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Norwegian Investigations on Shrimp, *Pandalus borealis*,
in East Greenland Waters in 1983

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INTRODUCTION

The Norwegian quota of shrimp in East Greenland waters in 1983 was 2000 tonnes.

From April fifteen vessels participated in the fishery but due to the ice conditions most of the vessels left the fishing grounds in early May. However, during the summer and autumn some vessels returned to the actual fishing grounds. The telegraphical reported landings are 1643 tonnes. According to the fishing logbooks received so far the data represented in the present paper cover catches of 1149 tonnes only.

Results of field investigations, together with analyses of commercial fishery data for the years 1981 and preliminary catch and effort data for 1982 were reported by Jakobsen and Torheim (1983). The results of investigations carried out in 1983 together with analyses of final catch and effort data for 1982 and preliminary catch and effort data for 1983 are presented in this paper.

MATERIAL AND METHODS

From 20 April to 6 May one of the authors was an observer on board the stern trawler "Lyshaug". The main fishery was carried out south of 66°N (Fig.1).

The shrimp were sorted into "landing" and "discards" after they had been separated from the fish in the catch. Details of the trawl hauls which were examined by the observer are given in Table 1.

Random samples of shrimp catches were taken for length measurements (carapace length to the nearest mm) (Table 2). In addition some length compositions were obtained for by-catches of Greenland halibut (Fig.3), redfish (Fig.4) and cod (Fig.5).

Monthly catch and effort data from 1982 and 1983 are compiled from logbooks of the vessels participating in the fishery. For 1983 preliminary data are available from 11 vessels, accounting for 70 per cent of the landings. (Table 3).

SIZE COMPOSITION OF SHRIMP

Length compositions of shrimp in samples collected by the observer onboard "Lyshaug" are listed in Table 2. The weighted mean length composition (with catch as the weighting factor) is shown in Fig.2. As in 1981 and 1982, large shrimp with modal group around 29 mm carapace length were dominating. As shown in Table 2 very few small shrimp were caught. Most of the discarded shrimp, which amounted to only 0.8 % of the total catch, consisted of broken shrimp of relatively large size (Fig.2).

BY-CATCHES IN THE SHRIMP FISHERY

By-catches of fish in the trawl hauls examined by the observer are listed in Table 1. The category others consisted of small skates, plaice and catfish.

None of the fish were kept except those consumed onboard during the trip. The mean numbers of fish relative to the mean shrimp catch (retained) per tow are given in the table below for the years 1981 - 1983.

Species	Mean number pr. haul		
	1981	1982	1983
Cod	1	23	3
Greenland halibut	86	7	9
Redfish	166	53	47
Others	77	13	5
Total	330	96	64
Nos of hauls observed	39	37	21
Mean shrimp catch (kg)	435	608	346
Nos of fish per kg shrimps	0.76	0.16	0.18

CATCH AND CATCH PER UNIT OF EFFORT

Table 3 shows catch and catch per hour trawling (CPUE) by month in division 14 B for the Norwegian fishery off East Greenland in 1982 - 1983 (CPUE is calculated as total catch/total effort). Fig. 6 shows the trend in CPUE in Div. 14 B by quarters from 1980 to 1983.

In the second quarter the CPUE is lower in 1983 than in 1982. However, the fishing area is very restricted in this period, and the ice conditions in 1983 was even worse than in 1982. It is therefore difficult to compare the CPUE from year to year. The material for the third quarter is too limited for estimating trends in CPUE.

A SCIENTIFIC CRUISE TO EAST GREENLAND WATERS

In November 1983 a cruise to East Greenland waters were carried out with R/V "Eldjarn". R/V "Eldjarn" is a rebuilt purse seiner/ blue whiting trawler with total length 60.3 m.

The bottom trawl used was a shrimp trawl with 30 m headline and 19 m ground-rope. The sweep wires were 40 m long.

Shrimp were only caught in any amount north of 66°N (Fig.7). The greatest catch was 243 kg per hour trawling. However, the coverage of this area was poor because of the ice conditions.

REFERENCE

Jakobsen, T and Torheim, S. 1983. Norwegian Investigations on Shrimp, Pandalus borealis, in East Greenland Waters in 1982. NAFO SCR Doc. 83/I/6.

Table 1. Catches of shrimps and by-catches of fish in some hauls by M/V "Lyshaug" off East Greenland in April-May 1963.

Nos	Date	Time (hr)	Position N W		Direc- tion towed	Towing time (hr)	Shrimp catches				By-catches (Nos)			
							Landings kg.	Discards		Total kg.	Cod	Gre. hal.	Red fish	Others
								kg.	%					
1	20 April	11 ⁰⁰	65°40'	29°50'	180°	1.00	1	0	0.0	1	-	-	-	3
2	20 April	20 ⁰⁰	65°41'	30°02'	10°	2.33	618	5	0.6	623	-	10	10	9
3	20 April	21 ²⁰	65°44'	30°00'	180°	3.00	505	5	1.0	510	11	17	426	2
4	21 April	10 ³⁵	65°41'	30°00'	180°	2.42	5	0	0	5	3	-	-	-
5	22 April	11 ³⁰	65°47'	29°56'	270°	2.25	372	1	0.3	373	-	5	4	-
6	22 April	14 ⁴⁵	65°43'	30°03'	3°	3.75	600	6	1.0	606	2	12	13	19
7	23 April	11 ¹⁰	65°48'	30°01'	160°	2.83	284	4	1.4	288	-	20	30	8
8	23 April	15 ⁵⁰	65°41'	30°02'	360°	2.83	280	6	2.1	286	2	34	47	4
9	23 April	20 ¹⁰	65°50'	30°08'	200°	1.00	1	0	0	1	-	5	7	-
10	1 May	15 ³⁰	65°37'	30°49'	80°	3.33	222	4	1.8	226	4	2	42	10
11	1 May	22 ⁵⁰	65°40'	30°23'	10°	2.50	130	1	0.8	131	25	2	212	6
12	2 May	14 ²⁵	65°40'	30°12'	45°	3.33	504	4	0.8	508	1	13	21	7
13	2 May	18 ⁴⁵	65°46'	29°57'	230°	3.25	805	6	0.7	811	-	5	23	4
14	2 May	23 ²⁰	65°39'	30°05'	360°	3.00	934	10	1.1	944	-	7	19	2
15	3 May	05 ¹⁵	65°44'	30°01'	110°	3.05	660	2	0.3	662	1	13	12	19
16	3 May	10 ⁰⁰	65°44'	29°59'	260°	3.00	494	5	1.0	499	1	8	9	3
17	3 May	15 ²⁵	65°40'	30°13'	330°	3.00	220	0	0	220	2	14	7	1
18	5 May	04 ⁴⁵	65°35'	30°51'	240°	2.50	70	0	0	70	-	2	19	-
19	6 May	10 ¹⁰	65°38'	30°06'	360°	4.00	325	2	0.6	327	-	2	19	4
20	6 May	15 ¹⁵	65°49'	30°01'	200°	4.25	160	0	0	160	1	9	14	1
21	6 May	21 ³⁰	65°42'	30°15'	180°	1.75	80	0	0	80	1	0	60	2

Table 2. Length composition of random samples from shrimp catches by M/V "Lyshaug" off East Greenland in April-May 1983. (Numbers in heading refer to tow numbers in the first column of Table 1).

Carapace-length (mm)	2	3	5	6	7	8	10	12	15	19	Total
21	-	-	-	-	-	-	1	-	-	-	1
22	-	-	-	-	-	-	0	-	-	-	0
23	1	1	1	2	-	-	1	2	-	1	9
24	0	1	0	0	2	-	1	0	-	1	5
25	2	1	1	0	2	-	1	1	1	1	10
26	1	1	6	4	4	3	7	1	1	0	28
27	8	10	13	18	12	14	14	19	16	12	136
28	44	32	38	37	42	48	43	41	42	53	420
29	54	64	50	69	58	49	52	54	63	56	569
30	55	48	43	34	34	39	44	36	51	40	424
31	21	22	26	21	22	23	20	28	16	20	219
32	9	9	14	10	14	19	8	14	7	13	117
33	5	7	7	2	10	3	7	3	2	1	47
34	0	4	2	3	0	1	1	1	1	2	15
35						1					1
Total	200	200	201	200	200	200	200	200	200	200	2001

Table 3. Catch (metric tons) and catch per hour trawling (CPUE) in division 14B in 1982 and 1983^{a)}.

Month	1982		1983	
	Catch	CPUE	Catch	CPUE
Mar	305	0,197	-	-
Apr	761	0,171	350	0,128
May	828	0,248	367	0,255
Jun	-	-	257	0,143
Jul	-	-	6	0,133
Aug	-	-	61	0,098
Tot	1896	0,203	1041	0,157

^{a)} Data for 1983 cover 70% of total landings

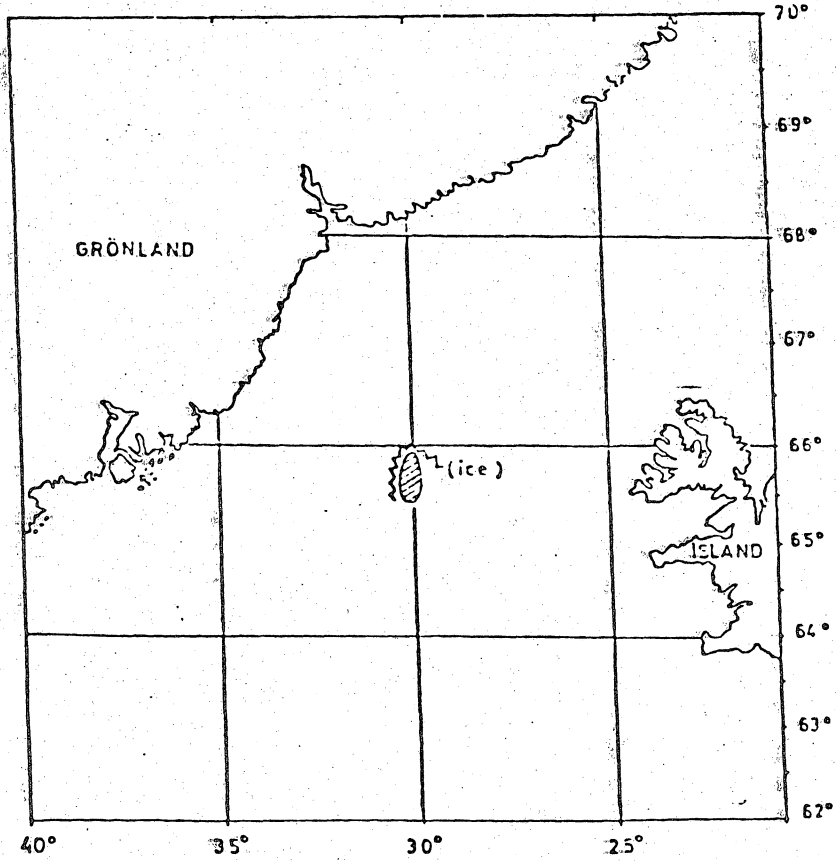


Fig. 1. Hatched area: Area fished by M/V "Lyshaug" during the stay of the observer in April - May 1983.

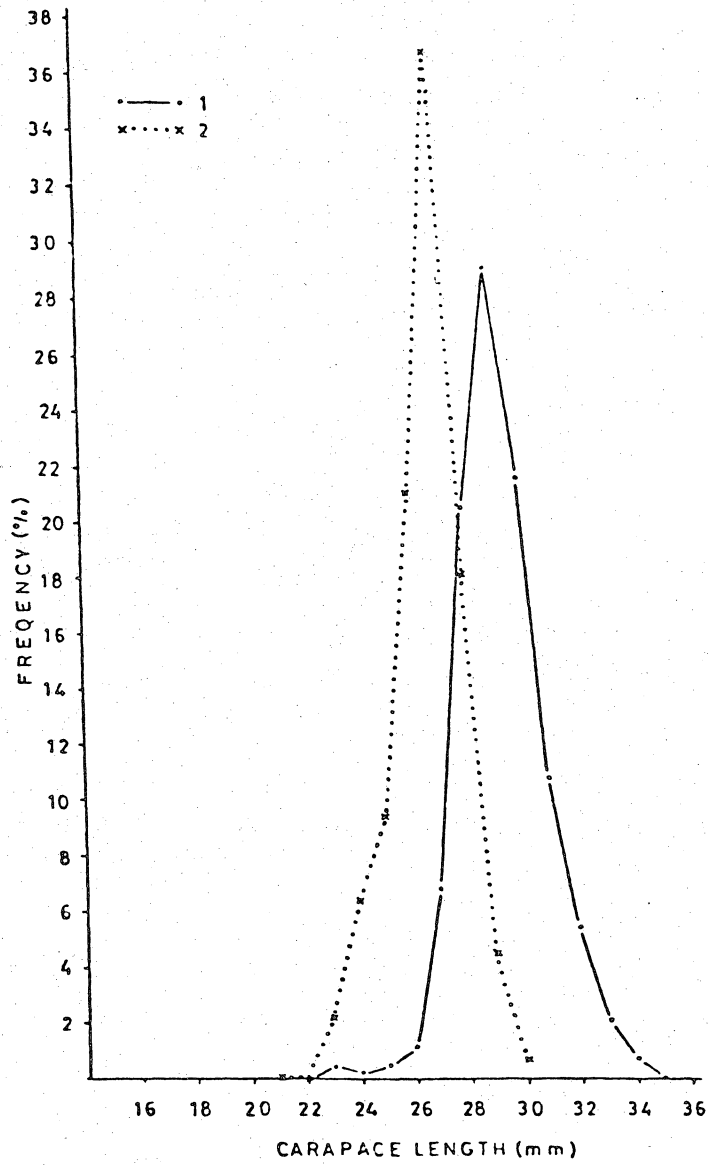


Fig. 2. Weighted mean length composition of shrimp from samples taken off East Greenland in April - May 1983. 1) Landed shrimp 2) Discarded shrimp.

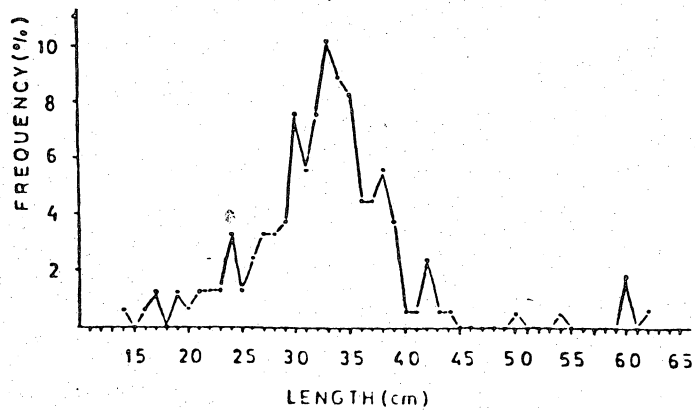


Fig. 3. Length composition of Greenland halibut taken as by-catch with shrimp off East Greenland in April - May 1983.

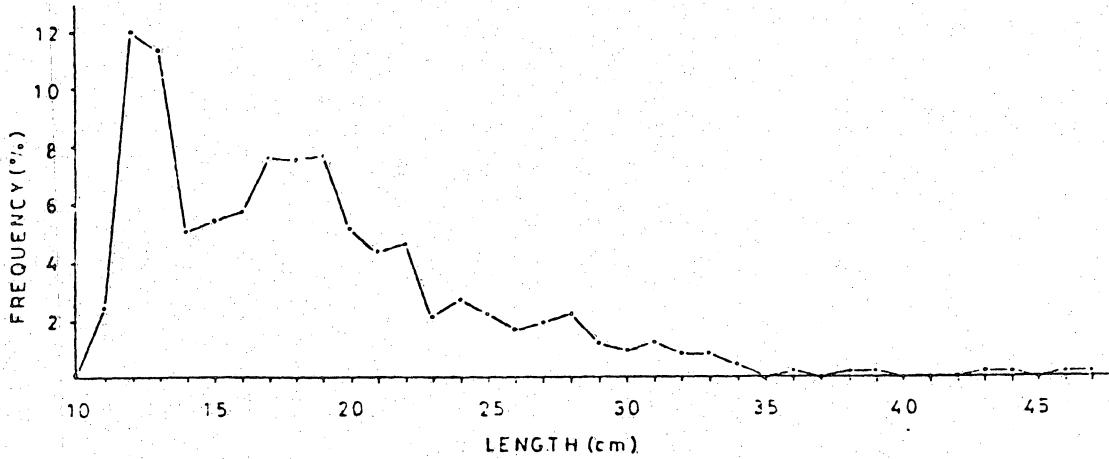


Fig. 4. Length composition of redfish taken as bycatch with shrimp off East Greenland in April - May 1983.

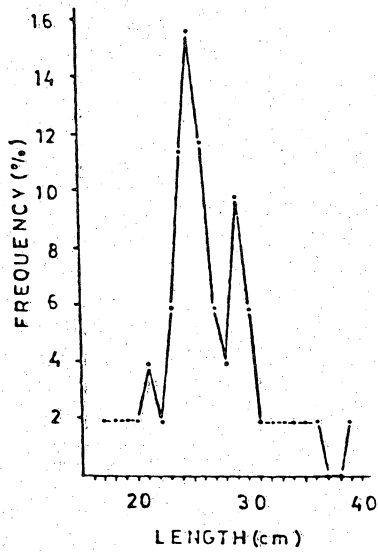


Fig. 5. Length composition of cod taken as bycatch with shrimp off East Greenland in April - May 1983.

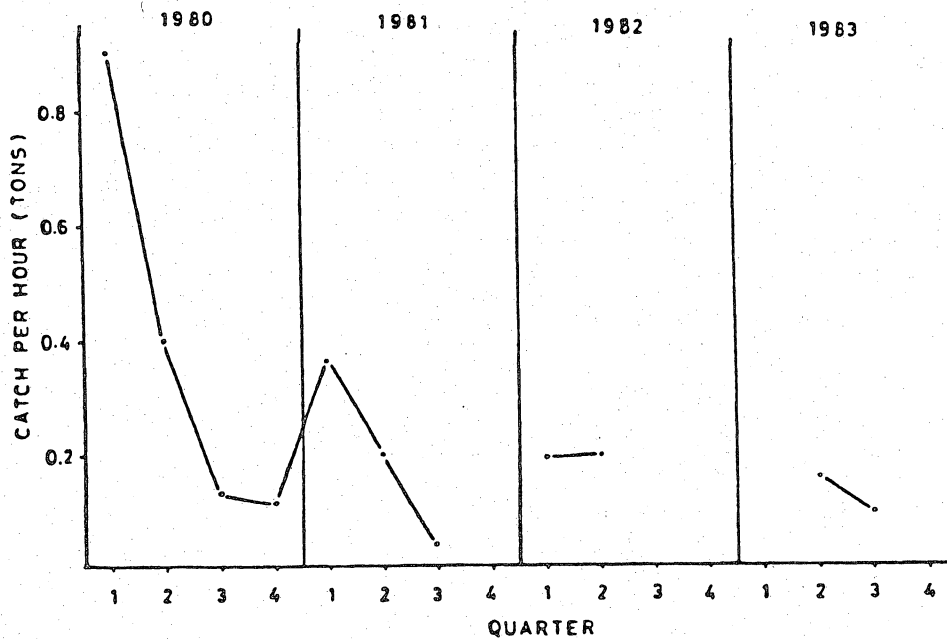


Fig. 6. Quarterly mean shrimp catch per hour trawling by Norwegian vessels in Div. 14 B 1980 - 1983.

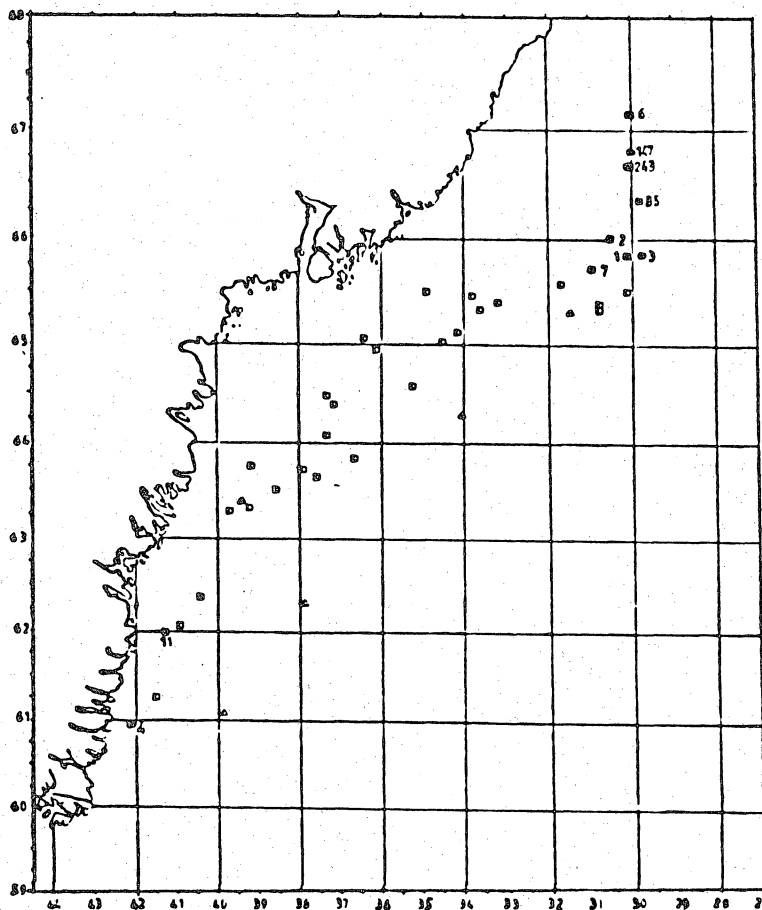


Fig. 7. Trawl stations taken by F/F "Eldjarn" in November 1983. Filled squares: bottom trawl stations with shrimp in the catch, open squares: bottom trawl stations without shrimp, triangles: pelagic trawl stations, numbers: kg shrimp per hour trawling.

