwan, more than 1,000 miles away from Bikini. Although none was landed from this region, tuna exports

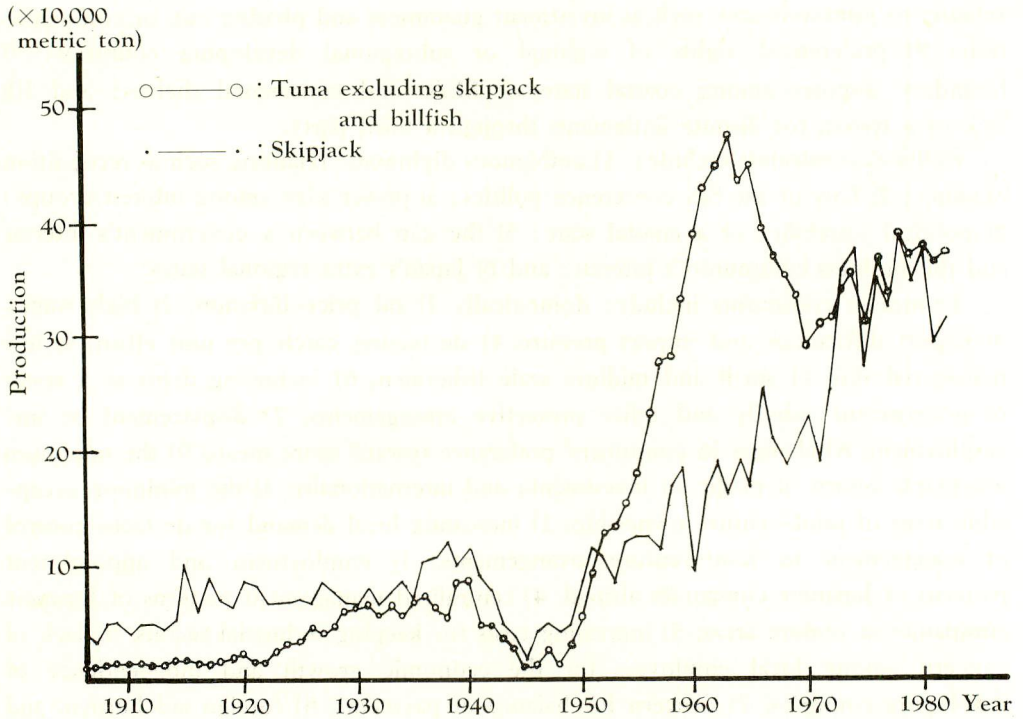


Figure 13. Tuna and skipjack production in Japan: 1906-1982

Sources: JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES (22) and JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES *et al* (23).

also suffered from an increase in cancelled contracts (104).

The tuna and skipjack fishery experienced smooth years during the 1960s, and the industry devoted itself to the exploitation of fishing grounds all over the world by establishing an extensive infrastructure. However, except for the skipjack pole-and-line fishery, during the 1970s the industry was confronted with extremely low catches per unit effort (Figure 14). Japanese tuna fisheries experienced numerous other problems as well: general inflationary trends and cost inflation (Figure 15), including increases in labor costs due to labor shortages and skyrocketing fuel prices, the difficulty of exports to the USA because of dollar devaluation in 1972 and changes in regulations by the FDA regarding the mercury content in tuna, increasing competition with the Taiwanese and Korean tuna fleets in fishing and marketing, a depressed domestic economy due to oil crises in 1973, increases in environmental concerns, and the advent of the 200-mile limits. The outcome was a decline in profits since 1974 (Table 11).

The economic impacts of 200-mile limits on Japanese tuna and skipjack fisheries are immense, because 48% of the tuna and 41% of the skipjack catches by Japan came from within 200 nautical miles of the coasts of 54 foreign nations in 1977 (37). Furthermore, price speculation in the skipjack market in early 1977 depressed the industry during the following years (Figure 16). Government and private efforts, such

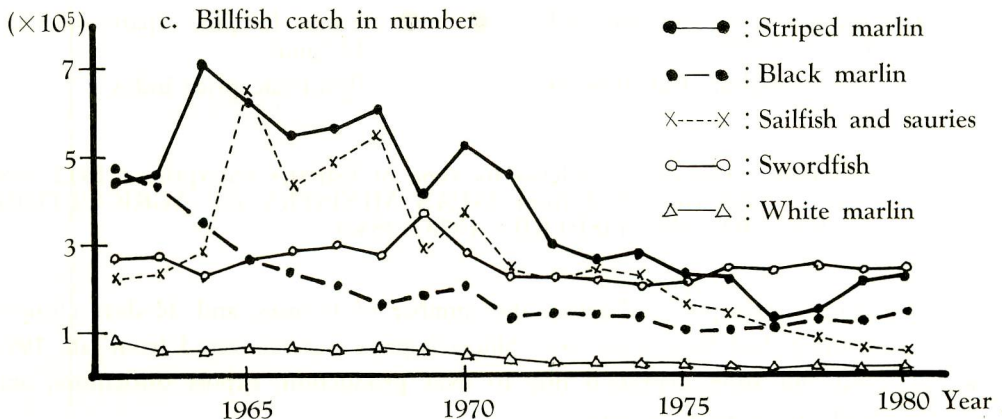
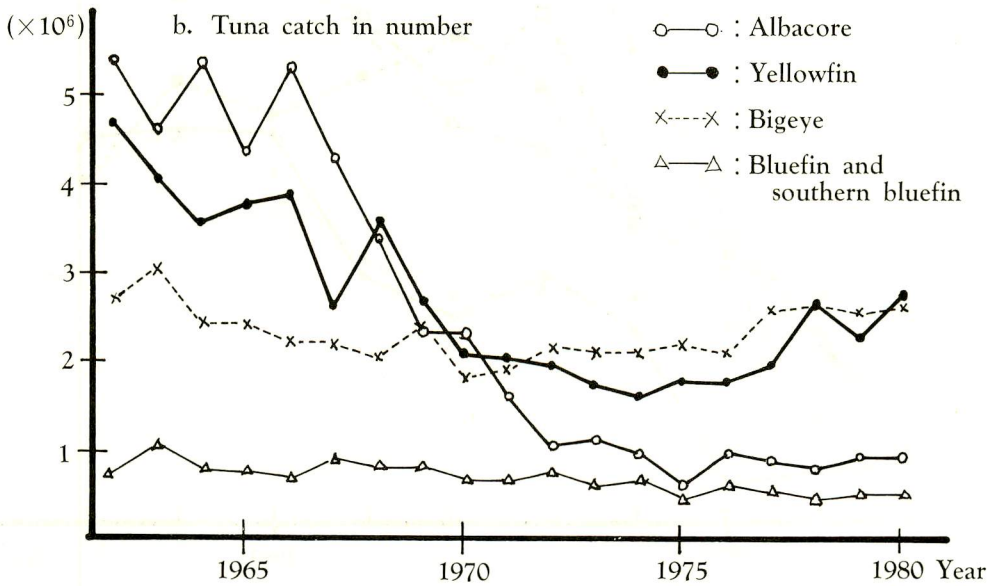
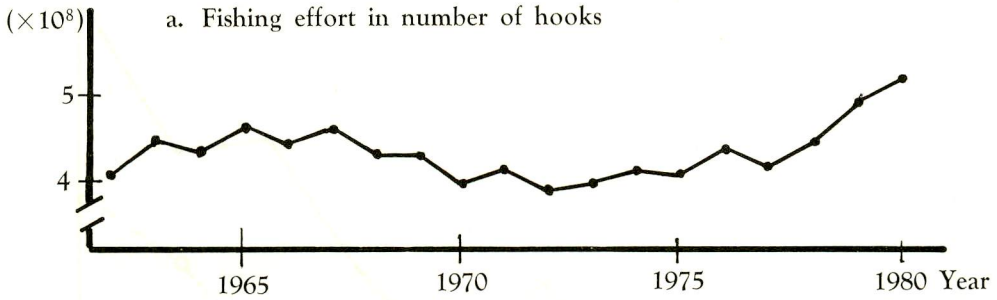


Figure 14 Japanese tuna longline fishing effort and catch in number by species: 1962-1980 (modified from JAPAN FISHERY AGENCY 1965-1982)

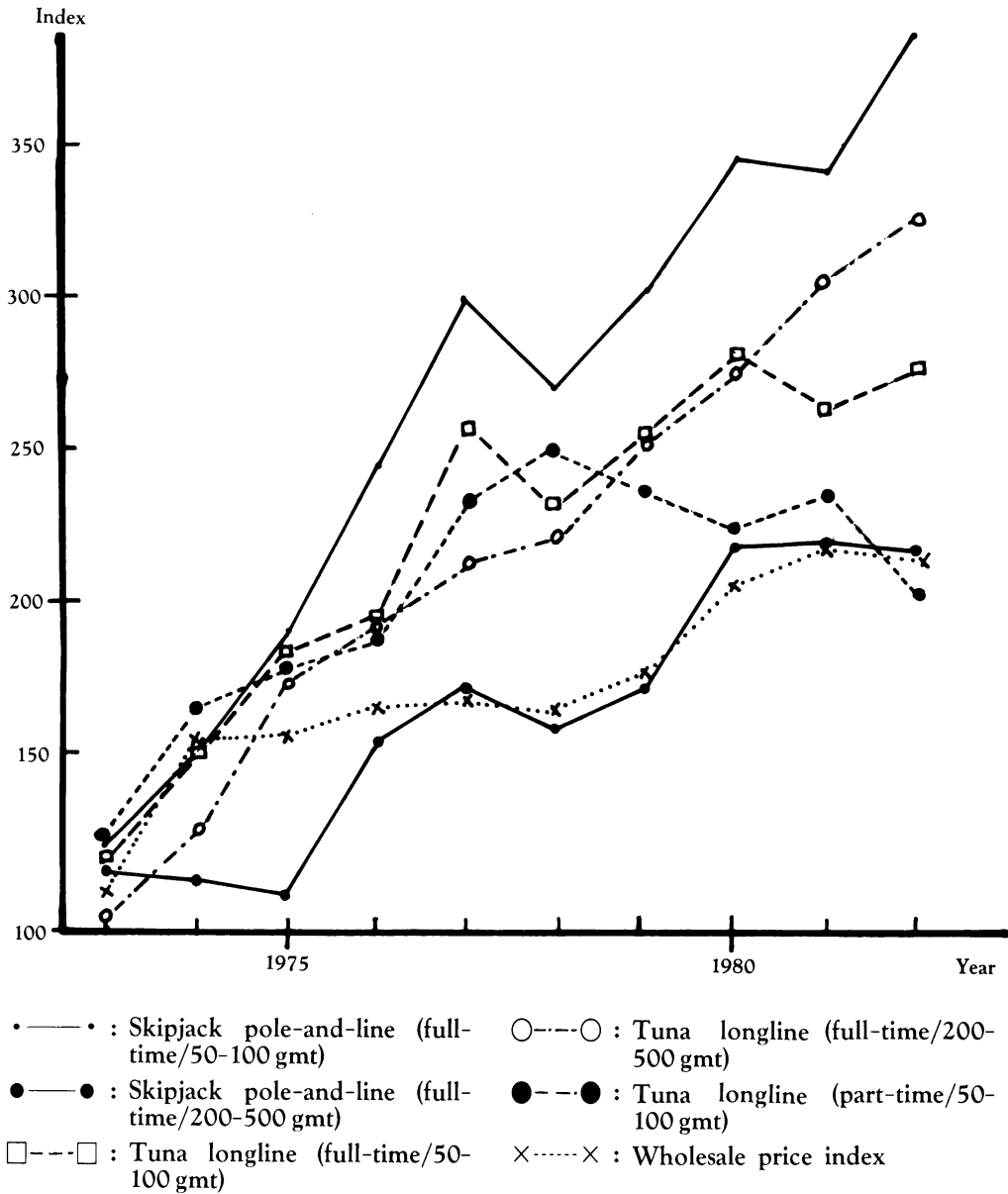


Figure 15. Fisheries expenditure indexes by type of fisheries enterprises: 1972-1982 (1972=100) (modified from JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES 1973-1984a)

as price supports, attempts to decrease the number of licenses, and 30-days closures of skipjack fishing, had limited success. Skipjack price was recovered from late 1979 to early 1980, but soon depressed due to over production, export difficulties, and increasing landings by purse-seiners.

The demand which coastal states placed on Japanese fishing fleets are continually increasing under the 200-nautical-mile regime. These include royalty or entry fees,

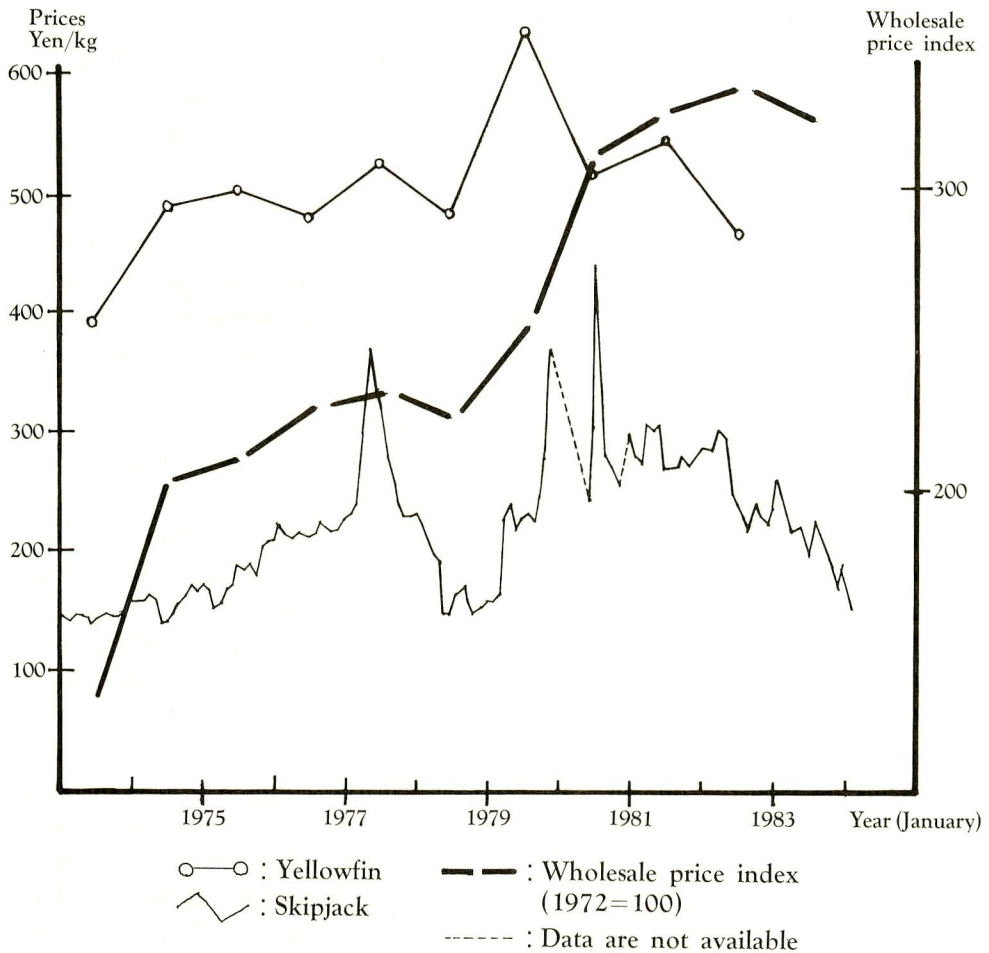


Figure 16. Frozen yellowfin and skipjack prices at Yaizu port: 1973-1983 (modified from JAPAN MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES, 1973-1984b)

registration fees, fishing' fees, quotas, excess catch fees, less favorable joint-venture agreements, requests for expansion of the export of agricultural products to Japan, and development assistance. Members of fishing cooperatives have not had the time to adjust, while large fishing and trading companies and other related industries have sought economic opportunities in joint-ventures. As a result, the former Ministry of Agriculture and Forestry was reorganized into the new Ministry of Agriculture, Forestry and Fisheries in 1978, and the government fisheries administration was restructured.

2) Fee Fishing

The main participants in Japanese tuna and skipjack fishing are individual fishermen, small-or medium-size companies, and members of the Japanese Federations of Fisheries Cooperatives (ZENGYOREN), Tuna and Skipjack Fisheries Cooperatives (NIKKAT-SUREN) or Nearshore Tuna and Skipjack Fisheries Cooperatives (KINKATSUREN).

Most of them own one or two vessels in the 50-to-500 gmt size range. In 1978, 651 enterprises were involved in distant-water tuna and skipjack fishing, while 994 enterprises practiced nearshore fishing. Seventy seven of these fished in both fishing grounds (70). In contrast, the large fishing companies (Taiyō, Hōkoku and Kyokuyō) supplied only 25,915 tons in 1977, or 3.7% of the total Japanese catch.

The economic and political events of the 1970s weakened the small Japanese fishing enterprises seriously. They could not accumulate enough capital for joint fishing ventures, and there were not many choices for them except to continue to fish for their survival. They preferred fee fishing over joint-ventures not only because the government now helped to bear the burden, but also because of their inability to deal with fishing joint-ventures.

Japanese fee fishing payments to New Zealand, Papua New Guinea, and the Solomon and Gilbert islands amounted to more than \$6 million in 1979 (70). Even though the Japanese government subsidized a portion of the interest paid for the fishing fee loans, the economic viability of distant-water tuna and skipjack fishing had become increasingly questionable because of oil supply shortages, oil price hikes, the general cost inflation, and the difficulty of market expansion.

According to the Japan Fisheries Agency, the tuna and skipjack fishery consumed approximately 22% of all oil used by the Japanese fishing industry in 1974 (102). The Japanese tuna and skipjack fishery was confronted with a second-round oil crisis after the Iranian crisis of December 1978. In addition to the oil price hike, access to oil became increasingly difficult. This was particularly serious for boats that had not already arranged their fuel purchases or that lacked documentation of past fuel purchases. In 1979, the total supply of oil to fisheries in Japan was reduced by approximately 30% from the previous year's supply. Except for Honolulu, Maui and Guam, fuel is no longer available to Japanese tuna and skipjack boats in the United States. Although oil has been loaded to boats in Federal States of Micronesia, Tahiti, New Zealand, Singapore, and Penang (Malaysia), the oil supply situation in these areas is also getting worse (49). Although oil price has come to a state of lull, the continuation of the energy-intensive fishing is therefore questionable. It appears that low-energy intensive fishing strategies will have to be introduced in the tuna and skipjack fishery. In addition to the difficulty of shifting from fee fishing to a joint-venture according to the Indonesian proposal, the Banda Sea agreement did not allow the use of a mothership or transportation vessels, an arrangement of questionable economic viability for Japan in light of the persistent energy problems. There still be a room for low energy intensive fee fishing if rational management is sought.

After a long resistance, conventional skipjack pole-and-line fishermen decided to join the tuna and skipjack purse-seine fishery in August 1979 (95). The plan was associated with the previously mentioned vessel withdrawals. However, the transfer was difficult due to newly created problems of employment, management, and competition with other interests (32). In particular, employment compensation problem was unclear. Under the plan, 264 to 300 fishermen were unemployed after the withdrawals of 10 pole-and-line vessels (300 gmt each) for two 499 gmt purse-seiners. The unemployment rate was extremely high, from 84% to 100%.

Cooperative management of newly constructed purse-seiners by 5 withdrawn vessel owners is also difficult. Although every skipjack pole-and-line vessel owner was eligible to join the plan, owners of inefficient small-scale vessels could not join the plan because they lacked the managerial skill for cooperative management and the financial ability for compensation of those who had withdrawn from the fishery. Furthermore, established tuna and skipjack purse-seine fishermen flatly opposed the conversion of the pole-and-line fishery because conventional skipjack pole-and-line fishermen had long strongly objected the expansion of purse-seiners because of competition between pole-and-liners and purse-seiners. On the other hand, conventional purse-seine fishermen based on 110 gmt vessels in the northeastern part of Japan increased their interests in skipjack purse-seine fishing, in particular, after good experimental results involving a harvest of 750-800 mt (or over \$912,659, or 200 million yen of gross income) per fleet during 2 months of operation in 1980. Under the Japan-U. S. S. R. fisheries negotiation in 1980, the Japanese government allowed the U. S. S. R. to take 50,000 mt of sardine and mackerel from their historical fishing grounds in the Japanese fisheries zone in exchange for the Japanese Alaskan pollack quota in the Russian fisheries zone. As a result, squeezed purse-seine fishermen are looking for expansion on tuna and skipjack fishing in the western central Pacific. Although Taiyō and Kyokuyō have established the Japanese tuna and skipjack purse-seine fishing, other large fishing companies influenced by the new 200-nautical-mile regime are also seeking investment opportunities in tuna and skipjack purse-seiners. The United States, Taiwan, South Korea, and the Philippines have also increased their tuna and skipjack purse-seine fishing operations in the western Pacific (95, 99, and 105).

Although an optimism prevails concerning the potential of the skipjack resource in the world ocean, fishing effort does no longer positively correlate with harvest in the western central Pacific (102). Large tuna are already being caught at maximum sustainable yield (MSY). Unless the industry is managed well internationally, there will always be common property problems resulting in depletion of fish resources and dissipation of rent (6).

Further, markets for purse-seine tuna products are limited to the United States, Europe, and Japan. The profitability of the industry is greatly influenced by amount of the stock and harvest in the United States (94). However, these are foreign factors and uncontrollable.

Preferential fishing rights of developing countries on a regional or subregional basis could also exclude Japanese fishermen. As a result, the surplus of allowable catch to which Japan and other foreign countries with extra-regional status will have access may be determined politically rather than scientifically, by interest groups and/or pressure groups that maximize their own interests as the coastal state's interests.

If too many legal conditions are demanded by coastal states, such as on local employment, technology transfer, nationalization, conservation, and foreign exchange, Japanese participation could be reduced below the minimum tolerable level and her fishermen would lack sufficient incentive to engage in fee fishing in foreign waters. Even if legal constraints are acceptable to the Japanese government, they may not be acceptable to the profit-oriented Japanese fishermen.

If a coastal state has unilateral legislation that does not conform with the treaty with Japan, the Japanese government might not be able to cooperate with the laws of that coastal state. This situation might arise due to different interpretations of a particular provision in the UNCLOS III, e.g., highly migratory species (Art. 64) both within and beyond the exclusive zones.

The lack of a system in the ICNT for settling disputes by third party arbitration is a serious problem for fee fishing. There is no such provision in fisheries, except for the Ocean Tribunal on jurisdiction. As a result, all-or-nothing situations in fee fishing will continue to generate high overhead costs for fisheries.

3) Joint-Ventures

Resource-owning nations have recently shown an increasing interest in tuna joint-ventures with Japanese partners. Mexico reached a new joint-venture agreement with Japanese tuna fishermen in 1978(88). Indonesia has not. Despite potential mutual benefits from joint-venture arrangements, the traditional tuna and skipjack fishing enterprises show the least interest because of their inexperience, inflexibility with respect to the fish resource, infrastructure deficiencies, lack of management experience, and low marketing abilities. Counterparts are also usually inexperienced in this respect.

In contrast, Japanese companies including large fishing companies, processing and trading companies, and related industries are the most prominent tuna joint-venture partners. They have preferred joint-venture arrangements to fee fishing because joint-ventures represent attractive investment opportunities. Although these companies are new to the tuna and skipjack industry and still represent a minority, they are competing seriously with small-or medium-size traditional tuna and skipjack fishing enterprises. The scarcity of national laws concerning joint-ventures in the coastal states is a severe constraint on the Japanese, interested in joint-ventures with those countries. If joint-ventures are to be encouraged, national legislation will be necessary to prescribe various phases of the joint-venture process, to assure the security of investment by capital-exporting nations. Particularly when a coastal state intends to nationalize or control joint-ventures in order to improve its economic status, the phase-out process will have to be clearly stipulated so the foreigners feel safe. Such protective measures should be provided not only by the coastal state but also by the Japanese government, in order to guarantee that any losses would be compensated at a certain minimum level.

Among the 37 joint-ventures in Table 14, 18 are associated with fishing only, 14 with processing and/or transshipment, and five with both fishing and processing. However, eleven of the 23 fishing operations have ceased, due to disappointing results, even though years of careful preparation sometimes preceded them. In contrast, only 6 of the 19 processing or transshipment joint-ventures have failed. It is generally accepted that fishing joint-ventures are more difficult to operate economically than processing or transshipment ventures. It appears to require nearly ten years of intensive preparation to establish a good fisheries joint-ventures with a developing country.

Coastal nations tend to require major economic concessions from the Japanese in joint-ventures, because they view the international market optimistically and expect high profits, and they believe that tuna resources within their EEZs are virtually

unlimited. Such concessions include: phase-out requirements for new and large vessels; infrastructure investment; fisheries feasibility studies; technology transfer; supply of research equipment; construction of training ships; development of domestic marketing; and investment in public works (construction of schools, hospitals, etc.). They may even expect military assistance, although it is definitely prohibited under the Japanese constitution. The more extensive the economic concessions, the more difficult it is to attain economic viability in joint-venture enterprises.

Past failures are also attributable to erroneous assumptions on both sides. Increasing economic burdens on the Japanese partners prohibit the involvement of single companies and small Japanese enterprises. Even large fishing companies such as Nichiro Gyogyō, Nihon Suisan, Kaigai Gyogyō, and Hōkoku Suisan have joined forces with large trading companies such as Itōchū Shōji and Mitsubishi Shōji, in order to take on fishing joint-ventures. Processing companies tend to work with large trading companies for processing joint-ventures. These are represented by Japanese partnerships such as between Yanagiya Honten-Okura Shōji, Itō Shokuhin-Nishō Iwai, Nihon Suisan-Tōei, and Taiheiyō Shokuhin-Mitsui Bussan.

In addition, traditional tuna longline and pole-and-line fishing methods are confronted with economic inefficiencies due to decreasing catches per unit effort and serious live-bait problems. As a consequence, the interest in purse-seining is increasing among joint-venture companies. Nauru Fishing Corporation established in 1965 is the first on this line.

There are two basic management structures which are possible for a joint venture: diffused or centralized. Diffused management, in which local leaders have strong leadership, can be superior to centralized management, with respect to incentives, overhead, and flexibility. However, joint-ventures tend to be controlled by host companies and/or local governments and therefore tend to come under centralized management, resulting in higher costs leading to lower incentives, higher overhead, and managerial inflexibility.

The increasing interest of the coastal nations to take part in management is understandable, but the quality of the managers may suffer in a centralized enterprise and a management without the necessary interest or experience can be an economic burden to the venture and a risk to its investors. Furthermore, it is often necessary to guard industrial secrets for a profitable enterprise: a firm could suffer a serious competitive disadvantage if secrets are not allowed.

Low local wages are an attraction for Japanese investors in a joint-venture. Yet, most necessary inputs depend on imports, which are expensive and sometimes offset the comparative advantage of using inexpensive labor. The quality of labor is also another consideration. Are they willing to work at sea for more than a couple of months? Are they willing to work under a three-shift arrangement? Are they willing to work six days a week? Japanese employees who are stationed with local vessels or processing plants under joint-venture arrangements may be vital assets to the enterprise. Although replacing them with local people may be important to the coastal nation, it should be done gradually to minimize disruptive effects that might threaten bankruptcy of the venture.

Fisheries joint-ventures can bring capital, technology and jobs to coastal nations, while providing foreign exchange earnings and technology transfer. Although albacore, yellowfin, bluefin, bigeye and skipjack are regarded as the primary species of tuna on the international market, they have little value in the domestic markets of Southeast Asian and western central Pacific nations except for Indonesia and the Philippines. As a result, tuna joint-ventures in these areas tend to focus upon foreign exchange earnings to improve the balance of payments of the resource owner. In many cases, however, foreign exchange earnings fail to contribute to a country's equitable development due to misallocation of such scarce resources. (In 1973, the World Bank changed its emphasis from increasing foreign exchange earnings to generating employment.)

For a Japanese investor, it is desirable to have 100% Japanese investment without the prospect of nationalization or gradual transfer of managerial and ownership rights to the coastal nation. This is particularly important for the economically marginal but highly technical tuna and skipjack fisheries which may be based in developing countries: the venture involves high risks and therefore needs greater flexibility for survival. However, the rise of nationalism among the resource-owning nations and their increasing interest in tuna and skipjack management has made 100% foreign ownership increasingly difficult. Whether it is in their long-term interest or not, many countries require a "phase-out" of foreign capital investments: Indonesia since 1948, India since 1950, and the Philippines, Turkey, the oil-producing/exporting countries, and the Andes group, since 1970(2).

The costs to Japanese investors of not being allowed 100% foreign investment could be substantial, including problems of reduced control over production, personnel, organization, accounting and general decision making. In addition, the role of the venture in the host company's global strategy could be lessened. By the same token, the costs of an improper phase-out of Japanese participation could impose numerous costs for the resource-owning nation, such as reduction of production, inflation and unemployment due to insufficient mastery of technical and managerial skills, supply difficulties, insufficient infrastructure, marketing difficulties, capital shortages, and isolation.

Additional problems may arise when a joint-venture arrangement is concluded not between governments, but between a government and a foreign private party whether corporate or individual. This means that the coastal state is ultimately free to abdicate the agreement with payment of "adequate, prompt and effective" compensation.

Although joint-ventures are multinational in character, diplomatic protection of joint-ventures by the government is difficult because they are usually incorporated within the coastal state and are legally therefore nationals of that state. Under international law, the state is free in a strict sense to do whatever it likes against its own nationals.

In short, it is understandable that with development as an urgent need, developing nations gravitate to joint-venture arrangements in the face of limited opportunities. But, one must remember the danger of economic confrontation in these arrangements. Assumptions by both sides must be reexamined, stages of development of the fishery need to be considered, and mutual benefits should be taken into account. Economic

realities must be understood, unnecessary economic burdens have to be removed, and joint-ventures must function in such a way that both partners cooperate with each other and complement one another's weaknesses instead of taking advantage of them.

4) Overseas Technical and Economic Cooperation

It has been increasingly difficult for the Japanese government to justify aid to tuna and skipjack joint-ventures, because the major fisheries goals of the Japanese government (securing fishing grounds, maintaining employment and increasing food security) often are not well satisfied by tuna and skipjack joint-ventures. For whom are the fishing grounds to be secured? In the prevailing economic and political environment, conventional Japanese tuna and skipjack fishermen tend to lose out in competition with larger economic units when joint-ventures are involved. Idle periods for fleets of conventional Japanese fishermen would increase unemployment.

A drastic change in fishing from small- and medium-scale conventional fishermen to larger fishing companies, processors, traders and related industries might bring about additional problems. One pretains to social welfare in Japan, and another is the feasibility of fishing joint-ventures with coastal nations. How many Japanese could be employed in tuna and skipjack joint-ventures in Southeast Asia and the western central Pacific? Employment generated by joint-ventures would be limited by economic factors such as wage inflation and political factors such as the desire of the coastal nation to employ its own nationals. Joint-ventures of Taiyō Gyogyō, for example, have employed large numbers of local laborers (51).

Although Japan is one of the largest tuna and skipjack markets in the world (33.1%)—second only to the USA (36.5%)—(6), there is no guarantee that joint-venture products would be exported to Japan. The tuna catch can be transported to wherever it receives the highest price. Except for small quantities of frozen billfish, products from tuna joint-venture canneries never reach Japanese ports. They tend to go instead to the United States and elsewhere, where people prefer canned goods to frozen raw fish. Thus, joint-ventures often fail to bring fish to Japan, while simple traders would not.

Cooperation is not always successful, because arrangements are often political compromises that are incompatible with the economic realities that would be indicated by adequate economic feasibility studies, allocation of resources and income distribution. Government cooperation is limited to countries having good diplomatic relations with Japan and may be a consequence of political pressure rather than need. For example, the donation of new, modern, and large tuna vessels to a developing country is appreciated by the recipient government. It is relatively easy for the donor government to do, and provides conspicuous and prestigious evidence for those involved. There is no guarantee, however, that tuna fisheries will develop with this kind of assistance. A new boat may be involved actively in the tuna fishery for a while, but it may not be repaired once it is out of order. Considering the proximity of the fishing grounds to Southeast Asian and western central Pacific nations, they could develop their tuna fisheries with small boats if properly managed¹. Likewise, many economic opportunities

1. The economically successful Japanese tuna industry began with small boats of less than ten gross metric tons.

are limited by irrational restrictive regulations such as some of those in the Banda Sea agreement. An increase in bad experiences in Japan's technical and economic assistance in fisheries has resulted in criticism concerning the justification for such assistance, and the supply of funds has become increasingly tight.

A serious problem of overseas technical assistance in tuna and skipjack fisheries is the lack of interest from conventional tuna and skipjack fishermen and the Japanese government. The fishermen feel they gain nothing from overseas technical assistance, and fear that such assistance will eventually create competitors as the fishing fleets of the coastal nations become established.

Technical assistance from the private sector is more flexible than governmental assistance. It is limited, however, by the current world trend towards high interest rates. Therefore, even so-called private fisheries technical assistance depends on semi-governmental or international loan organizations such as the Overseas Fisheries Cooperation Foundation (OFCF), Overseas Cooperation Foundations in Japan (OCF), the Asian Development Bank (ADB), and the World Bank. However, low interest loans (less than 7%) do not cover all the needs of private fisheries technical assistance. OFCF and OCF loans, for example, cover only 70% of capital requirements, and the rest has to come from private sources. As a consequence, overall interest costs are seldom below 10%.

Although it is generally accepted that, in the long-run, private fisheries technical assistance is beneficial to both investors and coastal nations, there is no guarantee of its economic feasibility for investors in tuna and skipjack fisheries or that it is of short-run benefit to them. Instead, it tends to create more severe competition among various interest groups, while increasing the bargaining power of resource owning nations.

VI. Conclusions

The United Nations Law of the Sea Conference has led to an "extended maritime jurisdictions" boom all over the world. Although extended maritime jurisdictions have been declared unilaterally and require further refinement, they are already part of customary international law. Despite the position of the Informal Composite Negotiating Text (ICNT) that highly migratory species such as tuna and skipjack are managed by cooperation among the countries concerned, most nations of Southeast Asia and the western central Pacific treat them as their national property.

It is realistic to recognize that most tuna and skipjack fishing grounds in the world will eventually be controlled by coastal states under the new regime. However, the Japanese have strongly claimed their historical tuna and skipjack fishing rights in Southeast Asian seas and the western central Pacific. Japanese tuna and skipjack fishing activities in the region have a long history supported by the governments and federations of fisheries cooperatives and associations in Japan. Fishermen, processors, private companies and financial institutions as well as governmental units have been cooperating. As a result, it is difficult to define Japanese tuna and skipjack fishing in

the region as individual activities because it has been so aggregate in character. Until very recently tuna and skipjack fishing on the high seas was free to all, and Japanese fishing did not have any serious conflict with local fishermen or governments of coastal states, except for the Philippines and Indonesia, which unilaterally claimed archipelagic regimes in 1955 and 1960, respectively. Japanese fishermen have discovered most of the tuna and skipjack fishing grounds in the region, taken risks for development, established economically viable fishing grounds, and continuously and habitually fished tuna and skipjack there for a long time with the exception of World War II. This industry has long been controlled by the Japanese fisheries licensing system and very important because of its leading role in the Japanese distant-water fisheries and is now confronted with serious problems of survival. The Japanese believe that any regulatory scheme should not result in a removal of fishing rights, even for public use, without adequate compensation. Further, to be economically viable, tuna and skipjack fishing rights must be use-rights of vast water areas, permitting the flexibility that goes with high mobility and new technological advances. Together with the highly migratory characteristics of tuna and skipjack, the traditional fishing right clause in ICNT should be interpreted in terms of historical fishing rights for tuna and skipjack fishing, not in terms of subsistence fishing rights claimed by Indonesia, in which traditional fishing rights are applicable only to fishermen who use traditional fishing gear and have fished an area with small catches for a long time. The latter policy excludes nations such as Japan, which have modern fishermen, improved equipment, and substantial catches.

Although Japanese historical tuna and skipjack fishing rights in the EEZs of Southeast Asia and the western central Pacific have had a lower priority than the access right of adjacent land-locked and/or geographically disadvantaged countries and other developing countries under the new regime, the Japanese have continued tuna and skipjack fishing in the EEZs of many countries in the region under bilateral negotiations. As archipelagic waters under the new regime are regarded as internal waters where other nations may not fish without permission of the archipelagic state. Japanese fishermen may have exclusive fishing rights to archipelagic waters of these nations if this is agreed upon bilaterally. The Banda Sea Agreement was a good example.

Despite many constraints, the Japanese still believe their role in tuna and skipjack fishing in the region. They believe most coastal nations in the region will not be able to develop their own tuna and skipjack fishing without Japanese cooperation. It is not easy to develop tuna and skipjack fishing as an economically viable industry, and Japanese experience can offer much to countries that want to develop such an industry.

Coping with problems of cost inflation, stagnant tuna and skipjack prices, and extended maritime jurisdictions, the Japanese tuna and skipjack fisheries industry have taken drastic steps since the 1970s. A number of countermeasures have strengthened the flexibility of the industry and ameliorated the impacts of extended maritime jurisdictions. These measures include energy saving operations and devices, mechanisms for tuna and skipjack price stability and demand expansion, withdrawal of fishing vessels, involvement in purse-seine fisheries, and nearshore fishing ground adjustment.

Bilateral arrangements such as fee fishing and joint-ventures associated with overseas technical and economic cooperation have been employed as an external strategy and have been successful so far in terms of fishing access to EEZs and archipelagic waters of coastal states in the region. However, current arrangements are becoming increasingly difficult due to coastal nations' desires to increase fishing fees and to take part in joint-ventures. Emergence of subregional fisheries management schemes such as the Nauru Agreement will be welcome, particularly for dealing with tuna and skipjack as highly migratory species, but Japan is not yet ready for such schemes.

The legal, political, and economic constraints on Japanese strategies are numerous and combine to aggravate Japan's problems. Although the Japanese government is trying to ease the transition, the job is not easy. Moreover, the Japanese government, which has substantial control over Japanese strategies, is implementing a multi-sectoral policy by assisting joint-ventures and permitting purse seines in the tuna and skipjack fleet. This is creating new tuna and skipjack fishermen, while the situation for conventional tuna and skipjack fishermen has worsened.

Problems due to extended maritime jurisdictions exist not only for the Japanese but also for coastal nations. Expanded maritime jurisdictions not only benefit coastal nations but also burden them, because no single country has the full resources to manage the tuna and skipjack stocks within its EEZ or archipelagic waters. For any interest group in tuna and skipjack management there is a large gap between the ideal and reality.

Joint arrangements have many advantages over one country going it alone. For successful arrangements, each party must understand the interests, capabilities, and limitations of the other. Goals must be reasonable, and growth must proceed step-by-step in a way that benefits both sides.

Since tuna and skipjack are so highly migratory, the time has come to consider them as a common heritage of mankind and not to accept automatically the unilateral claims of individual nations. It is now essential to face up to the conflicts between competing interest groups and not to count one's tuna and skipjack before they are caught. This is a time to learn, not to take advantage of others. Past experiences must be reviewed critically, and a new international order of cooperation for sound tuna and skipjack management must emerge.

Acknowledgement

This research is based on the study under the auspices of the East-West Environment and Policy Institute's project on Marine Environment and Extended Maritime Jurisdictions. The authors wish to acknowledge Drs. William H. MATTHEWS, Mark J. VALENCIA and Gerald G. MARTEN at the East-West Center; and Dr. Shigero IWAKIRI and Mr. Chikashi KATAOKA at Kagoshima University for offering the opportunity, criticism and support.

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