

World Utilization of Hake

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Introduction

In the last 10-15 years hake has become an increasingly important world fishery. In the 1960's, hake was used to a large extent for fish meal production, especially in South America. At the same time there began to be a very active interest in certain Atlantic hake stocks for human consumption. During the last few years there has been growing pressure on cod supplies. Hake has emerged as one of the more promising substitutes for white-fleshed fish such as cod, haddock, flounders, soles, etc. (Schroeder et al., 1978).

The purposes of this paper are four-fold: Review trends in world catches, indicate the products produced, look at world trade, and briefly review the major market areas for hake products.

World Catch

World production of hake increased at a rate of nearly 8 percent per year during 1971-76. The catch in the 36 major producing countries rose from 1.5 million tons in 1971 to 2.1 million tons in 1976 (Table 1). The Soviet Union is by far the largest producer of hake, accounting for 32-55 percent of the world catch. The Russian catch has declined by about 30 percent in recent years. Its catch may decline even further with the advent of extended fishery jurisdictions around the world.

The second largest producer and market is Spain. Its catch has risen by the use of long-distance freezer trawl-

ers but, like the U.S.S.R., Spain's catch of hake may decline somewhat in the future.

African production is dominated by

South Africa which regularly accounts for about 90 percent of that area's production. Production has been stable in recent years.

Table 1.—Hake production by countries (1,000 tons, live weight).

Country	1971	1972	1973	1974	1975	1976
Africa						
Angola	—	0.1	0.1	0.1	0.1	—
Cameroon	—	2.5	2.5	2.5	2.5	2.5
Egypt	0.2	0.1	0.1	—	—	—
Ghana	—	1.3	4.9	11.6	1.4	0.3
Morocco	2.9	2.6	2.9	5.1	4.4	0.1
South Africa	111.5	118.1	133.0	134.9	113.1	118.2
Tunisia	0.4	0.2	0.6	0.8	0.8	0.8
Zaire	2.8	2.8	5.8	5.8	5.8	2.7
Subtotal	117.8	127.7	149.9	160.8	128.1	124.6
N., S. America						
Cuba	39.8	49.0	31.3	31.7	31.7	57.5
U.S.A.	20.0	13.8	20.5	14.8	22.5	42.1
Argentina	92.0	102.8	151.4	162.2	109.0	174.9
Brazil	18.2	14.0	31.6	33.6	33.6	33.1
Chile	66.0	66.9	46.5	43.1	43.1	29.5
Peru	26.2	12.6	132.1	109.4	84.9	92.8
Uruguay	3.7	8.5	4.5	1.5	9.8	11.7
Subtotal	265.9	267.6	417.9	396.3	334.6	441.6
Asia						
Israel	8.6	9.2	6.5	5.7	6.0	6.3
Japan	64.8	56.1	70.1	63.3	54.4	66.4
Subtotal	73.4	65.3	76.6	69.0	60.4	72.7
Europe						
Belgium	0.2	0.2	0.2	0.4	0.7	3.5
Bulgaria	22.4	22.9	19.3	13.8	13.4	54.5
Denmark	1.2	1.4	1.4	1.8	2.3	140.5
France	24.0	22.3	24.7	23.0	24.2	65.6
German Dem. Rep.	8.1	0.2	5.0	1.3	10.6	31.0
Fed. Rep. Germany	6.1	4.1	1.5	0.2	3.7	12.2
Ireland	—	0.1	0.1	0.1	0.3	10.7
Italy	10.7	12.9	11.5	13.6	14.3	28.0
Netherlands	0.2	0.1	0.3	0.2	0.1	12.9
Norway	0.8	0.7	1.0	0.7	0.4	0.8
Poland	0.2	3.4	39.2	76.9	94.8	84.8
Portugal	31.8	27.2	44.0	28.6	19.4	35.4
Spain	229.2	259.2	263.4	218.5	254.1	263.4
Sweden	0.3	0.3	0.4	0.4	0.4	1.8
United Kingdom	2.8	2.9	2.8	2.6	2.8	57.4
Yugoslavia	0.3	0.3	0.4	0.5	0.6	0.7
Rumania	1.7	0.3	0.2	0.5	0.3	1.8
Subtotal	340.0	358.5	415.4	383.1	442.4	805.0
U.S.S.R.						
	736.2	1,035.2	1,072.9	746.9	640.7	680.8
Grand Total	1,533.3	1,854.3	2,132.7	1,756.1	1,606.2	2,124.7

Source: FAO Fishery Statistics Yearbook, various volumes.

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The area where production is growing the fastest is North and South America. Here production increased by 13 percent per year during 1971-76. Argentina and Peru account for nearly two-thirds of the catch in the Americas at present.

Potential Catches

World attention has turned to the potential for increasing hake production in Latin America. Table 2 indicates that this area has the potential for doubling present catches. About half of the relatively untapped potential is found on the Patagonian Shelf off Argentina and Uruguay. The remaining potential is in the eastern Pacific Ocean from the State of Washington to Chile.

Europe and North America are experiencing increasing difficulty in obtaining supplies of traditional white-fleshed species at prices the consumer is prepared to pay. This growing difficulty is shown in Table 3. Catches of the most popular white-fleshed species for the North American and European markets have declined in the 1970's. The catch of Atlantic cod, haddock, and various flatfish peaked at 5.6 million tons in 1969. Since then the combined catches have dropped nearly 30 percent or 1.5 million tons. The last column in the table shows the shortfall in catches of recent years compared with the 1969 peak. The 1.5 to 2.0 million tons of hake being produced annually are helping to supply the demand by this shortfall in catches of traditional species.

Hake Products

A listing of hake products produced in Uruguay indicates a wide variety of processes and styles are available in the world markets (Mattos and Torrey, 1978): Heated and gutted; headed and gutted, without tail or fins, scaled, and dressed; individual quick frozen (IQF) fillets; IQF fillets with and without skin, boned; layer pack interleaved fillets; shatter pack interleaved fillets; frozen blocks.

The most important single market for hake products is for fillet blocks in the United States and is based on the

consumption of fish sticks and portions. Other markets for hake blocks are to be found in Europe and Australia, while the markets for dressed hake in the United States and Europe are limited, compared with those of fish blocks and frozen fillets, they are expanding (Anderson et al., 1974).

Whole hake can generally be sold only in local markets where the fish are landed. These markets are usually considered as a temporary outlet until a more profitable export trade is developed.

Production of salted hake is limited at present, however there is a large world market for salted products. There has been a recent increase in the production of dried-salted hake—a product that resembles salted-dried cod but costs less. There are great prospects for salted products in Latin America. This is because of the economics, minimal investment and ease of processing, extended keeping qualities, and freedom from complicated chains of distribution (Lupin, 1978).

Peru is a good example of the evolution of hake products being produced in South America. The average percentage of hake utilization in Peru from 1967 to 1970 was originally 90 percent for fish meal (Sánchez and Lam, 1978). In 1976, about 90 percent of the hake catch in Peru was used to process products for human consumption (Table 4).

Hake is generally not used in canned products. However, different whitefish preparations, including hake, could be canned such as fish patties, fish balls, etc. Hake can also be prepared as paste, sausages, etc.

A preliminary investigation showed that all species, except one, examined from South American waters had good gel-forming capacity and thus suitable for kamaboko. Kamaboko and fish sausage make up 26 percent of Japanese fish consumption (Okada, 1978).

The official statistics published by the Food and Agriculture Organization of the United Nations (FAO) show few types of products being produced in

Table 2.—Estimated hake potentials in North and South America.

Country	Potential (tons)
Chile	100,000
Peru	200-250,000
Argentina-Uruguay	750,000
Mexico	300-400,000
U.S.A. (Washington-Oregon)	90-150,000
Total	1,440-1,650,000

Sources: FAO Fisheries Report 203, (Supplement 1) and National Marine Fisheries Service.

Table 3.—World production of Atlantic cod, haddock, and selected flatfish (1,000 tons, live weight).

Year	Atlantic cod	Haddock	Flounders, plaice, soles, etc.	Total	Shortfall
1965	2,726	748	724	4,198	
1966	2,874	729	952	4,555	
1967	3,123	484	1,028	4,635	
1968	3,867	487	969	5,323	
1969	3,577	902	1,077	5,556	
1970	3,076	913	1,044	5,033	523
1971	2,851	506	1,154	4,511	1,045
1972	2,738	547	1,031	4,316	1,240
1973	2,541	625	1,176	4,342	1,214
1974	2,872	582	1,128	4,582	974
1975	2,430	529	1,091	4,050	1,506
1976	2,385	520	1,074	3,979	1,577

Source: FAO Fishery Statistics Yearbook, various volumes.

Table 4.—Peruvian hake utilization (tons).

Year	Fresh	Frozen	Salted/Dried	Sausage	Canned	Fish meal
1972	3,477	876	743	—	—	7,485
1973	4,086	41,439	297	891	157	85,987
1974	3,016	70,068	1,509	895	2,434	31,395
1975	4,092	66,673	1,241	1,541	121	11,166
1976	3,221	79,019	532	934	34	8,853

Source: FAO Fisheries Report 203 (Supplement 1).

certain countries. Table 5 summarizes the available data for recent years.

Foreign Trade

Available data on imports and exports of hake products by country is not at present published in FAO statistical yearbooks. However, the general knowledge of hake flows from the major production areas to major markets is as follows.

The major hake markets are the United States and Europe, and to a lesser extent, Australia, Brazil, and some African countries. The United States consumes all the hake it produces and imports considerable quantities. The same is generally true for Europe, although Spain does export some hake. With European fish catches tending to level off and consumption of frozen fish growing there, we can expect to see larger imports of hake by Europe. Hake is being supplied to these markets from the beef-eating nations of South America and South Africa. Russia, which catches a large share of the world's hake also exports it, but the quantities are not available.

In most producing countries, domestic demand may well continue to rise. However, all countries attach the greatest importance to foreign trade for getting the most out of their resources and investments. FAO estimates of the major world import areas at present are shown in Table 6.

The present trade of 175,000 tons is the equivalent of about 440,000 tons of whole hake per year. We should add to this 15,000 tons of fresh hake imported by Brazil.

Out of a technically accessible market of 455,000 tons, Latin American trade accounts for 23 percent or 105,000 tons despite the fact that stocks and production capacity vastly exceed this figure. The remaining 77 percent is supplied by, in order of importance: U.S.S.R., Spain, Japan, South Africa, and Poland (Food and Agriculture Organization, 1978).

The spread of extended fisheries zones could drastically reduce the catches of German and Spanish long-distance fleets which catch about 150,000 tons of hake off West Africa.

Table 5.—Partial production of hake products.

Product	1971	1972	1973	1974	1975	1976
Frozen fillets						
U.S.A.	0.2	0.1	1.3	0.9	0.4	0.4
Argentina	21.9	18.6	46.7	18.6	15.3	15.5
Uruguay	—	—	—	—	0.2	1.2
S. Africa	—	—	—	—	—	6.0
Frozen miscellaneous						
S. Africa	9.2	9.2	23.5	18.9	25.2	39.4
Argentina	0.8	3.0	3.6	5.0	5.2	14.0
Chile	3.2	2.2	12.0	1.4	1.5	—
Dried salted						
Canada	1.7	2.8	2.2	2.5	2.5	2.0
Chile	0.2	0.1	0.1	—	—	—
Argentina	—	—	—	0.5	0.1	0.2
Smoked						
Canada	6.1	0.2	0.2	0.2	—	—

Source: FAO Yearbook of Fishery Statistics, various volumes.

Table 6.—Current and projected world trade in hake products (tons).

Area	1976-77	1980
United States	20,000	35,000
Western Europe and Mediterranean	121,000	185,000
Australia	15,000	20,000
Brazil	5,000	10,000
Other Countries	14,000	20,000
Totals	175,000	270,000

Source: FAO Fisheries Report 203 (Supplement 1).

The same restrictions will affect the Soviet, Japanese, and Polish factory ships. Thus, world trade could go up by as much as 300,000 tons to meet these demands.

FAO projects the international market for hake to be about 270,000 tons by 1980 (Table 6). This total is equivalent to an annual hake catch of 678,000 tons.

Markets

Spain

An important recent development in Spanish fisheries was the establishment of fisheries for Cape hake in the South Atlantic where fish were frozen on board and brought back to Spain either by the fishing vessels themselves or by specialized cargo boats. With a substantial portion of the catch coming from distant waters, the Spanish fishing industry faces a difficult time.

Cape hake is now fully exploited (Earl R. Combs, Inc., 1979).

Hake has replaced cod as the major species landed, representing about 12 percent of Spain's total catch by weight.

About 45 percent of the Spanish fish catch is marketed fresh or chilled. The entire catch of Cape hake is marketed frozen in comparison with locally caught hake which is retailed fresh.

Early attempts, about 1959, to introduce frozen headed and gutted hake led to a strong adverse consumer reaction. The second step came with fillet production. To improve quality, filleting was done on board vessels. The introduction of battered, breaded, and fried products made from imperfect hake fillets was not successful. The Spanish market resisted products with a regular geometric shape. Now there is a growing market in prepared products from hake blocks sold in an aluminum tray with a sauce. The future for frozen hake in Spain is good (Varona, 1978).

West Germany

The West German market for headed and gutted hake is rather limited, but with the increasing scarcity of other fish, there is a growing trend to replace them with blocks of frozen hake. Hake block imports are about 10,000 tons at present (Food and Agriculture Organization, 1978). Imported hake blocks are cut and processed as fish sticks and packaged into convenience sizes. The German consumer does not have a very clear concept of hake. For this reason, firms lean toward other species when the hake supply is inadequate (Werner, 1978).

The introduction of extended fishing zones has wreaked havoc with the German fishing industry by depriving it of, or severely limiting, catches on its traditional fishing grounds. Consequently Germany will have to depend increasingly upon imports (Earl R. Combs, Inc., 1979).

France

Hake is well received on the French market which totals about 20,000 tons per year. Imports from South America

total about 4,000 tons. The French market remains essentially a fresh fish market for only one-third of French households have freezers. Although frozen and smoked seafoods are making slow but gradual inroads, the French consumer ordinarily purchases entire or sectional fish or increasing amounts of fillets (Earl R. Combs, Inc., 1979).

Portugal

Hake is one of the most popular species in Portugal. The production of cod is not able to keep up with market demand, thus hake is being substituted. Hake imports were 17,000 tons in 1976 and 10,000 tons in 1977 compared with catches of 19,000 and 35,000 tons in those years. The largest share of imported hake comes from South Africa and the U.S.S.R. The Amessao Reguladora de Comercio de Bacalhar (Regulatory Commission for Cod Trade) is able to import hake only when the domestic catch is insufficient to meet market demand (Earl R. Combs, Inc., 1979).

Italy

Hake is one of the most important fish sold at retail in Italy. The market for hake is estimated at 90,000 tons (Fishery Development Ltd., 1974).

Brazil

There is a considerable Brazilian market for dried salt fish with 40,000 tons imported annually. Consumption ranges from 85,000 to 100,000 tons. The traditional cod and related species are being replaced, in part, by lower cost dried salted hake (Food and Agriculture Organization, 1978).

Zaire

The total market for dried salted fish is about 30,000 tons. Supplies from northern Europe are becoming scarce and more costly. Some hake is im-

Table 7.—U.S. imports of fish blocks by species, 1978.

Species	Tons	Percent of total
Cod	92,833	50.4
Pollock	36,868	20.0
Haddock	12,257	6.6
Flatfish	7,609	4.1
Hake	18,058	9.8
Ocean perch	1,399	0.7
Minced fish	9,007	4.9
Other	6,454	3.5
Total	184,485	100.00

Source: Fisheries of the United States, 1978.

Table 8.—U.S. imports of hake blocks.

Year	Tons
1975	3,954
1976	9,362
1977	10,160
1978	18,058

Source: Fisheries of the United States, 1978.

Table 9.—U.S. production of hake products (tons).

Year	Headed and gutted	Fillets
1968	15.5	1.0
1969	7.6	1.0
1970	7.0	0.3
1971	4.6	0.8
1972	2.4	0.1
1973	4.6	1.3
1974	2.0	0.8
1975	3.9	0.4
1976	4.5	0.4
1977	3.9	0.4

Source: Processed Fishery Products, NMFS, various years.

ported from Latin America (Food and Agriculture Organization, 1978).

Australia

Australia imports about 4,000 tons of smoked hake and also frozen blocks from South America (Food and Agriculture Organization, 1978).

United States

Frozen fish blocks of various species are extensively used in the United States as raw materials for further processing into a wide variety of products (Table 7). Block use has grown at a rate of 6 percent per year in the 1970's. Hake blocks have received increased attention in the United States, mainly as a substitute for cod blocks. Hake is gradually meeting with the acceptance

of the industry because of certain resemblances with cod and other popular white flesh species (Pedraja, 1978). In 1978, hake accounted for nearly 10 percent of U.S. imports of frozen fish blocks. Imports of hake blocks in recent years have increased from 4 million pounds to 10 million pounds (Table 8).

The two major market forms of whitening products produced in the United States are fillets and headed and gutted fish (Brooker, 1978). Production of these products has been declining over the last 10-15 years (Table 9).

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