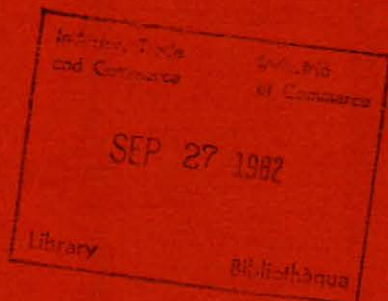


HD  
9464  
•C2A25  
Annex  
v.14zf

ANNEX TO THE  
**WORLDWIDE FISHERIES  
MARKETING STUDY:**  
PROSPECTS TO 1985

CHILE



Government  
of Canada

Gouvernement  
du Canada

Fisheries  
and Oceans

Pêches  
et Océans

HD  
9464  
C2A25  
Annex  
v. 14zf

(This report is one of a series of country and species annexes to the main study - entitled the Overview.)

DRAFT

Annex to the  
Worldwide Fisheries Marketing Study:  
Prospects to 1985

CHILE

Study Team

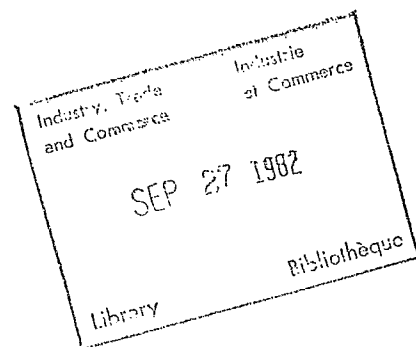
D. Goodman  
Department of Fisheries and Oceans

B. Hood  
Canadian Embassy, Santiago

D. Dickinson  
Nickersons Seafood, Bermuda

G. Vernon  
Department of Fisheries and Oceans

E. Wong  
Department of Fisheries and Oceans



December 1981

## ACKNOWLEDGEMENT

The preparation of the Worldwide Fisheries Marketing Study of which this Report is a part, embodies many hours of work not only by the authors but also and more importantly by those who generously provided us with market information and advice.

Specifically, this Report would not have been possible without the cooperation and assistance of fishermen, processors, brokers, wholesalers, distributors, retailers, consumers and their organizations as well as government officials with whom we visited and interviewed. Though too numerous to mention separately, we would like to extend our sincere gratitude and appreciation.

The views expressed in this Study, however, are ours alone and reflect the Canadian perception of worldwide markets.

With regard to the overall Study, we would like to acknowledge:

- the encouragement and guidance of G.C. Vernon and J. John, Department of Fisheries and Oceans (DFO);
- the advice of K. Campbell, Fisheries Council of Canada; and R. Bulmer, Canadian Association of Fish Exporters;
- the liaison work of M. Foubert, DFO;
- the cooperation of the Department of Industry, Trade and Commerce (IT&C);
- the dedication of the participants from various parts of the industry and government including officers at our diplomatic posts who formed the study team;
- the analytical and editorial assistance of K. Hay and his staff at Economix International;
- the general assistance within DFO provided by the Headquarters word processing support services and the staff of the Marketing Services Branch.

To all of the above, we extend our thanks.

E. Wong  
December, 1981

## FOREWORD

As a consequence of global extension of fisheries jurisdictions, a radical shift has taken place in the pattern of worldwide fish supply and demand. This change is still going on and will continue for many years before a new dynamic equilibrium situation is reached. However, in the midst of this re-adjustment, a new trade pattern is emerging -- some net exporting countries are now importing and vice versa. In the longer term, some countries will experience shortages of supply and others will have a surplus. Fortunately, Canada is amongst the latter group.

The implications for the marketing of Canadian fisheries products arising from the worldwide introduction of the 200-mile limit are extensive. With our vastly improved supply position relative to world demand, government and industry are understandably concerned about ensuring that the bright promise of increased market opportunities are real and can be fulfilled. One of the steps in this process is the publication of the Worldwide Fisheries Marketing Study which assesses the global potential on a country and species basis.

Specifically, the purpose of the Study is to identify the longer term market opportunities for selected traditional and non-traditional species in existing and prospective markets and to identify factors which may hinder or help Canadian fisheries trade in world markets. To date, over 40 country markets and 8 species groups have been analyzed. It should be noted that while the information contained in the Reports was up-to-date when collected, some information may now be dated given the speed with which changes are occurring in the marketplace. In this same vein, the market projections should be viewed with caution given the present and still evolving re-alignment in the pattern of international fisheries trade, keeping in mind the variability of key factors such as foreign exchange rates, energy costs, bilateral fisheries arrangements and GATT agreements which have a direct effect on trade flows.

Notwithstanding, the findings contained in these Reports represent an important consolidation of knowledge regarding market potential and implications for improvements in our existing marketing and production practices. The results of the Study should, therefore, usefully serve as a basis for planning fisheries development and marketing activities by both government and industry in order to capitalize on the identified market opportunities.

This draft report is published for discussion purposes and as such we invite your critical comments.

Ed Wong

Marketing Services Branch.  
Marketing Directorate.  
Fisheries Economic Development and Marketing.  
Department of Fisheries and Oceans.  
October, 1981.  
Ottawa

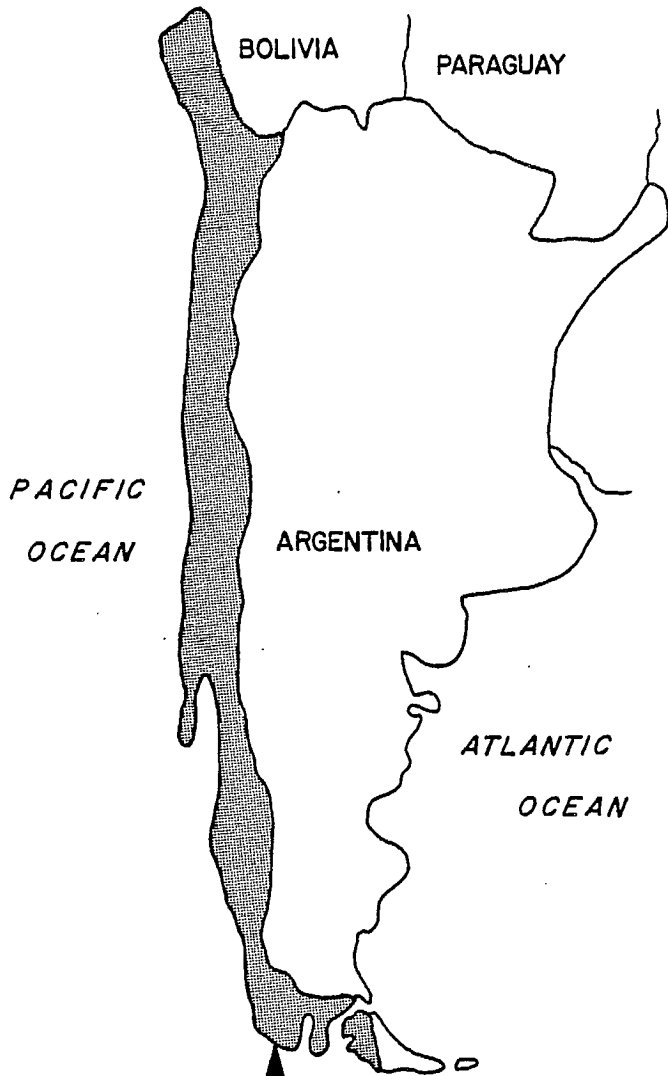
WORLDWIDE FISHERIES MARKETING STUDY

CHILE

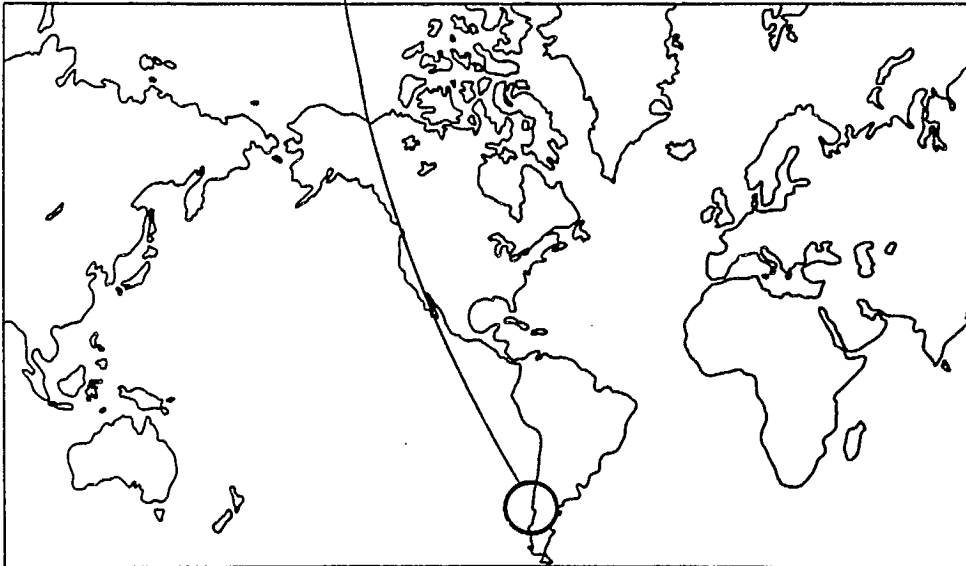
Table of Contents

<u>Section</u>	<u>Page</u>
A. INTRODUCTION .....	1
B. SUPPLY .....	2
1. Landings .....	2
2. The Fishing Industry .....	7
3. Prospects for Production by Species .....	8
C. DEMAND .....	10
D. DEMAND-SUPPLY BALANCE .....	11
1. Imports .....	11
2. Exports .....	11
3. Canadian Trade with Chile .....	12
E. MARKET IMPLICATIONS FOR CANADIAN TRADE OF CHILEAN EXPORTS .....	17
1. Exports Expected to 1985 .....	17
2. Foreign Participation in the Chilean Economy .....	18
F. CONCLUSIONS .....	19
APPENDICES .....	21
I Chile: Industrial Fishing Fleet, 1978 Number and Registered Gross Tonnage .....	22
II Chile: The Fish Processing Industry .....	24
III Chile: Fish Landings (1970-1980) .....	27
IV Chile: Production of Fish Meal Net Product Weight (1970-1978) .....	28

# CHILE



INDEX MAP



## A. INTRODUCTION

Chile is rapidly becoming one of the world's leading producers of fisheries products. Her sovereign waters extend over an immense area of the south-east Pacific Ocean and the Antarctic Sea, and her coastline stretches 2 800 nautical miles from the Atacama Desert in the north to wind-swept Tierra del Fuego in the south. The cold waters of the Humbolt current provide ideal conditions for pelagic species such as anchovy and sardine, and for many crustaceans and molluscs. Occasionally, warm waters from the north disrupt these conditions, leading to poor harvests of anchovies, as happened in the mid 1960's and early 1970's.

The fishing fleet has traditionally been small and mainly artisanal. The processing industry has concentrated on fish meal production from anchovy. But this situation is changing rapidly with the help of external aid, foreign investment and technical assistance.

Chile's population numbered 11 million in 1979 and is increasing at 1.7% per annum. By 1985, it is expected to reach about 12 million. During the 1970's, Chile followed, by turns, two quite different economic philosophies. From 1970 to 1973 an attempt was made to transform the country to a state-planned economy. With a change in government in 1973, Chile swung sharply back towards a free-market system, giving rise to a period of sustained readjustment within the economy. Per capita national product in 1978 was just 3% higher than 1970 and about the same as 1974. After a long struggle to contain hyperinflation, it was reduced to 38% per annum in 1979, with a real income growth of 6.7% in that year. Thus at the beginning of the 1980's, Chile is moving towards economic stability and sustained growth. These factors will promote income expansion and allow a higher level of fisheries products consumption than occurred in the recent past.



## B. SUPPLY

### Current and Expected Supply Picture to 1985

#### 1. Landings

Chile, like Peru, was strongly affected by the sudden drop in anchovy stocks in 1973. In terms of world production Chile fell to nineteenth in the world league tables but by 1980 preliminary catch estimates of 3.2 million tonnes placed Chile fourth among the world's fishing nations. Nominal catches by species are shown in Table 1 and illustrated in Chart I. Figure 1 shows major ports and fishing regions in Chile.

As Figure 1 illustrates, Chile is a long narrow country about 3 500 km from north to south and about 200 km at its widest point. Most of the population lives in the south central region around Santiago and Valparaiso. But it is the arid and underpopulated northern region which accounts for 90% of Chile's fish production. The major species caught in this region are Peruvian Anchovy, Sardines and Jack Mackerel. Most of this catch is used for fish meal.

As Table 1 shows, the anchovy catch dropped to almost nothing between 1971 and 1977 but other species such as Chilean sardines, jack and club mackerel have more than replaced this loss. By comparison, Peruvian catches of anchovy in 1978 showed some slight recovery, thus it may be that Chilean anchovy catches will also return to higher levels in the near future as the regions stock recovers. Chilean sardine catches have increased very significantly from a low of 54 000 tonnes in 1973 to 780 000 tonnes in 1978. The 1980 sardine catch was estimated at 1.6 million tonnes.

In the north central region there is a large artisanal fishery which harvests sardines, jack mackerel, shrimp and abalone. It is believed that there are large reserves of pelagic species in this region which are currently underutilized.

In the Valparaiso area high value species such as shrimp, lobster and abalone are in danger of being overfished. To control this, their harvest has

been restricted. Hake, sardine and jack mackerel are also caught in this area, but in limited quantities.

The southern region is potentially an excellent fishing area but its resources are underexploited. There is an abundance of high value species such as crab, oyster, scallop and high quality fin-fish. There are also large reserves of mussels and grenadier. Krill is available in abundance in Antarctic waters.

Chile's territorial waters extend around off-shore islands. Some fishing is carried out from the Juan Fernandez Archipelago and from Easter Island, nearly 5 000 km from the mainland. The most commercially important species taken in these island fisheries is the spiny lobster. Salmon are being reared in the waters of the Archipelago, but this fishery is still in its infancy.

TABLE 1

Chile: nominal fisheries catches, by major species

1970-1978

(000 tonnes)

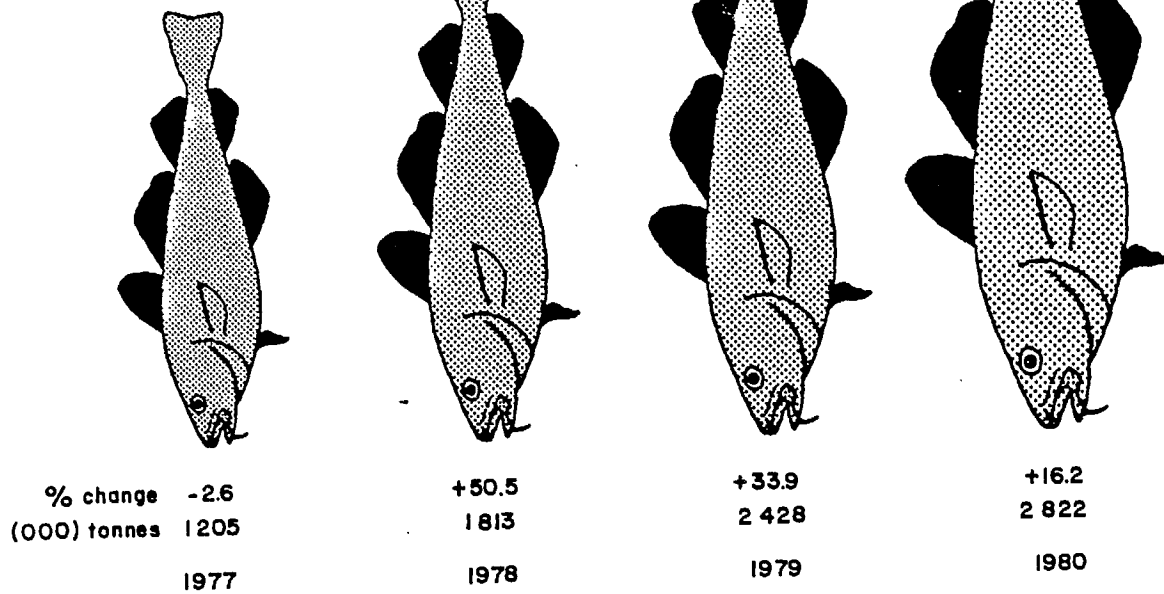
<u>Year</u>	<u>Anchovy</u>	<u>Chilean Sardine</u>	<u>Jack Mackerel</u>	<u>Chub Mackerel</u>	<u>Hake</u>	<u>Squat Lobsters</u>	<u>TOTAL</u>
1970	783	68	112	--	88	40	1 228
1971	961	175	158	--	66	38	1 512
1972	368	132	87	--	67	33	818
1973	192	54	117	4	47	25	691
1974	389	208	193	--	43	27	1 158
1975	240	165	261	15	32	36	92
1976	434	327	342	53	30	63	1 409
1977	19	621	341	141	37	43	1 349
1978	27	781	500	175	23	41	1 698

Note: Catches for 1979 were reported to be 2.6 million tonnes. Estimates for 1980 put the catch figure at 3.2 million tonnes.

Source: FAO, Fishery Statistics, Vols. 38 to 46, Rome, Italy.

**CHART I**

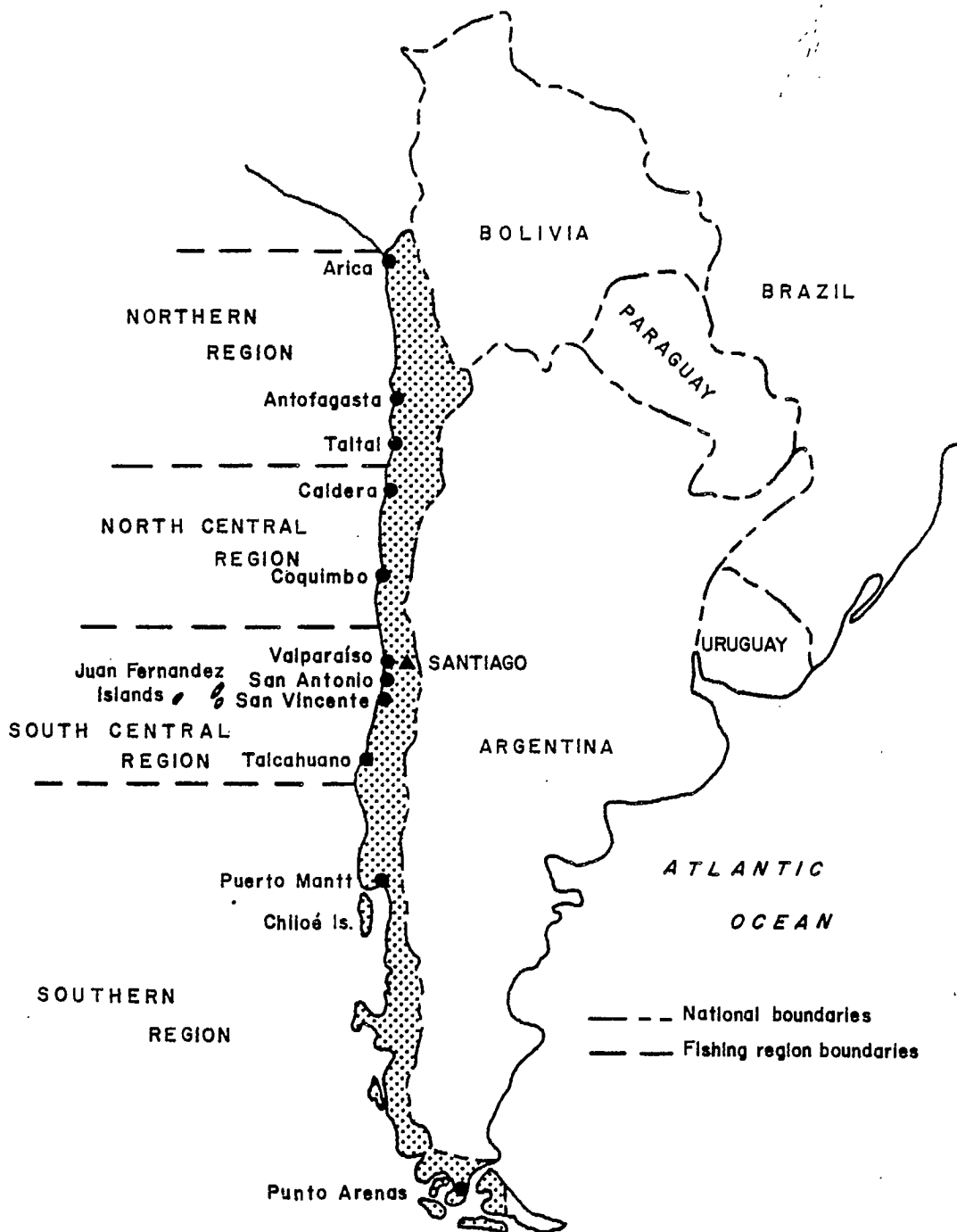
CHILE: Fish catch 1977-1980



Source: ODEPLAN, Central Bank of Chile, Santiago.

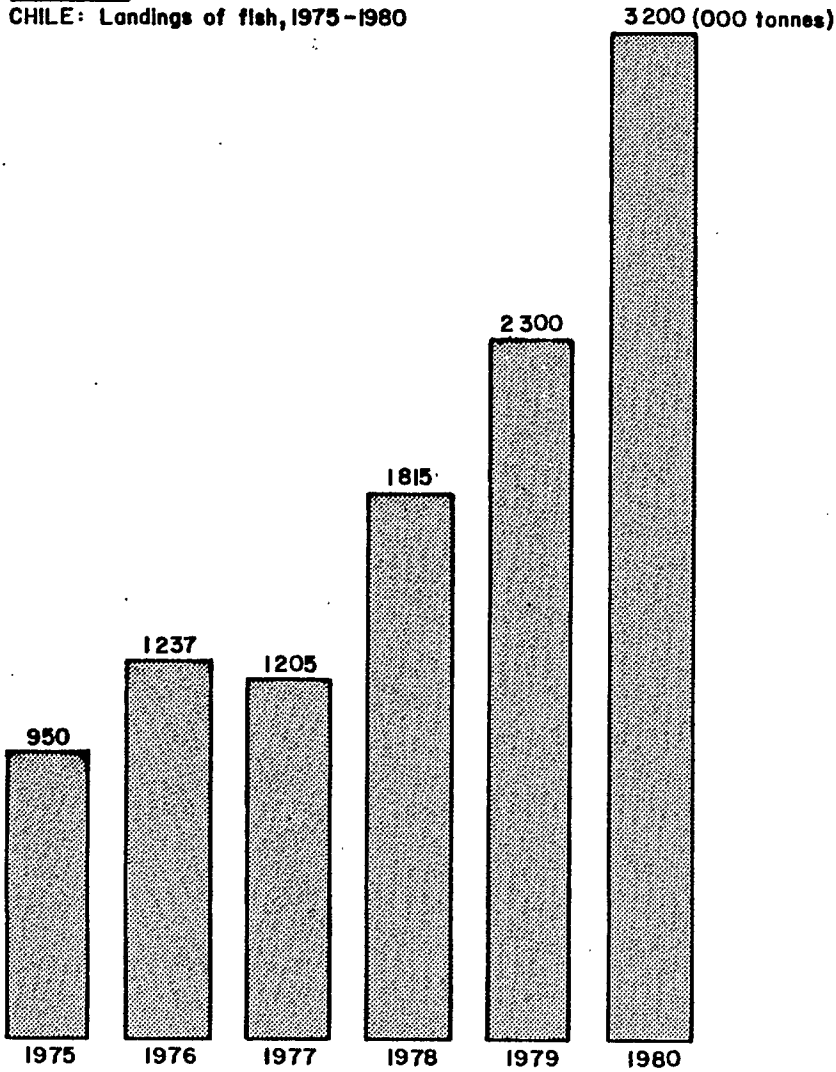
---

FIGURE I - FISHING REGIONS OF CHILE



**CHART 2**

CHILE: Landings of fish, 1975-1980

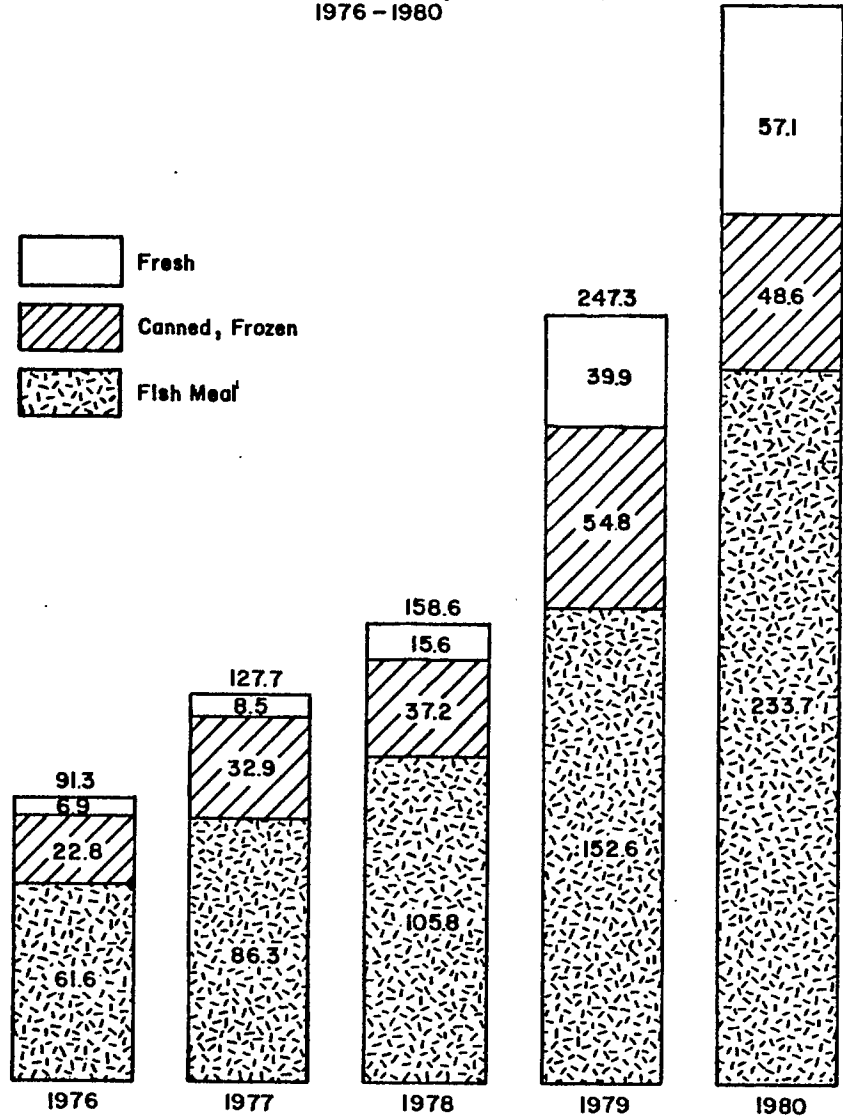


Source: ODEPLAN, Central Bank of Chile, Santiago.

**CHART 3**

CHILE: Exports of fish and fish products, 1976-1980

(US \$ Millions) 339.4



Note: These graphs do not include fish oil exports.

Source: ODEPLAN, Central Bank of Chile, Santiago.

## 2. The Fishing Industry

### a) The Fishing Fleet

One-third of the fish consumed in Chile is produced by an artisanal fleet of independent fishermen operating small vessels. Some of these fishermen sell directly to local markets, others to co-operatives. The Government is trying to encourage fisheries co-operatives and has had some success, although there have been technical problems. The Japanese are providing assistance by training fishermen in new production methods and technology.

Chile's industrial fleet is primarily owned and operated by the private fish processing companies. The fleet consists mainly of purse seiners for harvesting anchovy, sardine, bonito and tuna, and trawlers for harvesting shrimp, prawn and hake. (See Appendix I for more details of the fleet.)

At present very little mid-water trawling is carried out in Chile, but the potential for its development exists.

### b) Processing

Since 1974 most of the existing fish plants have been modernized and new ones have been built. Facilities for freezing and canning have been installed as the processors have tried to diversify and reduce their dependence on fish meal and fish oil. The industry is concentrating on higher revenue producing items such as shellfish and frozen fish.

Two canneries are being constructed at present (May 1981) in Iquique and Caldera as co-operative ventures between a Chilean firm and two South African companies. Production from these new facilities will be almost entirely exported and is expected to have an annual value of US \$35 million. The species to be canned include sardine, jack mackerel, blue mackerel, and anchovy. For more details on the modernization of the fish processing industry, (see Appendix II).

### 3. Prospects for Production, by Species

Chile's fishery is in the process of rapid expansion and diversification. The modernization of the fleet and processing industry will allow greater output to exploit the enormous resources of certain non-traditional species. Chilean laws are being revised to encourage a more rapid growth of the fishing sector including encouraging joint ventures. The government is actively engaged in research to determine limits so over-fishing of anchovy and sardine can be curtailed. Total allowable catch limits will be set for anchovy, jack mackerel, common and Spanish sardine, horse mackerel, hake, cusk, eel, shrimp, prawn, rock lobster, scallops, mussels, clams, and abalone.

In the past most fishing has taken place in coastal waters but this is changing as bigger vessels are built to exploit the more distant waters, especially south of latitude 43°S. Chilean prospects for future fisheries production by species, are discussed below.

#### a) Marine Fish

It is estimated that 600 000 tonnes of commercially suitable fish remain unexploited each year. This includes 430 000 tonnes of pelagic species (jack mackerel, aguijilla and snake mackerel), and 170 000 tonnes of demersal species (hake, grenadier, cusk and eel).

#### b) Crustaceans and Molluscs

Principal crustaceans are being fully exploited with the exception of crab and king crab which still have potential. It is estimated that 280 000 tonnes of mussels could be harvested each year from the southern region. Mussels are also being raised in industrial farms and at three experimental farms situated in different parts of the country.

#### c) Salmon

Attempts are being made to establish Pacific salmon in Chilean rivers. Salmon hatcheries have been built on Chiloé Island where pure water is

available. They are stocked with salmon eggs flown in from fish farms in Hokkaido, Japan. After early setbacks the project began to show positive results in 1979 when salmon returned to the streams into which they had been released.

d) Krill

Chile is in the forefront of experiments to utilize krill, an organism resembling tiny shrimps and living in the cold waters round Antarctica. It is an extremely rich source of protein. In early 1981, Chile and 11 other countries participated in an international expedition to investigate the abundance, population dynamics and behaviour of krill, as well as the ecology of the birds associated with krill fishing.

Technology is being developed to reduce the tiny crustacean into a usable form with the minimum of cost and maximum utilization of the raw material. One method recently developed in Chile uses up to 90% of the raw krill. This process is now being tested in Japan; if successful, a processing plant will be built in Chile. The Chilean Development Corporation estimates that a commercial krill fishery would be capable of catching and processing 3 million tonnes each year. The government is attempting to promote the growth of krill fishery by means of tax exemptions and other incentives.

Concentrated krill could be consumed as human food. Experiments are now going on in Chile, Finland, and the USSR to find the most palatable forms. The Chileans have signed an agreement with a Danish company to produce krill salami for domestic and export sales.

e) Seaweed

Another underexploited Chilean resource is seaweed which grows in abundance along the coast. It is believed that 85 000 tonnes could be produced from the southern region. Currently only about 5 000 tonnes are being harvested.



### C. DEMAND

Chileans consumed on average 17 kilograms of fisheries products per capita in 1979 (live weight). Fish supplies 20% of the total protein in the Chilean diet, a relatively low proportion compared with other fishing nations.

Both state and private companies in Chile are encouraging higher levels of consumption. The recent expansion of the processing industry has increased the variety and availability of frozen and canned fisheries products. Underutilized species such as southern mackerel, hake, aquilla and crab are also being promoted.

These efforts have shown some success as the per capita fish consumption rate has risen from 15.1 kilograms in 1975. Assuming a constant rate of growth, the per capita rate is projected to be 20.5 kilograms by 1985, which will be made possible by gains in income and fish supplies, given the vast increases in Chile's landings in recent years. (see Table 1). Whereas the total demand for fisheries products in Chile in 1979 was 187 000 tonnes, by 1985 this should reach 245 000 tonnes.

Expected growth in real incomes will create an overall growth in protein consumption rather than just a substitution between fish and various meats. The strongest competitor for fish appears to be chicken, whose production rose 33% during 1979, and is highly price elastic in demand.

Chile is able to provide almost all the fish consumed within the country from its own abundant resources. Since at least one-third of the fish eaten is produced by artisanal fishermen selling through cooperatives and local markets, the recorded data quoted above are likely to be underestimations. Some gains in per capita consumption will also arise from a shift in distribution patterns from open street markets where fish sales may not be measured to more organized channels. Moreover, as the fishing industry increases production of new products and from new regions, there will be fresh product available more widely throughout Chile.

D. DEMAND-SUPPLY BALANCE

1. Imports

Because of its relative self-sufficiency, Chile's imports of fish are minimal. In 1980, fish imports totalled US \$330 000. Although this is a considerable increase over the 1979 figure of US \$69 000, it is still very small.

No detailed breakdown of import product mix was available, but in recent years there has been major expansion of the canned fish capacity in Chile. Thus previously needed imports of canned fish can now be provided from domestic sources. From time to time Chilean canneries may need fish feedstock imports to maintain their throughput levels. Other fish imports are for certain types of high-value added consumer end products not immediately available from local sources in Chile.

2. Exports

Chile exports 80% of her total fish production. Export volumes have been rising as dramatically as production figures in recent years. In 1976 the total value of fishery exports was US \$91.3 million, but by 1979 this had increased to US \$247.3 million (see Chart 3). A detailed breakdown of exports is given in Table 4.

Fish meal is by far the most important export and consistently accounts for over 50% of the total. In recent years Chile has been concentrating on increasing exports of higher value fisheries products. There have been some worthwhile increases of such items exemplified by exports of frozen fish rising from approximately US \$1 200 in 1977 to over US \$27 000 in 1979. There have also been big increases in exports of lobster, crab and other crustaceans. Some of these items may have peaked since preliminary figures for 1980 show a big drop in exports of frozen prawns and shrimps (see Table 5). However, exports of fish oil and fish meal have continued to rise, so that Chile's overall export

situation looks promising. It is expected that by 1982 fisheries products will become the nation's second largest foreign exchange earner, behind copper and replacing forestry products. Preliminary figures for 1980 indicate a total production of 3.2 million tonnes and continued healthy exports of frozen fish, abalone, seaweed and fish oil.

The species experiencing the greatest increase was the Spanish sardine (Sardinella ancovia) whose production reached 1.6 million tonnes in 1979. Spanish sardines are about 24 centimeters in length and have a special quality and taste. Mackerel also showed a big increase in 1979 with 600 000 tonnes caught. Most of the catch of these species was exported.

The biggest market for Chilean fish is the Federal Republic of Germany (FRG) which purchases almost one-third of the total exported. Japan buys 16% of the total followed by the United States (US), Taiwan, Italy, the Netherlands and Spain. A newly opening market is South Africa (RSA) which received an initial shipment of 260 000 tonnes of Spanish sardines.

The destination of different categories of exports can be seen in Table 4. Further details on exports of individual species of crustaceans and molluscs are found in Tables 5 and 6.

### 3. Canadian Trade with Chile

Canada and Chile trade very few fisheries products (see Table 7). The only consistent exports from Chile to Canada are lobster and shellfish which are sent to British Columbia. During 1980 Canada received smaller shipments than in recent years, reflecting the overall drop in Chilean production of these products and their consequent rise in price.

Canada exports specialty items to Chile, particularly smoked salmon. With Chilean efforts to become a salmon producer now showing signs of success this import requirement will likely disappear in the short-run. Chile's very limited fish import market may continue for non-salmon items, but there seem few prospects for expanded trade since both countries are more than self-sufficient in fisheries products.

TABLE 4

Chile: exports of fishery products, 1977-79

Value (US \$'000)

Category	1977	1978	1979	Countries Exported to
FISH MEAL	86 307	105 800	152 600	FRG, Italy, Taiwan (54%) (10%) (10%)
FISH OIL				
Crude and refined	13 265	22 120	24 917	US (10%)
Cod liver oil	196	--	29	Brazil (100%)
FISH, FRESH, FROZEN				
Fresh shrimps			497	Japan (79%), Argentina
Frozen fish	1 266	6 078	27 350	Spain (52%), Japan, Italy
Live fish	--	--	977	Japan (57%), Spain
FISH, SMOKED				
Jurel and Hake	50	--	51	Brazil (100%)
FISH, CANNED				
Tuna, salmon, sardines	777	2 047	3 314	S. Africa, UK, Zaire (58%) (10%) (10%)
CRUSTACEANS & MOLLUSCS, FROZEN	26 272	29 033	40 143	Japan, US, FRG (35%) (35%) (10%)
CRUS. & MOLL. CANNED				
King crab & crab	3 028	3 782	5 969	France (82%)
Abalone, clams	880	1 460	3 106	Spain (42%) US (34%)
SEAWEEDS				
Agar	1 978	2 276	34 288	US (47%) Thailand (22%) Spain (11%)
Colager				
Algae	7 196	8 804	11 255	Japan US France (66%) (19%) (6%)
TOTAL	141 215	181 400	304 496	

Source: Embassy of Chile, Ottawa.

Notes: Market shares in parentheses.

TABLE 5

Chile: exports of selected  
fisheries products, 1979-1980

Product	1979		1980		Percentage Variation (value)
	Q tonnes	V \$US'000	Q tonnes	V \$US'000	
Frozen fish	33 968	26 800	43 074	40 200	+50
Frozen prawns	3 110	14 400	346	2 100	-85
Frozen shrimp	1 177	7 400	930	7 800	+5
Frozen abalone	6 027	13 300	6 050	12 900	-3
Seaweed	23 994	10 600	21 593	12 600	+19
Fish oil	63 774	24 200	88 055	35 100	+45
Fish meal	--	152 600	--	233 700	+53
Fresh fish	--	28 300	--	41 100	+71

Source: Banco Central de Chile, Santiago.

TABLE 6  
Chilean shellfish  
production and utilizationn, 1980

Species	Exploitable Potential Per Annum (tonnes)	% Utilization of Fish Production					Destination of Exports
		Fresh	Frozen	Dried/Salt	Canned	Smoked	
Hard shell clam	5 000	76.9	3.2	0.9	16.3	--	Japan, Spain, Argentina
Chilean abalone	4 400	40.7	51.8	0.1	7.6	--	Japan US, Taiwan
Common mussel	3 000	43.2	1.4	1.2	53.9	0.2	Argentina, Brazil, Paraguay
Clam	3 500	90.0	3.0	--	7.0	--	Argentina, Japan, Hong Kong
Oyster	870	100.0	Exported alive	--	--	--	Argentina, Brazil
Crab	3 000	94.0	6.0	--	--	--	US, UK, Venezuela
Shrimp	5 000	11.5	88.0	--	0.5	--	FRG, Sweden, Argentina
Lobster	30	100.0	--	--	--	--	France, Argentina, Spain
King crab	2 000	5.2	26.5	--	68.3	--	France, Netherlands, Belgium
Sea urchin	5 000	34.0	42.0	18.0	8.0	--	Japan, US, Argentina

Source: Pro Chile - Chilean Trade Promotion Bureau, Santiago.

TABLE 7

Canada-Chile fish trade

I: Canadian Fish Imports from Chile

Year	Commodity	Q tonnes	V C\$ '000
1980	Lobster, fresh or frozen	6	62
	Shellfish, fresh or frozen NES	1	7
	Total	<u>7</u>	<u>69</u>
1979	Lobster, fresh or frozen	16	181
	Shellfish, fresh or frozen	3	10
	Total	<u>19</u>	<u>191</u>
1978	Lobster, fresh or frozen	25	181
	Shellfish, fresh or frozen	10	39
	Shellfish, fresh or frozen NES	1	6
	Total	<u>36</u>	<u>226</u>
1976	Cod, fresh or frozen	6	7
	Lobster, fresh or frozen	51	216
	Shrimps or prawns, fresh or frozen	5	14
	Shellfish and products NES	2	4
	Total	<u>64</u>	<u>241</u>

II: Canadian Fish Exports to Chile

Year	Commodity	Q tonnes	V C\$ '000
1980	Salmon, frozen	0.2	1
	Salmon, smoked	0.7	5
	Seafish fillets, frozen	0.2	1
		<u>1.1</u>	<u>7</u>
1979	Salmon, smoked	0.6	3
	Seafish fillets, frozen	0.2	1
		<u>0.8</u>	<u>4</u>
1978	Salmon, frozen	0.1	1
	Salmon, smoked	0.2	1
	Herring, canned	28.0	24
	Salmon, canned	2.0	7
		<u>30.3</u>	<u>33</u>
1976	nil		

Sources: Statistics Canada. Imports by Commodity, various volumes.  
Exports by Commodity, Ottawa.

E. MARKET IMPLICATIONS FOR CANADIAN TRADE OF CHILEAN EXPORTS

1. Exports Expected to 1985

The Chilean fishery is undergoing an aggressive program of modernization and expansion, with emphasis on promotion of exports. In the last five years, Chile has become one of the world's leading producers of fish. If government programs of conservation and resource management are successful, this position should be maintained.

At present Chile's exports are mainly fish meal and oil, commodities with which Canada does not strongly compete. Canada exported globally fish meal valued at only C\$14 million in 1980, compared with Chile's exports of C\$272 million. Canada exported 9 000 tonnes of fish oil valued at C\$4 million in 1980, while Chile exported 88 000 tonnes valued at C\$41 million.

Chile and Canada both sell crustaceans and molluscs on the world market. Demand, however, is strong for these items and Chile's presence in the market should not cause price variations for Canadian export of these lines.

If a cheap method can be found for harvesting and processing krill this may cause competition in the shrimp paste market. However, it is more likely to affect the salami and luncheon meat packers. It seems unlikely that a commercially viable krill operation will be underway before 1985.

Chile has large reserves of demersal species, especially hake. At present Chile has no mid-water trawling fleet. If one were established, Chile quite quickly could become competitive with Canada in some institutional markets in the US, especially since an infrastructure is being established to process and distribute these fisheries products. Canada should thus remain aware of developments in the Chilean fishing industry and their potential for producing products which could undercut North American frozen cod block sales.



## 2. Foreign Participation in the Chilean Economy

Foreign investment is now welcomed in Chile with very few restrictions.\* Several policies have been initiated to encourage foreign capital and to establish a laissez-faire economy. These include:

- i) The highly protective tariffs of the early 1970's have been dismantled and replaced by a general 10% tariff, excluding automotive parts.
- ii) Relatively few industrial incentives are granted (with the exception of the forestry and petroleum industries).
- iii) Price controls are being phased out.
- iv) Local and foreign investors are treated equally. However all vessels operating from Chile must fly the Chilean flag and have local registration.
- v) Procedures for a wide variety of transactions have been simplified. These include joint ventures, transferring technology, importing and exporting, investing foreign capital and remitting capital and profits abroad.
- vi) Many government corporations have been sold to the private sector.
- vii) Limitations on land holdings have been abolished.

The government wishes to diversify towards non-traditional exports and is encouraging the fishing sector and the processing and freezing industries.

---

\* For details on investment possibilities, see the following publication: Martha Reynolds, "Chile's Fishing Industry and Assessment to Markets for Fisheries Industry Equipment", August 1979. This also limits the major fish processors and import and export agents.

## F. CONCLUSIONS

1. Chile is expected to rank fourth among the world's fish producers in 1980 with an estimated catch of 3.2 million tonnes. This is a dramatic rise from nineteenth position in 1975 with a catch of 950 000 tonnes. The cold waters and extensive fishing zone contain an abundance of pelagic fish, crustaceans and molluscs.

2. Nine-tenths of Chile's fish production comes from the northern region, mostly in the form of anchovy, pilchard and jack mackerel for processing into fish meal. Spanish sardine (*Sardinella anchovia*) has become increasingly important in the last five years, reaching a catch of 1.6 million tonnes in 1979. Crustaceans and molluscs are in danger of being overfished in the area round Valparaiso and limits are being established. The southern region and the outlying islands have underexploited reserves of mussels, lobster and non-traditional species.

3. One-third of Chile's fleet is artisanal and some attempts have been made to make this more efficient. The industrial fleet consists mostly of purse-seiners and is being expanded and modernized with the help of foreign investment. The processing industry is being upgraded and diversified to include better facilities for canning and freezing as producers concentrate on producing high-revenue items to complement traditional earnings from fish meal.

4. It is estimated that 600 000 tonnes of marine fish remain unexploited each year, including demersal species. Crustaceans and molluscs, with the exception of mussels, are being fully exploited. Experiments are being conducted to rear salmon and exploit the enormous reserves of krill in the Antarctic.

5. Chileans ate 17 kilograms per capita of fish in 1979, up from 15.1 kilograms in 1975. The government is promoting increased consumption of fish. The population should reach 12 million in 1985 and total demand for fish will be approximately 245 000 tonnes, almost all of which can be supplied from within Chile.

6. Chile imports little fish. Exports were valued at US \$247.3 million in 1979, amounting to 80% of the total fisheries production. Fish meal accounts for about half of total exports earnings. Chile has been attempting to diversify its fisheries exports and there have been big increases in exports of higher value commodities. However, exports of crustaceans and molluscs may have peaked. The biggest markets for Chilean fish are FRG, Japan and Taiwan. Canada and Chile conduct very little trade in fisheries products.

7. At present Chile is not a strong competitor with Canada on the world market. Chile has reserves of demersal species which are unexploited and, if a mid-water trawling fleet is established, could compete with Canada in the US institutional market through hake sales, especially now that an infrastructure is being established to process and distribute fisheries products. Canada should continue to monitor developments in the Chilean fishery.

8. After economic difficulties in the mid 1970's, Chile has adopted a free market system in which foreign investment is welcome with very few restrictions. GDP and real incomes have recovered to mid-1970 levels and are now expected to grow.

APPENDICES

APPENDIX I

Table A-1

CHILE: INDUSTRIAL FISHING FLEET:  
NUMBER AND REGISTERED GROSS TONNAGE;

1978

Region	Purse-Seiner		Trawler		Total	
	No. of boats	Tonnage	No. of boats	Tonnage	No. of boats	Tonnage
Northern	117	13 318	--	--	117	13 318
North-Central	14	1 416	--	--	14	1 416
South-Central	46	5 539	79	10 854	125	16 393
Southern	--	--	4	905	4	905
<b>TOTAL</b>	<b>177</b>	<b>20 273</b>	<b>83</b>	<b>11 759</b>	<b>260</b>	<b>32 032</b>

Source: IFOP and Subsecretaria de Pesca, Chile

Table A-2

Chile: Fish Plants, 1978

Region	Fish Meal	Canning	Freezing	Drying/Salting/Smoking
Northern	14	6	3	2
North-Central	2	3	4	--
South-Central	16	13	14	4
Southern	1	26	17	11
<b>TOTAL</b>	<b>33</b>	<b>48</b>	<b>38</b>	<b>17</b>

Source: Reynolds, OP. CIT.

APPENDIX I (cont'd.)

TABLE A-3

CHILE: MAJOR COMPANIES OPERATING FISHING VESSELS, 1978

Sociedad Pesquera Coloso S.A.	34
Pesquera Guanaye	24
Pesquera Indo S.A.	19
Empresa Pesquera Eper va S.A.	14
Pesquera Iquique S.A.	14
Empresa Pesquera Tara paca s.a.	13
Pesquera Nueva Aurora	<u>12</u>
	130
Others (5 vessels or less)	<u>144</u>
Total	<u>274</u>

Source: Subsecretariat of Fishing, Chile.

APPENDIX II

CHILE: THE FISH PROCESSING INDUSTRY

Before 1974, most fish plants were small and there was little mechanization. Since then there has been a great deal of investment in the industry with modernization and expansion of existing facilities and construction of new plants. Listed below are some examples:

Northern Region

Modern cannery and freezing plant built at Iquique by Empresa Pesquera S.A.

Modernization of plant at Antofagasta by Pesquera Guanaye S.A.

North Central Region

Cannery built at Coquimbo by Sociedad Pesquera Coloso S.A. A South African company completely installed the equipment and facilities.

South Central Region

Pesquera Camelio S.A. have added freezing facilities to a plant which produces fish meal and canned products.

New cannery built at Talcahuano by Pesquera Iquique S.A.

Southern Region

The two biggest companies at Puerto Montt have built modern canneries and freezing plants.

### Northern Zone Fishing Reflects Industry Growth<sup>1</sup>

Chile's outstanding performance in fishing in 1979 has filled the country's fishing industry with optimism. A great deal of credit for this success goes to the Northern Zone which accounts for 90% of Chile's fishing production.

The eleven companies operating in this zone have undertaken major tasks of modernization of facilities and technology in catching, freezing and canning.

A selective sampling of these companies shows that the Iquique Fishing Consortium is building a new US\$6.5 million cold storage plant with a production capacity of 200 tons per day which will employ 200 additional workers. The consortium, which has 22 ships totalling 3 000 tonnes including a 380-ton refrigerated cargo ship, has already spent US\$14 million for other capital investments.

The Coloso Fishing Industries will build two evaporating plants, at a total cost of US\$900 000, to maximize fish oil output and avoid contaminating the ocean with processing by-products. Coloso has 30 fishing vessels totalling 5 980 tonnes including a 1 800-ton transport ship.

Guanaye Fishing Industries is building a new canning facility that will increase its productive capacity by 30% and will employ 260 more workers, for a total of 1 260 persons. It has 22 ships with a storage capacity of 4 700 tonnes.

As a whole, Chile's fishing industry expects a 3 million tonne catch for 1980. Looking at Coloso's performance, 290 136 tonnes by July 20, 1980 compared to 234 929 tonnes for all of 1979, that goal is not unrealistic. Fishmeal production for 1979 was 50 638 tonnes, while, as of July 20 of this year, it had produced 61 604 tonnes. Fish oil production totaled 10 453 tonnes in 1979; the July 20 figure was 13 207 tonnes.

---

<sup>1</sup> Chile Economic News (October 1980)



### Two New Seafood Canneries to be Built<sup>2</sup>

Two sea product canneries are being constructed in the Iquique and Caldera regions as the result of an agreement between Pasquera Camelio (Camelio Fishing Company) and two South African firms, Kaap Kunene Limited and Fedfood Limited. The project is valued at Ch\$640 million (US \$16.4 million), with 50% of the funds being supplied by the Chilean firm and the other half by the South African companies. Production from the new canneries, with an estimated annual value of \$35 million, will be almost entirely destined for export. Administrative and technical control will be exercised by the South African firms.

Pesquera Camelio, which has fish plants in Iquique, Coquimbo, Calbuco and Punta Arenas, issued new shares of stock in November 1980. The South African companies acquired a stock package equivalent to US\$2.5 million. This led to an association to create the two industrial plants in Iquique and Caldera. The latter is an initiative in a region that, until now, had been unexploited by the fishing sector.

The Iquique plant will can seafood of the "All Talls", "Buffets" and "Jitney's" types. Initially, the Caldera plant will produce only fish meal but it is expected to develop into a cannery also. The species of greatest interest for those plants include the Spanish sardine, jack mackerel and anchovy. The Iquique installation is expected to begin production in August 1981 while the Caldera plant should start operations by 1982.

The new seafood plants will be associated with South Africa's principal buyer and exporter of canned seafood, Federal Marines Limited. This firm has markets established throughout Western Europe and the Far East.

---

<sup>2</sup> Chile Economic Report (April 1981).

APPENDIX III

TABLE A-4

CHILE: FISH LANDINGS 1970-1980  
(000 tonnes)

	TOTAL	<u>Anchovy</u>	<u>Chilean Sardine</u>	<u>Jack Mackerel</u>	<u>Chubb Mackerel</u>	<u>Hake</u>	<u>Squat Lobster</u>
1970	1 228	783	68	112	--	88	40
1971	1 512	961	175	158	--	66	38
1972	818	368	132	87	--	67	33
1973	691	192	54	117	4	47	25
1974	1 158	389	208	193	--	43	27
1975	929	240	165	261	15	32	36
1976	1 409	434	327	342	53	30	63
1977	1 349	19	621	341	141	37	43
1978	1 698	27	781	500	175	23	41
1979	2 560	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1980	3 200	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: FAO, Fishery Statistics, various volumes, Rome, Italy.

APPENDIX IV

TABLE A-5

CHILE: PRODUCTION OF FISH MEAL, NET PRODUCT WEIGHT 1970-1978  
(000 tonnes)

	<u>Total</u>	<u>Anchoveta</u>	<u>Pilchard</u>	<u>Mackerel</u>	<u>Other</u>	<u>From all oily fish</u>
1970	197.2	150.8	10.5	19.4	1.5	182.2
1971	263.1	197.0	26.1	27.6	2.0	252.7
1972	119.3	78.5	18.9	10.7	2.1	110.2
1973	93.3	39.0	30.9	16.6	2.0	88.5
1974	197.0	78.0	75.2	35.3	3.1	191.6
1975	155.1	50.1	45.2	48.4	4.7	148.4
1976	251.1	84.1	77.1	65.2	14.3	240.7
1977	256.3	n.a.	n.a.	n.a.	n.a.	256.3
1978	379.1	n.a.	n.a.	n.a.	n.a.	379.1

Source: FAO, IBID.

