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Norwegian Investigations on Shrimp (*Pandalus borealis*)

in East Greenland Waters in 1984

by

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INTRODUCTION

The Norwegian quota of shrimp in East Greenland waters in 1984 was 2000 tonnes. From 19 February to 13 May 18 vessels participated in the fishery. According to the fishing logbooks received so far the data represented in the present paper cover catches of 1634 tonnes.

Results of field investigations, together with commercial fishery data for the years 1982 and preliminary catch and effort data for 1983 were reported by Smedstad and Torheim (1984). The results of investigations carried out in 1984 are presented in this paper.

LOCATION OF THE FISHERY

The ice cover did not influence the geographical distribution of the fishing fleet compared with previous years. From 12 to 19 April one of the authors was on board the stern trawler "Kap Farvel". The fishery at that time was located mostly north of 66°N at depths ranging from 360-500 m.

MATERIAL AND METHODS

The shrimp were sorted in "landings" 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 were taken for length measurements (carapace length to the nearest mm) (Table 2). In addition length compositions were obtained from the by-catches of Greenland halibut (Fig. 3) and redfish (Fig. 4).

Monthly catch and effort data from 1982 to 1984 are compiled from logbooks of the vessels participating in the fishery. For 1984 the preliminary data cover 80 % of the landings (Table 3).

SIZE COMPOSITIONS OF SHRIMP

Length compositions of shrimp in samples collected by the observer on board "Kap Farvel" are listed in Table 2. The weighted mean length composition (with catch as the weighting factor) is shown in Fig. 2. Shrimp with modal group around 29 mm carapace length were dominating. As shown in Table 2 some small shrimp were caught.

North of 66°N the samples consisted of about 37 % males, 15 % transitionals and 48 % females on an average, while the sample taken south of 66°N (Tow 18) consisted of 100 % females where 92 % were eggbearing and 8 % had head roe.

DISCARD

The discard varied from 0,7 % to 5,9 % of the total catch (Table 1). On an average 3,4 % of the total catch was discarded. The discarded shrimp consisted of both small shrimp and 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. The mean numbers of fish relative to the mean shrimp catch (retained) per tow are given in the table below for the years 1982-84.

Species	Mean number per haul		
	1982	1983	1984
Cod	23	3	3
Greenland halibut	7	9	120
Redfish	53	47	87
Others	13	5	3
Total	96	64	213
Nos of hauls observed	37	21	19
Mean shrimp catch (kg)	608	346	880
Nos of fish per kg shrimp	0,16	0,18	0,24

The increase in by-catches of Greenland halibut and redfish in 1984 compared to 1982 and 1983 are probably due to good ice conditions and a more northerly location of the fishery.

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 1984. The quarterly CPUE in Div. XIV B for the period 1980 - 1984 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 - 1984.

REFERENCE

Smedstad, O. and Torheim, S. 1984. Norwegian Investigations on Shrimp.

Pandalus borealis, in East Greenland Waters in 1983. NAFO SCR Doc.84/1/1.

Table 1. Catches of shrimp and by-catches of fish in some trawl hauls by M/V "Kap Farvel" off East Greenland in April 1984.

Nos	Date	Time (hr)	Position N W		Direc- tion towed	Towing- time (hr)	Shrimp catches				By-catches (Nos)				
							Landings		Discards		Total kg	Cod	Gre. hal.	Red fish	Other
							kg		kg	%					
1	12 April	1340	66°20'	30°28'	330°	1.50	144	8	5,3	152	-	182	3	3	
2	12 April	1555	66°22'	30°33'	220°	3.00	805	40	4,7	845	-	102	62	20	
3	12 April	1950	66°15'	30°49'	40	2.00	816	40	4,7	856	-	72	130	-	
4	13 April	0315	66°20'	30°00'	300°	3.00	420	12	2,7	452	-	32	95	-	
5	13 April	0650	66°13'	30°05'	22°	3.00	240	15	5,9	255	-	17	31	-	
6	13 April	1510	66°09'	29°56'	180°	2.00	426	8	1,8	434	-	5	11	-	
7	14 April	1310	66°15'	30°35'	34°	3.33	474	10	2,1	484	1	232	14	1	
8	14 April	1710	66°10'	30°10'	210°	2.33	696	30	4,1	726	1	110	8	-	
9	14 April	2010	66°16'	30°40'	20°	3.33	960	50	5,0	1010	-	142	200	-	
10	15 April	0850	66°07'	30°43'	10°	3.00	1260	30	2,3	1290	-	78	90	-	
11	15 April	1220	66°15'	30°40'	180°	3.00	1560	66	4,1	1626	-	112	40	2	
12	15 April	1600	66°06'	30°44'	20°	3.50	960	40	4,0	1000	2	208	110	-	
13	16 April	0415	66°12'	30°40'	190°	3.00	126	5	3,8	131	1	84	52	-	
14	16 April	0815	66°03'	30°47'	30°	3.00	1250	40	3,1	1290	-	210	130	-	
15	16 April	1220	66°12'	30°40'	20°	3.50	1500	60	3,8	1560	-	191	70	-	
16	18 April	1025	66°35'	30°23'	200°	3.00	470	20	4,1	490	-	210	17	-	
17	18 April	1635	66°22'	30°35'	90°	3.00	1650	70	4,1	1720	-	240	30	-	
18	19 April	0345	65°38'	30°00'	100°	3.00	1370	10	0,7	1380	2	37	540	22	
19	19 April	0735	65°49'	29°58'	180°	4.00	1002	10	1,0	1012	1	17	19	5	

Table 2. Length composition of random samples from shrimp catches by M/V "Kap Farvel" off East Greenland in April 1984. (Numbers in heading refer to tow numbers in the first column of Table 1).

Carapace- length (mm)	2	3	4	5	7	11	13	15	17	18	Total
19	-	1	-	-	-	-	1	-	1	-	3
20	-	4	-	-	2	1	1	-	2	-	10
21	-	-	1	-	1	3	5	-	4	-	14
22	-	2	3	3	1	3	3	3	7	-	25
23	6	8	2	1	3	7	8	2	9	-	46
24	5	9	-	4	7	9	7	6	10	-	57
25	6	5	1	4	9	12	9	12	5	-	63
26	13	17	7	7	8	14	12	8	11	-	97
27	13	13	4	8	8	17	6	9	10	5	93
28	8	9	17	23	11	10	1	8	9	12	108
29	18	4	16	16	14	8	9	15	15	38	153
30	10	8	15	10	15	7	12	18	7	49	151
31	12	13	19	11	10	5	17	11	7	52	157
32	5	4	10	6	7	2	4	7	2	24	71
33	4	3	2	6	3	1	4	1	1	15	40
34	-	-	2	1	1	1	1	-	-	4	10
35	-	-	1	-	-	-	-	-	-	1	2
Total	100	100	100	100	100	100	100	100	100	200	1100

Table 3. Catch (tonnes) and catch per hour trawling (CPUE) in division XIV B from 1982 to 1984.

Month	1982		1983 ^{a)}		1984 ^{b)}	
	Catch	CPUE	Catch	CPUE	Catch	CPUE
Feb	-	-	-	-	38	0,208
Mrs	305	0,197	-	-	481	0,229
Apr	761	0,171	350	0,128	679	0,184
May	828	0,248	367	0,255	435	0,161
Jun	-	-	257	0,143	-	-
Jul	-	-	6	0,133	-	-
Aug	-	-	61	0,098	-	-
Total	1896	0,203	1041	0,157	1634	0,188

a) 60 % of total landings

b) 80 % of total landings

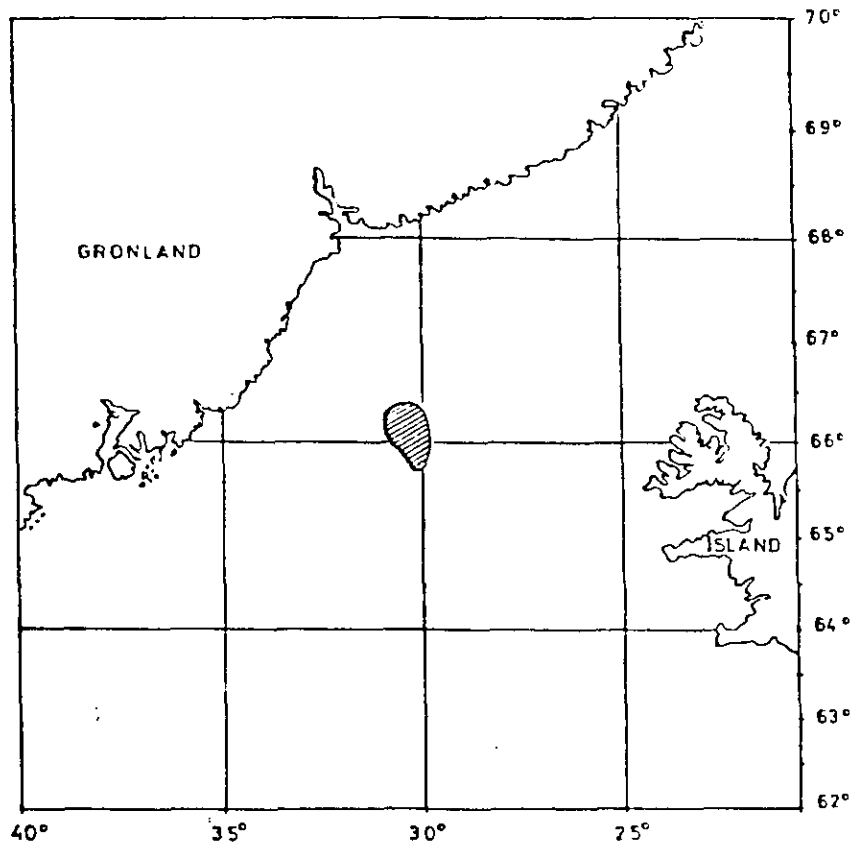


Fig. 1. Hatched area: Area fished by M/V "Kap Farvel" during the stay of the observer in April 1984.

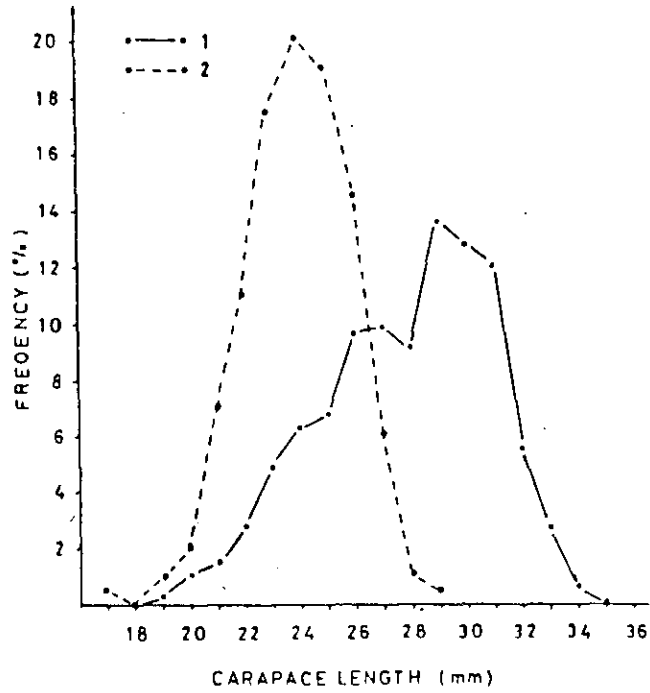


Fig.2. Weighted mean length composition of shrimp from samples taken off East Greenland in April 1984. 1) Landed shrimp 2) Discarded shrimp.

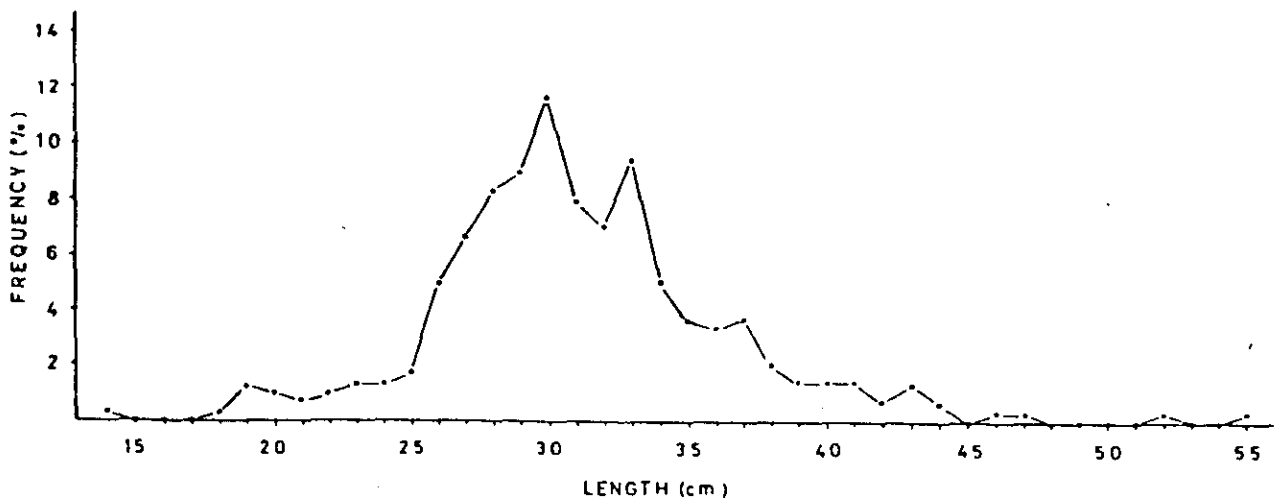


Fig.3. Length composition of Greenland halibut taken as by-catch with shrimp off East Greenland in April 1984.



Fig. 4. Length composition of red fish taken as by-catch with shrimp off East Greenland in April 1984.

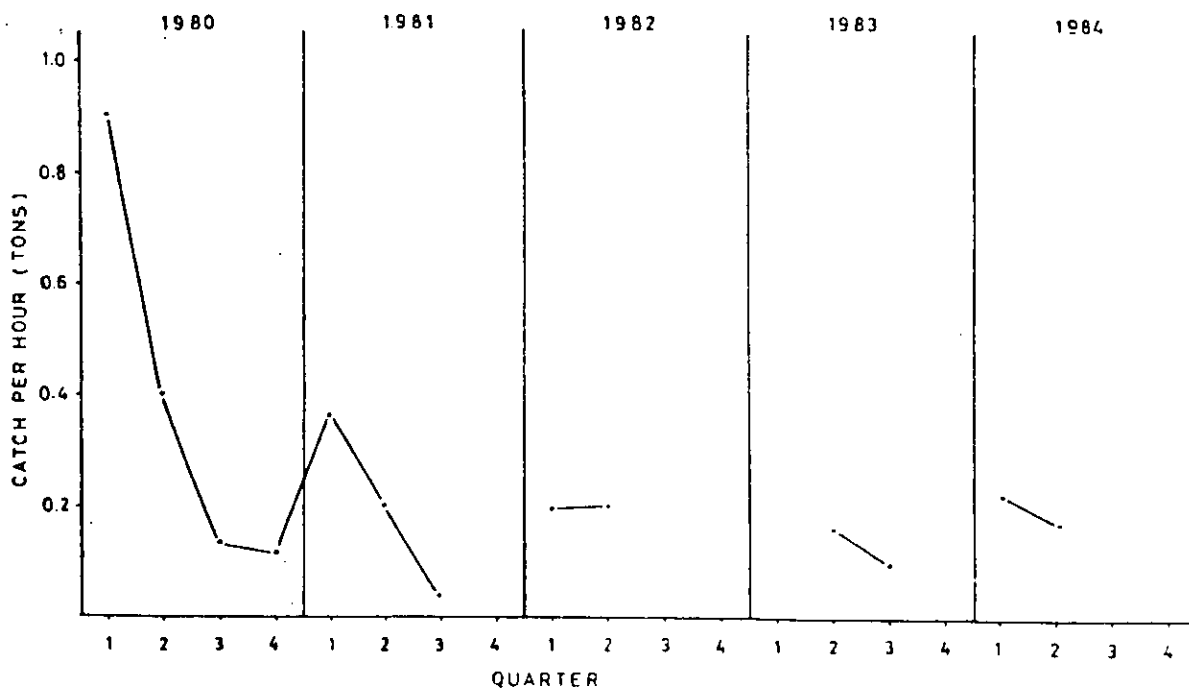


Fig. 5. Quarterly mean shrimp catch per hour trawling by Norwegian vessels in Div. XIV B 1980 - 1984.