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Investigations on Shrimp (*Pandalus borealis*) in the
Norwegian Fishery off East Greenland in 1985

by

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INTRODUCTION

The Norwegian quota of shrimp in East Greenland waters in 1985 was 2050 tonnes. From 7 March to 15 May, 20 vessels participated in the fishery. According to fishing logbooks received so far the data represented in the present paper cover catches of 1473 tons.

Results of field investigations, together with commercial fishery data for the years 1983 and preliminary catch and effort data for 1984 were reported by Smedstad and Torheim (1985). The results of investigations carried out in 1985 are presented in this paper.

LOCATION OF THE FISHERY

Due to good ice conditions the fishery was spread over a larger area north and south of 66° N and about 30° W compared to earlier years. From 15 March to 25 April one of the authors was on board the sterntrawler "Lyshaug". The best concentration of large shrimp were, as in earlier years, found south of 66° and the main fishing area of "Lyshaug" was located in this area at depths ranging from 360-412 m.

MATERIAL AND METHODS

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

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

Monthly catch and effort data from 1983 to 1985 are compiled from logbooks of the vessels participating in the fishery. For 1985 preliminary data are available from 18 vessels accounting for 72% of the landings.

SIZE COMPOSITION OF SHRIMP

Length compositions of shrimp in samples collected by the observer on board "Lyshaug" are listed in Table 2. The weighted mean length compositions (with catch as the weighting factor) are shown in Fig. 2. Shrimp with modal group around 30 mm carapace length were dominating. As shown in Table 2 some small shrimp were caught.

On an average the samples consisted of 10% males, 1.6% transitionals, 0.3% females without roe, 21.1% with head roe and 67% were eggbearing (23% (Br+E), 44% (BR + E/HR)).

DISCARD

The discard varied from 0.1% to 7.8% of the total catch (Table 1). On an average 2.3% of the total catch was discarded. The discarded shrimp consisted mostly of broken shrimp of relatively large size (Fig. 2).

CATCH AND CATCH PER UNIT EFFORT

Table 3 shows catch and catch per hour trawling (CPUE) by month in Div. XIV B for the Norwegian fishery off East Greenland from 1982 to 1985. The quarterly CPUE in Div. XIV B for the period 1980 - 1985 are shown in Fig. 6.

It is only for the second quarter data exist for all years. In this quarter the CPUE has not shown any significant change in the period 1981 - 1985.

BY-CATCHES IN THE SHRIMP FISHERY

By-catches of fish in the trawl hauls of "Lyshaug" examined by the observer are listed in Table 1. None of the fish were kept on board. The mean number of fish relative to the mean shrimp catch (retained) per tow are given in the table below for the years 1982 - 1985.

Species	Mean number per haul			
	1982	1983	1984	1985
Cod	23	3	3	3
Greenland halibut	7	9	120	7
Redfish	53	47	87	74
Others	13	5	3	17
Total	96	64	213	101
Nos of hauls observed	37	21	19	40
Mean shrimp catch (kg)	608	346	880	732
Nos of fish per kg shrimp	0.16	0.18	0.24	0.13

REFERENCE

Smedstad, O.M. and Torheim, S. 1985. Norwegian Investigations on shrimp (Pandalus borealis) in East Greenland Waters in 1984. NAFO SCR Doc.85/1/7.

Table 1. Catches of shrimp and by-catches of fish in some trawl hauls by M/V "Lyshaug" off East Greenland in March-April 1985.

Nos	Date	Time (hr)	Position		Direction towed	Towing time (hr)	Shrimp catches				By-catches (Nos)			
			N	W			Landings		Discards	Total	Cod	Gre. hal.	Red fish	Other
							kg	%						
1	15 March	0330	65°51'	30°00'	180°	3.50	488	8	1.6	496	-	17	230	44
2	15 March	0810	65°43'	30°00'	360°	3.50	1780	64	3.5	1844	-	5	37	-
3	15 March	1240	65°48'	30°00'	160°	4.00	1430	30	2.1	1460	1	-	31	13
4	16 March	0316	65°44'	30°06'	35°	3.00	1180	10	0.8	1190	24	14	360	85
5	18 March	1245	65°48'	30°00'	170°	4.00	524	3	0.6	527	-	1	2	3
6	18 March	1745	65°43'	30°04'	350°	3.50	605	1	0.2	606	1	20	74	3
7	19 March	1430	65°43'	30°09'	360°	3.00	893	2	0.2	895	-	9	11	-
8	19 March	1840	65°49'	30°10'	180°	4.00	585	3	0.5	588	3	8	301	34
9	20 March	0530	65°50'	30°07'	180°	4.00	413	1	0.2	414	4	12	174	5
10	20 March	1600	65°49'	30°07'	165°	4.00	609	1	0.2	610	2	5	62	-
11	21 March	1630	65°49'	30°07'	170°	4.00	710	2	0.3	712	2	6	30	-
12	21 March	2135	65°45'	29°57'	340°	1.00	740	1	0.1	741	4	-	360	42
13	22 March	1600	65°40'	30°00'	12°	4.00	122	1	0.8	123	2	-	40	15
14	23 March	0745	65°46'	30°00'	255°	4.00	575	2	0.3	577	1	7	-	2
15	24 March	0445	66°10'	30°02'	358°	3.00	334	2	0.6	336	45	5	50	2
16	25 March	0215	65°42'	30°01'	358°	4.00	890	3	0.3	893	7	8	-	97
17	25 March	1800	65°43'	30°04'	180°	2.75	392	1	0.3	393	-	8	7	3
18	27 March	1410	66°11'	29°53'	60°	4.00	558	3	0.5	561	-	-	-	-
19	28 March	0115	66°14'	29°39'	240°	3.25	493	7	1.4	500	5	7	72	66
20	28 March	1325	66°13'	29°36'	40°	4.25	1055	20	1.9	1075	-	4	10	-
21	29 March	0815	65°51'	30°04'	140°	3.50	473	1	0.2	474	-	4	-	7
22	29 March	1250	65°45'	30°08'	30°	4.15	900	20	2.2	920	1	1	-	-
23	30 March	0140	65°45'	30°05'	-	4.00	300	10	3.2	310	1	9	200	53
24	30 March	1130	65°52'	30°02'	180°	2.60	1838	30	1.6	1868	1	-	5	-
25	1 April	0250	65°52'	30°02'	180°	4.00	563	3	0.5	566	1	5	21	11
26	1 April	1644	65°44'	29°29'	350°	4.15	390	5	1.3	395	-	3	30	4
27	2 April	1720	66°23'	30°01'	230°	3.00	705	15	2.1	720	1	57	40	-
28	3 April	0715	66°16'	29°56'	70°	4.25	105	5	4.5	110	-	-	30	9
29	3 April	1720	66°23'	30°07'	220°	4.00	300	10	3.2	310	-	-	5	-
30	6 April	1450	66°30'	30°06'	-	3.50	630	45	6.7	675	1	11	6	60
31	6 April	2040	66°32'	30°08'	180°	3.50	320	25	7.2	345	5	15	130	-
32	8 April	0540	65°52'	30°02'	210°	4.00	890	30	3.3	920	-	9	86	16
33	9 April	0120	65°53'	30°03'	180°	4.50	1405	50	3.4	1455	-	17	200	50
35	12 April	1630	66°13'	29°39'	40°	3.75	475	40	7.8	515	-	2	2	-
36	13 April	0920	66°14'	29°23'	220°	3.66	1650	60	3.5	1710	-	-	-	2
37	13 April	1430	66°10'	29°37'	45°	3.66	1915	100	5.0	2015	1	-	-	-
38	17 April	0545	66°21'	29°30'	45°	4.00	1065	60	5.3	1125	1	-	-	7
39	19 April	0225	65°52'	30°01'	-	4.00	410	5	1.2	415	1	8	350	38
40	25 April	0920	65°37'	30°08'	20°	4.33	585	4	0.7	589	1	2	-	2

Table 2. Length Composition of random samples from shrimp catches by M/V "Lyshaug" off East Greenland in March-April 1985. (Numbers in heading refers to tow numbers in the first column of Table 1).

Carapace-length (mm)	3	4	5	7	18	20	24	25	27	28	29	30	32	35	38	Total
18	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	2
21	-	-	1	-	-	-	-	-	1	-	1	1	-	1	2	7
22	-	1	-	-	-	1	-	-	3	-	-	1	-	2	3	11
23	2	2	-	-	1	3	-	-	1	6	2	5	-	2	10	34
24	-	2	2	1	1	2	1	-	1	4	2	5	-	6	7	34
25	3	5	3	-	2	2	-	1	6	4	-	7	1	1	15	50
26	6	5	2	8	6	4	1	3	4	11	1	11	2	5	9	78
27	16	11	10	17	7	12	14	10	11	9	8	21	17	17	21	201
28	41	20	39	30	12	34	36	45	29	21	28	31	33	35	41	475
29	48	57	47	50	24	41	47	44	41	23	40	38	56	20	42	618
30	41	52	48	54	31	51	54	42	40	34	46	42	53	36	31	655
31	26	24	31	30	9	30	20	29	28	14	40	16	27	13	12	349
32	9	13	12	4	5	13	20	22	12	6	19	15	7	11	4	172
33	4	8	3	5	2	4	5	3	9	3	12	6	3	-	3	70
34	3	-	2	1	-	2	2	1	-	-	-	1	1	-	-	13
35	1	-	-	-	-	-	-	-	1	-	1	-	-	-	-	3
Total	200	200	200	200	100	200	200	200	187	136	200	200	200	150	200	2773

Table 3. Catch (tonnes) and catch per hour trawling (CPUE) in division XIV B from 1982 to 1985.

Month	1982		1983 ^{a)}		1984		1985 ^{b)}	
	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Feb.	-	-	-	-	79	0,232	-	-
Mrs.	305	0,197	-	-	622	0,224	559	0,181
Apr.	761	0,171	350	0,128	732	0,183	736	0,163
May	828	0,248	367	0,255	500	0,167	178	0,128
Jun.	-	-	257	0,143	-	-	-	-
Jul.	-	-	6	0,133	-	-	-	-
Aug.	-	-	61	0,098	-	-	-	-
Total	1896	0,203	1041	0,157	1933	0,191	1473	0,164

a) 60 % of total landings

b) 72 % of total landings

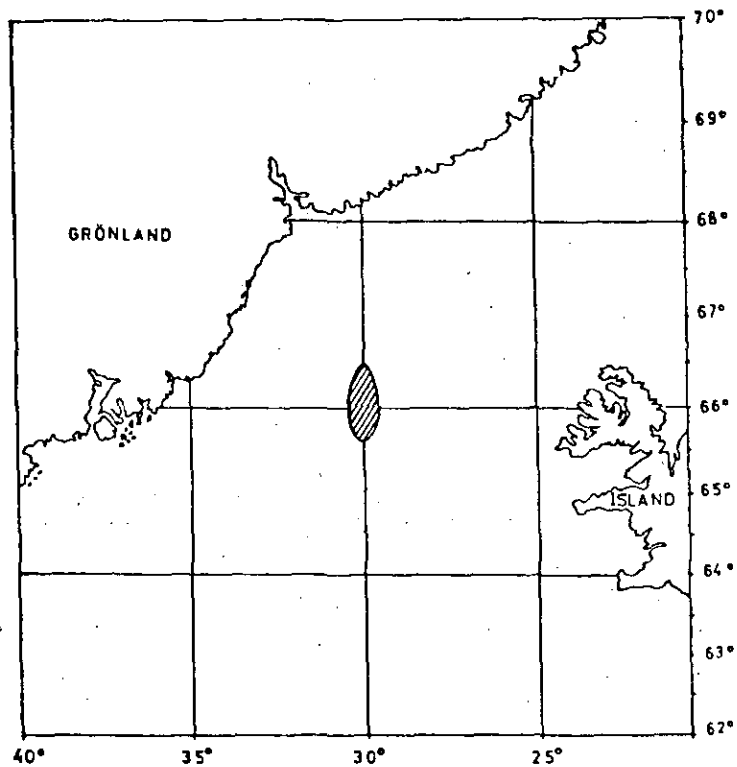


Fig.1. Hatched area: Area fished by M/V "Lyshaug" during the stay of the observer in March-April 1985.

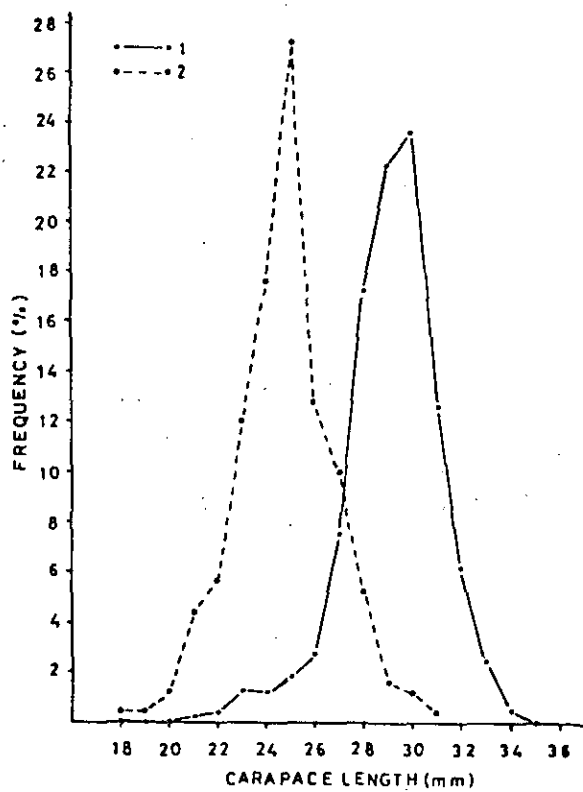


Fig.2. Weighted mean length composition of shrimp from samples taken off East Greenland in March-April 1985. 1) Landed shrimp 2) Discarded shrimp.

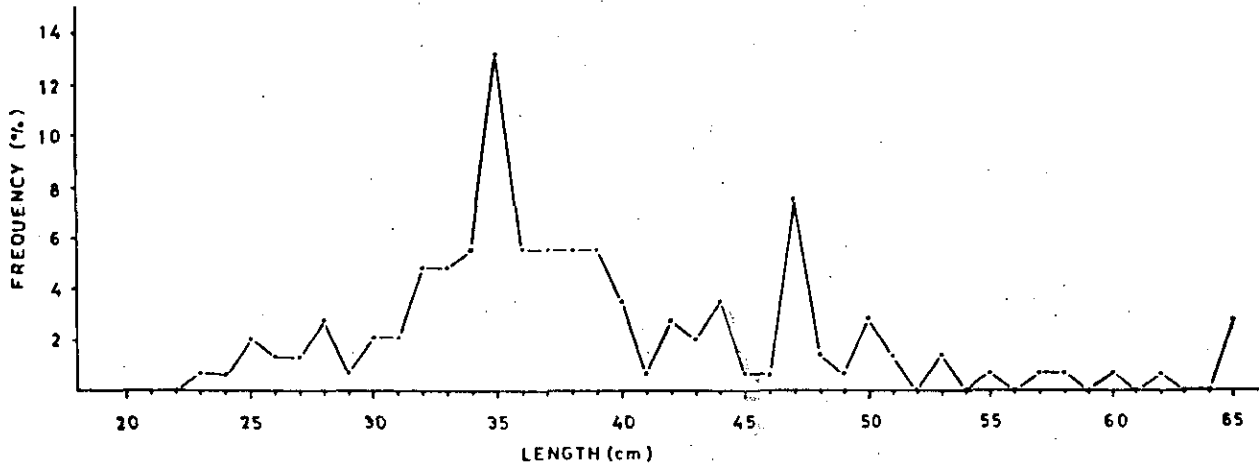


Fig. 3. Length composition of Greenland halibut taken as by-catch with shrimp off East Greenland in March-April 1985.

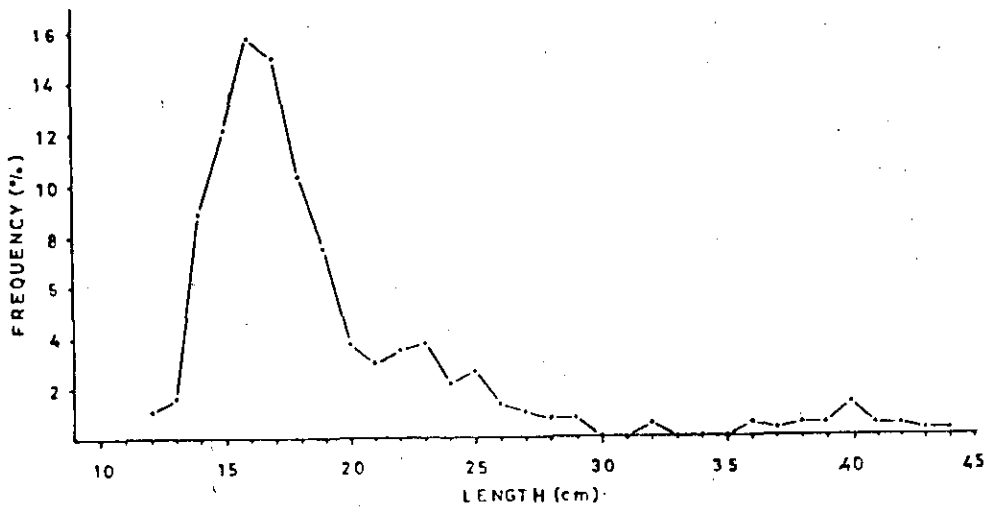


Fig. 4. Length composition of red fish taken as by-catch with shrimp off East Greenland in March-April 1985.

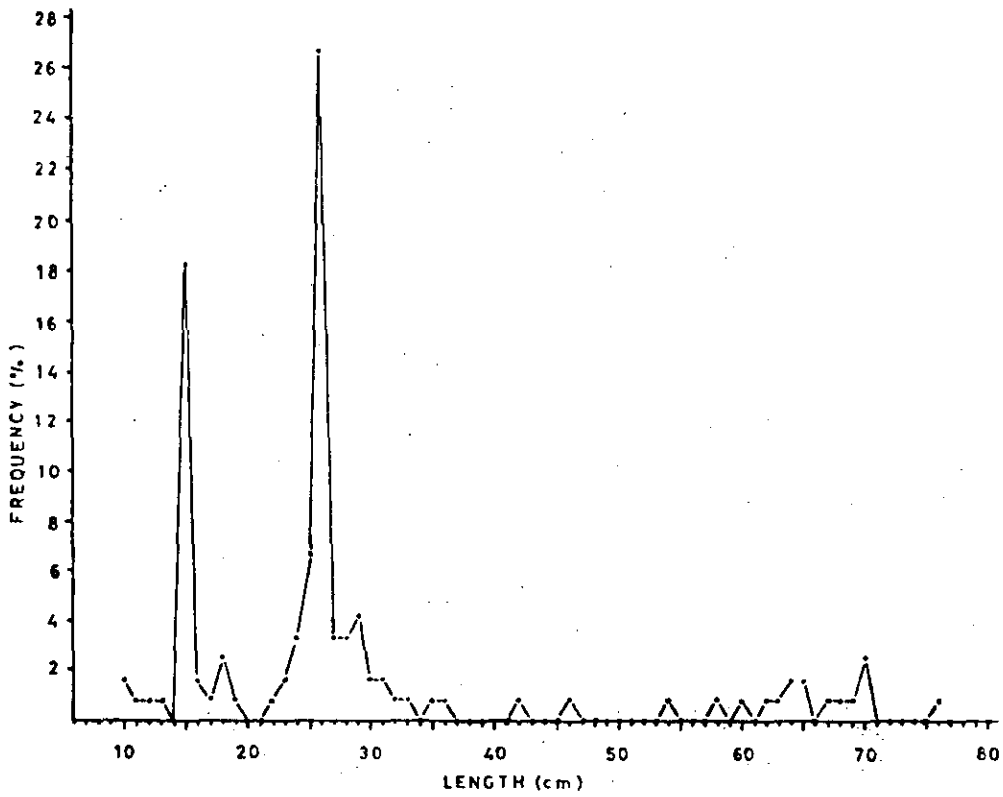


Fig. 5. Length composition of cod taken as by-catch with shrimp off East Greenland, in March-April 1985.

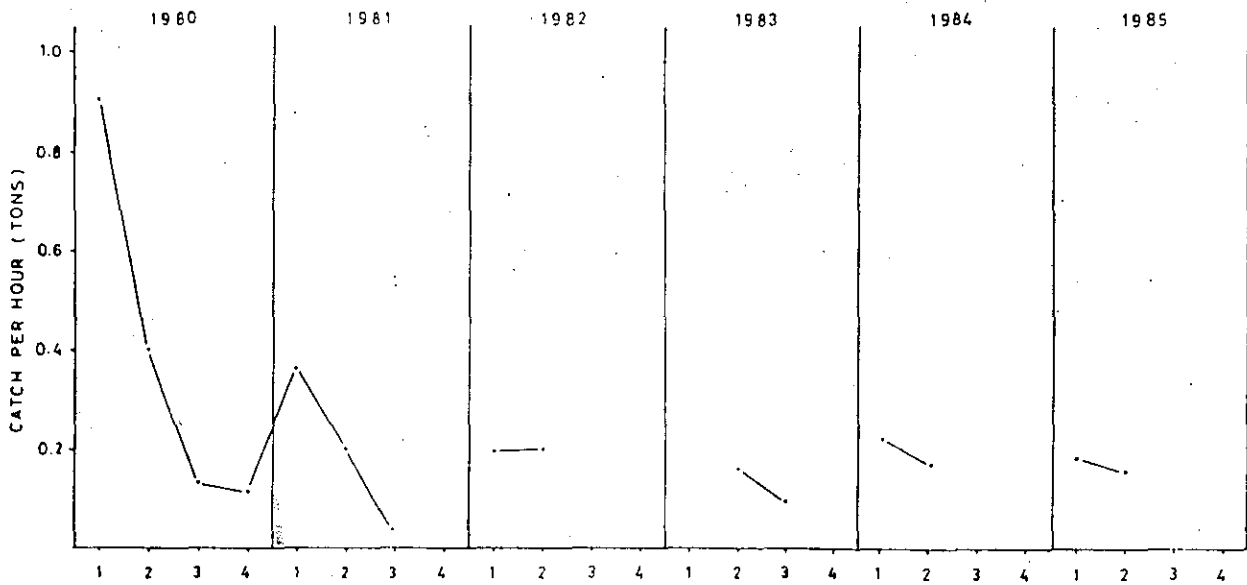


Fig. 6. Quarterly mean shrimp catch per hour trawling by Norwegian vessels in Div. XIV B 1980 - 1985.

