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Denmark (Greenland) Research Report for 1985

by

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This report contains information on the fisheries by Greenland vessels and on research carried out by Greenland Fisheries and Environment Research Institute (Grønlands Fiskeri- og Miljøundersøgelser) in the NAFO Area and at East Greenland (ICES Subarea XIV) in 1985. Such work which is of minor interest to NAFO, e.g. work related to environmental protection is not mentioned. Some of it, namely that related to marine studies is reported to ICES Marine Environmental Quality Committee (Doc. E:1). Various scientists in the institute have contributed to the report. Some information on fisheries by Danish, Faroese and Japanese vessels is also given.

SUBAREA 0

A catch of 2,662 tons of shrimp by Greenland vessels was reported from Subarea 0 for 1985, while Danish vessels caught 203 tons (the figures are provisional and taken from NAFO SCS Doc. 86/1).

Two of the 28 stations operated in the shrimp survey by the R/V ADOLF JENSEN in July-August were on the shrimp grounds adjacent to the major offshore grounds in Div. 1B (NAFO SCR Doc. 86/3).

SUBAREA 1

A. STATUS OF THE FISHERIES

1. General trends

Preliminary statistics for the fisheries in 1985 are given in Table 1. Preliminary figures supplied for the year prior to the NAFO June Meeting are usually very close to the final figures. However, due mainly to the more and more complex fleet composition and the decentralized production and trade, the preliminary figures here supplied for 1985 may differ relatively much from the final figures to be supplied later in the year.

Although the total catch in 1985 was at the same level as that for 1984 there are some trends, which should be mentioned:

Total catch of cod was more than halved as compared to 1984, while catches of shrimp increased to a new high level round 50.000 tons. Increased landings of redfish and Greenland halibut were not sufficient to counterbalance the drastic decline in cod catches.

Salmon catches increased from 297 tons in 1984 to 851 tons in 1985.

Experimental fishing for scallops (Chlamys islandica) has led to an increasing commercial fishery for this species in 1984 and 1985.

2. Cod

a) The fisheries

Total landings of cod decreased dramatically from about 30,000 tons in 1983 over 24,000 tons in 1984 to about 12,000 tons in 1985. Excluding the years around World War 2 these are the lowest landings in record since the opening of the offshore cod fishery in the late twenties.

Landings by trawlers accounted for 50 % of total landings in 1985. Virtually all trawl catches (98 %) were taken in the two southern divisions (1E and 1F). Inshore catches showed a more uniform geographical distribution with highest catches in Div. 1 D .

b) Forecast

Cod landings in 1985 were predominated by the 1979 year class which accounted for 60 % of the total landings by number as well as by weight.

The year classes 1980 and 1981 are both estimated to be very weak and the following year classes 1982 and 1983 are literally non-existing.

The 1984 year class seems, on the other hand, to be a relatively good one. It first showed up in the Icelandic 0-group survey off East Greenland in August 1984 with abundance indices 3 times higher than the good 1973 year class. Later in the same year it was observed in relatively high numbers in the bottom trawl survey conducted by the Federal Republic of Germany off West Greenland. During 1985 it was the dominating year class in the Greenlandic inshore gill net survey, and it was found later in very high abundances in the German bottom trawl survey, 1985.

Also the 1985 year class might turn up as a good one since it has been observed in relatively high numbers in the Icelandic 0-group survey as well as in the German bottom trawl survey.

The 1984 and 1985 year classes will recruit to the fisheries during the years 1988-1990.

Thus, unless a substantial migration into the West Greenland stock should occur no improvement in the fishable stock situation can be expected in the period 1986-1988. Thereafter there seems to be reasonable hopes for an improvement.

3. Shrimp

a) The fisheries

The total nominal catch of shrimp in Subarea 1 in 1985 by Greenland vessels was app. 50,000 tons, of which app. 42,000 tons were taken in the offshore area including 4,349 tons from a trial fishery in the northern Davis Strait. The catch figures are thus about 1/4 higher than in the preceding years.

In contrast to the years before ice did not hamper the access to the main shrimp fishing areas in the Davis Strait, thus the southern part of Div. 1B was open to the fishery from the beginning of the year. In general, the fishing in 1985 took place in the same main areas as earlier; however, more fishing effort was expended in the southern parts than in earlier years (NAFO SCR Doc. 86/10).

The trial fishery in the northern Davis Strait north of 70°52'N, in which 21 vessels participated, took place in June to December.

b) Forecast for 1986

The status of the offshore shrimp stock in Subarea 1 was assessed by the Shrimp Working Group of STACFIS in January 1986. Data presented at the January meeting indicated continued stability in shrimp abundance since 1982, and it was therefore advised that the overall TAC in 1986 for the offshore fishing grounds in Subarea 1 and adjacent parts of Subarea 0 should not exceed 36,000 tons, which is of the same magnitude as the TAC advised for 1985.

4. Salmon

The reported nominal catches of salmon at West Greenland in 1985 are 851 tons, one ton less than the TAC of 852 set by the Greenland authorities.

The nominal catch in 1985 is about three times higher than the nominal catches in 1983 and 1984, which were 310 and 297 tons, respectively.

The total catch was taken by gill nets, mostly drift nets. No effort data are available, but a comparison between the first two weeks catches for the period 1976 to 1985 could give some indication of the availability of salmon to the fishery. This suggests increased abundance of salmon and/or effort in 1985 relative to 1983 and 1984. The low abundance of salmon in 1983 and 1984, followed by a somewhat higher abundance in 1985, could be explained by low temperatures during the winters 1982/83 and 1983/84, followed by relatively warm temperatures during the winter 1984/85.

5. Capelin.

At West Greenland, capelin are fished inshore and in the spawning season only. Apart from the traditional catch for dogfood and for domestic use a trial fishery on roe-bearing females for the Japanese market took place in 1985. On that occasion 191 tons were landed in Paamiut, (Div. 1E) 50 and tons in Aasiaat (Div. 1A-1B)

6. Redfish

In SA 1 95 tons of redfish were taken by Greenlandic trawlers. (1651 tons were taken by Japanese trawlers, in a joint venture charter arrangement with the Greenlandic HomeRule authorities). The catch was taken offshore as a directed redfish trawl fishery.

7. Greenland halibut

The catch of Greenland halibut increased by 38% to 8955 tons. The fishery for Greenland halibut was mainly an inshore fishery with gill nets and long-lines. A small bycatch occurred in the offshore trawl fishery. The increase is due to an increase in effort in a directed Greenland-halibut fishery as a compensation for the decrease in the pound net fishery for cod.

8. Other fish

Landings of halibut seem to have decreased, probably due to decreased trawl effort for cod since this species is caught primarily as by-catch in the cod fishery. This may also be the reason for the decrease in the landings of redfish by Greenlandic trawlers although a directed fishery for redfish was started in 1985. The increased landings of wolffishes are due to the increased effort in the gill net and long-line fishery for Greenland halibut in which wolffish is an important by-catch.

B. SPECIAL RESEARCH STUDIES

I. ENVIRONMENTAL STUDIES

1. Hydrography.

See NAFO SCR Doc. 86/48

2. Plankton

The standard zooplankton sampling programme was continued in the Davis Strait and Disko Bay in July at the same sections and stations as the hydrographic programme. Half-hour oblique hauls were made from about 50 m depth using stramin net (2 m ring diameter, mesh aperture 1 mm, 225-0 m wire, speed 2 n. miles/hour), and bongo net (60 cm diameter rings, mesh aperture 0.5 and 1 mm, 225-0 m wire, speed 4 1/2 n. miles/hour).

In the Davis Strait sections (Holsteinsborg, Sukkertoppen and Fylla Bank sections) very few cod larvae (one to three) were observed and only on five of the thirteen stations. In the stramin net hauls there was a total catch of 6 larvae in four of the stations and in the bongo net hauls there was a total catch of 5 larvae in three of the hauls. The duration of each haul was 30 minutes.

II. BIOLOGICAL STUDIES

1. Cod

a) Eggs and larvae

The routine sampling of cod eggs and larvae by means of stramin-net hauls on the West Greenland standard hydrographic sections and stations was continued in 1985. The number of cod larvae observed was one of the lowest ever recorded. This can be interpreted as either a limited spawning success off West Greenland or could be caused by a high mortality of eggs and larvae. However, the value of larval indices for predicting subsequent year-class strength for cod off West Greenland is quite questionable due to a large and variable recruitment from outside the area (NAFO SCR Doc. 85/62).

b) Occurrence of pre-recruit cod

A survey using gill nets for estimating distribution and relative abundance of one- and two-year-old cod was carried out in inshore areas of West Greenland during July and August. Due to an engine break-down on the major research vessel, only the area from Nanortalik (Div. 1F) to Nuuk (Div. 1D) was properly covered. In this area the young cod was found almost entirely at the bottom of shallow water down to 10 m. The one year old cod (1984 year class) were dominating the catch and showed a relatively uniform abundance within the area. Two-year-old cod, in contrast, had a very restricted distribution as they were found in some quantities only within the Godthåb Fjord. The geographical distribution and the relative year-class strength found later in the FRG ground fish survey generally confirm this picture with a large 1984 year class and a very small 1983 year class. For further details on the survey, see NAFO SCR Doc 86/--.

c) Cod in commercial landings

The total catch was heavily dominated by the 1979 year class which accounted for 60 % by number as well as by weight of the catch. The formerly important year-class 1977 accounted for 9% only whereas the year classes 1980 and 1981 accounted for 15 % and 8%, respectively.

d) Otolith structure studies

In cooperation with scientists and technicians from the Federal Republic of Germany a study on otolith structures was started in 1984 and continued in 1985. This may lead to a method of separating cod by feeding areas by various ages and thus to a better possibility of quantifying migrations.

2. Salmon

Samples were taken from commercial catches at fish plants in NAFO Div 1B-1E in cooperation with Canadian scientists. Altogether 4700 scale samples and 13000 length samples were taken. Part of the commercial catch was scanned for coded wire micro tags.

3. Capelin

On request of the Greenland HomeRule Administration research on West Greenland capelin was carried out.

The research included investigations on distribution and migration pattern. Furthermore, work on stock dissimulation, maturity and age reading of otoliths was initiated.

4. Other fin fish

Samples for age/length keys of Greenland halibut were taken from commercial landings in Nuuk (Div. 1D, long-line and gill net fishery), Illulissat and Uummannaq (Div. 1A, longline fishery from the ice). Research samples were collected in the autumn in Disko Bay and Uummannaq Fjord with long-lines. Samples in Disko Bugt and Uummannaq Fjord were taken with long-lines. The age readings of the otoliths of the 1985 material has not yet been finished.

Scale samples of redfish by species (S. marinus and S. mentella) were taken from research and commercial catches. Age/length keys are under preparation.

Otolith and vertebrae samples from commercial wolffish landings were collected in Manitsog (Div. 1C) for initiation of age determination of this species.

4. Shrimp (Pandalus borealis)

As in previous years offshore shrimp surveys were carried out mainly around Store Hellefiske Banke and west of Disko, while inshore investigations were limited.

Information on the distribution of the shrimp fishery and catch rates was obtained from logbooks of Greenland trawlers. Size composition of the stock was evaluated based on analysis of shrimp samples from research surveys and commercial trawlers (NAFO SCR Doc. 85/I/3).

Shrimp biomass was estimated by bottom photography in the depth - range 100 - 600 meters in the offshore area from 66°00'N to 69°30'N (NAFO SCR Doc. 85/I/8).

5. Scallops (Chlamys islandica)

In Div. 1B, 1C and 1D scallops were investigated with respect to distribution, abundance, growth and mortality. Only the stock off Kangerluarsussuaq (Div. 1C) was estimated with respect to biomass, which was 750 MT. A TAC of 75 MT was recommended for that area. A total of 255 scallops were tagged at one locality at Kangerluarsussuaq.

6. Marine mammals

Trends in the catch of harp and hooded seals in Greenland in the period 1939-1984 were analysed, and recoveries in Greenland of tagged harp seals were reported (NAFO. SCR Docs 85/I/9 and 85/I/13)

Sampling of biological material from hooded seals was carried out in April-June in South Greenland (Div. 1F).

Collection of tissues from marine mammals for examination of heavy-metal residues was continued in several regions of Greenland.

Shore-based counting of narwhals was repeated in August in the head of Inglefield Bredning, North Greenland (Div. 1A). In late August the count was supplemented by an aerial survey in the same area.

An aerial survey of minke whale and other large whales was carried out in June-July in the Baffin Bay - Davis Strait region (Div. 1A-1E).

EAST GREENLAND (ICES SUBAREA XIV)

A. STATUS OF THE FISHERIES

Provisional figures for the Greenland fisheries in this area (ICES Subarea XIV) show a total of 8,476 tons landed in 1985, more than doubling of the catch of 3,254 tons for 1984. The increase is due mainly to increased catches of redfish (from 10 tons in 1984 to 5,519 tons in 1985, taken exclusively by trawlers), and of shrimp (from 2162 tons to 2596 tons). The increase in the catches of redfish is due to a joint-venture arrangement with Japanese trawlers. Catches of cod decreased drastically from more than 1,000 tons in 1984 to below 100 tons in 1985. Other species were caught in negligible quantities.

The Danish capelin fishery increased from about 8,000 tons in 1984 to about 16,000 tons in 1985. At the same time the Faroese fishery for this species increased from 6,200 tons to 65,000 tons.

B. SPECIAL RESEARCH STUDIES

Sampling of biological material from the catch of hooded seals in the Ammassalik area (65°-66°N) was carried out in July-August.

Table 1. Nominal catches (tons) by Greenland vessels¹⁾ in Subarea 1, 1985 (provisional figures), and the relative changes from 1984 to 1985.

Species	Nom. catch (provisional)	1985	1984
Cod		12,265	24,457
Greenland cod		4,799	4,763
Redfish		1,769	1,027
Wolffishes		1,670	1,598
Grenadiers		32	25
Greenland halibut		8,956	6,509
Halibut		96	152
Capelin		666	1,069
Atlantic salmon		851	297
Arctic char		64	139
Lumpsucker		211	3,176
Herring		1	5
A. plaice		1	1
Dogfishes		0	14
Skates		15	143
Industrial fish and fish not specified		44	6
Shrimp		49,196	39,631
Scallops		900	287
Total		81,534	83,299

1) including non-Greenland vessels in joint-venture arrangements.

Joint-venture catches in 1984 in tons

Cod: 1,638 - Redfish: 862 - Wolffishes: 37 -
Greenland halibut: 30 - Halibut: 8 - Fish not specified: 6

Joint-venture catches in 1985 in tons

Cod: 0 - Redfish: 1,651 - Wolffishes: 12 - Grenadiers: 3
Greenland halibut: 7 - Halibut: 0 - Fish not specified: 8