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no. 72-17

A UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION

Foreign Fisheries Leaflet No. 72-17

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service



Fisheries of Taiwan, 1971

Edited by William B. Folsom

International
Activities
Staff

WASHINGTON, D.C.
December 1972

FISHERIES OF TAIWAN, 1971

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Taiwan (Formosa), the seat of the Government of the Republic of China since 1949, is an island 90 miles off the southeast coast of the Chinese mainland. It and the Pescadores (Penghu) Islands lying to the west are administered as the Province of Taiwan (fig. 1).

Taiwan is about 240 miles long and 60 to 90 miles wide. The island, with a total land area of about 14,000 square miles, is about the size of Massachusetts, Connecticut, and Rhode Island combined. Roughly three-fifths of the island is mountainous and cannot be cultivated. The population of Taiwan, which was only 6 million in 1946, reached nearly 15 million in 1971.

With only a limited amount of arable land and with a rapidly growing population, Taiwan has increasingly turned to the sea to find needed supplies of marine foods for local consumption and for commodities to export abroad.

CATCH

The fishermen of Taiwan harvested 650,096 metric tons of fish and other marine products in 1971, an increase of 6 percent over the 1970 catch (Fig. 2). The high-seas and inland fisheries were Taiwan's most productive fisheries, but fish culture registered the greatest percentage increase in 1971 (table 1).

William B. Folsom is with the International Activities Staff, National Marine Fisheries Service, NOAA. This report is an edited version of two papers, "Fisheries Development in Taiwan," and "Tuna Fishery of Taiwan," prepared by the Fisheries Division, Joint Commission on Rural Reconstruction, Government of the Republic of China, in April and May 1972.

Table 1.--Taiwan's production by fishery, 1970-71

Fishery	Catch		Increase
	1971	1970	
	Metric tons		Percent
High-seas..	293,780	277,955	5.7
Inland.....	250,679	234,704	6.8
Coastal.....	27,876	27,690	.7
Culture.....	77,761	72,695	7.0
Total....	650,096	613,044	6.0

The Joint Commission on Rural Reconstruction (JCRR) has established a production target of 700,000 metric tons for 1972. Taiwan's high-seas fisheries are expected to produce 333,000 tons; inland fisheries 262,000 tons; fish culture 80,000 tons; and coastal fisheries 25,000 tons. Interestingly, coastal fisheries are expected to produce less in 1972; this fishery has gradually declined from a high of 47,175 tons caught in 1955 to an average annual production of 24,000 to 27,000 tons.

Taiwan's tuna fisheries (90,530 metric tons) was the top producer in 1971, followed by the sardine, shrimp and lobster, shark, and milkfish fisheries (table 2).

Table 2.--Taiwan's fishery catch, by species, 1971

Species	Catch
	Metric tons
Tuna.....	90,530
Sardines.....	38,185
Shrimps and lobsters.....	37,047
Sharks.....	36,822
Milkfish.....	30,650
Mackerels.....	22,587
Skipjack and bonitos.....	22,530
Lizard fish.....	22,050
Croakers.....	20,025
Hairtails.....	17,289
Billfishes.....	16,572
Cuttlefish and squids.....	14,192
Horse mackerels.....	14,002
Oysters.....	12,677
Seabreams.....	12,355
Tilapia.....	11,363
Marine eels.....	9,196
Carps.....	8,895
Goatfish.....	7,550
Spanish mackerel.....	2,550
Mullet.....	1,617
Others.....	201,412 1/
Total.....	650,096

1/ The original table provided by JCRR listed 196,430 tons of "other" fish caught in 1971. However, this was 4,982 tons short of the total figure provided by the JCRR.

According to JCRR, the increasing production in Taiwan's fisheries can be attributed to the construction of new fishing vessels, the use of fish finders, mechanical line and net haulers, and improved fishing gear. The JCRR reports that the use of synthetic fiber for nets and lines, and plastic materials for floats, sinkers, and other equipment (including vessels) has increased efficiency while reducing the cost of fishing.

FLEET

At the end of 1971, the Taiwan fishing fleet had 10,247 powered vessels, 3,979 unpowered sampans and 11,584 bamboo rafts---a total of 25,810 vessels. The most significant increase has been in the "powered-vessel" category which totaled 10,247 vessels registering 263,016 tons with 714,274 horsepower (table 3.) This growth is especially significant when compared with previous years.

Table 3.--Taiwan's fishing fleet, powered and unpowered, 1940-71

Year	Powered			Unpowered		Total Number
	Number	Tons	Horsepower	Sampans	Rafts	
1940....	1,479	29,284	57,078	3,988	3,755	11,222
1950....	1,349	21,512	38,645	6,558	13,468	21,375
1960....	5,541	78,343	178,272	5,917	16,587	28,045
1971....	10,247	263,016	714,374	3,979	11,584	25,810

Over half of the powered vessels were under 10 tons, about one-third were between 10 and 50 tons, and only 5 vessels were in the 1,000-ton class. By fishery, most of the Taiwanese fleet were drag netters, followed by longliners (for seabream) and stick-held dip netters.

Tuna longliners, however, led in tonnage and horsepower. In 1971, the Taiwan tuna fleet included 462 longliners over 50-GRT (registering a total of 101,080 tons and 260,551 horsepower) and 863 vessels under 50-GRT (registering 16,534 tons and 36,803 horsepower).

The development of the Taiwanese tuna fisheries is especially noteworthy because of the worldwide nature of this fishery and its rapid development during the last decade.

TUNA FISHERIES ^{2/}

Taiwan's most important fishery is its tuna fishery. The Japanese introduced tuna fishing into Taiwan in 1913. In the beginning, tuna fishing was limited to the southern part of Taiwan, off Kaohsiung. Later, fishing was extended into the waters west of Luzon Island (the Philippines) and into the South China Sea. In 1954, tuna operations were begun in the Banda and Flores Seas. Two years later, Taiwanese fishermen entered the Indian Ocean and by 1960 were fishing tuna in the Atlantic Ocean.

To meet the growing demands of Taiwan's far-flung tuna fleets operational bases have been established throughout the world (table 4).

Table 4.--Taiwan's overseas tuna bases

Atlantic Ocean	Indian Ocean	South Pacific Ocean
Capetown	Singapore	American Samoa
Walvis Bay	Penang	West Samoa
Tema	Victoria	Fiji
Abidjan	Diego Suarez	Espiritu Santo
Monrovia	Tamatave	Tahiti
Dakar	Port Louis	Sydney
Sao Vicente	Durban	
Las Palmas	Mombasa	
Santa Cruz de Tenerife	Reunion	
Recife		
Saint Martin		
Tenerife		
Buenos Aires		
Montevideo		
Paranagua		

At these bases Taiwanese tuna fleets are resupplied, repaired, and occasionally have crew replacements flown in. Catches either are sold locally or are transshipped for export; in 1971, Taiwan exported from overseas bases 91,019 tons of tuna valued at US\$49 million.

Taiwan's tuna production has increased rapidly during the past decade; from 25,200 tons in 1962 to 125,197 tons in 1971. In 1962, the Taiwanese fleet had 647 tuna vessels; in 1971 it had increased to 1,325.

^{2/} JCRR listings of "tuna" include billfish and tuna like species.

Taiwan's tuna fleets fish throughout the world. In 1971, 192 tuna vessels caught 30,261 tons of tuna in the waters of the Pacific Ocean. Taiwanese fishermen also operated 157 tuna vessels in the Indian Ocean where they caught 28,942 tons of tuna; this, however, represents a considerable decrease when compared with the 41,000 tons caught in 1969. Taiwan also operated 108 tuna vessels in the Atlantic and reported catches of 31,816 tons. The remaining vessels (mostly small in size but large in number) caught 4,601 tons of tuna off the coast of Taiwan. Albacore, yellowfin, and bigeye were the most important species caught by Taiwan's worldwide fleet (table 5).

Table 5.--Taiwan's high-seas fleet catch of tuna, billfish, and tuna like species, by region and species, 1971

Species	Pacific	Indian	Atlantic	Kaohsiung	Total
	-----Metric tons-----				
Albacore.....	15,877	4,932	19,223	172	40,204
Bigeye.....	2,883	6,120	4,717	449	14,169
Bluefin.....	25	43	96	-	164
Little tuna...	114	70	10	2	196
Marlin.....	1,568	2,552	2,451	2,189	8,760
Sharks.....	14	1,169	558	890	2,631
Skipjack.....	382	5	11	113	511
Yellowfin.....	8,891	13,008	4,087	102	26,088
Other.....	507	1,043	663	683	2,896
Total.....	30,261	28,942	31,816	4,600	95,619

As was indicated previously, Taiwan exported 91,019 tons of tuna valued at \$48.6 million in 1971 versus 90,718 tons valued at \$45.3 million in 1970. These exports, listed by the JCRR under the heading "tuna" also included other species. Table 6 shows these exports.

Table 6.--Taiwan's exports of tuna, billfish, and tuna like species, caught by the high-seas fleet, by species, quantity, and value, 1970 and 1971

Species	1971		1970	
	<u>Metric tons</u>	<u>U.S. Dollars</u>	<u>Metric tons</u>	<u>U.S. Dollars</u>
Albacore.....	40,032	25,308,527	34,226	20,753,393
Bigeye.....	13,720	4,979,852	13,694	4,456,170
Black marlin...	989	417,709	775	313,280
Blue marlin....	2,030	962,306	2,218	989,020
Sailfish.....	612	152,173	718	130,510
Skipjack.....	398	100,785	80	13,535
Striped marlin.	1,033	415,452	1,663	622,870
Swordfish.....	1,423	397,530	1,379	531,235
Yellowfin.....	25,986	14,727,646	29,340	15,659,840
Other.....	4,796	1,152,856	6,625	1,832,839
Total.....	91,019	48,614,836	90,718	45,302,692

FISHERIES ASSISTANCE

To assist in the development of Taiwan's fisheries the Joint Commission on Rural Reconstruction (JCRR) has emphasized strengthening the facilities for overseas operations, establishment of scientific management, and the training of managerial personnel. JCRR support is also being given to the development of overseas shrimp fishing operations, fishing with large purse seiners, and pole-and-line fishing for skipjack. JCRR has provided funding for the construction of trawlers with freezing equipment and for two 300-GRT stern trawlers.

JCRR is also aiding the inshore fisheries (coastal fisheries), exploration of new fishing grounds, mechanization of fishing operations, improvement of fishing gear and methods, reducing hazards of fishing vessels, and strengthening of harbor and shore facilities. JCRR is assisting the construction of fiber-glass-reinforced plastic fishing vessels.

Fish culture in Taiwan is also receiving JCRR backing, principally for artificial propagation of shrimp and grey mullet, extension of the use of chemical fertilizers in fish ponds, and improvement of the culture of shrimp, eel, oyster, and seaweeds.

JCRR is also aiding the development and improvement of processing and fish distribution facilities along with studies of the fishing industry as a whole.

FISHERIES RESEARCH

Research in fishery biology is carried out by the Taiwan Fisheries Research Institute of the Provincial Government, the Institute of Fishery Biology, and the Institute of Oceanography of the National Taiwan University.

The Taiwan Fisheries Research Institute has four field stations and is active in fish culture (fresh-water species, milkfish, mullet, shellfish, and tuna) in addition to fishery biology, gear and methods, and fish processing.



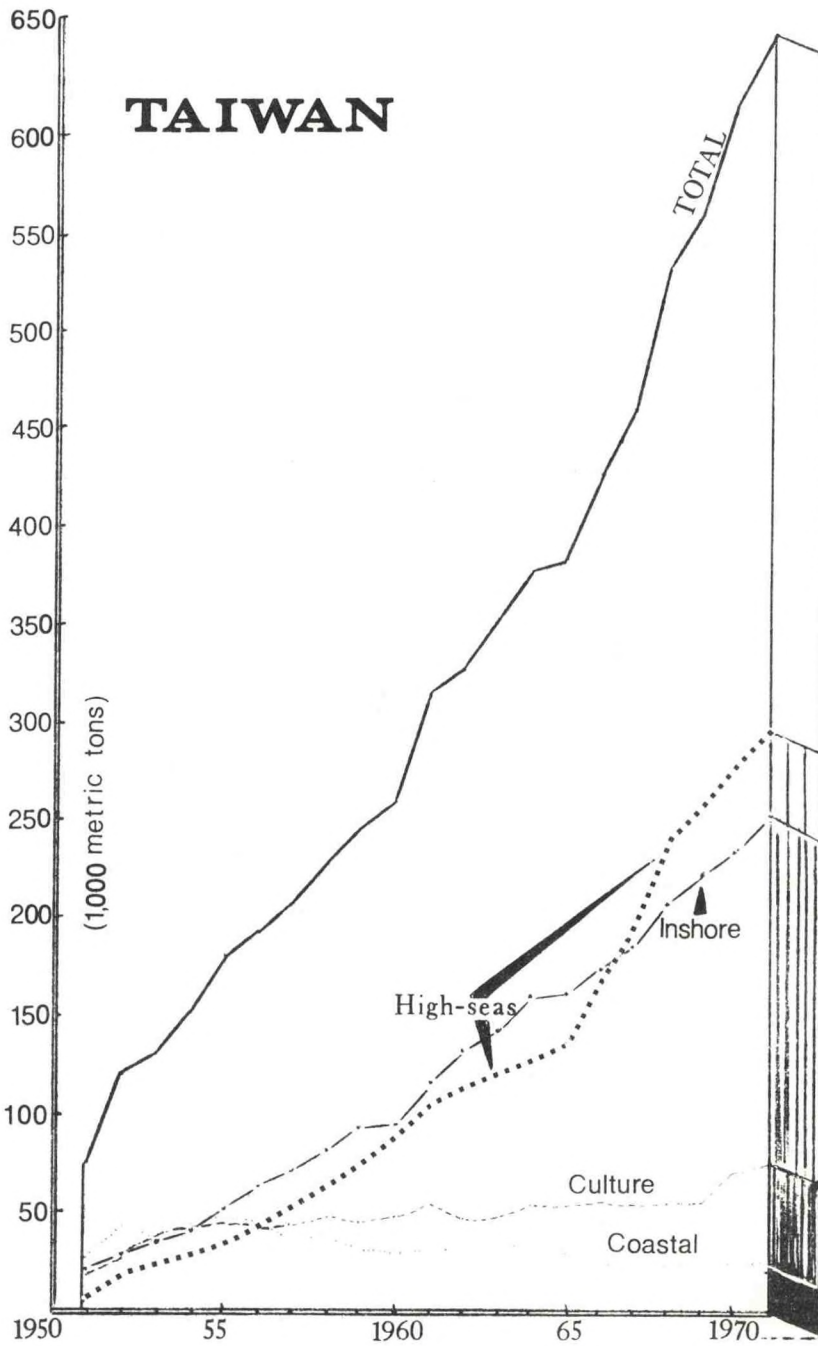


Figure 2.--Taiwan's fishery catch, by fishery, 1950-71.