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Status of Fisheries and Research Carried out in Subarea 1 and off East Greenland in 1972

by

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I. Pertinent Documents

This summary is based on Research Reports by the following ICNAF Member Countries (1973 Summ.Doc. No. in brackets):

Canada (14), Denmark (19), France (13), Fed. Rep. Germany (20), Norway (12), Poland (27), Portugal (24), Spain (29), USSR (22), UK (15) and USA (26). Also Res.Doc. 73/53 and 73/111 contain information on research carried out in the Subarea in 1972.

Other pertinent documents for this summary are: Summ.Doc. 73/17 with addendum: 1972 catch statistics; Summ.Doc 73/3: German Dem. Rep. Statistics 1969 and 1970; Summ.Doc. 73/7: Report of the Joint ICES/ICNAF Working Party on North Atlantic Salmon.

Work on salmon and seals is not considered in detail in this summary, and documents containing information on salmon or seals solely are, therefore, not listed here.

II. Status of the Fisheries

A. Subarea 1

Table 1 gives the nominal catches by species or group of species for the last five years. Table 2 shows for the same years total catches and catches of cod by countries.

Table 1. Nominal catches from Subarea 1 (thousands of metric tons) by principal species (excl. mammals). (Figures from ICNAF Statistical Bulletin, Summ.Doc. 73/3 and 73/17 with addendum.)

	1968	1969	1970	1971	1972
All Species	408	235	146	150	139
Cod	382	215	113	121	111
Redfish	9	4	4	3	3
Grenadiers	Ø	Ø	6	4	2
Flounders and other groundfish	10	6	8	7	9
Salmon	1	2	2	3	2
Prawns	6	7	9	9	9
Other species	Ø	1	4	3	3

Table 2. Nominal catches from Subarea 1 (thousands of metric tons) by countries. Only countries with more than 500 tons total catch are shown separately. (Figures from ICNAF Statistical Bulletin, Summ.Doc. 73/3 and 73/17 with addendum.)

Country	All species (excl. mammals)					Cod				
	1968	1969	1970	1971	1972	1968	1969	1970	1971	1972
Denmark (F)	46	19	8	17	11	46	18	8	16	10
Denmark (G)	33	38	37	37	41	21	24	20	19	23
France	47	25	5	4	6	47	25	5	4	6
Fed.Rep. Germany	145	83	45	43	20	133	79	41	41	17
Norway	40	19	7	8	33	39	18	6	6	32
Poland	1	Ø	-	-	Ø	1	Ø	-	-	-
Portugal	33	16	9	6	8	33	16	9	6	8
Spain	22	24	19	23	13	22	24	19	22	13
USSR	2	Ø	8	5	4	2	Ø	1	Ø	1
UK	10	1	4	3	1	10	1	3	2	1
Non-members	29	10	5	3	Ø	28	10	2	3	Ø
Total	408	235	146	150	139	382	215	113	121	111

Total nominal catch in 1972 decreased from 150,000 tons in 1971 to 139,000 tons. The decline is due mainly to a further decline in catches of cod.

For total catch as well as for catches of cod the 1971 and 1972 figures are the lowest so far recorded in ICNAF's statistics. Catches of cod have decreased abruptly after 1968 to about 30% of the level in the mid-1960's.

Catches of species other than cod have remained more constant. After cod the most important species (in terms of weight) were prawns, wolffishes, Greenland halibut and redfish.

As shown in Table 2 the changes in catches over the last five years have varied greatly between countries. An abrupt decrease in catches to 10-15% of the 1968 level is noted for France, Fed. Rep. Germany, UK and non-members, whereas a less severe decline (1/3 - 1/2 of the 1968 level) occurs for Denmark (F), Portugal and Spain. Norwegian catches showed the same trend up to 1971 but increased again in 1972. Denmark (G) solely has shown a slight increase in total catches over the period with rather stable catches of cod. This steady level has, however, been maintained only by an increase in effort (introduction of large stern trawlers).

The Research Report by Fed. Rep. Germany and that of the UK indicate a drastic decline in catch per day and hour respectively, whereas Norwegian catch per day has increased. The general impression is, that stock size has declined further since 1971.

The Portuguese cod catch is reported to have been taken solely by gillnets. Attention is drawn to the age and size composition of this catch as compared to that by trawlers (see Section III,E,3).

The overall decline in cod catches in the years since 1968 is as stated last year due to a combination of adverse conditions for fishing and a reduced stock following several years of poor recruitment. The year-class 1968 is expected to

contribute the major part of the catches in 1973-76, but year-classes following the 1968 year-class are regarded as poor, and assessments point to a further decrease in stock size the next 2-3 years

B. East Greenland

Nominal catches from waters off Southeast Greenland in the last five years are shown in Table 3.

Table 3. Nominal catches from Southeast Greenland (thousand metric tons). (Figures from 1972 Meeting Proceedings No. 3, App. II and Res.Doc. 73/20.)

Country/Year	Total					Cod					Redfish				
	68	69	70	71	72	68	69	70	71	72	68	69	70	71	72
Fed.Rep. Germany	26	41	31	44	30	10	14	14	29	22	15	25	16	14	7
Iceland	13	9	7	-	-	7	4	5	-	-	6	4	1	-	-
Other nations	1	1	1	1	1	1	1	1	1	1	Ø	Ø	Ø	Ø	Ø
Total	40	51	39	45+	31+	18	19	20	30+	23+	21	29	17	14+	7+

The relative importance of cod compared to redfish in catches off Southeast Greenland has been further strengthened with catches of both species declining from 1971 to 1972.

For the Fed. Rep. Germany the East Greenland catches of cod are for the first time higher than those in Subarea 1, but also at East Greenland the German catch per day has declined from 1971 to 1972.

III. Research Work

Research work in Subarea 1 in 1972 is reported by Canada, Denmark, France, Fed. Rep. Germany, USSR and UK. Portugal reports sampling of commercial catches. In addition, personnel from Norway and USA participated in the International Salmon Tagging Experiment.

A. Hydrography

(Canada, Denmark, France, Fed. Rep. Germany, USSR and UK)

Hydrographic studies have been carried out in all divisions but with the best coverage in Div. 1D.

Res.Doc. 73/53 summarizes work carried out by Denmark, Fed. Rep. Germany and the UK.

Very cold conditions were found on the Fylla Bank section in the upper 100 m in April, June and July as a result of a strong winter cooling and inflow of cold polar water from the East Greenland polar current. This indicates that the 1972 cod year-class will probably be poor.

Over the banks in Div. 1C and 1B the temperatures were very low in the upper 100 m in July.

In December the winter cooling had caused negative temperatures in the upper layers on all hydrographic sections deepest in the northern part of the Subarea, whereas in the deeper layers relatively high temperatures were found. In the core of the Irminger component of the current temperatures exceeding 5°C were found as far north as Section IV (about 67°N lat.).

Surface temperatures in the West and South Greenland area are now back at the level of the mean value for the years 1876-1915, and the climatic jump back to cold conditions has been just as sudden as the rise in temperatures in the twenties.

Research vessels participating in the International Salmon Tagging Experiment off West Greenland and in the Labrador Sea carried out hydrographic work on most fishing stations. The material will be worked up by the ICES hydrographer. France reports that as well as temperature readings and collection of water samples also clarity measurements were made on some stations.

B. Ice observations

(Denmark, Fed. Rep. Germany)

The occurence of polar ice (Storis) was much more sparse than during the preceeding three severe ice seasons. However, local formation of coastal ice was favoured by cold, calm weather, especially in southernmost Greenland and in the Disko Bay.

The Environmental Subcommittee of STACRES has had a special session on ice at the 1973 Annual Meeting. Attention is drawn to the Report of that Subcommittee (Appendix to 1973 STACRES Report).

C. Other environmental studies

Canada reports that surface particulate petroleum surveys were carried out on an opportunity basis.

D. Plankton

(Denmark, France, UK)

The Continuous Plankton Recorder surveys operated from the Oceanographic Laboratory, Edinburgh, on commercial vessels covered 2,500 miles in Subarea 1 in 1972. Attention is drawn to Res.Doc. 73/78 summarizing results of the surveys for the period 1961-1971. In 1972 numbers of adult Calanus finmarchicus were above average in the oceanic part of the subarea but lower than usual in the coastal regions. Numbers of redfish larvae were low as in 1971.

Displacement volume in Danish plankton samples reported to be relatively low in the years 1969 to 1971 was even lower in 1972, on the Fylla Bank section (Div. 1D) in July the average was the lowest in the 1961-71 period.

France collected samples by Hensen net during the International Salmon Tagging Experiment.

E. Cod

(Denmark, Fed. Rep. Germany, Portugal, USSR and UK)

1. Eggs and larvae (Denmark)

Observations in the spawning period were very limited. Very few eggs were found, but the material does not permit any judgement of the magnitude of the spawning.

Observations on cod larvae in the plankton in June and July showed larvae to be very scarce. None at all were observed on the Fylla Bank section, whereas a very limited number were found in Div. 1C and 1B.

The number of larvae suggest that the 1972 cod year-class at West Greenland is poor.

2. Young fish (age-groups I, II and III)

(Denmark, Fed. Rep. Germany and UK)

Very limited information exist for 1972 in Danish samples from inshore pound net catches.

Groundfish surveys conducted by Fed. Rep. Germany and the UK (Res.Doc. 73/111) revealed only small quantities of pre-recruit cod. Due to lack of any time series the results are not giving much information on the strength of the 1969-71 year-classes.

3. Composition of commercial catches

(Denmark, Fed. Rep. Germany, Portugal, USSR)

Length and age composition reported by Denmark, Fed. Rep. Germany and USSR shows some general trends supposed to be representative for the catches by otter trawls in the Subarea. Generally, however, German samples seem to contain relatively older fish than samples by Denmark and USSR. Whether this is due to difference in patterns of fishing or due to more or less discarding before sampling

is not known. However, the general trend is, that in northern divisions (Div. 1B-1D) the 1965-1968 year-classes dominate, while there is a nearly complete lack of 1963 and 1964 year-classes.

In the southern divisions (Div. 1E-1F) the 1961-64 year-classes dominate with the 1963 year-class as the most important one. However, 1965-68 year-classes also occur in these divisions.

Compared to the situation in 1971 the 1965 and 1966 year-classes are more widely distributed in the Subarea (they were mainly in the northern part in 1971), whereas it is still characteristic that the 1963 and 1964 year-classes are nearly lacking from Div. 1D and northwards.

The 1968 year-class recruited gradually to the exploited stock in 1972. Its relative strength in the samples depends partly on the selectivity in gear used, in discards before sampling and on time of the year when sample was taken, but there is no doubt that this year-class is by far the most important - or in other words the only important - of the younger year-classes to make up catches in the mid-1970's. It seems to be rather evenly distributed throughout the Subarea. There is, however, indication that its growth rate differs between divisions, being better in the north than in the south. This tendency to a slower growth rate in southern divisions has been shown to be a general trend for most age groups (Res. Doc. 73/38 and 73/108).

In the first half of 1973 Danish otter trawl catches in Div. 1C-1D seem to have a very strong predominance of the 1968 year-class.

Off East Greenland, German catches in 1972 showed the 1963 year-class to be the most important one, while the formerly very important 1961 year-class now seems to be vanishing.

The Portuguese catch at West Greenland was caught exclusively by gillnets. Evidently this gear exploits much older and larger fish than do otter trawls. Samples were taken in Div. 1C in June - August and showed predominance of the 1965 year-class followed by the 1961 and 1960 year-classes formerly very important but now of minor importance in the trawlers' catches. Mean length in the samples was as much as 85 cm.

4. Tagging (Denmark, USSR)

Denmark tagged 930 cod in Div. 1D. Of these 605 were small cod tagged mainly inshore. USSR tagged 400 cod in Div. 1D.

5. Other studies on cod (UK)

Serological studies of cod to assist quantitative estimates of the link between cod at Greenland and at Iceland were carried out by the UK in the West Greenland area in March.

F. Grenadiers (USSR)

Measurements of roundnose grenadier from the western part of Div. 1C on the southern slope of the Greenland - Canada ridge in depths of 600-800 m are reported by the USSR. Males seem to be more abundant and smaller than females. For both sexes the majority of the specimens measured were between 55 and 70 cm with mean length close to 60 cm.

G. Greenland Halibut (Denmark, USSR)

The USSR tagged 44 Greenland halibut in Div. 1C while Denmark has collected samples (length distribution) in Div. 1C and 1D.

H. American Plaice (Denmark, UK)

Denmark tagged 261 specimens in Div. 1C and 1D and collected otoliths and information on length and weight by sex. The UK measured more than 10,000 specimens

during the groundfish survey mentioned in Section I.

I. Other Groundfish (Fed. Rep. Germany, UK)

The Fed. Rep. Germany and the UK undertook a joint groundfish survey in the Subarea in November - December. Unfortunately the rough grounds seem to make a stratified random scheme very difficult if not impossible. However, due to the extreme variations in hydrographic conditions it may prove possible to develop a scheme based on standard stations operated at times of the year when some of the more important species (e.g. cod) will be found in deeper water where better conditions for trawling exist.

The UK report of the survey (Res.Doc. 73/111) contains some information on species other than those mentioned in Sections E-H, e.g. wolffishes, redfish and halibut.

J. Atlantic Salmon

(Canada, Denmark, France, Norway, UK and USA)

The International Salmon Tagging Experiment organized by the Joint ICES/ICNAF Working Party on North Atlantic Salmon resulted in 2,364 salmon being tagged at West Greenland and in the Labrador Sea. For further details, see Summ.Doc. 73/7.

Denmark has completed a two years survey of Greenland freshwater systems aimed at elucidating the possibilities of planting salmon in Greenland. Most major rivers (78 altogether) between Holsteinsborg and Cape Farewell have been investigated. Unfortunately it seems clear that the possibilities of introducing salmon in rivers other than the only one in which it is already found are extremely limited. Lack of suitable spawning areas is one of the major hindrances together with climatic and practical difficulties.

K. Crustaceans (Denmark)

Routine samples of deep-sea prawn (Pandalus borealis) have been collected in Div. 1C and 1D, and trap fishing experiments for the crab Chionoecetes opilio have been conducted in inshore waters of Div. 1D.

L. Seals (Denmark)

Research on seals in the Subarea is reported to Panel A Advisers in Summ. Doc. 73/19 and Res.Doc. 73/54.