The Sicilian Fishing Industry

Introduction

The fishing industry, an important segment of the Sicilian economy, is now making special efforts to modernize and expand to take advantage of high potential profits resulting from increasing demand and high fish prices. But the industry faces serious problems, including increasing obsolescence of the fleet, inefficient marketing facilities, fish depletion in local waters, and disputes with Libya, Tunisia, and Malta over fishing rights in areas of the Mediterranean those nations claim as territorial waters.

The Sicilian tuna fish canning and preserving industry, which in the middle 1960's was doing fairly well, has gradually declined. However, in recent years, a number of shrimp processing plants have been established.

Improved technology and marketing techniques are being introduced, and the Sicilian Regional Government, which is highly sensitive to the industry's problems, recently enacted legislation designed to stimulate and aid the fishing industry.

Economic Role

Sicily's 300 billion lire (US$385 million) fishing industry plays a significant role in the island's economy. The net income derived from commercial fishing alone (which in 1977 represented a quarter of Italy's total net income from this sector) nearly doubled in 5 years (68 billion lire in 1977 vs. 36 billion lire in 1973).

Fishing and related fields provide one of the main sources of livelihood for the island's coastal inhabitants, employing some 80,000 persons. Mazara del Vallo is the leading Sicilian fishing center. Other important centers are Palermo, Trapani, Sciacca, Porto Empedocle, Messina, and Siracusa.

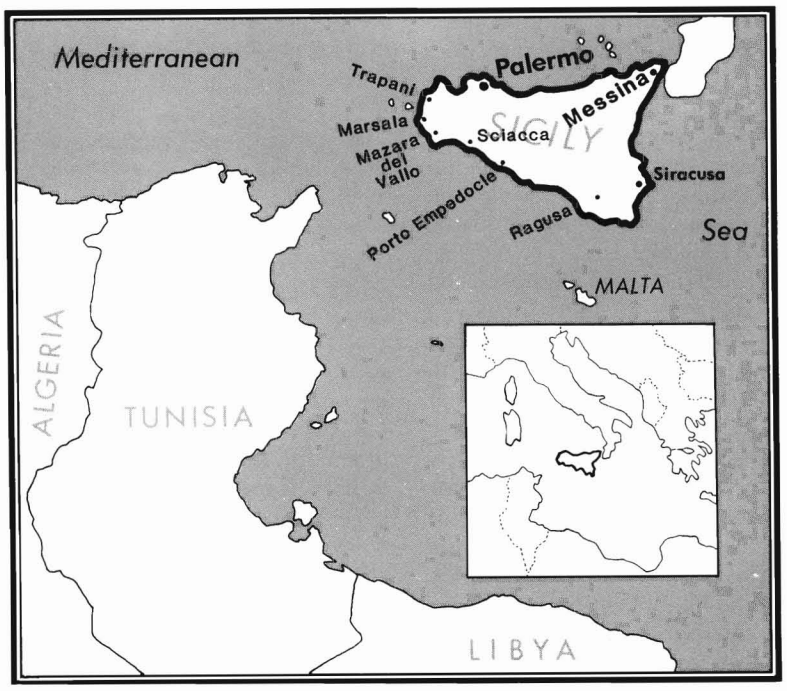
Fishing Fleet

The Sicilian fishing fleet is Italy's largest, representing one-fourth of the Italian total. It consists of 1,005 trawlers with a total gross tonnage of 53,675, and 4,864 small motor and sail boats. But much of the fleet is obsolete and poorly equipped. Even many of the larger trawlers are unable to undertake long voyages or engage in deepwater fishing. Moreover, there are no factory ships to process and refrigerate the catch. In recent years, because of these handicaps and the scarcity of fish in their own coastal waters, the Sicilians have fished mainly in the channel between Sicily and Libya and Tunisia. But lately this has led to serious diplomatic strains (see section on Problems).

Coastal tuna fishing, formerly a virtual Sicilian monopoly, has declined drastically over about the last 20 years. Most of the tuna catch nowadays is taken at sea by mainland (principally Neapolitan) fishermen using "flying nets" and fast, radar- and sonar-equipped boats.

Consumption and Marketing

Italian Government statistics (ISTAT) place Sicily's annual catch, including shellfish and mollusks, at between 45,000 and 50,000 metric tons (t), but Palermo Regional Government officials say the true figure is much higher—at least 70,000-80,000 t. Sicily also imports between 5,000 and 7,000 t of fish annually, mainly from South Korea, Spain, the U.S.S.R., and the United States. Sicilians harvest a wide range of fish, including swordfish, shrimp, anchovies, sardines, and mackerel.



As the Sicilian fleet has not been able to meet the rising demand for fish, local dealers are having to look more and more to foreign sources, and to this end have lately begun acquiring more freezing facilities and refrigerator trucks. The Palermo fish market, Sicily's largest, is also expanding and modernizing its wholesale distribution facilities and installing new refrigeration and conservation equipment.

Fish Processing

Over the last 15 years changes in supply and demand, greater selectivity by the public, and improved technology brought major transformations in the Sicilian fish processing industry. With the decline of the tuna catch in coastal waters, the number of tuna canneries in Sicily dropped from 12 in the 1960's to only 2 at present. Meanwhile, efforts have been directed toward the development of other processing activities, most importantly shrimp freezing, mainly in Mazara del Vallo where a dozen plants are now operating. The largest, Italgel, was built in 1977 by the Sicilian Industrial Promotion Agency (ESPI).

Problems

Although the Sicilian fishing industry continues to be profitable, owing to high retail prices and strong demand for fish, a number of serious and persistent problems cloud its future. The depletion of Sicily's coastal fish resources from overfishing and increasing industrial pollution, while the subject of increasing public attention and concern, continues. And the ever-rising cost of diesel fuel is a growing economic burden to boat operators, who report fuel now represents up to 50 percent of operating costs.

Fishermen are also worried and angry about the growth of "sea resources nationalism" in the Mediterranean, which limits their access to choice fishing areas. For years, under a 1963 agreement between Italy and Tunisia, Sicilian boats were permitted to fish undisturbed in specified areas near the Tunisian coast. But the agreement expired 19 June 1980, and the Tunisians had thus far declined to renew or extend it. Nonetheless, many Sicilian boats continued to fish in the relatively rich Tunisian and Libyan waters because owners considered the potential rewards were worth the risk. But this has caused considerable friction. Over the past 5 years, Tunisian, Libyan, and Algerian gunboats have seized 104 Sicilian trawlers and detained their crews until payment of stiff fines. In one incident in July 1980, the Tunisians actually fired on the Sicilians, killing one Mazara fisherman. More recently, the Libyans detained 12 Sicilian crewmen for 7 months and released them only after the Italian Minister of Foreign Affairs intervened on their behalf. In the fall of 1980 Mazara fishermen kept their fleet in port for a month to protest the detention of fishermen and call the attention of Italian authorities to their plight.

In 1980, Malta created a new problem for Siracusa and Ragusa fishermen when it abruptly extended its offshore jurisdiction to 25 miles. The deterioration in relations with nearby Mediterranean states over fishing issues and the slight chance of any resolution of these problems in the near term accounts for a certain pessimism voiced by fishing spokesmen in Mazara del Vallo in recent months. The risks and costs of fishing as usual in North Africa waters are on the rise.

Prospects

The Sicilian Government, in cooperation with the fishing industry, has devised a comprehensive program to reorganize and further expand the sector. It calls for promotional legislation, development of aquaculture, and efforts to find new fishing grounds and to resolve the disputes with Tunisia and Libya in a way that would permit the Sicilians to regain access to the rich fishing grounds off their coasts.

As a first step, in November 1980 the Sicilian Regional Assembly enacted legislation providing for the establishment of aquaculture projects in coastal waters, subsidies for modernization of the fishing fleet, and the application of advanced technology in the processing industry. The law, which was officially promulgated on 12 January 1980, also encourages the formation of fishermen's cooperatives. An initial allocation of 75 billion lire (about US$9.5 million) was appropriated for the program for the period 1980-82. Financial incentives (up to 80 percent for private operators) are being offered for the construction of trawlers of between 30 and 200 tons, provided owners demolish old vessels of a total capacity of at least 80 percent of the new vessel's tonnage. Other incentives are available for alterations and repairs on existing vessels.

The new law should be an overall plus for the Sicilian fishing industry, but it is questionable whether it can do much to promote early settlement of the problems with Tunisia and Libya. In fact, some local observers (including the State Commissioner for Sicily, Giorgio Brancata) believe the law could even complicate things for the National Government in Rome and the EEC (which is now the competent authority to conduct such negotiations for all Member States), in that expansion and modernization of the fleet would probably result in Sicilian fishing outside their own waters—and getting into trouble—to an even greater extent than has been the case up to now. Moreover, the Tunisians have indicated that they are interested only in a comprehensive agreement under which, in exchange for granting fishing rights, they would be allowed to sell more of their agricultural products, such as olive oil and almonds, in Western Europe. They are also unhappy about the oil drilling being conducted by ENI, the Italian Hydrocarbon Agency, on behalf of the Libyan government in waters contested by Libya and Tunisia, and this could further complicate prospects for a new agreement.

The outlook with Libya does not appear much better. The Libyan government has long pressed for joint venture arrangements with Italian firms under which the Libyans would share in the catch and the profits, but the Sicilians have been hesitant to enter any agreement that would leave them as minority partners. Such arrangements, however, could well turn out to be the only means by which Italian fishermen can regain access to areas now off limits to them. In an interview in Palermo on 22 March 1980, Italian Foreign Minister Ruffini urged Sicilians to consider establishing joint ventures with Libya. One such agreement was reached in January 1980

with Egypt which allows seven Mazara boats to fish in the Red and Mediterranean seas and sell the catch in Egypt. (The Italian government is to pay half of the operating expenses, the fishing firms the other half.)

Concern for the welfare of the fishing industry was expressed at the national level at a conference held in Rome on 21 March 1981. The conference, sponsored by CNEL (National Committee for the Economy and Labor) was attended by representatives from ministries, public bodies, and the fishing industry. Speakers emphasized the need for scientific research, protection of fishing resources, and cooperation with other Mediterranean countries. According to the head of the Sicilian Regional Fishing Bureau, who attended the conference, emphasis was placed on improving the Italian industry in order to reduce fish imports, now valued at 600 billion lire annually. He said the measures proposed at the conference did not seem to go much beyond those already provided for in the new Sicilian Regional Government's fishing law.

Sicily's age-old fishing industry confronts both opportunity and challenge as the new decade begins. With quality fish currently selling for as much as 20,000 lire per kilo (about US$11 a pound) in Palermo, and supply unequal to demand even at such prices, shipowners and fish processors are still making money, notwithstanding their high operating costs. There appears to be little likelihood, at least in the short term, that the fish catch in Sicilian waters can be increased significantly. Upgrading the fleet and adopting more modern fishing techniques would probably lead to an increase in the overall catch for a time, but the basic problems—the decline of the fish population from overfishing and pollution, and the frictions with other nations of the Mediterranean littoral over fishing grounds—are not likely to go away.

Some knowledgeable industry observers believe the best option for Sicily may lie in developing additional fish resources via aquaculture. Several aquaculture schemes are under consideration, including an ESPI plan for a pilot sea farm on the west coast, north of Marsala. In the near term, Sicilian fishermen will probably continue to fish, and become involved in incidents in, North African waters, and there will likely be increased interest in fishing in the Atlantic (one Sicilian firm—Cefalu'—is already sending boats to West African and U.S. waters) unless and until the cost of diesel fuel increases as to make that an unprofitable option. Meanwhile, government subsidies will probably loom ever more important to the fishing sector, as they have for so many other Italian industries, during a difficult period of transformation.

Russia-Japan Conclude Fishery Pacts for 1982

The Soviet and Japanese government representatives in Moscow on 16 December 1981 signed a protocol to bilateral interim agreements for 1982 which regulate mutual fishing operations and catch quotas within their respective 200-mile fishing zones. Under the agreements, both Japan and the Soviet Union will retain the same total quotas as in the previous 3 years, 750,000 metric tons (t) for Japan and 650,000 t for the Soviet Union. Catch quotas for the species in which each country has primary interest also remained unchanged, 290,000 t of Alaska pollock for Japan and 500,000 t of combined sardine and mackerel for the Soviet Union.

The agreements introduced expansion of fishing zones in two areas in the northern Sea of Japan, one west of Sakhalin for Japan and the other west of Hokkaido and northern Honshu for the Soviet Union.

A breakdown of the 1982 catch quotas is shown in Table 1.

Table 1.—Russian and Japanese catch quotas for 1980-82.

Species	Quotas (t) 1980	1981	1982
Soviet quotas in Japanese zone			
Sardine and mackerel	500,000	500,000	500,000
Alaska pollock	30,000	20,000	10,000
Itohikidara (hakeling)	80,000	90,000	90,000
Saury	10,000	10,000	10,000
Sand lance	10,000	10,000	0
Others	20,000	20,000	40,000
Total	650,000	650,000	650,000
Japanese quotas in Soviet zone			
Alaska pollock	290,000	290,000	290,000
Flounder	24,800	24,600	24,600
Pacific cod	34,000	32,600	33,200
Wachna cod	15,500	15,500	15,500
Saury	68,600	68,600	68,600
Atka mackerel	11,300	11,300	11,700
Sand lance	43,800	43,000	43,000
Shark	1,200	1,200	1,200
Tuna	6,400	6,400	6,400
Rockfish	16,900	17,900	17,900
Squid	142,900	146,200	146,400
Octopus	3,600	3,600	4,200
Tanner crab	2,500	2,800	2,800
Red tanner crab	2,600	2,600	2,600
Korean hair crab	800	800	800
Spiny crab	800	800	800
Shrimp	500	500	500
Snail	3,000	3,500	3,500
Others	80,800	78,100	76,300
Total	750,000	750,000	750,000

Norway, Russia Agree on Fisheries Quotas

The Soviet Union and Norway have reached agreement that the cod quota in the Barents Sea this year will be 340,000 t (same as last year), according to the Norwegian Information Service. Of this, 40,000 t are to be coastal cod. The Soviet Union had initially demanded a reduction of the cod catch to 140,000 t.

The cod catch is to be divided 50-50, but in addition, 45,000 t are to be transferred from the Soviet to the Norwegian quota, as well as 25,000 t of haddock. The total haddock catch was put at 110,000 t, plus 10,000 t to a third country.

The aggregate capelin catch will be 1.7 million t, 900,000 t of summer capelin and 800,000 t of winter capelin. Norway already had 60 percent of this quota, and then transferred 70,000 t of winter capelin and 40,000 t of summer capelin. This means that Norway had in effect two-thirds of the quota by late last year.

The Soviet fishermen will be permitted to fish 470,000 t of blue whiting, 185,000 t in the Norwegian zone and the rest in the Jan Mayen zone. There will also be an opportunity to apply for a bigger quota, should there be need for it. The Soviet Union may also fish 54,000 t of redfish and 2,400 t of Greenland halibut in the Norwegian zone.

Japanese 1980 Marine Fish Catch Sets Record

Japan's marine fish catch in 1980 set a new record, aided by a record-setting performance by the offshore fisheries and improved catches by the distant-water and coastal fisheries (Table 1), according to the statistics released by the Ministry of Agriculture, Forestry, and Fisheries. The total catch for the year was 9,908,554 metric tons (t), a 5 percent gain over 1979 and a new record over the previous high of 9,793,029 t in 1973.

By type of fisheries, the distant-water fisheries caught 2,121,000 t (+4 percent), reversing a 6-year decline since 1974. The offshore fisheries caught 5,751,000 t (+5 percent), a new high, and the coastal fisheries, with catches totaling 2,037,000 t (+4 percent), returned to a 2 million t level for the first time in 3 years since 1977.

By species, significant gains were recorded in the catches of sand lance (+82 percent), herring (+64 percent), common squid (+56 percent), searobin (+37 percent), and frigate mackerel (+36 percent), whereas sharp declines occurred in king crab (−79 percent), jack mackerel (−35 percent), and saury (−33 percent) (Table2).

The most important species landed in terms of quantity was sardine, as in 1978 and 1979, with a catch of 2,441, 961 t (+19 percent), followed by Alaska pollock with 1,552,421 t (no change). The third in importance was mackerel, which, at 1,301,122 t, showed a decrease of 8 percent over 1979. Sardine, Alaska pollock, and mackerel together accounted for 53 percent of the total marine catch for 1980, the same as 1979.

Total 1980 landings of fisheries and fish culture products for 1980 hit 11,092,000 t, up 5 percent from the 1979 figure, according to data released by the Ministry of Agriculture, Forestry, and Fisheries. Also showing an increase was marine culture at 992,000 t, up from 883,000 t in 1979. Decreasing slightly were inland fisheries, at 128,000 t compared with 136,000 t for 1979, and inland fish culture (94,000 t compared with 95,000 t in 1979). (Source: FFIR 81-21.)

Table 1.—Japan's marine fisheries catch by type of fisheries, 1972-80.

Type of fisheries	Catch (· 1,000 t)								
	1972	1973	1974	1975	1976	1977	1978	1979	1980
Distant-water	3,905	3,988	3,698	3,168	2,949	2,657	2,134	2,035	2,121
Offshore	3,594	3,984	4,178	4,469	4,656	4,924	5,559	5,488	5,751
Coastal	1,902	1,820	1,874	1,935	2,000	2,107	1,990	1,953	2,037
Total	9,400	9,793	9,749	9,573	9,605	9,688	9,683	9,477	9,909

Table 2.—Japan's marine fisheries catch by selected species, 1979 and 1980.

Species	Catch (t)		Species	Catch (t)	
	1980	1979		1980	1979
Tuna			Rockfish	31,310	40,447
Bluefin	49,494	44,241	Rockcod	11,870	9,927
Albacore	69,677	66,822	Sandfish	12,333	10,179
Bigeye	123,168	130,466	Croaker	32,025	39,444
Yellowfin, large	119,001	99,659	Butterfish	912	1,364
Yellowfin, small	17,156	21,729	Hairtail	37,803	30,518
Total	378,496	362,917	Searobin	3,395	2,473
			Sea bream	28,151	28,825
Skipjack			Dolphin fish	10,280	9,470
Skipjack	354,156	329,948	Flying fish	7,690	8,761
Frigate mackerel	22,582	16,570	Mullet	11,727	11,651
Total	376,738	346,518	Seabass	10,002	9,544
			Sand lance	201,209	110,484
Billfish	44,122	43,357			
Shark	42,286	42,480	Shrimp	50,505	52,661
Ray	11,884	9,496	Crab		
Salmon	122,515	131,021	King	57	270
Herring	11,154	6,819	Tanner	21,314	23,476
Sardine	2,441,961	2,056,358	Blue	2,807	3,905
Spanish mackerel	7,045	6,140	Other	53,911	52,618
Jack mackerel	144,979	183,883	Total	78,089	80,269
Mackerel	1,301,122	1,414,183			
Saury	187,155	277,960	Squid		
			Common squid	331,933	212,841
Yellowtail	42,009	44,970	Cuttlefish	10,409	14,137
Flatfish	288,881	288,896	Other squid	343,740	301,853
Cod			Total	686,082	528,831
Cod	96,742	91,829			
Alaska pollock	1,552,421	1,551,116	Octopus	46,106	51,986
Total	1,649,163	1,642,945	Sea urchin	24,158	26,500
			Sea cucumber	8,969	9,381
Atka mackerel	117,351	118,888	Shellfish	337,885	357,490

Norway Tries Trout Caviar

A new type of caviar made from trout roe will soon be competing with the traditional Russian brand, reports the Norwegian Information Service. Tasters who have sampled the product claim that it is on a par with the finest caviar on the international market.

The first production plant was scheduled to start operation on the island of Frøya, in mid-Norway, in March. Initial annual production is set at 50 t of caviar, at a first-hand value of $3.3 million. The industrial production method for trout caviar was discovered by an Icelandic concern in cooperation with the Fisheries Research Institute of Iceland. The main problem has been to separate the actual roe from the membrane enclosing it, and the Icelanders have found a way to do this. This method, now patented, is based on accelerating ovulation with the aid of salt and heat, without causing the eggs to ripen more.

Norway has secured first rights to the processing plants which the Icelandic firm deliveres. The intention is to establish 6-7 such plants along the Norwegian coast beside already established fisheries industries. The plans involve production for two plants this year. Price of a 50 g jar of the new product, with first-hand value of $33/kg from the factory will be about $3 at retail.

Brazilian Fisheries and Licensing Regulations

Brazil is one of Latin America's most important fishing countries. The 1980 catch was about 927,000 metric tons (t), excluding subsistence fishing.

Brazil claimed a 200-mile territorial sea on 27 March 1970 when law No. 1098 was approved by the Brazilian Government. Regulations for foreign fishermen were promulgated on 1 April 1971 with Decree Law No. 68459. Brazilian officials may reportedly modify their 200-mile territorial sea claim to an Exclusive Economic Zone (EEZ) claim in order to bring Brazil more in line with the emerging Law of the Sea consensus. Such a modification, however, would not affect the Brazilian regulations for foreign fishermen.

Brazilian officials have discouraged foreign distant-water fishing since 1978. Foreign-flag shrimp trawlers used to operate extensively off the country's northern coast, but in 1978 the Brazilian Government began to seize U.S. and other foreign vessels which continued to fish there. There are provisions in Brazilian law, however, which do permit foreign vessels to operate off Brazil, and fishermen from several countries have taken advantage of these provisions.

Brazilian regulations permit four categories of licenses for foreign fishermen: Special licenses, charter contracts, joint ventures, and bilateral agreements. While permitted by law, there are no known examples of Brazilian officials actually approving the special licenses.

Charter contracts are licenses for foreign vessels chartered by Brazilian fishing companies. These are routinely approved by Brazilian officials. Such charters authorize exploratory fishing for species not currently fished and commercial fishing for species not fully utilized by Brazilian fishermen. Joint venture licenses can also be obtained by Brazilian companies which have formed joint ventures with foreign fishermen[1].

Licenses can be obtained under bilateral agreements with foreign governments. Brazil has negotiated several such agreements with neighboring countries, but no known fishing operations have yet resulted from these agreements. Brazil signed a fishery agreement, for example, with Trinidad in 1978. Even though Trinidad badly needs access to fishing grounds for its fleet, Brazil has not yet issued such licenses. Brazilian officials have insisted on a joint venture framework even when agreeing to a bilateral licensing system.

Applications for licenses must be submitted to the Superintendency for Fisheries Development (SUDEPE) in the Ministry of Agriculture by a Brazilian company which assumes legal and financial responsibility for the operations of the foreign fishermen. Foreign fishermen obtaining licenses must pay a $500 registration fee and a $20 per net-registered-ton licensing fee. The licenses are valid for 1 year and can be renewed annually. Foreign fishermen are only authorized to fish outside a 100-mile coastal strip; the latter is reserved exclusively for Brazilian fishermen. All fish caught in Brazilian-claimed waters must be landed in Brazilian ports.

Violations of Brazilian regulations for foreign fishermen are punishable under the country's criminal code. Fines vary according to many different factors and circumstances as established in chapters IV and VII of Decree Law No. 211, dated 28 February 1967 and modified by Law No. 6276, dated 1 December 1975. Brazilian officials have been fining U.S. shrimp fishermen seized off Brazil about $2,000 per vessel and have also been confiscating their gear and catch. Brazilian officials have, however, recently decided to deal more strictly with foreign fishermen and have begun to also confiscate vessel equipment other than actual fishing gear. (Source: IFR-81/156.)

Another report prepared by the U.S. Embassy in Brasilia on the country's fishing industry, including details about the licensing of foreign fishermen, can be purchased for $6.50 by ordering report number DIB-81-03-092 from NTIS, Springfield, VA 22161.

[1]Additional details on charters and joint ventures are given in Foreign Participation in Brazilian Fishing Industry. Mar. Fish. Rev. 44(1):30.

Japan's Chum Salmon Catch Hits New High

Japan's fall chum salmon catch off Hokkaido, which has sharply increased in recent years, totaled 20,921,592 fish by the end of November 1981, an all-time record high according to preliminary data released by the Japan Fisheries Agency's Hokkaido Salmon Hatchery. Catch figures (by area) and comparisons with 1980 are shown in Table 1.

The catch also exceeded predictions by the Hokkaido Salmon Hatchery. It had been earlier forecast that the chum catch would be high, but probably the second largest in history. These data are also included in Table 1. The chum salmon catch in previous years (cumulative total to 30 November) was 18,361,000 in 1979, 12,474,000 in 1978, and 9,557,000 in 1977. (Source: FFIR 82-22.)

Table 1.—Japan's fall chum salmon catch off Hokkaido (cumulative to 30 November).

	Catch (no. of fish)		1981 forecast (no. of fish)			
Area	1980	1981	Total	3 years old	4 years old	5 years old
Pacific Ocean						
Nemuro area	4,193,110	5,561,523	5,851,500	1,669,400	3,669,700	472,400
East of Cape Erimo	4,437,045	5,674,232	3,060,000	420,700	1,911,400	727,900
West of Cape Erimo	1,968,834	3,207,928	2,750,000	839,300	1,768,600	142,100
Okhotsk Sea	3,409,519	5,385,320	4,128,200	1,931,700	2,016,000	180,500
Japan Sea	566,209	1,092,589	880,300	336,200	509,100	34,900
Total	14,574,717	20,921,592	16,660,000	5,197,400	9,904,800	1,557,800

Tasman Sea Squid Studies Find Gill Nets Effective

Catches by the Taiwanese research vessel *Hai Kung* in the Tasman Sea have demonstrated that surface gillnetting is an effective technique for catching oceanic squid in this region, according to a report in *Australian Fisheries.* The *Hai Kung* caught some 1,200 kg of the oceanic squid species *Ommastrephes bartrami* in seven sets during a 17-day exploratory cruise from Auckland to Melbourne a year ago (Table 1).

During this cruise, the 56.6 m, 712 t vessel routinely used surface plankton nets and freefall drop nets to try to obtain larval squid (only a small number were caught) and recorded oceanographic data at four other points (see map).

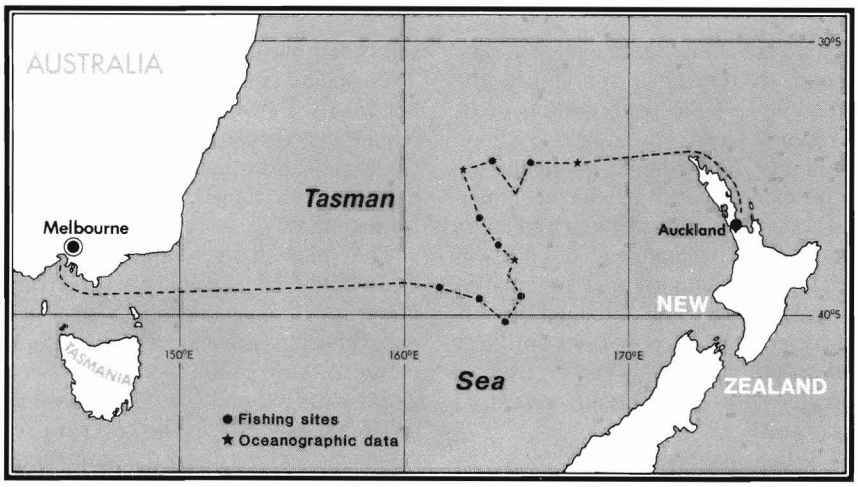
The gill net used consisted of panels about 25 m long with a stretched mesh of 110 cm. Each panel had one or two buoys (14.5 kg buoyancy, 30 cm diameter) attached to the floatline, making the net easy to see in the water. A radio transmitter was coupled to one end of the net, and two flashing beacons and a large buoy were attached to the end from which hauling would commence.

The net usually had 70 panels, although once (at station 11), a further 60 panels were added. The net was set at dusk. Hauling, the most critical part of the fishing operation, began shortly after the first light. Unfavorable conditions (swell greater than 3-4 m, winds force 4 and above) caused considerable problems; at times the net had to be cut to prevent it drifting under the ship and fouling the propeller.

Table 1.—Fishing station and catch data.

	Set			Haul			Catch (kg)	
Date	Duration[1]	Latitude	Longitude	Duration[1]	Latitude	Longitude	Squid	Other
12 Jan 1981	13	34°59'	165°59'	85	34°55'	165°58'	2	42
15	15	36°59'	163°35'	123	36°59'	163°34'	114	60
16	13	36°56'	164°15'	140	37°57'	164°10'	156	21
18	32	39°29'	165°18'	105	39°21'	165°10'	193	26
19	10	40°32'	164°49'	82	40°32'	164°49'	240	40
20	13	39°40'	163°28'	123	39°39'	163°28'	141	34
21	22	39°02'	161°59'	260	39°06'	161°59'	349	48

[1]Minutes



Although three automatic jigging machines were installed on the port side and one of these was used on several occasions after setting the net, only one squid was caught this way. However, squid were observed swimming at the surface on a number of nights and several were caught by the crew on a variety of hand jigs.

Over 80 percent of the catch was made up of the oceanic squid *Ommastrephes bartrami.* This species occurs throughout subtropical waters of the Southern Hemisphere and northwestern Pacific, and has been the second most important species to the Japanese local fishery in recent years (where annual landings totalled 180,000 t in 1980).

The balance of the catch consisted of albacore, *Thunnus alalunga*; skipjack tuna, *Katsuwonus pelamis*; shortfin mako, *Isurus oxyrinchus*; Ray's bream, *Brama brama*; and blue shark, *Prionace glauca.* A single specimen of another oceanic squid, *Todarodes filippovae*, distributed around the subtropical convergence zone in the Southern Ocean, was caught on a hand jig at Station 8.

During the cruise, immature females of 40 cm (mantle length) weighing over 2 kg were caught frequently. It is interesting that no oceanic squid less than 27 cm mantle length were caught by the net although specimens of 19 cm mantle length were caught on hand jigs. Scientists believed that the population consisted of several cohorts, with the net selecting only the larger individuals.

The catches by *Hai Kung* demonstrated that surface drift-netting using monofilament nets can be an effective method of catching oceanic squid. However, the scientists believe that more research to define the squid resource is needed before significant involvement by the Australian fishing industry can be considered.

Note: Unless otherwise credited, material in this section is from either the Foreign Fishery Information Releases (FFIR) compiled by Sunee C. Sonu, Foreign Reporting Branch, Fishery Development Division, Southwest Region, National Marine Fisheries Service, NOAA, Terminal Island, CA 90731, or the International Fishery Releases (IFR), Language Services Biweekly (LSB) reports, or Language Services News Briefs (LSNB) produced by the Office of International Fisheries Affairs, National Marine Fisheries Service, NOAA, Washington, DC 20235.