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ECONOMIC COMMITTEE

THE SOVIET FISHING INDUSTRY

Note by the Chairman

The attached report has been prepared by the Economic Directorate in the framework of the study started in 1976 on the activities of the Soviet Merchant Navy(1). It examines the development and activities of the Soviet fishing fleet and briefly discusses the impact of the establishment of the 200 mile exclusive economic zones on its future growth.

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This document includes: 2 Annexes

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(1) See in particular C-R(77)1, Item III, paragraph 14

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THE SOVIET FISHING INDUSTRY

I. MAIN FINDINGS

1. The growth of the Soviet fisheries in the late fifties and in the sixties may be considered as a significant factor in the metamorphosis of the USSR from a continental power into a global one. In a short span of time this country has succeeded in complementing its traditionally land-based strength with a remarkable development of the three elements which constitute maritime power: the Navy, the Merchant Navy and the Fishing Fleet(1). All these are supported by the widest oceanographic research programme in the world.

2. Traditionally Russian fishing was mainly concentrated on the coastline, inland waterways and lakes. The October Revolution and the Soviet régime did not at first change this pattern of the industry. There was practically no increase either in catch or in consumption between 1913 and 1948, the year in which the fishing fleet completed its post-World War II reconstruction.

3. As a result of plans laid down in 1956-1958, during the early Khrushchov era, the Soviet fishing industry experienced a rapid development. During the take-off phase in 1960-1965 the annual average growth rate of the catch was twice that of the previous and of the subsequent six-year periods.

4. First in fishing fleet size, second in catch, fourth in fishing vessel building, sixth in net exports, the Soviet Union may now be considered as having the largest fishing industry in the world. Not only is the Soviet fishing fleet impressive from a quantitative point of view, it is also one of the most modern and among those adopting advanced fishing techniques, such as submarine reconnaissance and the use of large mother-ships to serve sizeable fishing flotillas.

5. Yet, there is a glaring inconsistency in the Soviet fishing fleet, for although accounting for 52% of the world's tonnage, it barely takes 13% of the world catch. This reflects its low productivity which has been estimated at about a quarter of the world average, about a third of that of the Japanese fishing fleet productivity and a fifth of that of Norway. Even

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(1) "The strengthening of naval might depends on the development of all its components, including the cargo, fishing and scientific research fleets, with which we naval men have a long-standing friendship. We all serve the same cause, ensuing the well-being and flourishing of the Soviet State." Admiral of the Fleet S.G. Gorshkov, Pravda, 25th July, 1976.

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after allowing for some statistical discrepancies, for Soviet inefficiency, for the different way in which the Soviet fishing fleet operates and for the remoteness of the fishing grounds from the USSR, the Soviet productivity figures appear, nevertheless, to be below what could be reasonably expected from a large modern fleet.

6. Although it is difficult to say with certainty what percentage of the fishing fleet is in excess of Soviet needs, it is well known that a substantial number of large stern trawlers (possibly as many as 100 in 1975) and some support ships are used for monitoring and surveillance. They operate in close co-operation with the Soviet Navy. In times of crisis or conflict a large number of trawlers can be converted into minelayers or minesweepers and in the first capacity could create serious difficulties to Allied ships using the traditional sea lanes, in particular the North Atlantic.

7. The North Atlantic remains the primary area of operation of the Soviet fishing fleet, accounting in 1975 for 34.1% of the total catch. In that year 53% of the latter originated in the marine areas where NATO has interests at stake. On the hypothesis that there is a close link between the size of the catch and the tonnage of the fleet operating in any one area, it is likely that more than half the Soviet fishing fleet is present in waters of vital importance to the Alliance both from the economic and military viewpoint.

8. The Soviet fishing industry accounts for almost one-third of all capital invested in the food industry. It may be currently employing as many as 700,000-750,000 people (including 200,000 fishermen), both in the State and co-operative sectors (fishing kolkhozy). In 1975 internal water fishing and water farming accounted respectively for 7.6% and about 1.5% of the total catch. In normal times, as much as 10% of the protein intake of the Soviet consumer depends directly or indirectly(1) on fish. Besides, if for any reason grain supplies (homegrown and imported) were inadequate, the substitution of fish for meat and fishmeal for feed would require a greater catch than at present, which in turn would make the Soviet Union more dependent on fish than reflected in the above percentage.

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(1) Directly in the form of seafood; indirectly in the form of meat, as fishmeal is used to feed cattle and poultry and also as fertilizer

9. The important rôle of the fishing fleet as a source of food and also as a military force coming under the Soviet Navy implies that the latter may be faced, in periods of crisis, with the difficult task of protecting large flotillas of trawlers and other fishing boats all over the oceans.

10. There are several reasons for thinking that the growth of Soviet ocean fishing activities may slow down in the short and medium-term: gradual change in the diet of the Soviet consumer (although this will mainly depend on the performance of Soviet agriculture), difficulty in keeping the fleet in good operational order because of inadequate port servicing and repairing facilities, and last but not least, the establishment of the 200 mile exclusive economic zones (EEZ) off their coasts by almost all countries in the world. This will limit the presence and activities of Soviet fishing vessels over other countries' continental shelves, where at present the Soviets get some 50% of their catch.

11. The Soviets have reluctantly accepted the 200 mile limit. They will try to reduce the impact of this new development by expanding their deep-sea fishing, by making a more extensive use of their own EEZs and by obtaining the right to continue fishing in the coastal waters of certain LDCs. The new bilateral fishing agreements will determine the conditions under which the Soviets will be allowed to operate in other countries' EEZs. In the North Atlantic area, most of the coastal zones come under the sovereignty of nations belonging to the Alliance; henceforth these countries should be in a better position to monitor more closely the Soviet fishing fleet activities both as regards its genuine economic pursuits and its covert intelligence tasks.

## II. THE GROWTH OF SOVIET FISHING ACTIVITIES

### A. Historical Background (1913-1959)

12. Because of the unparalleled size of her fishing fleet tonnage and constant fish surplus since 1959, the Soviet Union may be considered as having the largest fishing industry in the world. Indeed, as of mid-1975 some six million gross registered tons of fishing vessels, trawlers, fish carriers and floating fish factories (or 52% of the world's fishing fleet) sailed under the Soviet flag. In the same year the Soviets fished more than ten million metric tons of fish, molluscs and aquatic mammals, ranking second to the Japanese.

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13. Soviet fisheries developed only recently as a part of a much wider project: to transform the USSR from a continental into a global power, by developing its sea power both in military and economic terms. A set of quantitative changes - for example the growth in tonnage of the Soviet Navy and Merchant Marine - all concentrated in a few years, brought about what Engels clumsily but effectively called a "qualitative leap".

14. Consistent with the more general and historical attitude towards sea activities, Russian fishing was traditionally carried out mainly in inland waterways and lakes. In 1913 about 83% of the catch was fished in internal waters (Table 1 below, and Table A, Annex I). Sea fishing was understood to be summer coastal trawling and all year fishing in the Black Sea. Tsarist Russia was in 1913 the second biggest fish producer in the world, after Japan (Table B, Annex I). However, in this case comparative statistics can be misleading: indeed, Russia was not a "fishing power" in the modern sense of the word and its fishing fleet operations had no international impact whatsoever.

15. Between 1913 and 1948, the year in which the fishing industry completed its post-war reconstruction, Soviet total sea catch per capita consumption of fish had both grown by a mere 1% on annual average (Tables C and F, Annex I). During the same span of time there had been a more than sixfold increase in national income (Soviet figures and concept) and a ninefold output growth in industry - to which fisheries belong according to the Soviet classification.

TABLE 1

INTERNAL AND OPEN WATER CATCH OF THE USSR  
THOUSAND TONS - 1913-1975

	Total catch	Internal waters	Open waters
1913	1,051	869	182
1928	840	619	222
1940	1,404	744	660
1946	1,208	556	652
1950	1,755	709	1,046
1955	2,737	811	1,926
1960	3,541	775	2,766
1965	5,774	826	4,948
1970	7,828	853	6,975
1975	10,300	783(a)	9,517

Source: 1913-1965 Committee on Commerce, Soviet Ocean Activities: A Preliminary Survey, Washington, 30th April, 1975, p. 10.  
1970-1975 figures taken from FAO Yearbooks of Fishery Statistics

Note: (a) Economic Directorate's estimate

B. The Take-off Period (1960-1965)

16. The Soviet take-off period for all maritime large-scale operations stretches over the years 1960-1965, as a result of plans laid down in 1956-1958. For the Merchant Marine in general, "the Soviets began a programme of accelerated fleet development in 1956, with a large shipbuilding programme, and during the decade of the nineteen sixties about 90% of the Merchant Marine was renewed"(1). Moreover in 1957-1958, a major oceanographic programme was set up, giving the support of science to economic, political and military sea activities.

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(1) Committee on Commerce, Soviet Ocean Activities: A Preliminary Survey, Washington, 30th April, 1975, p. 17

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17. In the late Khrushchov era, fisheries started recording the positive effects of the attention and money the planners had paid to them. In 1960-1965 the total sea catch rates of growth rose, reaching an annual average of 11.1%, i.e. double the previous and the subsequent six-year periods (5.8% and 5.1%: Table C, Annex I). No full data about the Soviet fishing fleet tonnage are available before 1969(1), but the catch figures strongly suggest that it underwent a process of fast growth. This is backed, if only indirectly, by the figures relating to the number of trawlers, seiners and support vessels given in Tables D and E, Annex I.

C. The Motives and Reasons for the Expansion of Soviet Fishing Activities

18. The drive for fisheries expansion originated from a long-term design, both political and economic. The basic economic reason may have been the leadership's awareness that Soviet agriculture was a widely fluctuating and unreliable activity(2), and that fish could provide a useful and stable addition to the average Soviet citizen's diet. Economic calculations added a rationale for the fish option. In Okeanologia (1962), S.V. Mikhailov(3) stated that "to produce 100 kilogrammes of live-weight beef, it takes a capital

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- (1) Two exceptions may however be recorded. In "Les activités maritimes de l'Union Soviétique", Notes et Etudes Documentaires, No. 3415, 1st September, 1967, fishing fleet tonnage at the beginning of the war (June 1941) has been estimated at 124,000 tons. It is not clear, however, whether it refers only to vessels of over 100 tons, as does the authoritative source, the Lloyd's Register of Shipping. A classified US source of 1969 evaluated the Soviet fishing fleet tonnage (vessels over 100 tons) at 267,000 tons in 1948. But these data are not strictly comparable with those supporting the rest of this analysis.
- (2) 1960-1965 annual per capita growth of meat consumption was reduced to 0.5%, whereas fish consumption boomed at an annual average per capita increase of 5%. Details in Tables F and G, Annex I.
- (3) A rationale is not a reason. Indeed Mikhailov's reasoning completely overlooks people's tastes. In other words, the proper question to be asked in an economy - where there is no acute shortage problem - is not how many calories or proteins can be produced with one rouble invested in the fish or meat sectors, but rather whether the consumers are willing to spend on fish or meat exactly what they cost. In technical terms, this corresponds to the condition of subjective price ratio (marginal rate of substitution) being equal to opportunity cost.



investment of 2,000-2,500 roubles. But for a similar amount of fish only about 1,500-1,700 roubles are necessary. To produce one head of beef requires 20 man-days, but the production of a similar amount of protein from fishery products would take only about 5 man-days"(1). In the light of Marxist disregard for the consumer's real preferences, the above might have sounded then like convincing arguments in favour of fish instead of meat.

19. Balance of payments considerations may have also been an element in the policy of expansion of the Soviet fishing activities, as part of the fish industry production could be exported.

### III. THE SIZE OF THE SOVIET FISHING FLEET AND INTERNATIONAL COMPARISONS

#### A. Comparison with other major Fishing Countries

20. The recent development of the Merchant Marine as a whole, Transport and Fishing, has been spectacular. From 23rd in the world shipping league before World War II, the Soviet Union is today sixth, before the United States (as shown in Table 2). Nevertheless, this apparent superiority should not be overrated, as a great number of Western countries' merchant vessels sail under flags of convenience. However, it is not clear to what extent those ships could be at the immediate disposal of the Allies in case of international crisis, whereas the Soviets have complete control over their merchant fleet and the latter has close links with the Soviet Navy.

21. During the Ninth Five-Year Plan (1971-1975), while the Merchant Navy as a whole recorded a 5.3% average annual rate of growth, the fishing fleet increased by 8.2% and the transport fleet by 4.2%. The high growth rate of its fishing fleet allowed the Soviet Union to expand its share in the world fishing fleet from 51.2% at the beginning of the Plan period to 52.4% in 1975 (Table L, Annex I).

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(1) Quoted in: Kravanja, "The Soviet Fishing Industry: A Review", in US Committee of Commerce, Soviet Oceans Development, Washington, October 1976, pp. 450-451

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TABLE 2  
LEADING MERCHANT FLEETS OF THE WORLD  
GROSS REGISTERED TONS - 1975

1. Liberia	65,820,000
2. Japan	39,740,000
3. United Kingdom	33,157,000
4. Norway	26,154,000
5. Greece	22,527,000
6. USSR	19,236,000
7. United States	14,587,000
8. Panama	13,667,000
WORLD TOTAL	342,162,000
Soviet share in world total	5.6%

Source: Lloyd's Register of Shipping, Statistical Tables,  
1975, p. 5

Note: The figures relate to merchant fleets registered in each country on 30th June. They are given in gross registered tons (1 grt is equivalent to 100 cubic feet or 2.83 cubic metres) and represent the total volume of all the permanently enclosed spaces of the vessels. Vessels without mechanical means of propulsion or under 100 grt are excluded.

TABLE 3  
LEADING FISHING FLEETS OF THE WORLD  
GROSS REGISTERED TONS - 1975

1. USSR	5,937,400
2. Japan	1,216,600
3. Spain	549,900
4. United States	398,200
5. Poland	281,900
6. United Kingdom	236,500
7. South Korea	235,000
8. Norway	211,400
WORLD TOTAL	11,337,200
Soviet share in world total	52.4%

Source: Lloyd's, op. cit., pp. 58-59

22. The Soviet fishing fleet is not only impressive from a quantitative point of view. It is, according to the Lloyd's Review, "more important, modern and efficient than that of all other countries together"(1). Although the last adjective - "efficient" - may be an overstatement, it is indeed "important" and "modern", as at least one-third of it is less than five years old. Moreover, as shown in Table 4 below, it consists mainly of large ships(2): average registered tonnage 1,407 grt, compared with 386 grt for Japan and 228 grt for the United States. In addition, 78.5% of that fleet is over 2,000 grt, as compared with 13.8% for Japan and less than 2% for the United States (Table M, Annex I).

TABLE 4

STRUCTURE OF THE SOVIET FISHING FLEET, 1ST JULY, 1975

A. TRAWLERS AND FISHING VESSELS  
(including factory trawlers)

<u>Size (grt)</u>	<u>Number</u>	<u>Total tonnage</u>
100 - 499	2,077	442,211
500 - 999	829	526,342
1,000 - 1,999	130	206,580
2,000 - 3,999	638	1,791,203
4,000 and above	5	30,415
<u>Sub-total</u>	<u>3,679</u>	<u>2,996,751</u>

B. FISH CARRIERS AND FISH FACTORIES

<u>Size (grt)</u>	<u>Number</u>	<u>Total tonnage</u>
100 - 1,999	164	99,808
2,000 - 3,999	124	409,727
4,000 - 5,999	94	487,315
6,000 - 9,999	36	237,918
10,000 and above	122	1,655,848
<u>Sub-total</u>	<u>540</u>	<u>2,940,616</u>
<u>GRAND TOTAL</u>	<u>4,219</u>	<u>5,937,367</u>

Source: Lloyd's Register, pp. 58-59

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- (1) Quoted by Kahn, "L'industrie de la pêche en URSS", Courrier des pays de l'Est, October 1976, p. 6
- (2) The need for large ships stems from the nature of the operations in distant, and sometimes difficult fishing grounds

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23. The adoption of the stern factory trawler, a British invention, marked the beginning of the drive for modernization, qualitative improvement and increase in the average tonnage of the Soviet fishing fleet. Such a vessel is capable of handling and processing large quantities of fish, transforming offal into fishmeal and operating on the high seas for periods of up to one year.

24. The use of the stern factory trawler brought about a change in fishing techniques. Typically, today's Soviet fishermen operate in large flotillas of smaller fishing ships (100-150 of them) served by a large support ship (factory trawler or floating factory). Moreover, the Soviets make extensive use of undersea reconnaissance for fishing purposes(1).

B. Investment in the Fishing Fleet

25. Prior to World War II, investment in the fishing fleet was minimal. As shown by the data in Table 5 below, in the years 1946-1950 large amounts were allocated to the rebuilding of the fishing fleet. This was done with the help of East German shipyards.

26. Investments in the fleet increased from 53.3% of the total allocated to the fishing industry in 1951-1955 to 63.2% in 1956-1958 and 75.5% in 1959-1965. The fleet build-up far outstripped the development of shore-based processing plants and supporting installations, mostly ship-repair yards and harbour facilities. This absence of a proper balance between two major aspects of fishing activities has become a serious constraint for the Soviet fishing industry.

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(1) "It is worthy to note that most of the past and current inventory of Soviet undersea vehicles (8 in 1975) belong almost exclusively to fisheries research organizations. This is in contrast to the United States programme, wherein only one vehicle has been used for fisheries related research".

Committee on Commerce, op. cit., p. 49

TABLE 5

CAPITAL INVESTMENTS IN THE SOVIET  
FISHING INDUSTRY, BY PLANNING PERIODS  
(in million roubles)

Period	Total investment	Per year	For fishing fleet		For shore-based plants	
			Total	Per year	Total	Per year
1st FYP: 1929-1932	17.6	4.4	1.6	0.4	16.0	4.0
2nd FYP: 1933-1937	55.0	11.0	5.0	1.0	50.0	10.0
3rd FYP: 1938-1940	46.2	15.4	3.6	1.2	42.6	14.2
1941-1945	96.8	19.4	7.7e	1.5e	89.1e	17.8e
4th FYP: 1946-1950	366.0	73.2	218.0	43.6	148.0	29.6
5th FYP: 1951-1955	721.0	144.2	386.0	77.2	335.0	67.0
6th FYP: 1956-1958	886.5	295.5	560.1	186.7	326.4	108.8
7th FYP: 1959-1965	2,032.0	290.3	1,533.5	219.1	498.5	71.2
8th FYP: 1966-1970	3,500.0	700.0	2,450.0	490.0	1,050.0	210.0
9th FYP: 1971-1975	4,000.0	800.0	2,600.0e	520.0e	1,400.0e	280.0e
TOTAL	11,721.1	254.8 (1)	7,765.5	168.8 (1)	3,955.6	86.0 (1)

Primary source: Sysoev N.P. Sostav i struktura osnovnykh proizvodstvennykh fondov rybnoi promyshlennosti SSSR. Trudy Atlantniro, No. 26, p. 19, Kaliningrad, 1970

(1) Average annual investment

Source: Kravanja, op. cit., p. 390

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27. As a builder of fishing boats the Soviet Union ranks fourth after Japan, the GDR and Poland (Table 6 below). It also imports a large number of fishing vessels from other CMEA countries, in particular super-trawlers from the GDR and large factory ships from Poland. This is one of the reasons why the USSR is particularly sensitive to discontent and unrest in the Baltic ports, where a substantial part of its fishing fleet is built. Western countries (Netherlands, Denmark, France, etc.) also export ships to the Soviet fishing fleet - in general these are technologically advanced vessels and factory ships.

TABLE 6

LEADING FISHING SHIPBUILDERS OF THE WORLD  
GROSS REGISTERED TONS - 1974

1. Japan	117,291
2. GDR	111,288
3. Poland	103,145
4. USSR	91,789

Source: Kahn, *op. cit.*, p. 6

IV. GEOGRAPHY OF SOVIET FISHING ACTIVITIES

A. Comparison with the catch of other major Fishing Countries

28. The Soviet Union, with a catch of 9.8 million metric tons in 1975, is the second fish producer in the world. Adding aquatic mammals and other sea products, the total catch reaches 10.3 million tons(1). For the sake of comparison, the 1974 (latest data available) fish catches of the eight leading countries are ranked in Table 7 below(2).

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- (1) Table C, Annex I, contains details about Soviet catches in a historical perspective, starting from 1913. Whale, fish and total catch are shown, along with their annual growth rates
  - (2) Much more comprehensive, historical data are to be found in Table B, Annex I, where the comparison goes back to 1913

TABLE 7

LEADING FISH PRODUCERS OF THE WORLD  
METRIC TONS - 1974

1. Japan	10,773,355
2. USSR	9,235,609
3. China	6,880,000
4. Peru	4,149,888
5. United States	2,743,673
6. Norway	2,644,930
7. India	2,255,313
8. South Korea	2,001,300
WORLD TOTAL	69,800,000
Soviet share in world total	13.1%

Source: FAO, Yearbook of Fishery Statistics, 1975

29. While such major fishing countries as Japan and the United States are dependent on fish imports (in 1974 their deficit in this field was, respectively, \$441,000 and \$1,280,000), the USSR is a major net exporter(1). But currency earnings are not the only benefit the Soviet Union derives from fish exports. "Since much of the poorer quality output goes to developing countries in the form of highly nutritional fish protein concentrate, the Soviet Union gains some prestige in the Third World."(2)

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- (1) Table N, Annex I, gives more extensive historical data as from 1955. Data for the period before that year, although given in Vneshnyaya trgovlya SSSR, 1966, are not reliable, as they are fragmentary. This piecemeal information indicates, nevertheless, that in the famine years 1930-1933, the USSR was not only exporting grain but also massive amounts of fish. Other information on quantities imported and exported is to be found in Table O, Annex I.
- (2) Background Brief, cit., p. 1

TABLE 8

FISH AND PREPARATIONS LEADING NET EXPORTERS  
EXPORT SURPLUS IN DOLLARS  
1974

1. Norway	465,292,000
2. Denmark	322,075,000
3. Canada	313,225,000
4. Iceland	244,371,000
5. South Korea	157,919,000
6. USSR	135,483,000

Source: FAO, Yearbook, cit.

Note: The data refer to seven main fishery commodity groups and are far more extensive in coverage than the ones recorded in Vneshnyaya torgovlya SSSR (Foreign Trade of the USSR)

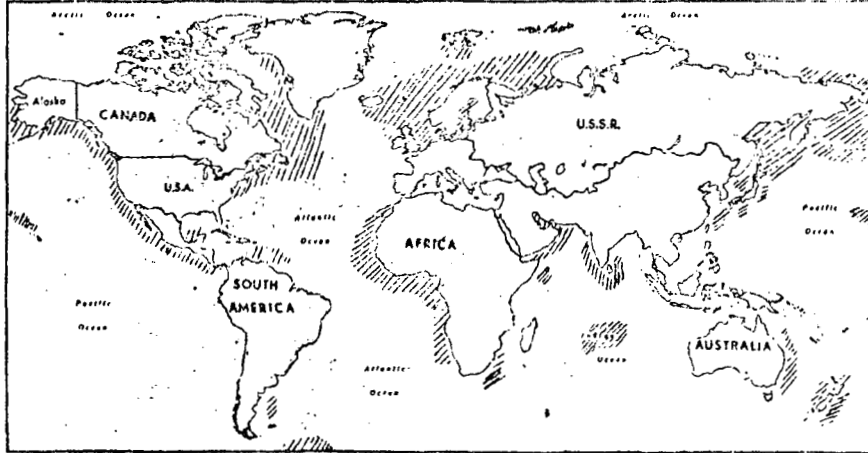
B. Major Fishing Areas

30. Before the revolution, the Soviet Union was fishing almost exclusively in lakes, rivers and internal waters, mainly the Caspian and Aral Seas. Between the two World Wars the geographic structure of Soviet fishing activities changed considerably in favour of the open seas, so that the internal waters share decreased to 74% of total catch in 1928 and 53% in 1940. Nevertheless, this "high sea" catch was taken in well defined regions close to the Soviet coastline: Barents, Baltic and Black Seas in the West, and Okhotzk and Japan Seas in the East. Until 1955 - as shown in Table P, Annex I - Soviet fishing reach did not extend beyond the above marine areas.

31. The geographic expansion of Soviet fishing activities has been rapid in the last 20 years, and particularly so in the Atlantic and the Pacific. In the former ocean Soviet activities expanded first west and southwest (off Canada 1956, off New England 1961, off Mexico 1962) and then south (off West Africa 1962, off Argentina 1966). In the Pacific the expansion took place to the east and southeast, off the coasts of Canada and the United States (Alaska 1958, Northwest Pacific 1966, California 1972). Following the drive of the early 1960s for expansion in the Indian Ocean, Soviet fishing activities reached practically all the world's oceans, as shown in the map below.



USSR MAJOR HIGH SEAS FISHING GROUNDS



Source: Kravanja, op. cit., p. 402

C. The Catch by major Fishing Areas

32. While the geographical distribution of the catch shows a growing Soviet interest in African waters(1) (East-Central, South-East Atlantic and West Indian Ocean), the North Atlantic remains the primary area of operation, accounting for 34.1% of the fish catch. If full account is taken of all the marine areas where NATO countries' interests are directly involved - in particular around Africa(2) - one cannot fail to notice that almost 53%(3) of the catch of the Soviet fishing fleet originates in seas of vital importance to the Alliance(4).

- 
- (1) Until 1955, no catch was recorded in African waters. In 1960 that catch was still a mere 1.3% of the total and in 1965 just 2%, to be compared with 18.7% in 1974. In 9 years Soviet catch percentage around Africa grew ninefold.
  - (2) See Admiral Isaac Kidd, Supreme Allied Commander Atlantic, "NATO Strategy and the new Dimension at Sea", NATO Review, No. 6, December 1976.
  - (3) Table P, Annex I, shows Soviet catch breakdown in a historical perspective. A more detailed breakdown for 1974 is presented in Table 9 below.
  - (4) These percentages suggest that a substantial part - possibly half - of the Soviet fishing fleet operates in the North Atlantic as well as off the West African coast, i.e. areas crowded with Allied shipping lanes.

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TABLE 9

BREAKDOWN OF THE SOVIET FISH CATCH  
METRIC TONS - 1974

	<u>Tons</u>	<u>Per cent</u>
Internal Waters (including Caspian)	772,900	8.3
Atlantic Ocean		
North-West	1,157,033	12.5
North-East	1,996,996	21.6
West-Central	25,600	0.3
East-Central	1,145,000	12.4
South-West	12,900	1.4
South-East	447,480	4.8
Black Sea	371,500	4.0
Indian Ocean		
West	135,100	1.5
East	700	..
Pacific Ocean		
North-West	2,358,100	25.5
North-East	701,300	7.6
East-Central	22,200	0.2
South-West	88,800	1.0
South-East	..	..
TOTAL	9,235,609	100.0

Source: FAO, Yearbook, op. cit.

33. To support its world-wide fishing operations the Soviet Union utilises a number of ports of call in foreign countries. These are indispensable to the transshipment of the catch, to refuel and resupply the fleet near the fishing grounds. The most important of these ports are Singapore for the Indian and South Pacific Oceans, Havana for the Western Atlantic Ocean, the Canary Islands for the Eastern Atlantic Ocean, and St. John's and Halifax in Canada for boats operating off the Canadian and United States coasts. Besides these main harbours, the Soviet fishing ships call at other ports all over the world. In times of crisis they are able to switch to alternative ports for refuelling and transshipment. This was the case when Canada closed its ports to the Soviet fishing vessels, because of overfishing of protected species. On that occasion, the Russians diverted a great part of their vessels to St. Pierre and Miquelon.

34. In the context of the world-wide extension of its operations the Soviet Union, since 1956, has been busy promoting its fishing interests in the Third World. It has granted a modest financial and technical aid to the fisheries of many LDCs and in general obtained access to the beneficiaries' coastal fisheries and the use of on-shore support facilities. The LDCs can offer markets for some of the Soviet fish catch and also for some of the older trawlers which the Soviets gradually replace by more modern ones. Thus it is believed that the USSR will be selling in the short-medium term, most of its Maykovskii type ships to LDCs.

35. Joint fishing ventures are another means by which the Soviet Union promotes its global fisheries interest. By end-1975, 20 developing countries had been approached and 11 had concluded such arrangements.

36. In this connection it is worth recalling the series of "co-operation" agreements(1) concluded with a series of African countries: in particular Mauritius, Mauritania, Morocco, Sierra Leone, Egypt, Guinea-Bissau and Somalia. These countries are located strategically along main supply routes of the NATO countries. Approaches are reported to have been made to Fiji, Papua-New Guinea, Tonga and Western Samoa, with a view to securing facilities and access to off-shore fishing rights. A Soviet fishing base in this area would be capable of servicing all the South Pacific operations and the Antarctic fleets.

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(1) A list of LDCs which have concluded such agreements with the USSR is given at Annex I

V. ECONOMICS OF SOVIET FISHING

A. The present dimension of the Industry

37. The large expansion of the fishing fleet has not resulted in any spectacular change in the number of fishermen employed: 200,000 or about the same figure as 60 years ago. This reflects the saving in manpower achieved through the modernization of the fleet, the introduction of technologically advanced equipment and the use of larger trawlers. However, the fish industry as a whole(1) due to the increased importance of processing, may be employing another half a million people(2).

38. As the total catch is now ten times what it was before the revolution and the number of fishermen is roughly the same, labour productivity has increased tenfold. This is mainly due to the impressive investment the Soviets have concentrated upon fisheries. However, another factor should not be overlooked, namely the improvements in the labour force through education and training. Indeed, out of the 700,000 persons employed by the fishing industry around 140,000, or 20%, possess a degree from the various levels of fishery schools, the list and locations of which are given in Table H, Annex I.

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- (1) The fish industry includes, according to Soviet input-output definitions, the following: fishing and whaling, fresh and processed fish and seafood, fish flour and meal, other fish products. See: Treml and others, "The Soviet 1966 and 1972 Input-Output Tables", in Joint Economic Committee, Soviet Economy in a New Perspective, p. 341 (1973 edition). (The same definition has been held in the 1976 edition as well.)
- (2) This is another case where sources widely differ from one another. Indeed, as can be seen in Table J, Annex I, according to Treml and others - in an official Congress publication - total employment in the fish industry was 346,400 in 1959 and 285,500 in 1966. Consequently, after the boom of the years 1960-1965, employment decreased. Data for later periods are not given by the authors, but the trend indicated by their figures cannot be reconciled with that which can be derived from the Committee on Commerce study - in another official publication - which states that "Total employment in the fishing industry is (1976) approximately 750,000". (op. cit., p. 9)

39. Some 61,000 students are taught modern fishing techniques in 38 higher institutes, secondary and trade schools in the Soviet Union (see Table 10 below). There are 10,000 students graduate every year. The Soviet fishing industry employed in 1965 about 47,000 graduates from higher and secondary fishery schools, by 1968 this figure had grown to 70,000 and by 1976 their number was probably 140,000.

TABLE 10

FISHERY INSTITUTES AND  
SCHOOLS OF THE SOVIET UNION

Level of schools (number of schools)	Type of schools (number of schools)
I. Higher institutes (6)	{ 1. Higher Technical Fisheries Institute (3) (Vysshee Texnicheskoe-Uchebnoe Zavedenie) 2. Higher Engineering Fisheries Institute (2) (Vysshee Inzhenemoe Morskoe Uchilishche) 3. Institute for the Improvement of Qualifications of Fisheries Command Personnel (1)
II. Secondary Schools (25)	{ 4. Secondary Fishery Schools (15) (Morekhodnoe Uchilishche) 5. Secondary Coastal Fishery Schools (10) (Tekhnikum)
III. Trade Schools (7)	{ 6. Fisheries Trade School (6) (Morekhodnaia Shkola) 7. Kothkoz Training School (1)

Source: Kravanja, op. cit., p. 429

40. In the early 1960s the Ministry of Fisheries, which is responsible for the fishery schools, began to organize a training fleet. Since 1951 the number of fishery training vessels has grown from 2 to 22, some of these are engaged in production tasks as well as in training. The training fleet of the Soviet Union is the largest in the world: gross registered tonnage 67,054 tons (1975) (see Table I, Annex I). It is believed that every year from 10,000 to 15,000 students receive some training at sea.

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41. The Soviet fishing industry accounts for almost 30% of investments in the food industry (Table J, Annex I)(1). It is managed from Moscow by a Union-Republic Ministry in a highly centralized and administrative way. The Fish Industry Ministry has close links with at least two other Ministries - the Merchant Marine Ministry, which is also responsible for the port facilities used by the fishing fleet, and the Defence Ministry, through the intermediation of the Soviet Navy, for which the fishing fleet carries out reconnaissance and other missions. There is also a permanent relation with the Shipbuilding Ministry. As any other top administrative body, the Fishing Industry Ministry receives its plans from the Gosplan of the USSR, through the usual "bargaining" procedure. The Ministry is supported by many research institutes, some of which belong to the Academy of Science of the USSR (see Chart 1, Annex I).

42. The new reforms introduced in the early seventies have resulted in a greater concentration of the fish industry activities through industrial associations both at the federal and republican levels. Of the 730 enterprises - including floating factories and processing firms - which existed before the reforms, 320 continue to operate as independent productive units under the industrial associations or republican managing boards, while the others have been merged into 50 production associations(2). There also exists a co-operative sector. In 1970, after a process of concentration, there were 521 fishing kolkhozy, the most important and productive ones being located in the Soviet Far East. In 1971, the co-operatives possessed 10,300 vessels, with a total 514,000 HP, and 17,800 sailboats for a total of 45,000 grt. It is probable that most of the boats of the co-operative sector are of less than 100 grt and they are not taken into account in the fleet data given at Annex I.

43. Four open sea "Basin Directions" covering sea fishing in the Far East, North, West and Azov-Black Sea account for 90% of the catch (Table 11 below and Chart 2, Annex I).

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- (1) M. Kahn, "L'industrie de la pêche en URSS", in Courrier des pays de l'Est, October 1976, p. 10  
(2) idem, p. 5

TABLE 11

SOVIET "BASIN DIRECTIONS", i.e. INDUSTRIAL UNIONS DIRECTLY INVOLVED IN SEA FISHING (90% OF TOTAL CATCH)

<u>Denomination</u>	<u>Ports*</u>	<u>Fishing areas</u>
1. Dal'ryba (Far East)	<u>Vladivostok</u> , Nakhodka, Petropavlovsk Kamchatsky, Magadan	Pacific Ocean, Indian Ocean
2. Sevryba (North)	<u>Murmansk</u> , Arkhangelsk	Atlantic Ocean, White Sea
3. Zapryba (West)	<u>Riga</u> , Kaliningrad, Tallin	Atlantic Ocean, Baltic Sea
4. Azcherryba (Azov and Black Sea)	<u>Kerch</u> , Sebastopol, Odessa, <u>Novorossiysk</u>	Atlantic Ocean, Indian Ocean, Azov-Black Sea
5. Kaspryba (Caspian Sea)	<u>Astrakhan</u> , Baku	Caspian Sea

Source: Michèle Kahn, "L'industrie de la pêche en URSS", Courrier des pays de l'Est, October 1976, pp. 5 and 10

Notes: Two new deep-water ports are under construction: Vostochnyy, near Nakhodka in the Far East, and Gregoryevka (to be completed by 1980), near Odessa in the Black Sea. Their facilities will probably be used for the fishing fleet as well; the first is within the jurisdiction of Dal'ryba, the second within that of Azcherryba.

\* Administrative capital underlined.

44. The fishing industry plays a significant rôle in the Soviet consumer goods sector. Fish is a basic component of the Russian diet, accounting for 7% of direct protein intake(1). This average figure is likely to be much higher in the case of the low income groups for whom fish constitutes an important protein source. This percentage, which is not negligible, indicates the degree of vulnerability of the Soviet consumer sector in the event of an interruption of the fishing fleet operations in the context of a prolonged crisis.

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(1) "USSR: Fisheries", Background Brief, November 1976, p. 1, footnote 1, courtesy of the British Delegation to NATO. On the other hand, the Committee on Commerce, op. cit., p. 12, maintains that the percentage of fish in total protein intake is as high as 20%.

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45. In addition to its rôle in human consumption, fish is an indirect source of protein in the form of animal feed (fishmeal). Over the period 1965-1974, the importance of this indirect consumption is demonstrated by the 6.5% annual average increase in total fish production while direct consumption increased by only 5% a year. The difference between the two rates of growth, after allowing for a higher volume of exports and an unknown amount of stockpiling for strategic and other purposes, represents by and large the greater use of fish as animal feed and as fertilizer(1).

46. The erratic performance of Soviet agriculture, in particular the huge variations in yearly grain production, and the likelihood that the USSR will not be self-sufficient in food during the next 10-15 years, gives an added importance to the fishing industry as a more regular and reliable source of food, to replace insufficient meat production, or shortages of feed for the cattle.

47. The importance of the internal water bodies for the Soviet fishing industries has been steadily declining, the catch from that source is less than 10% of the total (the best post-World War II results were recorded in 1971 with 935,000 tons - see Table A, Annex I). Aquaculture is still in the early stages of development, although in recent years the Soviet Union has made great efforts to improve this activity. The country has 29 farms for carp and 25 for salmon. In 1975 an agreement was signed with Japan for a salmon farm in Sakhalin, on the River Pionerskaya, this project should be completed by 1980. In that latter year total production of fish farming is expected to reach 240,000 tons, which barely represents 2.3% of the 1975 sea harvest (Kahn, op. cit., p. 1).

#### B. Fishing Fleet Productivity

48. First in fishing fleet size, second in fish catch, fourth in building fishing vessels, sixth as a net fish exporter, the Soviet Union may be considered, taking all these elements together, as the first fishing power in the world. It is, however, peculiar that the Soviet fishing fleet, with more than 52% of the world's total tonnage fished, in 1975, a

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(1) The trend has accelerated in the last years, as the fish industry production increased by an annual 5.7% and fish consumption by 2.7% in the period 1970-1974. (Narkhoz SSSR, 1974, p. 283, and Table G, Annex I.) The production data in Table K, Annex I, differ from the above in that they are referring to tons produced.



bare 13% of the world's catch. In that respect it compares poorly with other nations. In 1974 the productivity of the total Soviet fishing fleet (including factory ships and fish carriers) was a little more than one-third of that of Japan and less than a fifth of that of Norway. The comparison continues to be unfavourable to the USSR even when the calculation is made on the basis of the tonnage which is directly engaged in fishing (by excluding the floating factories). To allow for the longer distances the Soviet fleet might have to cover in order to reach its fishing grounds, productivity has also been assessed after leaving out the tonnage of both factory ships and fish carriers; in that case too it remains well below that of Japan and Norway (see Table 12 below, third line).

TABLE 12

TENTATIVE ESTIMATE OF PRODUCTIVITY  
FOR OPEN WATERS OPERATIONS - 1974

(Tons of fish/grt of vessels)

	USSR(2)	JAPAN(3)	NORWAY(4)	USSR as a percentage of	
				JAPAN	NORWAY
TOTAL FLEET(1)	1.6	4.5	8.1	35.6	19.8
Excluding floating factories	2.2	4.8	8.6	45.8	25.6
Excluding carriers and factories	3.2	5.5	8.6	58.2	37.2

Sources: Fishing fleets: USSR, Lloyd's op. cit., 1974, pp. 56-57  
 Japan, Ibidem  
 Norway, Norwegian Delegation to NATO  
 Fish catch: USSR, Table B, Annex I  
 Japan, Table from the Fisheries Yearbook of Japan, provided by the Embassy of Japan in Brussels  
 Norway, figures provided by the Norwegian Delegation to NATO

- Notes: (1) Total fishing fleet consists of: trawlers, factory trawlers, fishing vessels, fish carriers and fish factories  
 (2) Total open waters catch including whales  
 (3) Data refer only to the vessels of 100 grt or more and the fish (excluding whales) caught by them  
 (4) Productivity is calculated for all vessels, including those of less than 100 tons grt

49. Data given in Table 12 is not completely homogenous because of statistical discrepancies. The productivity figure in the case of the USSR is the ratio of the open sea catch, including whales, and the fleet tonnage as reported in Lloyd's Register of Shipping (vessels of 100 grt or more). The underlying assumption is that in internal waters only small vessels operate, whereas the whole of the open sea catch is done by large vessels (this however is unlikely as some of the fishing is carried out close to the coast in small ships and, therefore, the figure of 1.6 overestimates real Soviet productivity). On the other hand Norwegian productivity figures are more reliable as they represent the ratio between total catch and total fleet, including small boats. Finally, Japanese productivity is the ratio between the catch of vessels of 100 grt or more (5,673,300 metric tons) and their total tonnage. Available data do not allow more precise calculations, however errors resulting from statistical heterogeneity are likely to be relatively minor.

50. Lack of precise data does not allow a comparative analysis of labour productivity. The latter, however, would seem to be lower than that of crews on Western fishing vessels. Soviet vessels carry a larger complement than their Western counterparts as they operate a three 8 hours shift day and there is no overtime, in addition Soviet crews(1) are replaced every 90 days for shore leave.

C. Reasons for low productivity of the Fishing Fleet

51. Several reasons can explain this low productivity of the Soviet fishing fleet:

- (i) The relatively short time spent by the Soviet fishing fleet at sea; whereas a Western trawler is out for 250 to 280 days a Soviet fishing vessel operates for 140 days.
- (ii) The long distances fishing vessels have to cover before reaching their fishing grounds, which involves the use of larger ships(2). In addition, the world-wide spread of Soviet fishing activities necessitates a larger number of fish carriers and floating factories, thus explaining the

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(1) Soviet crews, in particular in factory trawlers and floating factories, consist of men and women  
(2) Kravanja, op. cit., p. 380

higher fleet tonnage required per ton of catch. In this connection it should be recalled that the distance covered by Soviet vessels increased from an average of 200 miles in 1950 to over 4,000 miles in the late 1960s.

- (iii) The very bureaucratic and hierarchical framework of the fishing fleet limits initiatives and reduces incentives. In addition, fishing vessels operate as a pack and individual hunting is not allowed.
- (iv) Poor harbour and repair facilities. Fishing vessels waste time in unloading operations and at ship repair yards, the number of which is not sufficient to meet present needs. This situation may explain why Soviet ships spend less time at sea than Western ships. However, these negative elements are partly offset at sea by certain features of the Soviet fishing equipment, most of which is modern (factory trawlers, floating factories) and partly Western built. The Soviets also utilise sophisticated fishing techniques: submarine reconnaissance, operation in large flotillas served by mother ships, etc.(1).
- (v) Deliberate understatements by the Soviets of their catch figures so as to avoid charges of violating the quotas fixed in international agreements(2). This hypothesis is plausible in view of the reiterated charges of quota violation made against the USSR by certain Western countries. Conversely, there have been instances of the USSR overstating the catch in areas where quotas had not yet been fixed so as to support claims for a large quota allocation(3).

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- (1) There have been cases of Soviet trawlers using narrow-mesh nets to increase their catch, in contravention of international agreements. In addition, the Soviets also use a suction system in order to pump the fish out of the sea. All these fishing techniques lead to a quick exhaustion of the fish schools and seriously interfere with the reproduction of the species.
  - (2) This could be the case for whales. Data of the catch is recorded in Table C, Annex I. However lack of data on whaler tonnage makes it impossible to calculate the productivity of Soviet whaling.
  - (3) Background Brief, cit., p. 4

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- (vi) Part of the Soviet fishing fleet is engaged in activities which have nothing to do with fishing; it is used as an extension of the Soviet Navy on specific military duties.

D. Military Aspects

52. It is general knowledge that many Soviet fishing vessels, in particular in the North Atlantic, are used to monitor radio and telecommunications, to carry out surveillance missions and to spy on the activities of NATO countries' naval forces. It is estimated that in 1975 about a hundred large stern trawlers (out of a total of some 760) were engaged in some military activity at sea. It is also very likely that some of the support vessels of the fishing fleet are specially equipped to assist the Soviet Navy in its missions. A large number of trawlers have their holds built in such a way that they can be converted very quickly into minelayers, each of these trawlers is able to carry several hundred mines. Such trawlers operating in the North Atlantic or in areas close to the sea lanes used by NATO countries shipping could easily cause a critical disruption of NATO supplies and of the traffic flow across the Atlantic in case of serious tension between NATO and the Warsaw Pact. In addition, trawlers can also be converted into minesweepers. The Soviets are adding some 20 units a year to their "fishing" fleet engaged in military duties and it is estimated, therefore, that by 1980 there may be as many as 200 vessels carrying out such duties.

VI. THE FUTURE: THE TENTH PLAN PROSPECTS AND THE 200 MILE LIMIT

A. General Prospects

53. Soviet planners intend to foster fish consumption in the current Five-Year Plan (1976-1980), with per capita consumption reaching 20-21 kg per year by the end of the period. This corresponds to a 3.5-4.6% average annual growth, as against a yearly average increase of 1.8% during the previous Five-Year Plan. Total fish catch should increase by 30-32%, equivalent to 5.4-5.7% a year (5.6% last Plan period). Investment in the fish industry during the quinquennium will total 5 billion roubles, of which 1.5 billion for on-shore facilities and 2.9 billion for vessels. The modernization of the fleet is to continue. However, the future is fraught with a number of uncertainties and the Plan targets may well not be met.

54. For one thing, the Soviet consumer may be reluctant to accept to consume as much fish as the planners want him to. The more so as the best types of fish are in short supply and mainly exported. Moreover, the distribution system is poor, in spite of the creation of an ad hoc chain of special fish shops "Okean". The combined result of these factors is that fish consumption plans often go unfulfilled, as was the case in 1971-1975. Nor was this failure a consequence of harvesting difficulties, as the catch figures show a higher rate of growth than consumption (Table K, Annex I).

55. A second cause of possible underfulfilment of the current plan may be found in the chronic deficiencies of the fishing industry itself. The two new ports now under construction (Gregorievka and Vostochnyy) will help solve at least some of the problems related to unloading and repairing facilities, but certainly not in time to have a notable impact on the current Five-Year Plan. Nor is it likely that the on-shore storage system will be substantially improved in the next few years.

56. There is little doubt, though, that the gravest threat to Soviet fisheries expansion is to be found in a number of relatively recent developments on which the Soviet planners have little control. First, some species are being extinguished, and the coastal countries are growing particularly strict in enforcing quotas. The more so as the Soviet Union is well known for its depredation practices(1). Second, and more important, most coastal countries of the world are establishing 200 mile "exclusive economic zones" (EEZs), which cover fishing as well as other economic activities over their continental shelf.

B. The 200 Mile Limit and Foreseeable Consequences

57. This second factor is of particular relevance to the USSR as close to 90% of the commercially important fishing zones are within 200 miles from the coast, and a fleet barred from such areas would have drastically to reduce its activities. The Soviets catch approximately half of their total harvest off the coasts of foreign countries(2). It is not surprising, therefore, that the USSR has been a strong supporter of the traditional Grotian concepts about the freedom of the seas.

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(1) Background Brief, cit., pp. 2-3  
(2) Committee on Commerce, cit., p. 14

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However, it has reconciled itself to the new state of affairs and on 10th December, 1976 it decided to extend the limits of its fishing zone(1) and therefore implicitly accepted a similar decision taken by other countries.

58. During the last few years the Soviet Union has been trying to adjust to the new international framework in which it will have to operate. It has signed fishery agreements with the USA, Iceland, Canada and Norway. However in the case of the latter country, negotiations are still continuing on the delimitation of the continental shelf in the Barents Sea. For that area a provisional agreement has been reached on reciprocal fishing rights in the EEZs of both countries. A final agreement will only be concluded and become operational after the successful conclusion of the current negotiations. At this stage the positions are still far apart: the Soviets are very firm about the sector line principle which they wish to apply, whereas Norway has retained the medium line criterion(2). The final solution adopted will also have some importance for the Common Market countries which are currently negotiating with Norway and with the USSR on reciprocal fishing rights.

59. The negotiations between the EEC and the Soviet Union started in February 1977, with a view to reaching a long-term agreement for reciprocal fishing rights in their respective 200 mile zones. The Soviet Union has accepted that Soviet vessels operating in the EEC fishing zone will have to be licensed. For the first quarter of this year the quota allocated to this country is of 38,500 tons. In principle the EEC wishes to allow no more than 27 trawlers in its EEZ, of which 17 could be fishing at the same time. The Soviets want to keep as many fishing boats as possible in the area (in excess therefore of the 27), not necessarily because of any great hopes that they would be allowed to increase their catch above the levels decided by the European Commission, but mainly because of the area's strategic importance and the monitoring rôle played by the Soviet trawlers(3). Poland has also started negotiations on reciprocal fishing rights and the GDR is expected to do the same shortly.

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- (1) The USSR decision about the 200 mile EEZ comes into force on 1st March, 1977; final delimitation of certain areas will depend on international agreements with neighbouring countries, for instance in the Baltic.
- (2) See chart at Annex I
- (3) At the time of writing this paper it seems as if the EEC would be prepared to allow a larger number of ships to operate provided the quota tonnage is not exceeded

60. The question of the Baltic Sea exclusive economic zones still has to be settled, the main problem is how to determine the continental shelf of the area. The Soviet Union, and apparently the EEC favours the sector line principle whereas Sweden opts for the medium line.

61. In coastal areas under the control of LDCs, in particular in Africa, the Soviets will probably attempt to obtain a number of privileges as regards fishing in the coastal states exclusive economic zones; they will invoke in that connection the financial and technical aid granted to the local fishing industries. Their participation in existing fishing joint ventures will also enable them to maintain a presence in LDCs' waters. An extension of the operations of the Soviet fishing fleet on the African continental shelf may pose a problem to the European Economic Community which is considering, in the framework of the Lomé Agreements, the possibility of extending the activities in African waters of European fishing fleets, and more particularly those of Communist countries with limited fishing zones (Italy, Germany).

62. It is reasonable to expect that the establishment of the 200 mile limit by the Allied nations bordering on the North Atlantic and the North Sea, with a strict enforcement of quotas and licensing of Soviet fishing boats, should quickly reduce the Soviet catch in these waters and limit its growth in the medium-long term (see Table 13 below).

63. The world-wide adoption of the EEZ will compel the Soviet Authorities to re-examine the present arrangements for fishing in the open seas and reallocate their fleet to different areas. A significant pull-out from the North Atlantic and the North-East Pacific (off the United States and Canadian coasts) is expected to take place gradually. In the future the Soviets will concentrate probably much more on the South-East Atlantic and on the North-West Pacific.



TABLE 13

USSR, EEC, NORWAY, US, CANADA AND JAPAN MUTUAL CROSS  
CATCHES WITHIN THE 200 MILE LIMITS - THOUSAND TONS  
1975

1.	Soviet catch in EEC waters	- 600	
2.	EEC catch in Soviet waters	<u>+ 65</u>	
3.	USSR balance with EEC		- 535
4.	Soviet catch in Norwegian waters	- 460	
5.	Norwegian catch in Soviet waters	<u>+ 410</u>	
6.	USSR balance with Norway		- 50
7.	USSR balance with US and Canada		-1.600
8.	Soviet catch in Japanese waters	- 250	
9.	Japanese catch in Soviet waters	<u>+1.851</u>	
10.	USSR balance with Japan		<u>+1.601</u>
11.	Total USSR balance with EEC, Norway, US, Canada and Japan		- 584

Sources: Rows 1 and 2 Financial Times, 11th December, 1976  
Rows 4 and 5 Norwegian Delegation to NATO  
Row 7 Estimate on the basis of data in Table 9  
above. (90% of North-West Atlantic  
Soviet catch plus 90% of North-East  
Pacific catch - slight adjustment.)  
Rows 8 and 9 NATO, AS(77)010, p. 2

64. As a result of this shift in activities, the operations of the Japanese fishing fleet are likely drastically to be reduced in the USSR's EEZ in the Pacific, in particular in the Bering and Okhotsk Seas, as well as in parts of the Sea of Japan, 15% of the catch of Japan originates from that area. The conditions under which the Japanese fishing fleet will be able to operate inside the 200 mile limit of the Soviet zone and the delimitation of certain points of that zone will influence future economic relations between Japan and the USSR(1). A more rational exploitation by the Soviets of their own EEZs will no doubt offset, to some extent, the decline in Soviet fishing in the seas controlled by Western countries.

(1) On 28th February, 1977, the USSR agreed to allow Japanese fishing vessels to continue operating within 200 miles of the Soviet coast while negotiations continue for an interim agreement on Japanese fishing rights in the newly declared EEZ.

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65. The fact that future Soviet fishing activities, with some exceptions, will be more concentrated in areas situated nearer to the Soviet shores will reduce the average distance which the Soviet fishing vessels have to cover in order to reach their fishing grounds and, as a consequence, improve the potential productivity of the operating fleet. In the medium-term, there might be some restructuring of the Soviet fishing fleet if it appeared, in the light of experience, that there was less need for fish carriers and/or, possibly, floating factories. The latter, however, may have to be replaced by an expansion of the on-shore fish processing plants capacity. But this is only one possibility, and it might be argued that as a result of the 200 mile limit the Soviets will also try to develop their deep sea fishing activities, which would require the use of large trawlers. However, as it is estimated that only 10% of the world's fish resources are to be found in deep sea waters, it is unlikely that the expansion of deep sea fishing will necessitate a significant increase in the number of very large fishing boats used by the Soviets.

VII. CONCLUSIONS

66. The Soviet fishing fleet has steadily expanded since the early 1960s and its presence has stretched all over the seas and oceans of the world. This development has stemmed from economic, political and military considerations. The fishing fleet, in its quasi military rôle of monitoring, surveillance and spying on the high seas, in close co-operation with the Soviet Navy, represents a permanent, though covert, threat to Western shipping lanes which it could harass in case of severe tension in East-West relations.

67. The unilateral extension by many countries of their sovereignty over the fishery resources lying in exclusive economic zones of up to 200 miles from their coasts has modified the international environment in which the Soviet fleet can operate. There is reason to believe that the expansion of Soviet fishing activities will be much more limited in the future and that they will have to be reorganized. This adjustment will probably involve some shift of activity from the North Atlantic to the USSR's own EEZs, to deep sea fishing and to the waters of the less developed countries, in particular along the African continent.

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68. The gradual entering into force of fishing agreements between Allied countries and the Soviet Union should give a good opportunity to Western countries not only to obtain reciprocity and the right to operate in Soviet EEZs, but also to keep a close check on the number of Soviet fishing boats operating within their own 200 mile limit. A concerted action by the countries bordering on the North Atlantic and the North Sea should reduce the risk involved in the overt and covert surveillance activities of the Soviet fishing flotillas. It will be, however, very difficult to curb similar activities which are taking place off the coasts of Africa and the sub-Indian continent, and which may pose a problem for the security of Allied countries shipping.

BASIC STATISTICS ON SOVIET FISHERIES

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TABLE A

SOVIET INTERNAL AND OPEN WATER CATCH  
THOUSAND TONS - 1913-1974  
(Selected Years)

	Total catch	Internal waters	Open waters	% in open waters (3)/(1)	% annual average increase in open waters
	(1)	(2)	(3)	(4)	(5)
1913	1,051	869	182	17.3	-
1917	893	800	92	10.4	-
1928	840	619	222	26.4	-
1940	1,404	744	660	47.0	-
1946	1,208	556	652	54.0	-
1950	1,755	709	1,046	59.6	-
1955	2,737	811	1,926	70.4	13.0
1960	3,541	775	2,766	78.1	7.5
1965	5,774	826	4,948	83.7	11.8
1968	6,784	781	6,003	85.3	6.2
1970	7,828	853	6,975	89.1	7.6
1975	10,300	783a	9,517	92.4	6.4
1971	7,785	935	6,850	88.0	- 1.8
1972	8,209	870	7,339	89.4	7.1
1973	9,005	850	8,155	90.6	11.1
1974	9,622	773	8,849	92.0	8.5
1975	10,300	783a	9,517	92.4	7.5

Source: Total catch: Table C below  
 Internal waters: 1913-1968: US Committee on Commerce "Soviet Ocean Activities - a preliminary survey"  
 1970-1975: FAO Yearbook  
 Open waters: Difference between column (1) and column (2)

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TABLE B  
INTERNATIONAL COMPARISON OF FISH  
CATCHES OF LEADING PRODUCERS  
THOUSAND TONS - 1913 AND 1928-1975

	Japan	USSR	Norway	USA	Peru	World	Soviet % share in world
1913	1,605	1,051	582	1,023 (1)			
1928	3,047	839	894	1,314			
1929	3,078	954	976	1,577			
1930	3,267	1,279	995	1,485			
1931	3,435	1,431	740	1,205			
1932	3,656	1,324	910	1,182			
1st PLAN period annual average	3,297	1,165	903	1,353			
1933	4,906	1,291	1,055	1,312			
1934	4,457	1,527	783	1,786			
1935	4,065	1,494	924	1,876			
1936	4,348	1,606	1,031	2,190			
1937	4,011	1,583	904	1,969			
2nd PLAN period annual average	4,357	1,500	919	1,827			
1938	3,562	1,523	1,153	2,253		20,500	7.43%
1939	3,653	1,545	1,043	2,013	5		
1940	3,644	1,385	1,081	1,841	6		
3rd PLAN period annual average	3,620	1,484	1,092	2,036	6 (2)		
1946	3,266	1,188	945	1,996	28		
1947	2,206	1,472	1,195	2,283	31		
1948	2,518	1,485	1,422	2,417	84	19,600	7.57%
1949	2,642	1,827	1,297	2,503	45		
1950	3,086	1,627	1,468	2,590	74	20,140	8.07%
4th PLAN period annual average	2,744	1,520	1,265	2,358	52	19,870	7.83%

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	Japan	USSR	Norway	USA	Peru	World	Soviet % share in world
1951	3,666	1,977	1,839	2,365	127	22,760	8.69%
1952	4,820	1,888	1,815	2,397	137	24,520	7.70%
1953	4,599	1,983	1,557	2,675	165	25,900	7.66%
1954	4,545	2,258	2,068	2,781	176	27,010	8.36%
1955	4,913	2,495	1,814	2,790	213	28,700	8.69%
5th PLAN period annual average	4,508	2,120	1,819	2,358	164	25,776	8.22%
1956	4,763	2,616	2,201	2,989	297	30,300	8.63%
1957	5,407	2,531	1,745	2,760	511	31,500	8.03%
1958	5,505	2,621	1,442	2,703	961	33,200	7.89%
6th PLAN sub-period annual average	5,225	2,593	1,796	2,817	590	31,667	8.19%
1959	5,884	2,756	1,575	2,891	2,187	36,700	7.51%
1960	6,193	3,051	1,543	2,815	3,569	40,000	7.63%
1961	6,710	3,250	1,523	2,932	5,291	43,400	7.49%
1962	6,867	3,616	1,332	2,973	7,164	47,100	7.68%
1963	6,699	3,977	1,388	2,777	7,091	48,400	8.21%
1964	6,372	4,476	1,623	2,647	9,322	51,900	8.62%
1965	6,929	5,100	2,312	2,696	7,632	53,200	9.59%
7-Year PLAN period annual average	6,522	3,747	1,614	2,819	6,037	45,814	8.18%
1966	7,132	5,349	2,872	2,515	8,845	57,300	9.33%
1967	7,902	5,777	3,266	2,406	10,199	60,400	9.56%
1968	8,694	6,082	2,856	2,452	10,556	63,900	9.52%
1969	8,639	6,498	2,491	2,489	9,244	62,700	10.36%
1970	9,366	7,252	2,980	2,777	12,613	70,000	10.36%
8th PLAN period annual average	8,347	6,192	2,893	2,528	10,291	62,860	9.85%

	Japan	USSR	Norway	USA	Peru	World	Soviet % share in world
1971	9,950	7,337	3,075	2,820	10,606	70,200	10.45%
1972	10,273	7,757	3,163	2,650	4,768	65,500	11.84%
1973	10,702	8,619	2,975	2,670	2,299	65,700	13.12%
1974	10,773	9,236	2,645	2,744	4,150	69,800	13.23%
9th PLAN sub-period annual average	10,424	8,237	2,965	2,721	5,456	67,800	12.15%

Source: UN, Statistical Yearbook, various issues. Some data also in FAO, Yearbook, cit. For USSR data, see Table C below

- Notes: (1) 1921  
(2) Two-year average

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TABLE C

SOVIET SEA CATCH  
THOUSAND TONS - 1913, 1917, 1922 AND 1928-1975

	Total catch*	Fish catch	Annual% growth of total catch	Annual% growth of fish catch	Whales** (units)	Whale catchers used (units)
1913	1,051	1,048	-	-	....	.....
1917	893	...	-	-	....	.....
1922	483	...	-	-	....	.....
1928	840	839	-	-	....	.....
1929	956	954	13.81	13.71	0	0
1930	1,283	1,279	34.21	34.07	....	....
1931	1,441	1,431	12.31	11.88	....	.....
1932	1,333	1,324	- 7.49	- 7.47	203	....
1st PLAN annual average	1,170	1,165	12.23(1)	12.08(1)	....	....
1933	1,303	1,291	- 2.25	- 2.49	.....	.....
1934	1,547	1,527	18.73	18.28	.....C	.....
1935	1,520	1,494	- 1.75	- 2.16	.....	.....
1936	1,631	1,606	7.30	7.50	.....	.....
1937	1,609	1,583	- 1.35	- 1.43	265	3
2nd PLAN annual average	1,522	1,500	4.31	4.16	.....	.....

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	Total catch*	Fish catch	Annual% growth of total catch	Annual% growth of fish catch	Whales** (units)	Whale catchers used (units)
1938	1,542	1,523	- 4.16	- 3.79	....	....
1939	1,566	1,545	- 1.56	1.44	...	....
1940	1,404	1,385	-10.34	-10.36	...	....
3rd PLAN annual average	1,504	1,484	- 3.08	- 3.12	...	....
1945	1,125	1,109	- 4.33	- 4.35	....	....
1946	1,208	1,188	7.37	7.12	....	....
1947	1,534	1,472	26.99	23.91	....	....
1948	1,575	1,485	2.67	0.88	3,122	26
1949	1,953	1,827	24.00	23.03	3,931	...
1950	1,755	1,627	-10.10	-10.90	4,274	....
4th PLAN annual average	1,605	1,520	9.30	7.97	...	....
1951	2,142	1,977	22.10	21.50	5,579	32
1952	2,107	1,888	- 1.60	- 4.50	5,605	32
1953	2,195	1,983	4.20	5.00	5,831	33
1954	2,505	2,258	14.10	13.90	6,321	33
1955	2,737	2,495	9.30	10.50	6,071	36
5th PLAN annual average	2,337	2,120	9.29	8.92		

N A T O C O N F I D E N T I A L

	Total catch*	Fish catch	Annual % growth of total catch	Annual % growth of fish catch	Whales** (units)	Whale catchers used (units)
1956	2,849	2,616	4.10	4.80	2,616	6,113
1957	2,761	2,531	- 3.10	- 3.20	8,412	53
1958	2,936	2,621	6.30	3.60	7,833	52
6th PLAN annual average	2,849	2,589	2.37	1.66	.....	.....
1959	3,075	2,756	4.70	5.20	1,143	59
1960	3,541	3,051	15.20	10.70	11,184	78
1961	3,724	3,250	5.20	6.50	14,645	105
1962	4,168	3,616	11.90	11.30	19,654	119
1963	4,681	3,977	12.30	10.00	20,207	118
1964	5,171	4,476	10.50	12.50	21,214	114
1965	5,774	5,100	11.70	13.90	20,906	98
7-Year PLAN annual average	4,305	3,747	10.14	9.28		
1966	6,093	5,349	5.50	4.90	21,918	90
1967	6,538	5,777	7.30	8.00	19,127	81
1968	6,784	6,082	3.80	5.30	17,436	77
1969	7,082	6,498	4.40	6.80	18,517	76
1970	7,828	7,252	10.50	11.60	15,014	74
8th PLAN annual average	6,865	6,192	6.28	7.29		

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	Total catch*	Fish catch	Annual % growth of total catch	Annual % growth of fish catch	Whales** (units)	Whale catchers used (units)
1971	7,785	7,337	- 0.50	1.20	11,204	66
1972	8,209	7,757	5.40	5.70	14,903	93
1973	9,005	8,619	9.70	11.10	15,083	76
1974	9,622	9,236	6.90	7.20		
1975	10,300	9,803(2)	7.00	6.10(2)		
9th PLAN annual average	8,984	8,550	5.64	6.21		

Source: 1913-1955: Promyshlennost SSSR, Moscow, 1957, p. 381  
 1956 on: FAO, Yearbook of Fishery Statistics and Narkhoz SSSR, Various issues

- Notes: (1) 1929-1932  
 (2) Directorate's estimates  
 \*\* 1929 = 1929/30, 1930 = 1930/31, etc.  
 \* Total catch includes: fish, molluscs and aquatic mammals

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TABLE D

SOVIET - FISHING FLEET, BY TYPE OF CRAFT FOR SELECTED YEARS

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

Source: FAO, Yearbook of Fishery Statistics, Vol. VI (1955-1956), Rome, 1957

N - number

P - horsepower

T - tonnage (grt)

Source: Kravanja, "The Soviet Fishing Industry: A review", in US Committee on Commerce, Soviet Ocean Development, Washington, October, 1976, p. 417

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TABLE E

SOVIET - NUMBER OF POWERED AND NON-POWERED FISHERY VESSELS  
1940, 1955 AND 1975

TYPE OF VESSEL/YEAR	1975	1955	1940
POWERED TOTAL	(E) 18,000(1)	10,872	2,727
<u>Trawlers(2)</u>			
Large Stern	760	-	-
Medium Side	1,810	1,498	107
Medium Stern	150	-	-
Seiner Trawler	40	-	-
Other	120	100	-
Total Trawlers	2,880	1,598	107
<u>Seiners</u>			
100 grt or more	570	(E) 300	na
less than 100 grt	(E) 2,430	(E) 1,217	na
Total seiners	(E) 3,000	1,517	376
<u>Support Vessels</u>			
Fish carriers	380	(E) 100	-
Floating canneries	95	-	-
Motherships	5	-	-
Baseships	60	-	-
Cargo support	60	(E) 10	-
Repair ships	40	na	-
Fuel tankers	75	10	-
Water carriers	35	(E) 10	-
Passenger transports	5	-	-
Fishery training	22	2	-
Research vessels	80(4)	(E) 13	10
Total support	857	(E) 145	10
<u>Other(3)</u>	(E) 11,168	(E) 7,549	(E) 2,234

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TYPE OF VESSEL/YEAR	1975	1955	1940
<u>Whaling Vessels</u>			
Motherships	5(5)	3	-
Catcher boats	90	(E) 60	-
Total whaling	95	(E) 63	-
NON-POWERED TOTAL	(E) 62,000	47,752	33,679
GRAND TOTAL	(E) 80,000	58,624	36,406

(E) Estimated

(1) Sovetskaia Torgovliia, 12th July, 1975

(2) Includes only vessels having a capacity greater than 100 gross register tons

(3) Includes vessels having less than 100 gross register tons

(4) The figure 80 does not include those vessels which are engaged in exploratory fisheries research (promrazvedka), because they are owned by the respective Regional Fishery Administrations and not by the Fishery Research Institutes

(5) One of these, the Iuril Dolgorukii, was retired in late 1975 before the 1975/76 Antarctic whaling season began

Sources: FAO, Yearbook of Fishery Statistics, Vol. VI, Rome, 1957 (for 1955 and 1940 statistics)

Division of International Fisheries Analysis, Office of International Fisheries, NMFS, NOAA (for 1975 data)

Source: Kravanja, op. cit., p. 418

TABLE F

SOVIET PER CAPITA CONSUMPTION OF  
SELECTED FOOD PRODUCTS (KILOGRAMMES)  
1913-1975

	1913	1950	1960	1965	1970	1975	Percentage change 1913-1975
<u>Per capita consumption (kg)</u>							
Fish and fish products	6.7	7.0	9.9	12.6	15.4	16.8	150
Meat and meat products	29	26	40	41	48	58	100
Milk and milk products	154	172	240	251	307	315	104
Potatoes	114	241	143	142	130	120	5
Grain products	200	172	164	156	149	142	-29

Source: Narchoz SSSR 1922-1972, p. 372; Committee on Commerce,  
op. cit., p. 623, and Narchoz, various issues

TABLE G

INDEXES OF SOVIET CONSUMPTION OF FOOD COMMODITIES  
1950 AND 1955-1975 - 1970 = 100

	1950	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Food:																						
Animal products:																						
Fish	33.7	49.3	50.7	52.2	54.2	55.2	56.7	57.5	59.8	65.8	74.4	77.8	80.6	83.3	91.1	101.7	100	97.0	100.0	107.6	111.2	114.4
Meat	39.6	54.1	56.0	60.6	63.7	74.9	72.3	72.2	75.3	78.7	72.5	80.6	86.4	92.1	95.7	96.2	100	107.5	111.0	113.7	117.2	125.9
Slaughter fat	37.1	52.2	55.0	64.9	65.8	74.6	69.8	73.5	80.4	86.8	64.8	85.6	92.6	96.8	94.0	94.0	100	111.5	114.1	110.8	119.6	125.8
Milk	47.9	55.7	63.0	70.4	76.9	79.5	79.5	77.2	76.8	74.0	74.8	80.7	87.1	93.5	96.8	99.0	100	97.9	94.4	95.7	102.9	102.4
Butter	34.1	47.0	53.5	57.7	64.4	66.2	68.9	70.6	70.4	71.6	75.7	79.7	78.8	82.2	90.4	98.6	100	97.1	98.5	121.2	113.4	113.3
Cheese	15.2	27.6	30.8	32.4	35.4	36.8	40.6	42.7	47.5	48.3	57.5	64.9	73.6	76.2	81.6	90.1	100	96.8	101.0	112.1	118.2	120.9
Eggs	28.9	45.8	48.4	55.1	56.9	63.0	67.9	72.3	74.4	71.0	66.5	72.2	78.8	84.4	88.6	92.0	100	110.5	118.6	126.4	137.6	141.8
Processed foods:																						
Sugar	19.2	45.3	47.3	49.7	51.9	55.0	64.6	68.3	71.4	76.3	77.5	84.8	90.0	94.4	96.2	96.8	100	103.5	101.8	108.1	108.9	110.2
Vegetable oil	22.8	56.0	64.7	64.8	61.5	64.6	69.2	74.2	77.4	81.4	96.6	93.3	88.0	89.6	94.4	97.6	100	100.3	102.5	109.4	110.4	115.9
Margarine	25.6	53.0	55.9	58.2	54.8	58.1	61.7	63.9	67.4	75.2	83.2	82.4	78.6	81.1	86.4	94.6	100	106.3	114.5	123.5	127.7	130.2
Confectionery	31.3	44.6	50.9	51.0	54.5	57.7	56.0	58.3	63.1	65.9	74.5	75.7	75.0	80.7	86.9	95.0	100	100.3	103.2	110.2	115.1	113.3
Canned goods	14.5	29.8	32.9	36.7	39.5	42.7	46.0	52.2	63.3	58.9	68.1	68.5	74.2	86.6	89.7	93.3	100	106.3	115.5	125.3	132.1	134.9
Macaroni	28.9	69.8	63.7	71.6	77.0	73.8	80.8	80.7	87.8	63.0	94.5	91.3	90.8	93.6	91.5	100.0	100	105.9	118.6	110.9	110.7	115.1
Basic foods:																						
Potatoes	137.5	92.0	93.6	95.9	98.3	100.1	97.1	98.8	99.7	100.6	101.2	103.9	105.1	100.9	98.9	99.9	100	101.7	94.9	98.1	96.6	96.8
Vegetables	50.4	74.9	75.5	77.6	77.5	76.2	84.8	80.6	77.4	72.7	95.4	86.5	86.9	98.5	89.8	88.0	100	96.4	88.4	120.6	101.4	93.4
Fruits and berries	36.7	44.4	37.2	59.9	64.4	58.1	56.4	53.7	62.4	66.8	66.5	86.5	72.5	84.7	83.8	69.4	100	105.6	59.0	136.6	106.3	108.6
Flour and groats	75.0	94.6	94.5	93.9	92.2	92.7	93.2	93.6	94.5	90.3	92.8	93.5	94.6	94.8	97.2	98.5	100	101.3	99.8	99.5	100.0	101.2
Alcohol, soft drinks, tobacco:																						
Alcohol, soft drinks	20.1	36.8	38.7	43.4	45.5	45.5	48.0	51.2	56.9	60.6	64.3	69.3	74.8	84.9	88.4	100.3	100	101.4	108.3	108.8	118.9	123.1
Tobacco	29.3	43.2	45.6	47.5	49.3	51.2	53.7	55.2	56.2	59.1	63.4	68.7	72.6	79.1	86.2	94.5	100	106.3	112.3	118.6	123.8	129.4
TOTAL	39.2	53.6	56.0	60.2	62.6	65.9	67.2	68.6	71.7	73.0	74.8	79.9	83.5	88.9	92.3	96.4	100	104.1	103.8	110.4	113.4	116.3

Source: Schroeder and Severin, "Soviet Consumption and Income Policies in Perspective", in Joint Economic Committee, Soviet Economy in a New Perspective, Washington, 1976, p. 647



TABLE H

FISHERY SCHOOLS IN THE SOVIET UNION

I. HIGHER FISHERY INSTITUTES

- A. Higher Technical Fishery Institutes  
(Tekhnicheskie instituty rybnoi promyshlennosti i khoziaistva)
1. Kaliningrad (Branch in Riga)
  2. Astrakhan
  3. Vladivostok (Branch in Petropavlovsk-Kamchatskii)
- B. Higher Engineering Fishery Institutes  
(Vysshie inzhenernye morskoe uchilishcha)
1. Murmansk
  2. Kaliningrad
- C. Other Higher Institutes
1. Kaliningrad (Institute for Improving the Qualifications) (Institute povysheniia kvalifikatsii) (Branch in Dmitrov, Moscow Oblast')

II. SECONDARY FISHERY SCHOOLS

- A. Secondary Fishery Schools  
(Srednie morekhodnye uchilishcha)
- |                |                                 |
|----------------|---------------------------------|
| 1. Murmansk    | 9. Rostov-na-Donu               |
| 2. Kaliningrad | 10. Astrakhan (Kaspiskoe)       |
| 3. Leningrad   | 11. Nevelsk (Sakhalinskoe)      |
| 4. Liepaja     | 12. Nakhodka (Dal'nevostochnoe) |
| 5. Tallin      | 13. Petropavlovsk-Kamchatskii   |
| 6. Klajpeda    | 14. Vladivostok                 |
| 7. Odessa      | 15. Tobolsk                     |
| 8. Kherson     |                                 |

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B. Secondary Coastal Fishery Schools  
(Rybopromyshlennye tekhnikumy)

1. Astrakhan
2. Arkhangelsk
3. Eisk (Krasnodar)
4. Belgorod-Dnestrovskii
5. Guriev
6. Dagestan (Makhachkala) (F)
7. Baku
8. Dmitrov (Moscow oblast') (F)
9. Petropavlovsk-Kamchatskii
10. Tobolsk (F)

III. PRE-SECONDARY FISHERY SCHOOLS

A. Fishery Trade Schools  
(Morekhodnye shkoly)

- |                |                       |
|----------------|-----------------------|
| 1. Arkhangelsk | 4. Primorsko-Akhtarsk |
| 2. Kaliningrad | 5. Baku               |
| 3. Tallin      | 6. Klajpeda           |

B. Training School for Leading Workers of Fishery Kolkhozes  
(Shkola po podgotovke rukovodiashchikh rabotnikov  
rybolovestskikh kolkhozov)

1. Anapa

(F) Secondary schools specializing in training of inland fishermen

Source: Kravanja, op. cit., p. 433

TABLE I  
USSR - FISHERY TRAINING VESSELS  
(AS OF 1ST JANUARY, 1975)

NAME	VESSEL			BUILT		SERVICE AS TRAINING VESSEL		
	GRT	Class	Type	Year	Country	Since	With	Homeport
Barograf	2,600	Atlantik	TP	1973	GDR	1973	Azch	Sevastopol'
Bataisk	3,728	Vorkuta	T	1955	Poland	1965	Sev	Murmansk
Diplot	2,600	Atlantik	TP	1973	GDR	1973	Zap	Riga
Ekholot	3,813	Grumant	TP	1969	Denmark	1969	Zap	Riga
Geliograf	2,600	Atlantik	TP	1973	GDR	1973	Dal	Vladivostok
Grif	239	SRT	T	1950	GDR	1950	Zap	Riga
Kommissar Polukhin	6,008	Sevastopol'	TP	1968	USSR	1968	Sev	Murmansk
Kompas	4,734	Grumant	TP	1968	Denmark	1968	Sev	Murmansk
Kruzenshtern	3,257	Sail	T	1926	Germany	1966	Zap	Riga
Kurgan	239	SRT	T	1949	GDR	1963	Zap	Riga
Kurs	3,813	Grumant	TP	1969	Denmark	1969	Azch	Sevastopol'
Kursograf	2,600	Atlantik	TP	1973	GDR	1973	Zap	Riga
Kvadrant	2,600	Atlantik	TP	1973	GDR	1973	Dal	Vladivostok
Lokator	3,813	Grumant	TP	1970	Denmark	1970	Dal	Vladivostok
Mikhail Korsunov	873	Zelenodolsk	T	1970	USSR	1970	Kasp	Astrakhan
Navigator	239	SRT	T	1950	GDR	1964	Zap	Riga
Nikolai Zytsar	6,008	Sevastopol'	TP	1968	USSR	1968	Zap	Riga
Pelengator	4,734	Grumant	TP	1968	Denmark	1968	Dal	Vladivostok
Ruslan	239	SRT	T	1951	GDR	1951	Azch	Sevastopol'
Sedov	3,709	Sail	T	1921	Germany	1966	Zap	Riga
Volnomer	2,600	Atlantik	TP	1973	GDR	1973	Dal	Vladivostok
Zabaikal'e	6,008	Sevastopol'	TP	1969	USSR	1969	Dal	Vladivostok

Azch = Azcherryba (Azov-Black Sea Fisheries Administration)

Sev = Sevryba (Northern Fisheries Administration)

Zap = Zapryba (Western Fisheries Administration)

Dal = Dalryba (Far Eastern Fisheries Administration)

Kasp = Kaspyba (Caspian Fisheries Administration)

TP = Training and production vessel.

T = Training vessel

Source: Kravanja, op. cit., p. 438

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TABLE J

DOMESTIC RELEVANCE OF THE SOVIET FISH INDUSTRY  
MILLION ROUBLES AT CURRENT PRICES AND PERCENTAGES  
1959 - 1966 - 1972

	1959	1966	1972
Purchases			
Interindustry purchases	1,426.6	3,324.8	5,384.1
Value added	1,014.2	1,375.8	1,543.7
Sales			
Interindustry sales	680.1	2,146.0	3,909.8
Final sales of which:	1,864.4	2,828.0	3,790.2
Consumption	1,716.5	2,663.0	3,133.0
Capital	1,950.6	3,255.2	6,328.9
Employment (000 men/year)	346.4	285.5	...
Share of fish industry in:			
Total consumption	1.9%	1.9%	1.5%
Food consumption	4.7%	4.1%	3.4%
Employment in food industry	14.2%	10.3%	...
Total capital	1.2%	1.1%	1.3%
Capital in food industry	24.0%	24.8%	29.5%

Source: Treml and others, "The Soviet 1966 and 1972 Input-Output Tables", in Joint Economic Committee, op. cit., passim

TABLE K  
FISH OUTPUT AND USE - THOUSAND TONS  
1970-1975

	1970	1971	1972	1973	1974	1975
1. Fresh and frozen fish	2,557.3	2,449.8	2,607.2	2,891.3	3,085.1	...
2. Dried fish	720.6	658.1	631.5	735.0	700.2	...
3. Fresh, frozen and dried molluscs	...	...	...	...	...	...
4. Canned fish	689.9	742.9	796.2	819.8	887.2	...
5. Canned molluscs	3.9	3.4	2.5	2.5	2.4	...
6. Oil	162.0	152.1	(160.0)*	(160.0)*	(160.0)*	(160.0)*
7. Fishmeal	393.1	472.2	455.9	506.0	506.1	654.7
8. TOTAL OUTPUT	4,526.8	4,478.5	4,653.3	5,114.6	5,341.0	5,814.7
9. NET EXPORT	276.5	304.2	276.2	285.5	381.2	562.6
10. INTERNAL USE (8)-(9)	4,250.3	4,174.3	4,377.1	4,829.1	4,959.8	5,252.1
of which:						
11. Animal consumption	393.1	472.2	455.9	506.0	506.1	654.7
12. Human consumption	3,739.1	3,626.9	3,739.1	4,023.3	4,157.9	4,277.5
13. Other (including discrepancies)	118.1	75.2	182.1	299.8	295.8	319.9
14. TOTAL CATCH	7,828.0	7,785.0	8,209.0	9,005.0	9,622.0	10,300.0
15. % Total output in total catch	57.8%	57.5%	53.3%	56.8%	55.5%	56.5%

Source: Rows 1-7 and 9: FAO, Yearbook, cit., various issues  
 Row 12: Obtained from per capita consumption (Narchoz, various issues) times mid-year population  
 Row 14: Table C, above  
 Note: \* = Directorate estimate

TABLE L

INTERNATIONAL COMPARISON - LEADING FISHING FLEETS - 1970-1975  
THOUSAND GROSS REGISTERED TONS

	USSR	Japan	Spain	USA	Poland	UK	South Korea	Norway	Canada	Peru	World	USSR % in world
1969	3,405.1	888.5	409.2	61.0	220.6	240.2	68.2	179.1	124.1	48.7	6,933.7	49.1%
1970	3,996.7	977.6	432.6	73.6	230.7	235.4	51.2	182.3	128.5	81.2	7,803.6	51.2%
1971	4,902.4	1,082.8	435.8	170.0	236.3	238.2	63.9	194.6	124.1	107.3	9,035.7	54.3%
1972	5,124.0	1,172.2	442.1	249.6	254.2	241.7	82.4	197.5	127.6	121.3	9,618.8	53.3%
1973	5,382.9	1,207.0	470.6	334.7	267.7	245.9	139.1	202.8	129.8	123.1	10,273.7	52.4%
1974	5,610.0	1,255.8	509.5	357.2	271.3	242.8	146.8	203.7	132.5	125.0	10,681.9	52.5%
1975	5,937.4	1,216.6	549.9	398.2	281.9	236.5	235.0	211.4	138.4	124.9	11,337.2	52.4%

Source: Lloyd's Register of Shipping, Statistical Tables, Various issues

Note: Ships of 100 grt and over. Data previous to 1969 are not available in the Register

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TABLE M

STRUCTURE OF SELECTED LEADING FISHING FLEETS IN 1975

A. Size of Trawlers and Fishing Vessels

FLAG	DIVISIONS OF TONNAGE											
	100-499		500-999		1,000-1,999		2,000-3,999		4,000 and above		TOTAL	
	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross
USSR	2,077	442,211	829	526,342	130	206,580	638	1,791,203	5	30,415	3,679	2,996,751
JAPAN	2,913	734,194	65	44,883	51	71,194	46	131,741	10	48,410	3,085	1,030,422
USA	1,575	250,554	119	90,329	37	46,744					1,731	387,627
NORWAY	541	135,655	64	45,088	8	10,822					613	191,565

B. Size of Fish Carriers and Fish Factories

FLAG	DIVISIONS OF TONNAGE											
	100-1,999		2,000-3,999		4,000-5,999		6,000-9,999		10,000 and above		TOTAL	
	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross	No.	Tons Gross
USSR	164	99,808	124	409,727	94	487,315	36	287,918	122	1,655,848	540	2,940,616
JAPAN	45	27,880	5	15,312	1	5,044	8	65,467	5	72,492	64	186,195
USA	10	2,738	1	3,805	1	4,011					12	10,554
NORWAY	7	2,218							1	17,583	8	19,801

Source: Lloyd's Register of Shipping, Statistical Tables, 1975, Tables 13 and 14, pp. 58-59

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TABLE N  
SOVIET IMPORT-EXPORT OF FISH AND PREPARATIONS  
MILLION ROUBLES  
1955-1975

	F&P Exports	Total Exports	F&P Imports	Total Imports	Net F&P Exports	USSR Net Exports
1955	15.1	3,084	29.4	2,755	-14.3	329
5th PLAN annual average	...	2,642	....	2,432	...	ξ1,052
1956	20.0	3,254	31.6	3,251	-11.6	3
1957	18.2	3,943	31.9	3,544	-13.7	399
1958	21.4	3,869	26.7	3,915	- 5.3	-46
6th PLAN annual average	19.9	3,689	30.1	3,570	ξ-30.6	ξ 356
1959	32.7	4,905	27.8	4,566	+ 4.9	339
1960	38.7	5,007	22.3	5,066	16.4	-59
1961	38.0	5,399	14.4	5,245	23.6	154
1962	41.0	6,328	17.8	5,810	23.2	518
1963	50.5	6,545	22.8	6,353	27.7	192
1964	50.0	6,915	25.0	6,963	25.0	-48
1965	59.9	7,357	21.9	7,253	38.0	104
7-Year PLAN annual average	39.1	5,065	15.4	5,894	ξ158.8	ξ1,200
1966	69.6	7,957	22.0	7,122	47.6	835
1967	68.7	8,687	18.8	7,683	49.9	1,004
1968	74.9	9,571	13.2	8,469	61.7	1,102
1969	76.4	10,490	13.2	9,294	63.2	1,196
1970	81.3	11,520	14.9	10,559	66.4	961
8th PLAN annual average	64.3	9,645	14.2	8,625	ξ288.8	ξ5,098



	F&P Exports	Total Exports	F&P Imports	Total Imports	Net F&P Exports	USSR Net Exports
1971	83.7	12,426	13.6	11,232	70.1	1,194
1972	78.5	12,734	14.1	13,309	64.4	-575
1973	90.7	15,802	9.6	15,541	81.1	261
1974	120.2	20,738	19.7	18,830	100.5	1,904
1975	119.3 (1)	24,030	20.7 (1)	26,669	98.6 (1)	
9th PLAN annual average (1971-1976)	90.0	15,425	13.6	14,729	ξ 414.7	ξ 2,784

Source: Fish import-export: FAO, Yearbook, cit. Total Import-Export: Vneshnjaja Torgovlja SSSR, Various issues

Note: (1) Directorate estimate

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TABLE O

SOVIET FISH AND PREPARATION IMPORT-EXPORT  
IN METRIC TONS

(Seven main fishery commodity groups)

1970-1975

	Imports		Exports	
	Thousand Tons	Thousand dollars	Thousand Tons	Thousand dollars
1970	39.9	16,587	316.4	90,385
1971	23.6	15,181	327.8	93,048
1972	22.1	17,148	298.3	95,508
1973	16.1	12,968	301.6	122,675
1974	30.6	26,575	411.8	162,058
1975	26.7	....	589.3	...

Source: FAO, Yearbook, cit., various issues.  
1975: USSR: Fisheries, Background Brief,  
November 1976, p. 1

TABLE P

SOVIET CATCH BY AREA - THOUSAND TONS  
1950-1974

	TOTAL CATCH (Fish, Molluscs and Mammals)								FISH CATCH			
	1950		1955		1960		1965		1970		1974	
	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%	Tons	%
Atlantic Ocean												
Northeast	402.3	24.3	1,075.1	40.2	1,128.4	32.1	1,048.0	18.3	1,565.9	21.6	1,997.0	21.6
Northwest	-	-	-	-	285.1	8.1	886.5	15.5	811.5	11.2	1,157.0	12.5
West Central	-	-	-	-	-	-	17.4	0.3	-	-	25.6	0.3
East Central	-	-	-	-	44.0	1.3	82.4	1.4	612.5	8.4	1,145.0	12.4
Southeast	-	-	-	-	-	-	360.7	6.3	422.6	5.8	447.5	4.8
Southwest	-	-	-	-	-	-	-	-	420.6	5.8	12.9	1.4
North Pacific Ocean	483.8	29.2	639.9	23.9	855.5	24.4	1,589.3	27.8	2,195.2	30.3	3,059.4	33.1
Indian Ocean												
East	-	-	-	-	-	-	-	-	-	-	0.7	0
West	-	-	-	-	-	-	36.1	0.6	47.0	0.6	135.1	1.5
Azov, Black and Mediterranean Sea	234.3	14.2	170.5	6.4	152.6	4.3	251.8	4.4	302.5	4.2	371.5	4.0
Other water bodies (1)	534.0	32.3	788.0	29.5	1,045.3	29.8	1,453.1	25.4	874.4	12.1	883.9	9.6
TOTAL(2)	1,654.4	100	2,673.9	100	3,510.9	100	5,725.2	100	7,252.2	100	9,235.6	100

Source: 1950-1965: US Committee on Commerce, Soviet Ocean Activities, A Preliminary Survey, Washington, April 1975, p. 11

1970-1974: FAO, Yearbook, cit.

Notes: (1) Including Caspian Sea and Pacific other than North  
 (2) 1950-1965: Total catch - 1970-1974: Fish catch - Total till 1965 may slightly differ from the ones in Table C above, because of different sources

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TABLE Q

LIST OF DEVELOPING COUNTRIES WHICH HAVE CONCLUDED  
AGREEMENTS ON FISHING WITH THE SOVIET UNION

Africa

Algeria  
Equatorial Guinea  
Gambia  
Ghana  
Guinea  
Guinea-Bissau  
Kenya  
Mauritania  
Mauritius  
Morocco  
Senegal  
Somalia  
Sudan  
Tanzania  
Tunisia

Middle East

Egypt  
Iran  
Iraq  
North Yemen  
South Yemen  
Syria

South and East Asia

Bangladesh  
India  
Indonesia  
Pakistan  
Sri Lanka

Latin America

Argentina  
Peru

TABLE R  
LIKELY STRUCTURE OF THE SOVIET  
FISHING FLEET IN 1980(1)

<u>Type</u>		<u>Number</u>	<u>Grt.</u>	<u>Built in</u>
3	Mayakovskii	300	3,170	USSR
3	Atlantik	100	2,500	GDR
3	Tropik	86	2,435	GDR
3	Leskov	54	2,000	Poland
3	Kosmos		3,000	Poland
3	Moriak	50+	1,150	USSR
3	Alpinist	50	1,200	USSR
3	Barentsovo More	50	1,200	USSR
2(a)	Prometei (Supertrawlers) (1)	100	3,980	USSR
2(a)	Luchegorsk (Supertrawlers)	20	4,000	GDR
2(a)	Mintai	1	3,500	USSR
2(a)	Altai	2	4,000	USSR
2(a)	Tuna Seiner	10	3,000	Poland
2(b)	Grumant	11	4,700	Denmark
2(b)	Rembrandt	7	5,000	Holland
2(b)	Meridian	6	5,720	USSR
1	Gorizont	3	7,931	USSR
1	Natalia Koshkova	3	8,425	France
		<u>1975</u>	<u>1977</u>	<u>1980</u>
Class 1		4	4	6
Class 2(a)		64	74	133
Class 2(b)		19	19	23
Class 3		640	664	708

(1) It is expected that these supertrawlers will be put into service at the rate of 20 units every year until 1980. See note on following page

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Notes on Table R

On the basis of fragmentary information from a number of various technical publications it has been possible to prepare a table giving the likely pattern of the Soviet fishing fleet in 1980.

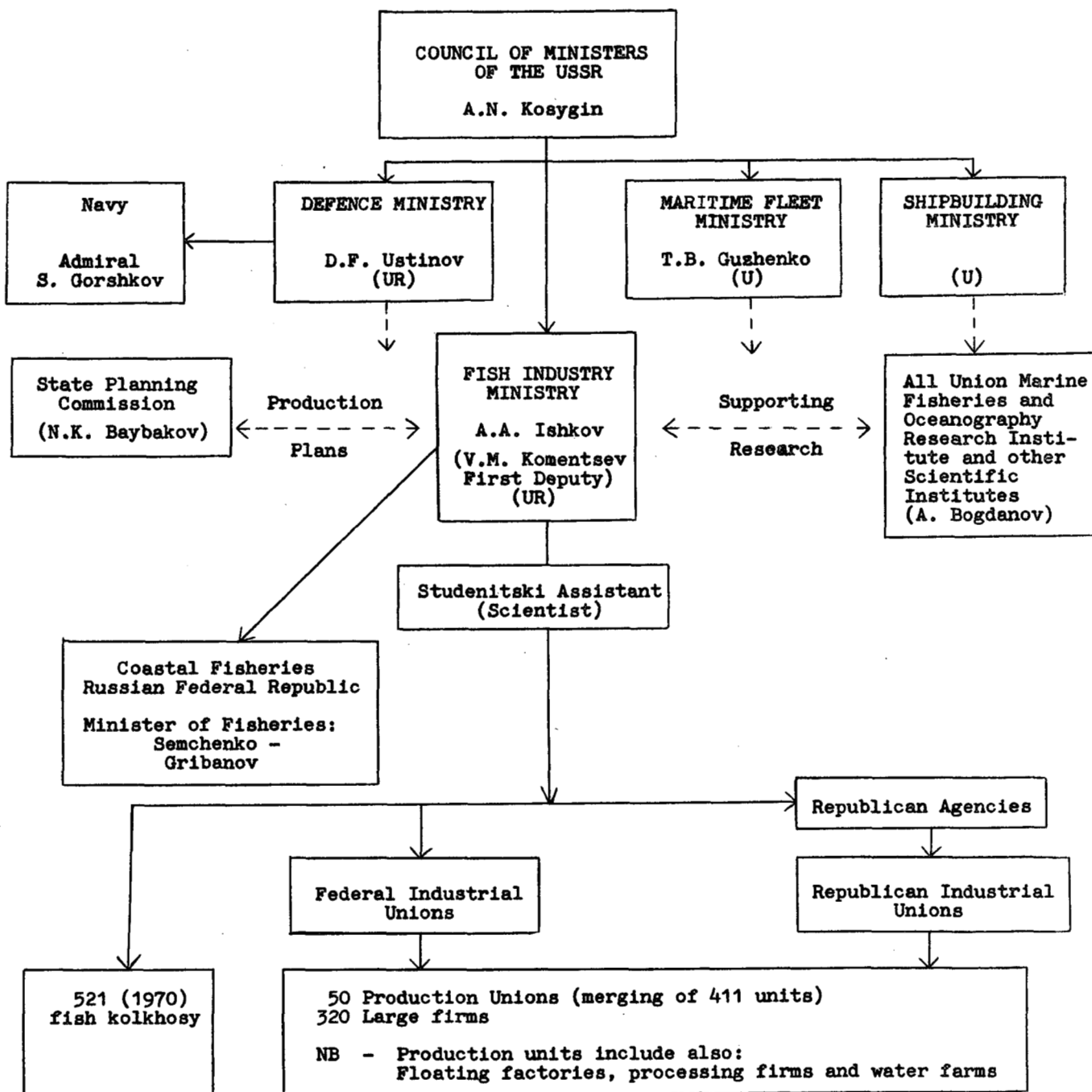
The main changes from the present situation will be in the gradual reduction (30 to 40 a year) of the Mayakovskii type fishing boats, built between 1958 and 1967. These will be replaced by trawlers of the Moriak, Alpinist and Barentsovo More type.

The new trawlers of the "2" Class will be allocated on a priority basis to the fleet operating in the Barents Sea.

The modernization of the fleet is unlikely to result in substantial productivity gains, as the yield of the ships in the Mayakovskii class, as well as of some other relatively old ships, tends to decline regularly as a consequence of the reduction in the number of days during which they are operational and of their slower speed at sea.

CHART 1

Fish and Related Ministries or Government Bodies  
Organization of the Fish Industry as of Mid-1976



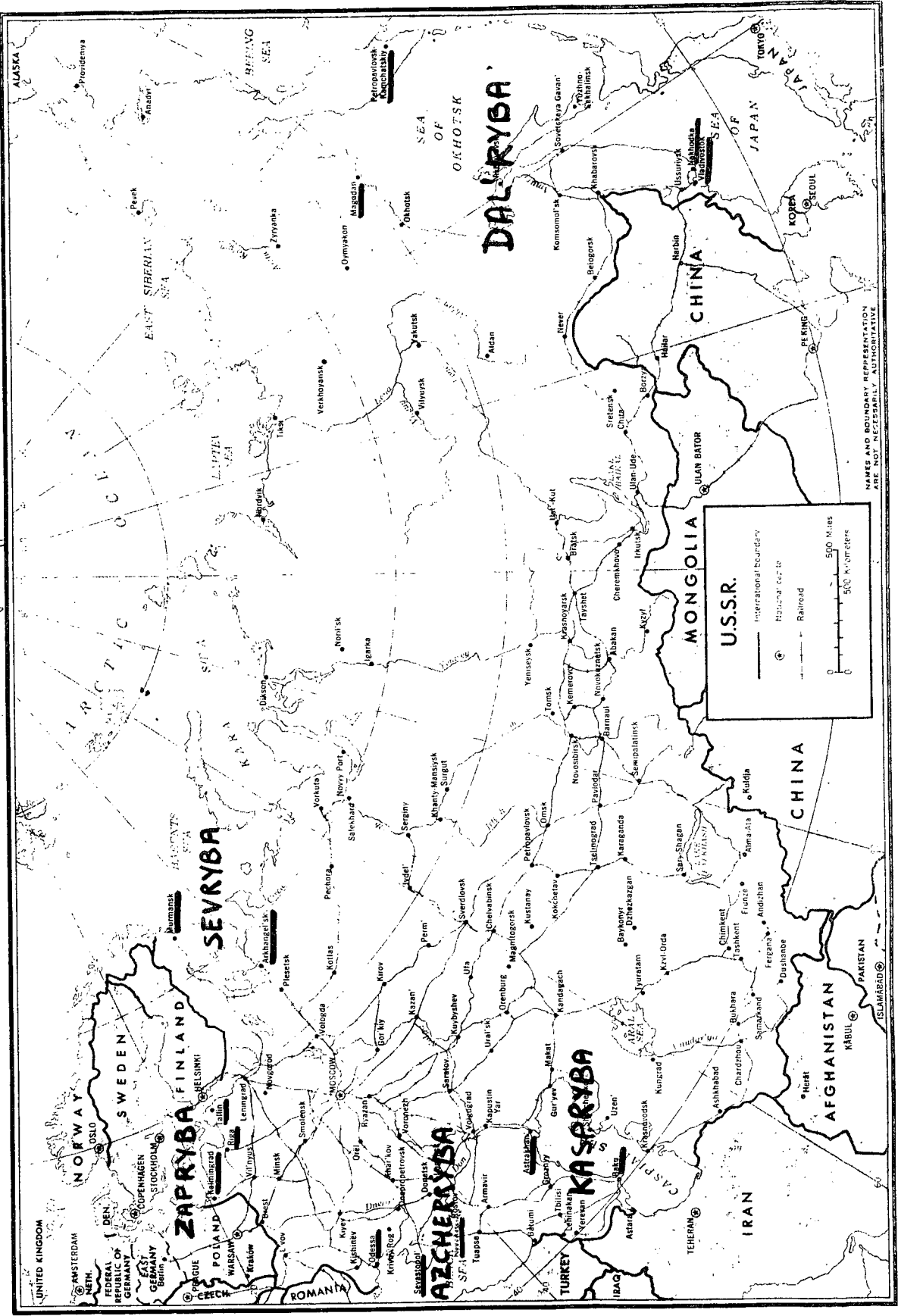
U = All-Union Ministry  
UR = Union Republican Ministry

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N A T O C O N F I D E N T I A L

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MAP 1: The five Soviet "Basin Directions" for sea-fishing.



N A T O C O N F I D E N T I A L

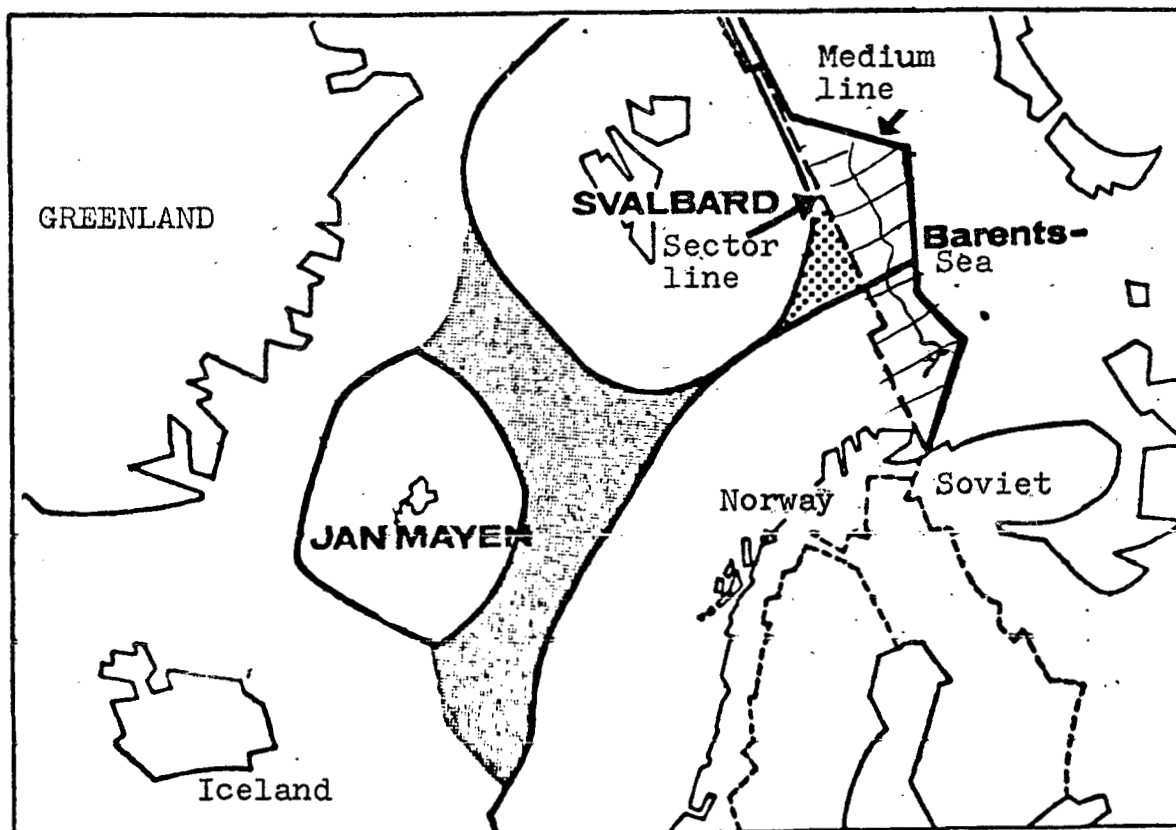


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MAP 2

MAP OF THE BARENTS SEA  
DELIMITATION OF CONTINENTAL SHELF



Source: Approximate map of the area published by the Norwegian paper Aftenpost.

STATISTICAL NOTE ON  
THE FISHING ACTIVITIES OF THE EAST EUROPEAN COUNTRIES

1. For geographical reasons, Czechoslovakia and Hungary being land-locked countries - only four of the six East European countries possess a fishing fleet (vessels of 100 dwt or more). The following table ranks them and includes the USSR for comparison purposes.

Table II.1

Fishing Fleets of the Soviet Bloc Countries  
Thousand dwt 1970, 1974 and 1975

	1970	1974	1975
Poland	231	271	282
GDR	136	147	147
Bulgaria	55	80	104
Rumania	58	96	103
EAST EUROPE	480	594	636
USSR	3,997	5,610	5,937
TOTAL SOVIET BLOC	4,477	6,204	6,573

Source: Lloyd's Register of Shipping, cit., various issues.

2. East European fishing fleets represent around 10% of the Soviet bloc total. Although growing faster in 1975 than the Soviet fleet (7% as against 5.8%), during the five year period 1971-75 their growth was slightly slower and, as a result, their share dropped by one percentage point. However, Bulgaria and Rumania have rapidly built-up their fishing fleets and as a consequence increased their share in the bloc's total, whereas Poland and the GDR registered a decrease in their relative share, as shown in Table II.2.

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TABLE II.2  
1971-75 Annual Growth - Rates of Soviet Bloc  
Fishing Fleets and Country Shares in Bloc Total

	1971-75 % growth	% Share in bloc total	
		1970	1975
Poland	4.1	5.2	4.3
GDR	1.6	3.0	2.2
Bulgaria	13.6	1.2	1.6
Rumania	12.2	1.3	1.6
EAST EUROPE	5.8	10.7	9.7
USSR	8.2	89.3	90.3
TOTAL SOVIET BLOC	8.0	100.0	100.0

Source: Table II.1 above

3. When analysing fish catches, the same ranking of East European countries may be observed as for fleet tonnage, with Poland leading the group and accounting for more than 52% of the total as shown in Table II.3.

Table II.3  
Fish Catch of the Soviet Bloc Countries  
Thousand tons - 1970 and 1974

	1970	1974
Poland	469	678
GDR	322	363*
Bulgaria	92*	115
Romania	58	129
EAST EUROPEAN	941	1,285
USSR	7,252	9,236
TOTAL SOVIET BLOC**	8,193	10,521

Source: UN, Statistical Year Book 1975, p. 16

NOTES:   \* FAO estimate  
      \*\* Excluding Hungary

Hungary, though not reported as possessing a "fishing fleet" (vessels of 100 dwt or more) caught in its internal waters some 30 thousand tons of fish in 1974, (1970: 26,000 tons) which could be added to the bloc's total.

4. The East Europe catch has grown faster than that of the USSR (8.1% versus 6.2% in 1971-76), so that its share in the total bloc catch rose from 11.5% in 1970 to 12.2% in 1975. This growth was very uneven, however, being the result of much increased fishing by Poland and Rumania on the one hand, and of sluggish development by the GDR and Bulgaria on the other, as shown in Table II.4 below.

Table II.4  
1971-74 Annual Rates of Growth of Soviet  
Bloc Fish Catch and Country Shares  
in Bloc Total

	1971-1974	% Share in Bloc Total	
	% Growth	1970	1974
Poland	9.7	5.7	6.4
GDR	3.0	3.9	3.5
Bulgaria	5.7	1.1	1.1
Rumania	22.1	0.7	1.2
EAST EUROPE	8.1	11.5	12.2
USSR	6.2	88.5	87.8
TOTAL SOVIET BLOC*	6.5	100.0	100.0

Source: Table II.3 above

NOTE: \* Excluding Hungary

5. The productivity of the Soviet Union's fishing fleet is lower than that of the four East European countries, together, or than that of Poland and the GDR. In 1974 it was only 66% of that of Poland, 67% of that of the GDR and 76% of that of Eastern Europe as a whole.

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TABLE II.5

Soviet Bloc Fishing Fleet Productivity  
(Tons of catch/dwt of vessels)

1974

Poland	2.50
GDR	2.47
Bulgaria	1.44
Rumania	1.34
EAST EUROPE	2.16
USSR	1.58
TOTAL SOVIET BLOC	1.70

Source: East Europe: Tables II.1 and II.3  
USSR: Table 12 of text

6. However the productivity of Eastern Europe fares poorly in comparison with that of the West (see Table 12 of the text) and stands exactly at one-third of the world average, which means that it is not very efficient, and that possibly some of its fishing boats are used for purposes other than fishing.