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**Denmark/Greenland Research Report for 1999**

by

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This report presents information on catch statistics from the commercial Greenland fishery and on research carried out in 1999 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 1998 and 1999 are presented in Table 1. The listed catches from 1999 are an estimate as no official catch figures has been given from Greenland

Total nominal catches in Greenland waters increased from 102,228 tons in 1998 to 109,833 in 1999. Landings of shrimp increased by 8% to 70,167 tons, landings of Greenland halibut in 1999 on 26,899 tons is at the same level as the landings in 1998. The cod fishery increased by 90% to 621 tons and the snow crab fishery increased 109% to 4.373.

Catches of lump sucker and scallops increased while catches of redfish, arctic char, atlantic salmon, capelin, greenland cod, grenadiers and wolffishes decreased.

**2. Shrimp**

The preliminary catch statistics of shrimp by Greenland vessels in Subarea 1 in 1999 is 70,167 tons. 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 fleet has taken place in recent years.

A standardized combined catch rate index based on logbook data from SA 0+1 showed that the biomass of shrimp in 1989-99 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.

Results from a stratified-random trawl survey in the offshore area of Subarea 0+1 in 1999 showed no indication of a significant change in the total stock biomass. The length-frequency distributions in the 1998 and 1999 commercial catches and surveys show good representation of all sizes of males. Males between 14 and 22 mm carapace length are very abundant and are expected to contribute to the female component and maintain the spawning stock biomass. For 2000 Scientific Council repeats last year's advice and recommends that catches of northern shrimp in Subareas 0 and 1 in 2000 should not exceed 65 000 tons.

### 3. **Greenland halibut**

The total catches of Greenland halibut by Greenland vessels in NAFO Subarea 1 amounted to 26,899 tons in 1999. The 1999 level is the same as the 1998 level. Offshore Greenland catches amounted to 2,622 tons and was mainly taken by trawlers. Additionally 2,478 tons were taken by foreign vessels offshore (EU, Norway, Faroe Island and Russia). The total catch offshore in NAFO Subarea 1 was thus 5,100 tons.

The inshore fishery in Div. 1A was concentrated in three areas Disko Bay (10,593 tons), Uummannaq (8,425 tons) and Upernavik (5,258 tons). The fishery was conducted by long lines and gill nets.

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

### 4. **Cod**

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 a reduction in effort in the offshore groundfish fishery. Catches in 1994 and 1995 amounted to 2,115 and 1,710 tons only. In 1996 and 1997 the catch decreased further to 945 tons and 904. In 1999 621 tons were caught. 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.

No assessment or forecast is given here but reference is made to the Northwestern Working Group report by ICES, April 2000. Greenland offshore trawl survey, conducted in July-September 1999, showed an extremely low biomass of cod off West Greenland. 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**

After a steady decline of the abundance of the salmon stock of both European and North American origin during the last decade the estimated pre-fishery abundance reached a historical minimum in 1996. The ICES Working Group on North Atlantic Salmon estimated that the abundance in 1999 would fall below the preliminary set conservation limit in both regions. At its annual meeting in 1999 the West Greenland Commission of NASCO agreed that in 1999 the fishery for salmon in Greenland should be restricted to that amount used for internal consumption in Greenland. This amount has in the past been estimated at 20 tons.

The total nominal catches in 1999 amounted to 19 tons. Due to the closure of the commercial fishery and thus closing of landing to the factories all handling and trade have been made privately or via the open markets. As the fishery and landings have been more scattered than in earlier years some unreported fishery is expected to have taken place.

In recent years only minor catches have been taken in the northern part (Div. 1A and 1B), while Div. 1C 1E have been the most important areas. In 1999 the major part of the reported catches was taken in Div. 1D.

### 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 amounted a total of 64 tons in 1999 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 majority of the catches were taken in Div. 1A.

## 7. Redfish

Redfish is mainly taken as bycatch by trawlers in the offshore shrimp trawlers. Smaller vessels take a minor part inshore landings in 1999 is approximately 98. An EU-German pelagic fishery for oceanic redfish (*Sebastes mentella*) occurred for the first time off West Greenland in 1999. This is probably due to a change in distribution pattern of the pelagic redfish stock in Irminger Sea in a westerly direction as derived from an international hydro-acoustic survey conducted by Iceland, Russia and Germany. By end of the year reported catches from this pelagic fishery of oceanic redfish amounted 154 tons.

## 8. Grenadiers

There are two species of grenadiers of commercial interest in Greenland: roundnose grenadier and roughead grenadier. All catches are however reported as roundnose grenadier. The catch reported is taken as by-catch in the Greenland halibut fishery. The total catch in 1999 was 12 tons, which is a decrease of 37 % compared to the previous year.

## 9. Snow Crab

The total catch of snow crab by Greenland vessels conducted by traps in Subarea 1 in 1999 was 4,373 tons. The total catch in 1999 increased with 109 % compared to 1998, mainly due to introduction of an offshore fishery in 1999. The inshore fishery in Div. 1A was concentrated in two areas Qeqertarsuaq and Aasiasat. In Div. 1B was the fishery mainly concentrated in the inshore area around Sisimiut.

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

## 10. Scallops

The total catches of Icelandic scallops in NAFO Subarea 1 amounted in 1999 to 2,624 tons. This is a 19% increase compared to 1998. All catches were taken in inshore areas in Div. 1A, 1 B, 1C 1D in 1999. The fishery in Division 1A is concentrated along the Disko Island, and the area around Sønder Upernavik. Other areas are found at Attu (1B) and Nuuk (1D).

There is an advised TAC for the major scallop areas (Nuuk, Attu and Disko) at West Greenland of 1800 tons.

## **B. Special Research Studies**

### 1. Environmental Studies

#### a. Hydrographic Studies

A survey of oceanographic stations along the West Greenland standard sections was carried out from 1- 10 July 1999. The climate over Greenland has in recent years been fairly mild due to the low North Atlantic Oscillation (NAO) Index experienced in this period. The oceanographic conditions in the surface showed temperatures 1°C above normal on top of Fylla Bank, while the salinity was slightly above normal. The inflow to Irminger water was relatively weak in 1999 while the modified Irminger water was widely present in the area.

#### b. Recruitment Studies in Davis Strait

A project entitled "Hydrographic and biological processes of importance for variability in recruitment of northern shrimp, copepods and fish in West Greenland water" was initiated in spring 1999. The main objectives of the present project are: 1) to investigate the distributions of *Pandalus* shrimp larvae (*Pandalus montagui* and *P. borealis*) and fish larvae (mainly Greenland halibut) in relation to hydrography and food abundance, 2) to identify the effect of hydrography frontal regimes on larval and juvenile shrimp and fish condition and survival potential and 3) to investigate stomach contents and tracer lipids to establish trophic relationships.

c. Growth and recruitment study of snow crab and northern shrimp in a local fjord in Nuuk area

The project main goal is to follow a local stock of snow crab and northern shrimp in a fjord in Nuuk area for determining the yearly growth, reproductive potential and others biological parameters.

## 2. Biological Studies

a. Shrimp

The series of annual stratified-random trawl surveys initiated in 1988 was continued in 1999. In July-September about 230 research trawl hauls were made in the major parts of the distribution area of the West Greenland shrimp stock, including areas in Subarea 0 and the inshore areas in Disko Bay and Vaigat.

b. Greenland halibut

A Greenland offshore trawl survey for Greenland halibut was initiated in 1997. The survey is a continuing of the joint Japanese / Greenland survey carried out in the period 1987-95. The survey covered NAFO Div. 1C and 1D between the 3 nm line and the 200 nm line. The survey was a stratified random bottom trawl survey. A total of 38 hauls were made in September-October 1999.

A longline survey for Greenland halibut in the inshore areas of Disko Bay, Uummannaq, and Upernavik was initiated in 1993. In 1999 36 settings were carried out in Uummannaq and Disko Bay areas.

c. Young Cod survey

The series of annual gill-net surveys initiated in 1985 was continued in 1999. Results from this work are presented in the ICES Report of the North-Western Working Group in 2000.

d. Snow crab

Trapping surveys were first conducted in 1992 in the inshore areas around Nuuk (Div. 1C), Sisimiut (Div. 1B) and Disko Bay (Div. 1A). In 1999 the survey were conducted in Sisimiut (Div. 1B) and in Disko Bay (Div. 1A) in May/June with the research vessel "Adolf Jensen". The survey used baited traps with large and small mesh. All snow crabs were enumerated by sex, the carapace length, carapace width, chela height, weight and carapace condition was determined.

The objective of the monitoring program is to assess the abundance and distribution of snow crab in inshore areas of Greenland. Results from this survey are presented in the Technical Report Series of the Greenland Institute of Natural Resources.

e. Marine mammals

Studies of white whale and narwhal continued in 1999. Details are being reported to JCCM and NAMMCO. Studies of minke whale, fin whale and humpback whale continued in 1999. Details are being reported to IWC. 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 1999 one Greenland vessel was engaged in the Flemish Cap shrimp fishery (NAFO Div. 3M). Total nominal catches amounted to 579 tons of shrimp.

**Table 1.** Nominal catches (tons) by Greenland vessels at West Greenland (NAFO Subarea 1) in 1998 and 1999. \*\*The nominal catches from 1999 are an estimate as no STATLAND A or B has been given from Greenland. (\*Provisional data)

Species	NAFO SA			
	Div. 1A. B. C. D. E. F			Div 3M
	Estimated catch 1998*	Estimated catch 1999**	% change 1998-99	Estimated catch 1999*
American Plaice		3		
Arctic char	68	24	-65	
Atlantic halibut	22	<1		
Atlantic salmon	11	19	73	
Capelin	21	34	62	
Cod	326	621	90	
Crabs	2.094	4.373	109	
Greenland cod	1.717	1.899	11	
Greenland halibut	26.891	26.899	0	
Grenadiers	19	12	-37	
Lumpsucker	2.143	3.057	43	
Redfish	929	78	-92	
Scallops	2.200	2.624	19	
Shark				
Shrimp	65.169	70.167	8	579
Wolfishes	30	26	-13	
Fish not specified	588	<i>nd</i>		
Sum total	102.228	109.833	7	579