

Northwest Atlantic



Fisheries Organization

Serial No. N2874

NAFO SCS Doc. 97/11

SCIENTIFIC COUNCIL MEETING - JUNE 1997

Denmark/Greenland Research Report for 1996

by

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This report presents information on catch statistics from the commercial Greenland fishery and on research carried out in 1996 by the Greenland Institute of Natural Resources.

WEST GREENLAND (NAFO SUBAREA 1)

A. STATUS OF THE FISHERIES

1. General trends

Provisional statistics for the fisheries in 1995 and 1996 are presented in Table 1.

Total nominal catches in Greenland waters decreased from 107,538 tons in 1995 to 93,083 tons in 1996. Landings of cod decreased by 45% to 945 tons; landings of shrimp decreased by 12% to 66,333 tons and the catch of 19,153 tons of Greenland halibut in 1996 correspond almost with the landings in 1995. Catches of arctic char, crabs, greenland cod, grenadiers, lumpsucker, redfish, scallops and wolffishes decreased while catches of atlantic halibut, atlantic salmon, shark and capelin and increased.

2. Shrimp

a. The fisheries

The total nominal catch of shrimp by Greenland vessels in Subarea 1 in 1996 was 66,333 tons, of which approximately 28,000 tons were taken in the inshore area.

As normally ice cover hampered the access to the main fishing grounds in Division 1A, 1B and 1C early in the year. In general the fishery took place in the same areas as in earlier years. Most effort was spent in Div. 1B, 1C and 1D. A considerable restructuring of the offshore fleet has taken place in recent years. About 20 vessels (above 75 GRT) participated in the offshore fishery in 1996.

A Standardized combined catch rate index based on logbook data from SA 0+1 showed that the biomass of shrimp in 1989-96 fluctuated without trend, but at a lower level than in 1976-88. The decrease from 1987 to 1989 was coincident with a substantial increase in effort.

b. Forecast for 1997.

Results from a stratified-random trawl survey in the offshore area of Subarea 0+1 in 1996 showed a minor increase in total estimated biomass from the year before. In general biomass estimates from the surveys in the period 1988-1996 indicate stability. The biomass estimate for the northernmost part of the survey area (north of 71°N) was reduced to a very low level in 1996.

Overall size composition of the biomass in 1996 showed the occurrence of several year-classes of smaller shrimp, which will recruit to the fishery in coming years. Especially the 1993 year class seems very abundant and indicate good recruitment to the fishery in coming years. A stratified-random trawl survey in the inshore Disko Bay area showed an increase in total biomass estimate from 1995 to 1996, to the same level as found in the surveys in 1991 and 1992.

Scientific Council advised a TAC of 60,000 tons for the total shrimp stock in inshore and offshore areas in Subarea 1 and adjacent parts of Subarea 0 for 1997. As a specific comment the Scientific Council noted that a catch of 67,000 tons may be sustainable. Greenland set an effective TACs at 64,600 tons for Subarea 1.

3. Greenland halibut.

a. The fisheries.

The total catches of Greenland halibut by Greenland vessels in NAFO Subarea 1 amounted in 1996 to 19,153 tons. This rank with the catches in 1995. Additionally 2,753 tons were taken by foreign vessels (EU, Norway, Faeroe Island and Russia) bringing the total catch up to 21,904 tons offshore. 17,371 tons were taken in inshore areas in 1996. Catches in Division 1A comprised 99.4 % of the inshore catches, amounting to 17,267 tons. Inshore catches in Div. 1B-1F amounted to 105 tons. Offshore catches amounted to 4,527 tons and were mainly taken by trawlers.

The inshore fishery in Div. 1A was concentrated in three areas Ilulissat (7,837 tons), Uummannaq (4,579 tons) and Upernavik (4,579 tons). The fishery was conducted by long lines and gill nets which accounts for 74% and 23%, respectively, 3% was unknown gear.

b. Assessment.

No analytical assessment has been made for either inshore or offshore stock components.

4. Cod

a. The fisheries

Catches have decreased very significantly over the last five years, with yields of 68,000 tons in 1990, the catches declined to 6,250 t in 1992. The decline was mainly caused by an reduction in effort in the offshore groundfish fishery. Catches in 1994 and 1995 amounted to 2,115 and 1,710 tons only. In 1996 the catch decreased further to the record low catch of 945 tons. The low inshore catch was due to decreasing catch rates and a general decline in the local inshore fishing effort directed to cod. The large fishery in recent years was sustained by the very strong 1984 year-class, which according to tag returns and the distribution of young fish is believed to be of Iceland origin. Due to migration and fishery induced mortality this year-class is no longer present in West Greenland waters. The year-classes now dominating the inshore catches are supposedly of local fjord origin.

b. Assessment.

No assessment or forecast is given here but reference is made to the Northwestern Working Group report by ICES, May 1997. Greenland offshore trawl survey, conducted in July-September 1996, showed an extremely low biomass of cod off West Greenland. Total abundance was estimated to be 0.3 million, equivalent to a biomass of 112 tons. These low values are consistent with the findings in the German survey, conducted in the same area, and are also in line with last years estimate. Probability of stock recovery depends only on future recruitment. In view of the severely depleted spawning stock and rare event of drift from Iceland, substantial stock recovery must be considered as very unlikely.

5. Salmon

In 1996, no agreement was obtained in the West Greenland Commission of NASCO on the size of the Greenland quota. However, the Greenland authorities permitted a salmon fishery of up to 174 tons for the 1996 season. The fishery was initiated on August 12, and the season ended on November 11 after a long period with very small catches. The nominal catches amounted to 82 tons, however catches sold directly to local consumers are not included in this. According to the Greenland Homerule these catches mounted for up to 10 tons in 1996, bringing the total landings for 1996 to 92 tons. The majority of the salmon catches was landed in August and September. The total catch was a minor increase compared to the year before. As in recent years the majority of the catch was taken and landed in Div. 1C and 1E (79%). Only very small catches were taken in Div. 1A and 1B.

6. Capelin

The capelin fishery in West Greenland is carried out inshore and in the spawning season only (May-July). The main part of the catches is produced as whole frozen fish for bait and local consumption, while a smaller part is dried and stored as food for sledge dogs in the winter season. The nominal catch of 82 tons was a 21% increase compared to the year before. The majority of the catches were taken in Div. 1A.

7. Redfish

Redfish is mainly taken by offshore trawlers a minor part by smaller vessels inshore. Nominal catch of redfish in 1996 was 862 tons, of which approximately 291 tons were caught in the inshore area.

8. Snow Crab

a. The fisheries

The commercial snow crab (*Chionoecetes opilio*) fishery was initiated on the west coast of Greenland in 1994. The snow crab fishery is conducted by cronical traps.

The total catches of Snow Crabs in NAFO Subarea 1 amounted in 1996 to 740 tons. This is 26% decrease compared to 1995. All catches were taken in inshore areas in Div. 1A, 1 B, 1C 1D and 1E in 1996. Catch in Div. 1B comprised 69% of the total inshore catches.

The inshore fishery in Division 1B is concentrated in the Area around Sisimiut and Asiaat. In the other Divisions the fishery is concentrated around Qeqertarsuaq, Nuuk and Paamiut.

b. Assessment for 1997.

The biological advised for 1997 was a TAC of 3,000 tons for the total snow crab stock in inshore areas in subarea 1.

B. SPECIAL RESEARCH STUDIES

I. BIOLOGICAL STUDIES

1. Shrimp

The series of annual stratified-random trawl surveys initiated in 1988 was continued in 1996. In July-September 168 research trawl hauls were made in the major parts of the distributional area of the West Greenland shrimp stock, including areas in Subarea 0 and the inshore areas in Disko Bay and Vaigat.

2. Greenland halibut.

Offshore length samples were obtained from commercial trawlers. Otoliths were sampled during the annual Greenland shrimp survey and on board a commercial trawler. CPUE data were available from logbooks, while abundance and biomass data were available from the Greenland trawl survey.

Inshore length samples were obtained from the commercial fishery in Ilulissat, Uummannaq and Upernavik in March and August. Otoliths were sampled during the Greenland longline survey as well from the commercial fishery in Ilulissat and Uummannaq.

A longline survey for Greenland halibut in the inshore areas of Ilulissat, Uummannaq, and Upernavik was initiated in 1993. The survey is conducted annually in July/August with the research long line vessel "Adolf Jensen", covering two of the three areas alternately, in order to obtain a CPUE index series for Greenland halibut. In 1996 56 lines with a total of 71,614 hooks were set in the areas around Ilulissat and Uummannaq. Comparing the mean length as well as the CPUE recorded in the surveys in the 60's with the surveys in the nineties a decline was evident for both parameters. However, looking at the surveys between 1993 to 1996 no clear trend in short time is observed.

3. Young Cod survey.

A survey using links of gill-nets with different mesh-sizes has been developed and used since 1985. The objective of the programme is to assess the abundance and distribution of pre-recruit cod in inshore areas of Greenland. Results from this work are presented in the ICES Report of The North-Western Working Group.

4. Salmon.

Biological characteristics (length, weight, and age) were recorded from 3328 samples of commercial catches from NAFO Div. 1C, 1D, and 1E in 1996 using the results of a discriminant analysis to divide samples into North American and European components. The mean lengths, weights and age compositions of the regional components of the catches were used to determine the input parameters for the calculation model for the Greenland quota for 1997.

An analysis of the landing statistics showed a similar size distribution (by weight) in the 1996 catches as in the period 1987-90. The analysis indicated somewhat larger salmon in 1996 than in both 1991 and 1995.

5. Snow crab

A trapping survey were first conducted in 1992 in the inshore areas around Nuuk (1C), Sisimiut (Div. 1B) and Disko Bay (Div. 1A). In 1996 the survey were conducted in Kangaatsiaq (Div. 1B) and Paamiut (1E). The surveys used baited cronical crab traps with large and small mesh. All crabs from each trap catch were enumerated by sex. For each male carapace length, carapace width, Chella heigh, weight and carapace condition was determined. Result from this surveys are presented in the Technical Report of the Greenland Institute of Natural Resources.

6. Icelandic Scallops.

A program conducted by local fishermen for planting out shallops (*Clamys islandica*) was initiated in the inshore area around Nuuk (Div. 1D). In this program small shallops (60mm) was transferred from areas of low growth efficiency, to fished out areas previous filled with large shallops in order to reestablish these fishing grounds. A large amount of the transferred shallops have been tagged by the Greenland Institute of Natural Resources and kept in cages for measuring mortality and growth efficiency.

7. Marine mammals.

a. Small cetaceans.

Studies of white whale and narwhal continued in 1996. Details are being reported to JCCM and NAMMCO.

b. Large cetaceans.

Studies of minke whale, fin whale and humpback whale continued in 1996. Details are being reported to IWC.

c. Seals.

Studies of harp and hooded seals are being reported to the Joint ICES/NAFO Working Group on Harp and Hooded Seals.

GREENLAND FISHERY IN OTHER NAFO SUBAREAS

A. STATUS OF THE FISHERIES

In 1996 5 Greenland vessels were engaged in the Flemish Cap shrimp fishery (NAFO Div. 3M). Total nominal catches amounted to 1,107 tons of shrimp, 2 tons of redfishes, and 5 tons of other species, compared to 2,321 tons of shrimp, 5 ton of redfish, and 6 ton of other spices in 1995.

EAST GREENLAND (ICES SUBAREA Va, XII and XIV)

A. STATUS OF THE FISHERIES

1. General trends

Table 1 shows provisional figures for the Greenland fisheries in ICES Subareas Va, XII and XIV. The nominal catch increased by 96% from 6,1731 tons in 1995 to 13.177 tons in 1996. The increase was mainly caused by a raise in the landings of Capelin. An increase in landings of Greenland halibut, shrimp, grenadiers and wolfishes was also observed, whereas landings of cod, Greenland cod and Atlantic halibut decreased. Minor changes were observed in the landings of other species.

2. Shrimp

a. The fisheries.

The catches by the 15 greenlandic vessels participating in the in this fishery amounted to 4.545 ton in 1996. The geographical pattern of this fishery has changed drastically in recent years. Traditionally the fishery took place primarily between 65°N and 67°30'N, and 26°W and 34°W. Since 1993 and new grounds has been exploited further south and in 1996 almost no catches were taken in the traditional area

The changes in fishing patterns make interpretation of catch rate indices difficult. Catch rates have declined in the traditional area while they have increased in the southern areas.

b. Forecast for 1997

A trawl survey was conducted in the Denmark Strait in 1996. Survey coverage was incomplete due to bad weather and the results are not strictly comparable to earlier years. The biomass index is 50% higher than in 1995 but this value should be treated with caution.

Juvenile and small shrimp were absent in survey samples as well as in commercial samples both from the traditional area and the new fishing areas south of 65°N, stressing that the total area of distribution and recruitment patterns of the stock are still unknown.

Scientific Council advised a TAC of 5,000 tons for the shrimp stock in Denmark Strait in 1997, including the new fishing areas south of 65°N. The total effective TAC in Greenland waters in 1997 has been set to 9,563 tons, of which 4,088 tons is reserved Greenlandic vessels (no effective TAC is set for the Icelandic side of the midline).

3. Capelin

The capelin fishery in East Greenland in 1996 was carried out inshore in the spawning season (May-July) 44 tons), and offshore in the summer-autumn period by vessels from Greenland, EU, Faeroes, Iceland and Norway (235,115 tons). The total nominal catch by Greenland increased from 1.797 tons in 1995 to 7.099 tons in 1996.

B. SPECIAL RESEARCH STUDIES

I. BIOLOGICAL STUDIES

1. Groundfish and shrimp.

A trawl survey covering the main shrimp stock area in Denmark Strait was conducted in September-October with 40 trawl stations. The sampling and biomass estimations were based on the spline methodology using the "Spline Survey Designer Software System".

**Table 1.** Nominal catches (tons) by Greenland vessels at West Greenland (NAFO Subarea 1) and East Greenland (ICES Subarea Va, XII and XIV) in 1995 and 1996 and the relative changes from 1995 to 1996. (\*provisional data, † catches sold directly to local consumers are not included).

Species	NAFO SA				ICES SA		
	Div. 1A, B, C, D, E, F			Div. 3M	Va, XII, XIV		
	Nominal catch 1995 *	Nominal catch 1996 †	% change 1995-96	Nominal catch 1996 *	Nominal catch 1995*	Nominal catch 1996*	% change 1995-96
Arctic char	55	43	-22		14	13	-7
Atlantic halibut	23	34	48		2		
Atlantic salmon	68	82	21		1,797	7,099	295
Capelin	68	82	21		29	5	-83
Cod	1,710	945	-45		3	1	-67
Crabs	998	740	-26		533	1,162	118
Greenland cod	2,525	2,117	-16		14	19	36
Greenland halibut	19,123	19,153	+				
Grenadiers	174	99	-43				
Lumpsucker	448	425	-5				
Polar cod		3	+				
Redfish	908	862	-5	2	140	242	73
Scallops	5,287	1,374	-74		20	2	-90
Shark	47	135	187		4,094	4,545	11
Shrimp	75,444	66,333	-12	1,107	5	12	140
Wolffishes	50	47	-6		80	77	-4
Fish not specified	610	609	-	5			
Sum total	107,538	93,083	-13	1,114	6,731	13,177	96