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Economic Intelligence Report

SOVIET FISHING IN INTERNATIONAL WATERS



CIA/RR ER 63-25

August 1963

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

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SOVIET FISHING IN INTERNATIONAL WATERS*Summary and Conclusions

Since the end of World War II the USSR has made a determined effort to expand its fishing on the high seas. One of the world's best fishing fleets -- the nucleus of which consists of large fish-factory trawlers -- and a modern scientific research fleet have been built or acquired, and the USSR has aggressively expanded or is planning to expand fishing operations into almost all the major fishing regions in the world. The fisheries of the North Atlantic are the most important for the USSR, but the waters of the North Pacific are becoming increasingly more important. New fishing areas off the west coast of Africa are being developed by the USSR, and some exploratory research is being conducted in the Indian Ocean preparatory to surveying the fishing potential of this area. The construction of a fishing port in Havana harbor will give the USSR an excellent base for fishing in the waters of the Caribbean, the Gulf of Mexico, and the east coast of the United States as well as in the rich tuna grounds of the East-Central Pacific.

Expansion of Soviet fishing on the high seas has seriously disturbed the fishing industries of other nations. The USSR has become a net exporter of fish products, a situation that has had some repercussions on traditional suppliers such as Iceland and Norway. Further expansion of Soviet activities into areas traditionally fished by US fishermen -- the northeast Pacific, the Gulf of Mexico, off the east coast of the US, and the northwest Atlantic -- could have some deleterious effects. Furthermore, the USSR is in a position to gain influence and respect in underdeveloped countries with the use of its fishing and research fleets by aiding such countries in the development of their fisheries.

The USSR surpassed the US in 1960, and in 1961, with a total fish catch of 3.72 million metric tons,** it ranked fourth after Japan, Peru, and Communist China among the world's fishing nations. During 1948-61 the Soviet fish catch increased at an average annual rate of about 7 percent. The annual rate of increase during the first 4 years of the Seven Year Plan (1959-65), however, was about 8.8 percent. Continuance of the current pace during the remaining years of the Seven Year Plan would assure easy fulfillment of the goal of 5 million tons set for 1965.

* The estimates and conclusions in this report represent the best judgment of this Office as of 15 July 1963.

** Unless otherwise indicated, tonnages are given in metric tons throughout this report.

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Fish is an important source of animal protein in the USSR, and the per capita consumption of this food increased from about 5.5 kilograms (kg) in 1938 to about 10.5 kg in 1961. Not only has the consumption of fish increased, but also, as a result of changing technology in fish processing, the assortment of fish products has changed considerably with the present emphasis on fresh, frozen, and canned fish products instead of salted products as before. The latter will constitute only about 11 percent, excluding salted herring, of total edible fish products by 1965, compared with about 52 percent in 1950.

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I. Introduction

Within the past decade the USSR has moved vigorously to expand its fishing activities on the high seas. In 1961, with a total catch of 3.72 million tons* of fish, whales, and other sea animals,** the USSR ranked fourth after Japan, Peru, and Communist China among the world's fishing nations. As shown in Table 1,*** the USSR in 1961 was responsible for 8 percent of the world's fish catch (excluding whales) and about 18 percent of the world's whale catch. Although the Soviet share of the world's fish catch, excluding whales, is only slightly above the level of 1938, the USSR in 1961 ranked behind only Japan and Norway in the catching of whales.

The Soviet fishing industry ranked sixth in importance among the branches of the food industry in 1960, when it provided about 7.2 percent of the total output of the industry 1/^t or about 1.5 percent of gross industrial output. The Soviet fishing industry employs about 500,000 persons, of which about one-third work on fishing ships (including kolkhoz fishermen). 2/ In comparison, in the same year the US fishing industry employed only about 220,000 people and provided less than 0.1 percent of gross industrial output. In 1961 the USSR produced about 1.7 million tons of commercial edible fish products, 3/ with fish accounting for about 36 percent of the total marketed fund^{††} of fish and meat products. 4/ The consumption of fish in 1961 was 10.5 kg per capita, 5/ and it is planned to be about 15 kg annually by 1965. 6/ An important source of animal protein, fish and other sea animals contribute about 15 percent of the total animal protein consumed in the USSR. Included among the numerous products, other than food, resulting from the processing of fish and other sea animals are vitamins, medicines, valuable furs, livestock feed, and fertilizer. In addition, exports of fish and fish products have increased to the point where the USSR has reversed its former position as a net importer of these products, and exports in 1961 exceeded imports by more than \$25 million.

* This figure is in terms of live weight.

** The term other sea animals refers to seals, porpoises, crustaceans, and certain sea plants.

*** Table 1 follows on p. 4.

†† The total marketed fund does not include total production but only that which passes through commercial channels.

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Table 1

Comparison of Soviet and World Fish Catches
1938, 1948, 1953-62, and 1965 Plan

Thousand Metric Tons Live Weight				
Year	Soviet Catch		World Catch <u>b/</u>	Soviet Catch as a Percent of World Catch <u>b/</u>
	Excluding Whales	Including Whales and Other Sea Animals <u>a/</u>		
1938	1,523	1,542	20,500	7.4
1948	1,485	1,575	19,090	7.8
1953	1,983	2,195	25,240	7.8
1954	2,258	2,505	27,010	8.4
1955	2,495	2,737	28,330	8.8
1956	2,616	2,849	29,910	8.8
1957	2,531	2,761	30,910	8.2
1958	2,621	2,936	32,240	8.1
1959	2,756	3,075	35,740	7.7
1960	3,051	3,541	38,020	8.0
1961	3,250	3,724	41,160	7.9
1962	N.A.	4,100 <u>c/</u>	N.A.	N.A.
1965 Plan		5,000 <u>d/</u>		

a. 7/b. Excluding whales. 8/c. 9/d. 10/. The original 1965 Plan called for a catch of 4,624,000 tons. This figure was later corrected to 4,640,000 tons, and in June 1962 it was increased to 5 million tons.II. Postwar Expansion of Soviet FishingA. Soviet Fish Catch

As shown in Table 1, the Soviet fish catch (according to Soviet statistics) in 1938 was about 1.5 million tons. By 1961 the catch had

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increased to 3.7 million tons, an amount almost 150 percent greater than the level of 1938. A major reason for this increase can be attributed to a vast expansion in whaling operations, with more than 11,000 whales caught in 1961 compared with only 265 in 1938. The increase in the fish catch exclusive of whales and other sea animals -- although not quite so spectacular as the whale catch -- was slightly greater than the increase in the world catch, which doubled during this period.

As a result of the wartime destruction of a large part of the fishing fleet and other facilities of the fishing industry, the 1938 catch was not equaled until 1948. Since that time, however, the fish catch increased steadily at an average rate of almost 7 percent annually during 1948-61.

The increase in the Soviet fish catch in the postwar period is the result primarily of expansion in fishing on the high seas. Whereas only 45 percent of the catch was obtained on the high seas in 1946, 11/ the figure rose to about 80 percent in 1962. The catch of freshwater fish from 1956 to 1961, the latest year for which detailed statistics are available, has been declining (see Table 2*). (The whale catch is presented in Table 3.***) On the other hand, the catch of most marine fish species has increased markedly since 1953. The species groups that include (1) cod, hake, and haddock and (2) herring, anchovies, and sardines are the most important of the marine fishes. In 1961 these two groups accounted for about 57 percent of the total fish catch, exclusive of whales, and about 65 percent of the catch from the high seas. In June 1962 the goal for 1965 was increased from 4.64 million to 5.0 million tons, a move apparently prompted by the successes achieved during the first 3 years of the Seven Year Plan.

B. Soviet Fishing Fleet

The basis for the expansion of Soviet fishing since World War II has been the vastly expanded and modernized high seas fishing fleet. In 1940, 40 percent of the fish catch was obtained from the high seas. 12/ Postwar plans for expansion of the fishing industry, as stated above, have been predicated almost entirely on the increased exploitation of the international resources of the high seas. Several reasons can be offered for the Soviet decision to expand this type of fishing operation. First, a depressed and generally inefficient agriculture that had suffered great losses during the war was incapable of providing a nutritionally balanced diet for the Soviet populace in a short time with the meager resources***

* Table 2 follows on p. 6.

** Table 3 follows on p. 10.

*** Text continued on p. 11.

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Table 2
Soviet Fish Catch, by Species ^{a/}
Selected Years, 1948-61

Species Group	Thousand Metric Tons Live Weight							
	1948	1953	1956	1957	1958	1959	1960	1961
Freshwater fishes	N.A.	<u>473.2</u>	<u>489.0</u>	<u>475.5</u>	<u>460.2</u>	<u>465.4</u>	<u>431.6</u>	<u>420.4</u>
Common bream	N.A.	58.4	56.3	55.8	65.1	60.8	51.2	46.4
Common carp	N.A.	36.3	51.0	49.9	31.6	27.9	50.3	57.0
Perch pike	N.A.	37.1	34.8	29.8	36.3	27.6	33.5	33.1
Pike	N.A.	23.3	31.1	30.9	29.4	30.5	32.4	29.5
Roach	N.A.	69.7	95.1	82.6	93.4	93.1	93.4	71.7
Sheatfish	N.A.	9.1	15.0	14.5	11.6	12.9	8.7	7.8
Sturgeon	N.A.	16.7	15.8	13.7	13.5	14.2	12.3	15.4
Other	N.A.	222.6	189.9	198.3	179.3	198.4	149.8	159.5
Salmons, trouts, and smelts	<u>157.6</u>	<u>230.9</u>	<u>230.9</u>	<u>196.0</u>	<u>116.8</u>	<u>142.2</u>	<u>120.5</u>	<u>128.2</u>
Pacific salmons	133.8	190.8	166.6	150.8	76.0	94.8	73.8	82.6
Chum salmon	62.5	34.0	77.8	32.4	29.4	38.4	44.3	38.5
King salmon	N.A.	N.A.	N.A.	N.A.	0.7	1.0	0.7	0.7
Pink salmon	52.2	142.3	72.4	106.7	36.9	47.5	19.7	30.7
Red salmon	N.A.	N.A.	N.A.	N.A.	1.3	4.0	4.3	7.6
Silver salmon	N.A.	N.A.	N.A.	N.A.	2.7	3.9	2.0	4.7
Other Pacific salmons	19.1	14.5	16.4	11.7	5.0	N.A.	2.8	0.4

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Table 2
Soviet Fish Catch, by Species
Selected Years, 1948-61
(Continued)

Species Group	Thousand Metric Tons Live Weight							
	1948	1953	1956	1957	1958	1959	1960	1961
Other salmons, trouts, and smelts	23.8	40.1	64.3	45.2	40.8	47.4	46.7	45.6
Capelin	N.A.	1.1	16.7	5.0	1.4	3.0	4.5	1.8
Smelts	N.A.	10.4	18.5	14.5	14.5	15.0	15.3	15.1
Other salmons	2.8	3.3	2.5	2.6	2.2	3.2	2.2	4.2
Whitefishes	21.0	22.6	26.6	23.1	22.7	24.2	24.7	24.5
Other	N.A.	2.7	N.A.	N.A.	N.A.	2.0	N.A.	N.A.
Flounders, halibuts, and soles	<u>39.5</u>	<u>63.6</u>	<u>154.1</u>	<u>146.9</u>	<u>203.0</u>	<u>203.8</u>	<u>241.7</u>	<u>273.1</u>
Barents Sea species	1.7	4.8	3.1	5.3	6.0	8.6	17.7	19.8
Baltic Sea species	1.9	2.4	3.2	3.2	2.4	2.6	4.1	2.5
Black Sea and Azov Sea species	2.3	2.6	2.1	1.0	1.1	1.4	0.9	1.2
Pacific Ocean species	33.6	53.8	145.7	137.4	193.5	191.2	219.0	249.6
Cods, hakes, and haddocks	<u>255.7</u>	<u>341.0</u>	<u>737.3</u>	<u>422.6</u>	<u>367.6</u>	<u>414.7</u>	<u>672.5</u>	<u>767.3</u>
Barents Sea, White Sea, and other Atlantic species	173.5	286.8	627.2	313.9	268.8	293.7	486.8	613.0
Alaska pollack	22.2	5.4	9.1	9.4	20.6	51.6	109.2	97.6
Baltic cod	17.8	28.5	62.0	64.6	50.4	40.5	44.4	25.1

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Table 2
Soviet Fish Catch, by Species
Selected Years, 1948-61
(Continued)

Species Group	Thousand Metric Tons Live Weight							
	1948	1953	1956	1957	1958	1959	1960	1961
Pacific cod	22.9	13.3	22.0	18.4	12.3	10.3	12.0	9.8
Wachna cod	19.3	7.0	17.0	16.3	15.5	18.6	20.1	21.8
Herrings, sardines, and anchovies	<u>325.5</u>	<u>670.3</u>	<u>777.1</u>	<u>983.8</u>	<u>1,093.1</u>	<u>1,056.3</u>	<u>1,083.5</u>	<u>1,075.6</u>
Anchovy	52.7	49.2	9.4	18.0	25.9	42.6	33.2	71.7
Atlantic herring	6.8	121.0	277.0	346.4	432.2	464.3	523.4	396.7
Baltic herring	20.3	64.2	84.8	68.3	63.9	72.1	60.0	63.8
Caspian Sea and Black Sea shads	58.5	48.7	42.0	43.6	70.6	54.6	56.5	32.5
Caspian Sea, Azov Sea, and Black Sea sprats	67.2	209.6	200.5	196.1	147.9	154.3	179.0	211.0
Pacific herring	116.6	170.9	154.2	296.5	332.6	235.3	193.0	272.8
Sardines	N.A.	N.A.	N.A.	0.2	2.8	8.6	17.6	4.1
Other sprats	2.8	4.3	9.2	14.5	17.2	23.5	20.8	23.0
Other	0.6	2.4	N.A.	0.2	N.A.	1.0	N.A.	N.A.
Tunas, bonitos, and mackerels	N.A.	<u>20.5</u>	<u>5.8</u>	<u>9.3</u>	<u>5.9</u>	<u>3.5</u>	<u>5.9</u>	<u>5.1</u>
Atlantic bonito	N.A.	N.A.	5.1	8.5	3.9	0.2	0.2	0.3
Pacific mackerel	6.6	18.3	0.6	0.1	N.A.	N.A.	N.A.	N.A.
Other mackerels	N.A.	2.2	0.1	0.7	2.0	3.3	5.7	4.8

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Table 2

Soviet Fish Catch, by Species
Selected Years, 1948-61
(Continued)

Species Group	Thousand Metric Tons Live Weight							
	1948	1953	1956	1957	1958	1959	1960	1961
Mulletts, jacks, and sea basses	N.A.	<u>48.8</u>	<u>128.1</u>	<u>211.5</u>	<u>291.2</u>	<u>342.6</u>	<u>280.8</u>	<u>259.3</u>
Mulletts	N.A.	4.2	1.8	2.0	2.0	1.2	1.3	1.4
Horse mackerel	N.A.	3.1	15.1	12.4	4.1	6.6	23.8	56.4
Redfishes	14.6	22.4	45.0	112.1	174.1	243.5	183.9	123.7
Sculpins	N.A.	5.6	12.0	10.8	15.7	13.3	15.0	N.A.
Gobies	N.A.	13.5	54.2	74.2	95.3	78.0	56.8	77.8
Unsorted and unidentified fishes	N.A.	<u>99.8</u>	<u>45.3</u>	<u>45.4</u>	<u>40.3</u>	<u>81.2</u>	<u>145.1</u>	<u>222.1</u>
Crustaceans	<u>15.1</u>	<u>29.1</u>	<u>37.4</u>	<u>30.7</u>	<u>31.7</u>	<u>32.8</u>	<u>37.4</u>	<u>39.4</u>
King crab	14.5	28.4	36.1	29.8	30.9	32.2	36.7	38.7
Other	0.6	0.7	1.3	0.9	0.8	0.6	0.7	0.7
Miscellaneous aquatic animals	<u>24.5</u>	<u>5.8</u>	<u>11.0</u>	<u>9.3</u>	<u>11.2</u>	<u>13.5</u>	<u>32.0</u>	<u>59.6</u>

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Table 3

Comparison of Soviet and World Whale Catches a/
Whaling Seasons of 1937/38, 1947/48, and 1952/53 - 1960/61

Whaling Season	Number of Whales Caught				World Catch	Soviet Catch as a Percent of World Catch
	Soviet Catch					
	Antarctic	Kamchatka	Kurile Islands	Total		
1937/38	0	265	0	265	54,902	0.5
1947/48	824	820	460	2,104	43,431	4.8
1952/53	2,726	1,061	1,818	5,605	45,009	12.5
1953/54	3,086	1,112	1,633	5,831	53,642	10.9
1954/55	3,290	1,116	1,915	6,321	55,075	11.5
1955/56	2,773	1,119	2,179	6,071	58,126	10.4
1956/57	2,600	1,351	2,162	6,113	59,056	10.4
1957/58	4,037	1,500	2,875	8,412	64,586	13.0
1958/59	3,687	1,881	2,265	7,833	64,489	12.1
1959/60	7,031	2,472	1,931	11,434	63,616	18.0
1960/61	7,182	2,317	1,647	11,184 b/	63,484	17.6

a. 14/

b. Including 38 whales caught in the pelagic region of the South Atlantic.

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allocated to it. Second, a rapid and sustained increase in fish output required new sources of supply because Soviet coastal waters not only are already extensively fished but also are severely handicapped by the prevalence of fog and ice for a large part of the year. Third, a chronic lack of port handling and processing facilities indicated the desirability of employing very large, mechanized fishing vessels supported by factory ships and transports to exploit distant waters effectively. Fourth, modern vessels and gear were quickly and cheaply available from Western Europe and the more industrialized Satellite countries, thus leaving Soviet shipyards free for naval construction and providing advanced foreign designs for subsequent copying.

During the war the USSR lost about 200,000 gross register tons (GRT) of fishing craft. As a means of rapidly rebuilding the fleet, the first postwar (Fourth) Five Year Plan (1946-50) provided for standardization of ship construction with the addition of 150 trawlers, 3,500 motor craft (undescribed), and 10,000 sail and motor boats. 15/ As shown in Table 4,* the Soviet fishing fleet numbered 44,332 craft in 1948, of which 3,158 were powered, with a total rating of 243,000 horsepower (hp). By 1956, the latest detailed accounting given by the USSR, the number of powered craft had increased by nearly four times -- to 12,387 craft, with a total rating of 983,000 hp. During this period the number of trawlers increased from 329 to 1,785, and a similar increase was registered in the number of seiners.

It is planned that during the Seven Year Plan (1959-65) about \$2.7 billion will be invested in the construction and import of new fishing ships. 16/ During this period the fleet is to increase by about 10 percent in numbers and 90 percent in engine power. 17/ Since 1955 the construction of large fishing craft used for fishing on the high seas has been emphasized. In 1960, for example, the large ships of the fishing fleet caught 76 percent of the fish catch of the entire fishing fleet in spite of the fact that large ships of 300 hp and above comprised only 6 percent of the total numbers of the motorized fleet. 18/ The goal for 1965 for these large ships calls for a catch of 3 million tons, which is to comprise about 80 percent of the planned catch for the entire fleet. 19/

In recent years the expansion of the Soviet fishing industry has been dominated by the fish-factory trawler program. Large refrigerated trawlers (BMRT's) catch and mechanically process the fish into frozen fillets, canned products, fish meal, and oil. These large-stern trawlers are in the Pushkin, Mayakovskiy, and Leskov series.



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* Table 4 follows on p. 12.

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Table 4
Composition of the Soviet Fishing Fleet a/
1940, 1948, and 1953-56

Year	Powered Craft								Nonpowered Craft		
	Trawlers		Seiners		Other		Total		Units	Total Tonnage	Total (Units)
	Units	Total Horsepower	Units	Total Horsepower	Units	Total Horsepower	Units	Total Horsepower			
1940	107	62,500	376	18,900	2,244	42,500	2,727	123,900	33,679	103,600	36,406
1948	329	88,000	407	29,200	2,422	126,000	3,158	243,200	41,174	83,300	44,332
1953	1,184	303,200	1,221	147,200	5,898	160,300	8,303	610,700	46,292	131,700	54,595
1954	1,379	362,400	1,395	175,800	7,151	187,100	9,925	725,300	45,912	125,800	55,837
1955	1,598	451,800	1,517	194,200	7,757	188,200	10,872	834,200	47,752	126,100	58,624
1956	1,785	549,300	1,724	225,700	8,878	207,600	12,387	982,600	48,056	127,400	60,443

a. 20/. This table presents the latest official statistics on the subject and is included as an indication of trends and for purposes of comparison with other countries.

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[redacted] A new large trawler of 3,300 hp with double the capacity of the present large trawlers is expected to be in service in 1964. 22/ The Tropik is a smaller version of the fish-factory trawler designed to operate in tropical waters especially for fishing for sardines and tuna. The Okean and Atlantik are medium-size refrigerated trawlers (SRT's), the latter being designed to can and package fish and to deliver its catch directly to ports. 23/

In addition to the vastly enlarged trawler fleet, the Soviet fishing fleet is being supplied with refrigerated transports, floating fish-processing ships, crab-canning ships, whale-factory ships, and whale catchers as well as numerous smaller vessels. Fish-factory ships of the Andrey Zakharov class (10,700 GRT), which are used for canning crab and fish, have an annual capacity of 20 million cans. 24/ A new fish-processing parent ship, the Vostok, with a displacement of 35,000 tons, is now being designed. 25/ Refrigerated transports include ships of the Sevastopol', Bratsk, Skryplev, and Tavriya classes. Series production of a new refrigerated transport designated as of the Sibir class is to begin in 1963. 26/

A program to modernize and expand whaling operations was undertaken in 1955, when a series of three 32,024-GRT factory ships was begun. Two of these ships, the Sovetskaya Ukraina and the Sovetskaya Rossiya, are operational, and the Sovetskiy Soyuz is to be commissioned in 1963. The Yuriy Dolgorukiy, a converted German liner, began operations in 1960. In addition two ships, the Vladivostok and the Dal'niy Vostok, each of 17,000 GRT, will operate as whale-factory/fish-factory ships in the Far East. 27/ Construction of whale-catcher ships, chiefly of the Mirniy class, has proceeded concurrently with the increase in mother ships.

The USSR has relied heavily on foreign shipyards in its postwar buildup of the fishing fleets. East and West Germany and Poland, in particular, have been important suppliers, but Denmark and Sweden also have been involved in the development of the Soviet fishing fleet. A contract with Japanese shipbuilders was signed recently, and negotiations are underway with firms in other countries to supply specialized fishing vessels.

The magnitude of development of the Soviet fishing fleet has been unparalleled in the postwar period. Although inadequate data on the composition of this fleet make comparisons difficult, the number of powered vessels almost quadrupled during 1948-58, increasing from 3,158 to an estimated number of 12,500 vessels, with the total tonnage increasing from 243,000 GRT to about 1.1 million GRT. During this same period the Japanese fleet increased from 104,000 to 162,000 vessels (853,000 GRT to 1,230,000 GRT); the US fleet increased from

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9,500 to 11,600 vessels (188,000 GRT to 235,000 GRT);

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In terms of gross register tons, only the Japanese fleet is comparable to that of the USSR, and as of 1963 it is estimated that the Soviet fleet surpasses that of Japan in tonnage.

With the expansion and modernization of the Soviet fleet, methods of fishing have likewise changed. As shown in Table 5, from 1950 to 1959 the percentage of the catch resulting from "active" fishing more than doubled.

Table 5

Soviet Fish Catch, by Methods Used a/
1950 and 1959

Method	Percent of Total	
	1950	1959
Active fishing	35.8	74.0
Trawling	19.2	31.6
Drift netting	5.1	18.3
Purse seining	4.2	7.5
Use of electric lights	0.1	5.2
Catching whales and sea animals	7.2	11.4
Passive fishing	64.2	26.0
Beach seine	16.4	6.5
Trap net	22.8	9.0
Fixed gill net	10.7	7.5
Other	14.3	3.0

a. 29/

C. Scientific Research Fleet

In addition to having one of the largest and most modern high seas fishing fleets in the world, the efforts of the USSR in oceanographic research have established it among the world leaders in this field. As revealed by Soviet participation in the International Geophysical Year (IGY) program (1 July 1957 - 31 December 1958), the USSR has a larger oceanographic fleet than the US. Not only is the rate of

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growth of Soviet oceanographic science greater than that of the US, but also the USSR probably leads in the field of exploratory surveys of the oceans. 30/

Soviet oceanographic studies are organized under 22 fishing research organizations headed by the All-Union Scientific Research Institute of Fishing and Oceanography (VNIRO), which employs about 100 vessels. Many of these ships are converted trawlers, but others are specially designed research ships such as the Y.M. Shokalskiy, which contains the latest equipment for studying sea currents, marine biology, and weather conditions. A converted submarine, the Severyanka, also is used in underwater research. A large combination research and commercial fishing vessel, the N.M. Knipovich, is currently under construction.

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In extending their high seas fishing industry into new areas, the Soviet authorities follow a general pattern of activities. An oceanographic expedition conducts broad-scale observations on marine biology, including the location of various sources of food for the different kinds of fish in a defined area. Research vessels follow up to conduct intensive explorations of the fishstocks, after which fishing begins. 32/

At present the USSR is engaged in oceanographic research in all the major fishing areas of the world as well as in areas such as the Gulf of Aden and Tonkin Bay, where the fishing potentials have yet to be determined. Undoubtedly the scientific research fleet will play a major role in the future expansion of Soviet fishing on the high seas, both in the development of new fisheries and in the better exploitation of existing fisheries.

D. Port and Shore Installations

Soviet fishing is centered on very few ports, almost all of which are undergoing extensive improvements. Kaliningrad in the Baltic is being reorganized as the second largest base (after Murmansk) on the western side of the continent and will control fleets in the Baltic and the North and South Atlantic and a whaling flotilla in the Antarctic. A large mechanized fishing harbor is being built as well as associated canning factories, refrigeration and processing plants, and shipyards. Similar, although less extensive, improvements are being made at Klaypeda, Riga, Tallin, Leningrad, and Murmansk. In the Far East the Vladivostok port is being expanded and will serve not only as the center of the Primorskiy Kray fisheries but also for the fisheries of the entire Far East. Other important fishing ports in the Far East include Nakhodka,

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Nevel'sk, Petropavlovsk, Mago, Okhotsk, and Rybnovsk. The most important fishing ports in the USSR are presented in Table 6.

Table 6

Landed Catch at Soviet Fishing Ports a/
1958 and Original 1965 Plan

Ports	Thousand Metric Tons Live Weight	
	1958	Original 1965 Plan <u>b/</u>
USSR	2,936	4,640
Of which:		
Murmansk	509	850 to 880
Kaliningrad	140	450 to 550
Estonia: Tallin and others	59	130
Latvia: Riga and others	95	200
Lithuania: Klaypeda and others	93	155
Leningrad	45	N.A.
Primorskiy Kray: Vladivostok and others	340	667
Kamchatka: Petropavlovsk and others	204	348
Sakhalin: Rybnovsk and others	179	249

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b. A revised breakdown of the new goal of 5 million tons has not been published to date.

As a result of the improvement of shore facilities, along with the growth of the fish-factory fleet, the proportions of the components of the processed fish products have changed considerably in recent years. The commercial output of fish products for food in 1961 was 1,682,000 tons,* of which about 778,000 tons, or 46 percent, were live, chilled, or frozen compared with only 594,000 tons, or 37 percent, of

* This figure for commercial output of edible fish products is only a part of the total production of edible fish products shown in Table 7, p. 18, below.

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the total commercial output in 1958. 34/ By 1965, 1.4 million tons* of live, chilled, or frozen fish products are to be produced. 35/ Instrumental in attaining this goal will be the planned growth in refrigeration facilities that will have a daily freezing capacity of 19,860 tons (5,920 tons at shore installations and 13,940 tons on ships) compared with a daily freezing capacity of only 7,740 tons in 1959 (3,800 tons on shore installations and 3,940 tons on ships). In 1958 the refrigerated hold capacity of ships of 80 hp and above was 189,300 tons, or 31 percent of their total hold capacity. By 1965 it is planned to increase refrigerated hold capacity to 675,900 tons, or 65 percent of the total. Output of quick-frozen fish is planned to increase from 430,000 tons in 1958 to 1,230,000 tons** in 1965 -- an increase of 66 to 88 percent of the total output of refrigerated fish and fish products. 36/

Output of canned fish products was 760 million cans in 1961 compared with 632 million cans in 1958. 37/ The goal for 1965 calls for more than 1 billion cans of fish to be produced. 38/ With the emphasis on fresh, frozen, and canned products, the share of salted fish (excluding salted herring) will decrease to about 11 percent of the output of edible fish products by 1965 compared with about 20 percent in 1958 and 52 percent in 1950. 39/ As shown in Table 7,*** production of inedible fish products has almost doubled in recent years.

E. Some Economic Aspects

As is the case with Soviet industry in general, the fishing industry can fall back on state subsidies when losses occur. It should be pointed out that the high seas fishing industry serves as cover for intelligence operations to some extent, and that, therefore, there are certain joint costs of operations. Some Soviet fishing operations undoubtedly are uneconomic, however well organized and efficient as far as the harvesting of fish is concerned. 40/ For instance, in some areas of the Northwest Atlantic where the Soviet catch is primarily herring, Soviet fishermen have referred to the fish (herring) as "golden fish" because of the expense of the operation. 41/ The fisheries in the Far East, admittedly, have not been profitable as a whole, 42/ but an economic evaluation of these fisheries would have to take into consideration the loss of foreign exchange if the USSR resorted to imports in preference to high-cost domestic production.

* According to the June 1962 revision of the goal for 1965. The original plan called for a total production of 1.2 million tons.

** According to the June 1962 revision of the goal for 1965. The original goal for 1965 for frozen fish as a separate category is not available.

*** Table 7 follows on p. 18.

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Table 7

Disposition of the Soviet Fish Catch a/
1958, 1961, and Original 1965 Plan

Product	Thousand Metric Tons Net Weight		
	1958 <u>b/</u>	1961 <u>c/</u>	Original 1965 Plan <u>b/</u>
Total edible fish products	1,796.8	2,018.5	2,669.0
Canned <u>d/</u> Fish products	214.1 1,582.7	269.8 1,748.7	338.2 2,330.8
Live, chilled, or frozen	651.0	797.1	1,238.0
Smoked, dried, balik, and culinary products	75.7	140.2 <u>e/</u>	113.0
Salted, excluding herring	371.0	349.9	284.0
Salted herring	460.0	461.5	668.0
Other (residual)	25.0	N.A.	27.8
Other fish products <u>c/</u>	120.1	222.6	N.A.
Whale oil	37.2 <u>f/</u>	59.5 <u>g/</u>	N.A.
Sperm oil	22.2 <u>f/</u>	25.3 <u>g/</u>	N.A.
Fish body oils	12.0	20.7 <u>h/</u>	N.A.
Whale meal	4.8 <u>f/</u>	16.5 <u>g/</u>	N.A.
Fish meals and solubles	43.9	100.6	N.A.

a. Figures by the Food and Agriculture Organization (FAO) of the UN 43/ for 1958 for edible fish products differ slightly from those of Mikhaylov, 44/ probably because of differences in definitions. The total is comparable to that given in Mikhaylov.

c. 46/

d. Including all types of fish, crustaceans, mollusks, and caviar.

e. Including spiced and marinated herring.

f. Data are for the 1958/59 whaling season.

g. Data are for the 1960/61 whaling season.

h. Data are for 1960.

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In spite of the very considerable growth in their fishing industry in the past decade, the Soviet authorities have been highly critical of the over-all performance of the fishing fleet. The growth in the fish catch has been due primarily to the expansion of the fishing fleet and not to the better utilization of the fleet. Special studies of fleet use in 1961 indicated that the large fishing trawlers (BMRT's) and the medium trawlers (SRT's) were occupied in fishing operations for only 39 to 43 percent and 25 to 37 percent of the calendar year, respectively. Idle time, spent chiefly under repair or waiting for repairs, amounted to 25 to 30 percent of the total time. ^{47/} Also, considerable unproductive time is spent waiting to transfer fish catches to transport or base ships, a shortage of which has handicapped the industry.

Part of the inefficient use of the Soviet fishing fleet is attributed to poor mechanization of some of the heavy operations on board ship. The lack of adequate port facilities, which have been greatly neglected in the past, however, has been a distinct handicap to the fishing industry. Indeed, inadequate port facilities were an important factor in the decision to operate fish-factory trawlers, which require fewer shore facilities. On the other hand, many Soviet fishing bases are located in largely underdeveloped areas of the North and Far East, and expansion of the fishing industry has stimulated the industrial development of these regions while at the same time supplying food in food-deficit areas.

The Soviet authorities point out that under existing conditions the fishing industry not only can be developed as a more economic alternative to the development of the livestock industry in the short run but also can be developed in less time. ^{48/} The Soviet writer S.V. Mikhaylov, citing a comparative study of fish and meat production, maintains that 1 million calories of food production are obtained from 1.0 to 1.5 tons of raw fish or from 2.8 standard head of cattle, each weighing 370 kg. He states that only 15 to 20 man-days of working time are required to catch the fish but that 56 man-days are expended on the cattle. ^{49/} Furthermore, the timespan needed to raise cattle to maturity makes livestock raising even more disadvantageous compared with fishing.

Mikhaylov further points out that in terms of capital investment, 20 million to 25 million rubles are needed to organize a state farm with 4,500 to 5,000 head of cattle. With a marketable production on such farms of approximately 1,000 tons (live weight) per year, total capital investment per ton of marketed production will be 20,000 to 25,000 rubles. On the other hand, a catch of 1 ton of fish (roughly equivalent to 1 ton of beef in protein food value) in the seas and oceans requires a total investment of only 15,000 to 17,000 rubles, or 25 to 30 percent less. ^{50/}

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It should be further pointed out that the expansion of the fishing industry is coincident with the determination of the Soviet authorities to make the USSR as self-sufficient as possible in the production of food. Soviet reliance on imports of fish has decreased substantially with the increase in the fish catch. As indicated in Table 8,* the USSR has reversed its former position as a net importer of fish and fish products. Trade with Norway and Iceland, in particular, has been sharply reduced, partly because of expanded Soviet production and partly because of political considerations. From 1956 to 1961, imports of fish fillets from Iceland fell from 31,500 tons to 8,200 tons and those from Norway from 8,100 tons to 1,900 tons. Imports of salted herring from Iceland during the same period fell from 16,200 tons to 8,600 tons, and those from Norway fell from 32,800 tons to none. 51/ It would appear that further reduction in these levels of trade is a likely prospect as the Soviet fishing operations continue to expand.

III. International Fishing Regions Exploited by the USSR

A. General

With the development of a modern high seas fishing fleet and a scientific research fleet second to none, the USSR in the postwar period has expanded its fishing operations into most of the principal fishing regions of the world. Furthermore, the Soviet authorities have been vigorously conducting exploratory research in their efforts not only to discover new fishing grounds but also better to exploit those already established. International fishing areas exploited by the USSR are shown on the map.**

Published Soviet data, although incomplete and at times contradictory, make it possible to determine to some degree the extent of Soviet regional fishing operations in 1958 and in the original 1965 Plan. These data are presented in Table 9.***

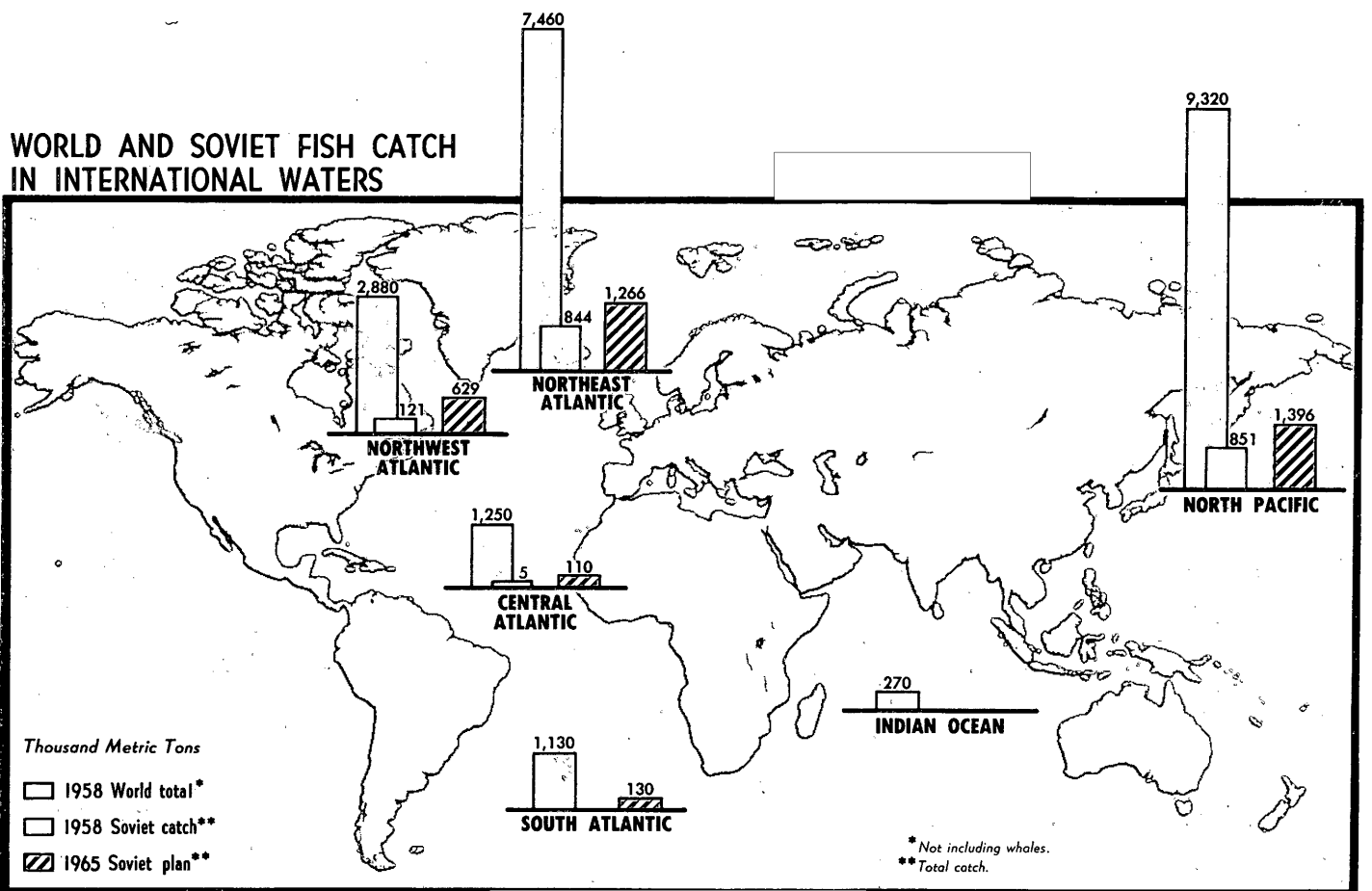
B. Atlantic Ocean

The fisheries of the Atlantic are by far the most important in the world. In 1961 the Atlantic provided about 35 percent of the world fish catch, exclusive of whales and other sea animals. Of the 14.3 million tons of fish caught in Atlantic waters in 1961, about 80 percent were obtained in the Northern waters. 52/

* Table 8 follows on p. 21.

** Following p. 20.

*** Table 9 follows on p. 23.



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Table 8

Soviet Foreign Trade in Fish and Fish Products a/
1957-61

	Unit of Measure	1957		1958		1959		1960		1961	
		Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Fish - fresh, chilled, or frozen	Thousand metric tons	52.6	0	56.1	0	53.1	0	58.1	0	18.7	0
	Thousand US \$	13,846.0	0	13,856.0	0	13,591.0	0	13,675.0	0	5,117.0	0
Fish - dried, salted, or smoked	Thousand metric tons	69.3	1.3	55.1	13.4	52.7	34.3	28.1	43.1	8.6	31.3
	Thousand US \$	10,180.0	570.0	7,751.0	3,074.0	7,166.0	6,807.0	3,986.0	8,159.0	1,922.0	5,928.0
Fish products and preparations, pre- served or canned	Thousand metric tons	0.1	7.8	0.1	7.8	Negl.	16.5	0.1	18.6	0.1	22.3
	Thousand US \$	625.0	10,529.0	584.0	10,375.0	534.0	18,120.0	880.0	18,429.0	806.0	22,004.0
Crustacean and mol- lusk products, cooked or canned	Thousand metric tons	0	3.8	0	4.1	0	4.1	0	3.7	0	3.7
	Thousand US \$	0	7,568.0	0	8,449.0	0	8,659.0	0	8,598.0	0	9,435.0
Oils and fats, crude or refined, of aquatic animal origin	Thousand metric tons	33.6	4.8	27.8	5.0	35.5	8.0	23.6	35.4	28.9	17.4
	Thousand US \$	10,754.0	1,139.0	7,673.0	1,366.0	9,654.0	2,138.0	6,288.0	7,282.0	7,415.0	4,101.0
Meals, solubles, and similar animal feedstuffs, of aquatic animal origin	Thousand metric tons	0	3.2	0	3.8	0	4.8	0	4.0	0	4.9
	Thousand US \$	0	422.0	0	494.0	0	631.0	0	538.0	0	623.0
Total	Thousand metric tons	155.6	20.9	139.1	34.1	141.3	67.7	109.9	104.8	56.3	79.6
	Thousand US \$	35,405.0	20,228.0	29,684.0	23,758.0	30,945.0	36,355.0	24,769.0	43,006.0	15,260.0	42,091.0

a. 53/

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Before the 1950's, Soviet fishing in the Atlantic was confined primarily to the Barents Sea, where the catch was mainly bottom fish. 54/ In 1940, only 218,000 tons of fish were taken from Atlantic waters. 55/ Since 1948, when Soviet ships began fishing for herring in northeastern waters, exploitation of this area proceeded rapidly. In 1950 the Atlantic catch was only 290,000 tons, but by 1958 it had increased to 970,000 tons, or about one-third of the entire Soviet catch. 56/ According to the original Seven Year Plan goal for 1965, the catch from the Atlantic is to increase by 120 percent above that of 1958. About 30 percent of the planned increase will be in the herring catch, while the remaining 70 percent will result from bottom fish -- sea perch and cod in the Northwest and sardines, tuna, and other types of fish in the central and southern regions. 57/ In view of the increased goal for 1965, it would appear likely that the Atlantic probably will provide more than two-thirds of the additional increase.

1. Northeast Atlantic

As indicated in Table 9,* the Northeast Atlantic, which includes the waters of the Barents, White, Baltic, Norwegian, and North Seas, is the major source of fish for the USSR and provided about 87 percent of the Soviet catch from the Atlantic and 40 percent of the Soviet high seas catch in 1958. In 1960 the catch from the Northeast Atlantic was about 1.1 million tons. 58/ Although the relative share of the Northeast Atlantic fisheries is declining because of expanded operations into other regions, these fisheries will continue to be the most important in the Atlantic waters.

Fishing in the Northeast Atlantic is a year-round operation, and this area is rarely devoid of Soviet fishermen. The intensity of Soviet operations in this area is apparent from the fact that the sighting of 300 to 400 trawlers and support ships in this area is common, with the number exceeding 800 on occasion. 59/ In the winter months, heavy concentrations are sighted constantly in the vicinity of the Faeroes, with operations gradually moving northward. By mid-summer, operations are usually concentrated in the general vicinity of Jan Mayen Island, but with the approach of autumn the trend is toward the southern part of the area. 60/

In the Northeast the Soviet vessels fish primarily for herring, sea perch, cod, and other bottom fish such as flatfish and redfish. Herring is the most important fish in this area. The development of herring fishing for the entire North Atlantic is to provide 30 percent of the planned increase in the total Atlantic catch during the Seven Year Plan. 61/ The tremendous expansion of the Soviet

* Table 9 follows on p. 23.

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Table 9

Soviet Fish Catch, by Region a/
1958 and Original 1965 Plan

	Thousand Metric Tons Live Weight	
	<u>1958</u>	<u>Original 1965 Plan <u>b/</u></u>
Total fish catch (including whales and other sea animals)	<u>2,936</u>	<u>4,640</u>
Inland and coastal	813	928
High seas	2,123	3,712
Atlantic	970	2,135
Northeast	844	1,266
Of which:		
Baltic Sea	168	113
Northwest	121	629
Central	5	110
Southern	0	130
Far East	851	1,396
Primorskiy Kray	336	662
Kamchatka	202	343
Sakhalin	177	245
Other Far East areas	136	146
Other <u>c/</u>	302	181

a. A reliable and complete regional breakdown is not available for recent years. Some data for 1960-62 are included in the text.

b. The original 1965 Plan called for a catch of 4,624,000 tons. It was later corrected to 4,640,000 tons, and in June 1962 it was increased to 5 million tons.

c. These are residuals and do not appear to be entirely consistent with the expansion of activities in other areas, especially Antarctic whaling.

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herring catch in the Northeast Atlantic in recent years is well illustrated by the Soviet catch in Norwegian waters. In 1951 the combined Soviet/Norwegian catch of adult herring in Norwegian waters was 930,000 tons, of which the Soviet catch was only 40,000 tons. By 1960 the Soviet share was 500,000 tons of the combined catch of 800,000 tons. 62/ As indicated in Table 9,* the fish catch from the Baltic Sea, an important source of sprats, is planned to decrease by one-third during the Seven Year Plan.

2. Northwest Atlantic

Soviet fishing in the Northwest Atlantic dates from 1954, when initial fishery research was undertaken by a single trawler. Actual exploitation, however, did not begin until 1957. Until June 1961, fishing operations were largely centered on the Flemish Gap and Grand Banks fisheries. With discovery of rich herring concentrations on the Georges Bank, operations were extended into this area. 63/

The Northwest Atlantic fisheries will play a significant role in the expansion of Soviet fish production during the Seven Year Plan. As seen in Table 9,* the 1958 catch was only 121,000 tons, but the goal for 1965 calls for a catch of about 629,000 tons -- an increase of about 420 percent. 64/ In 1961 the catch in the Northwest Atlantic, which consists primarily of herring, cod, redfish, sea perch, and other bottom species, was about 340,000 tons. 65/ The success of the Soviet fishing vessels in the Northwest Atlantic, where the catch was almost tripled from 1958 to 1961, could have been the main reason for increasing the goal for 1965 to 5 million tons in June 1962.

Because of the great distance from Soviet fishing ports, the fish-factory trawlers, with their great range of operations, form the nucleus of the fleet in this area. During a peak season, it is estimated, as many as 450 large and medium trawlers and their support ships operate in this area. 66/

3. Central and South Atlantic

As indicated on the map,** the Central and South Atlantic are not important fishing areas. The USSR did not engage in fishing activities in these areas before 1958. However, the combined catch from these areas is planned to be about 240,000 tons by 1965. Soviet operations to date are still on a fairly small scale but promise to increase substantially as soon as the Tropik-class trawlers, which are designed for tuna and sardine fishing, become operational in sufficient numbers.

* P. 23, above.

** Following p. 20, above.

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In 1957, exploratory operations were begun along the west coast of Africa in an area extending from the Cape Verde Islands south and eastward into the Gulf of Guinea. The following year a small fleet of fish-factory trawlers began limited operations, principally in the Gulf of Guinea, with their catches of tuna, sardines, and bottom fish being sold in coastal markets. Further exploratory work in 1960 led to the discovery of rich sardine grounds off Southwest Africa in the region subsequently called the Walvis Ridge area. It is reported that 17,000 tons of sardines were taken from this area in 1961. 67/ The fleet operating in the West African waters will be based primarily at ports along the Black Sea. The largest fishing port on the Black Sea is currently under construction at Kamyshovaya Bay near Sevastopol and will process the bulk of the catch of tuna, sardines, and sea perch expected by the end of the Seven Year Plan. 68/

Soviet fishing operations in Caribbean waters, the Gulf of Mexico, and along the east coast of the US and Brazil are not very extensive at present but with the construction of port facilities (such as refrigeration and repair) in Havana harbor the Soviet authorities will have an excellent base of operation for exploiting not only these waters but also possibly the rich tuna grounds of the East-Central Pacific.

C. Pacific Ocean

Soviet fishing operations in the Pacific are confined mainly to the waters of the Northern Pacific. As shown in Table 9,* the Soviet Far East fisheries provided about 29 percent of the total Soviet catch in 1958. During the Seven Year Plan the Far East catch is to increase by 64 percent above 1958 and will comprise about 1.4 million tons, or 30 percent of the Soviet catch. By 1961 the Far East catch had increased to about 1.0 million tons. 69/

Of the total Soviet catch, at present the Far East fisheries provide about 90 percent of the salmon, 100 percent of the crabs, more than 90 percent of the flounder, 35 percent of the whales, 40 percent of the herring, 55 percent of the mollusks, 100 percent of the trepangs, and 90 percent of the sea plants. 70/ The Soviet Far East fisheries embrace several regions, the most important of which is the Primorskiy region. In 1958, the last year for which a reliable and complete breakdown can be established, this region produced 40 percent of the Far East catch, and by 1965 it is planned to increase to 47 percent of the total. The ports of Vladivostok and Nakhodka in the Primorskiy region are the most important in the Soviet Far East because almost all of the Far East catch passes through them. The extensive repair,

* P. 23, above.

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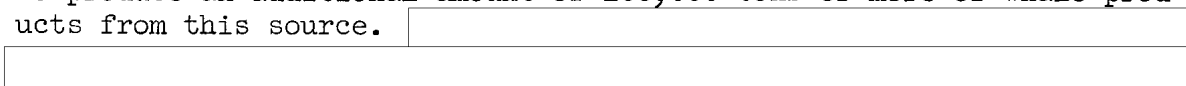
refrigeration, and processing facilities that are located in these ports are being expanded considerably. The Eastern Fish Refrigeration Fleet, which services the entire Soviet Far East, is based at Vladivostok, as are the crab and whaling fleets. In addition, the construction of a large base has begun in Preobrazheniya Bay on the Japan Sea coast, which will be important in expanding operations into more southern waters, including the Indian Ocean. 71/

Kamchatka is the next most important fishing region in the Soviet Far East, followed by Sakhalin. In 1958 these two regions produced 24 and 21 percent, respectively, of the Soviet Far East catch. The catches from these two regions in 1965 are planned to increase by 70 and 38 percent above their respective levels in 1958. Fishing operations in the Okhotsk, Magadan, and Lower Amur regions consist mainly of offshore fishing for spawning salmon and herring. The combined catch from these regions is expected to be about 11 percent of the Soviet Far East catch in 1965.

In order to carry out the planned expansion in the Far East, high seas fishing operations are being expanded in the Bering Sea, the Okhotsk Sea, and the Sea of Japan and in more southern waters, including the Indian Ocean. The Bering Sea, in particular, will play an important role in the Soviet Far East fishing industry. Following the exploratory surveys of the All-Union and Pacific Scientific Research Institutes of Fishing and Oceanography in 1957-59, development of this region has been proceeding rapidly. By 1961 the catch had increased to more than 300,000 tons. 72/ Future development of this region is expected to provide an annual sustained catch of about 500,000 tons. 73/

Fishing operations in the Bering Sea are conducted in the Olyutorskiy Gulf area on the west side of the Kamchatka Peninsula as well as in the vicinity of St. Lawrence Island and in a triangular area formed by Unimak and the Pribilof and Nunivak Islands. In 1961 the Soviet fishing fleet began operations in the waters south of the Aleutians and eastward into the Gulf of Alaska below Kodiak Island. Herring, salmon, flounder, sea perch, king crab, and other bottom varieties are taken from this region. 74/ The necessary expansion of the Far Eastern fleet to effect the planned increase in the fish catch will include the addition of about 50 fish-factory trawlers, more than 100 medium and large trawlers, and 9 parent ships of various types.

The Far Eastern whaling industry is to be expanded considerably to produce an additional amount of 200,000 tons or more of whale products from this source.



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[] The number of whaling vessels is to be trebled, and new expeditions are planned for the Bering, Chukchi, and Okhotsk Seas. Instrumental in the expansion of the whaling industry will be the re-equipping of the Aleut, the original whale-factory ship in the Far East, and the addition of two dual-purpose fish-whale factory ships, the Vladivostok and the Dal'niy Vostok.

D. Antarctic Whaling

Soviet whaling operations in the Antarctic have been developed exclusively since World War II. The expansion of Antarctic whaling has provided a quick and relatively cheap source of supply to ease the postwar shortage of animal and vegetable fats. Since 1946, when operations were begun with only a single floating base, the Slava, and several attendant catchers, the USSR has expanded to 4 flotillas of 4 factory ships and approximately 75 catchers. 76/

As seen in Table 3,* the USSR caught only 3,687 whales in the Antarctic in the 1958-59 season. In 1958, however, the International Whaling Conference sanctioned the additional flotillas that the USSR planned to put into operation, and that country was allocated 20 percent of the total Antarctic catch. Thus the Soviet catch since the 1958-59 season has ranged from 17 to 24 percent of the total world Antarctic catch compared with only 9 percent in 1958-59. The future of Antarctic whaling, however, is in jeopardy because of the failure to establish strict international control of the catch.

E. Indian Ocean

At the present time, Soviet activities in the Indian Ocean are limited to exploratory expeditions designed to survey potential fishing grounds. Under the auspices of the International Indian Ocean Expedition (IIOE), a Soviet expedition was studying marine biology of the Indian Ocean in January 1963. 77/ With the past pattern of activities as a guide, this biological study probably will pave the way for more intensive explorations to determine the potential fisheries in the Indian Ocean.

In September 1962, one Soviet tuna boat was operating in the Gulf of Aden, on the northwest periphery of the Indian Ocean. Perhaps it is significant that the Soviet authorities are building a new tuna cannery for the Somali Republic, 78/ the completion of which probably will be tied in with an expansion of Soviet activities in that area.

* P. 10, above.

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IV. US-Soviet Competition in High Seas Fisheries

Soviet competition on the fishing grounds of the Atlantic, Pacific, and Antarctic has already seriously disturbed the fishing industries of the other nations that have established fishing operations in these areas. With its expanded, modern deep sea fishing and scientific research fleets, the USSR is in a position to place an even greater strain on the fishing industries of other countries as the pressure increases to fulfill increasingly ambitious goals. The decision in June 1962 to increase the Seven Year Plan goal from 4.64 million to 5.0 million tons of fish is a direct reflection of the expanded capabilities of the Soviet fishing fleet. During the first 4 years of the Seven Year Plan the average annual rate of increase in the fish catch was about 8.8 percent compared with an increase of 7 percent needed to fulfill the original goal for 1965. Fulfillment of the revised goal for 1965 is assured if an annual increase of 7 percent can be maintained over the next 3 years -- a pace that should not be too difficult for the USSR to maintain.

The expansion of Soviet fishing activities presents a direct threat to US fishing interests as the USSR expands its activities into those fisheries currently fished by US fishermen. Soviet fishing activities in international waters near the underdeveloped countries, especially along the African coast, have served as a convenient means of entry into those countries for the purposes of possible economic or political penetration to further the aims of Soviet foreign policy.

A. Impact on US Fishing Interests

As pointed out above, Soviet fishing operations are being rapidly expanded into several areas where US fishermen have traditionally fished -- the Northwest Atlantic, the Northeast Pacific, off the east coast of the US, and in the Gulf of Mexico. Although there have been numerous cases where Soviet actions on the high seas have led to the destruction of crabpots, the fouling of screws and gear, and even the coercion of individual fishing boats, such incidents are more in the nature of irritants to US fishermen. A serious threat may be posed to the US-Canadian halibut industry in the eastern Pacific, where stocks have been rigidly controlled for several decades, if the USSR decides to enter the halibut industry in that area.

With the construction of a fishing port in the Bay of Havana the USSR will have a base for expanding fishing operations in the Western Hemisphere. Expansion of Soviet activities can be expected not only in the Gulf of Mexico but also along the eastern coast of the US. Although the Soviet fish meal industry is not of great importance at present, Soviet negotiation to purchase fish meal ships from

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the UK may presage considerable expansion of menhaden fishing on the US east coast. The Cuban base will serve as a base for expanding fishing operations in tropical waters, especially for catching tuna and sardines. Serial production of the Tropik, a ship designed especially for catching tuna and sardines, was to have begun in 1962, and the USSR has contracted for more than 60 ships of this class that are to be completed during the Seven Year Plan. With the completion of the Havana fishing port the USSR will be in position to exploit the rich tuna grounds in the vicinity of the Galapagos Islands -- an area currently exploited by US fishermen.

B. Soviet Relations with Underdeveloped Countries

The USSR is in a favorable position to render aid and thereby gain respect and influence in underdeveloped countries that have a critical need for a relatively cheap source of animal protein such as can be supplied by fish. Because of the high cost of developing fisheries, outside aid is often welcomed by the underdeveloped countries. The USSR has undertaken exploratory research in coastal and offshore waters along the west coast of Africa in an effort to establish new fishing grounds and to participate in their exploitation.

Ghana serves as a particular example to illustrate the potentials of the Soviet fishing industry as a weapon for economic penetration of a strategic underdeveloped country. Under an economic aid program initiated in August 1960 the USSR has provided Ghana more than \$95 million in economic credits. 79/ To help develop the Ghanaian fishing industry, the USSR in December 1960 agreed to build shore facilities -- fish processing, refrigeration, a fish meal plant, repair, and the like -- as well as provide some trawlers and seiners. The agreement also called for the training of Ghanaian specialists in the USSR. 80/ The recent rapid development of the Ghanaian fishing industry probably reflects the investment of Soviet funds.

The sale of Soviet fish in markets along the west coast of Africa has been a cause of some concern for foreign investors in those countries. In Sierra Leone, for example, the Soviet authorities have offered fish for sale at prices well below the world price for frozen, cleaned, packed "bottom" fish. However, the Soviet product is said to have been of poorer quality. 81/ The Van Camp Company, which ships its entire catch of tuna taken off Sierra Leone to Puerto Rico for packing, is reported to be hesitant about opening a cannery in Freetown because of the unpredictability of the Soviet authorities and their activities in the area. 82/

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V. International Treaties

The rapid expansion of the world fishing industry in the postwar period has raised some serious questions in relation to international fisheries. The aggressive expansion of Soviet fishing operations in international waters in recent years has served notice that the USSR is determined to increase its share of the world's fish catch. In 1927, defying the historically accepted 3-mile limit, the USSR declared a 12-mile territorial and fishing limit around its coasts, thereby reserving these waters for its own fishing industry. As illustrated by the USSR-Norway agreement of April 1962, however, fishing rights within the 12-mile limit can be negotiated with the Soviet authorities. ^{83/} On the initiative of the Soviet government in 1956, a bilateral agreement was entered into by the USSR and Japan that limits Japanese fishing activities in the Northwest Pacific by placing quotas on the quantities of salmon and crab which can be taken by Japanese fishermen.

At the present time the USSR is participating in 27 international fishery treaties and 13 international commissions for high seas fishing and fishery research. ^{84/} Included are the International Council for the Exploration of the Sea, the Permanent Commission of the International Convention for Fishing, and the International Commission for Fishing in the Northwest Atlantic as well as the International Whaling Commission and the North Pacific Fur Seal Commission. A number of commissions in which the USSR participates include only the Communist countries. These include the Joint Commission for Fishing on the Danube River (the USSR, Bulgaria, Rumania, Hungary, and Yugoslavia), the Joint Commission for Fishing in the Black Sea (the USSR, Bulgaria, and Rumania), and the Commission for Fishery Research in the Western Pacific (the USSR, Communist China, North Korea, Mongolia, and North Vietnam). An agreement was signed in 1962 with East Germany and Poland for cooperation in the field of high seas fishing. In addition, the USSR has agreements with some of the underdeveloped countries such as Ghana and Cuba to help in the development of their fisheries.

Statements by Soviet officials suggest a willingness to cooperate with other countries in the rational exploitation of marine resources. With the huge investment that the USSR now has in its high seas fishing industry, it behooves that country to cooperate to prevent depletion of world fishing resources. Soviet actions have not always reflected a cooperative attitude, but the aggressive expansion of high seas fishing in recent years may be explained, in part, by the fact that the USSR, as a relatively new competitor, must establish certain "rights" in anticipation of stricter international controls in the future.

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