

Northwest Atlantic



Fisheries Organization

Serial No. N643

NAFO SCR Doc. 83/I/5

SPECIAL SCIENTIFIC COUNCIL MEETING - JANUARY 1983

Norwegian Investigations on Shrimp, *Pandalus borealis*, off West Greenland in 1982

by

T. Jakobsen and S. Torheim  
Institute of Marine Research  
P. O. Box 1870, 5011 Nordnes-Bergen, Norway

INTRODUCTION

The Norwegian quota of shrimp off West Greenland decreased from 1000 tons in 1981 to 850 tons in 1982. In 1982, 11 vessels have taken part in the fishery and preliminary reported landings are 848 tons.

Monthly catch and effort data for 1981 compiled from logbooks of 9 vessels, accounting for 55% of the landings, were reported by Jakobsen and Torheim (1981).

Results of field investigations carried out in 1982 together with analyses of preliminary catch and effort data for 1982 and the final catch and effort data for 1981 are presented in this paper.

MATERIALS AND METHODS

From 29 May to 12 June, one of the authors was an observer on board the stern trawler "Pero" which was fishing between 66°40'N and 67°33'N (Fig. 1). 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 catches were taken for length measurement (carapace length to nearest mm) (Fig. 2). In addition, some length composition data were obtained for by-catches of redfish (Fig. 3) and Greenland halibut (Fig. 4).

Monthly catch and effort data for 1981 are compiled from logbooks of the vessels participating in the fishery. For 1982, preliminary data are available from 5 vessels, accounting for 45% of the landings.

SIZE COMPOSITION OF SHRIMP

Length compositions of shrimp in samples of total catch collected by the observer on board "Pero" are listed in Table 2. The weighted mean length composition (with catch as the weighting factor) is shown in Fig. 2. The catches were made up of three size groups with modal lengths of 18 mm, 21 mm and 26 mm, respectively. For the discards, the two smallest size groups were dominating. The quantity of dis-

carded shrimp were 12.3% of the total shrimp catches.

#### BY-CATCHES IN THE SHRIMP FISHERY

By-catches of fish in the trawl hauls of "Pero" examined by the observer are listed in Table 1. None of the fish were kept except those consumed on board during the trip. The mean number of fish relative to the mean shrimp catch (retained) per ton is given in the table below.

Species	Mean number per haul
Cod	2
Greenland halibut	48
Redfish	443
Others	129
Total by-catch	621
No. of hauls observed	34
Mean shrimp catch (kg)	1074
No. of fish per kg shrimp	0.58

#### CATCH AND CATCH PER UNIT EFFORT

Table 3 shows catch and catch per hour trawling (CPUE) by month and division for the Norwegian fishery at West Greenland in 1981 and 1982. In 1982, a higher proportion than usual of the landings were from Div. 1D. The CPUE values were in contrast to 1981, higher in Div. 1D than in Div. 1B. The fishery started in May and was stopped in July when the quota had been taken. During this period, catch rates were increasing.

The quarterly CPUE in Div. 1B for the period 1980-1982 is shown in Fig. 5. In the 2nd quarter there is no significant change from 1981 to 1982, but for the 3rd quarter, there is nearly a doubling of the CPUE. In Div. 1D, the CPUE is at the same level as in 1979 which is the highest recorded. However, the data from Div. 1D may be less reliable than those from Div. 1B because the fishery in the past has been less extensive.

#### REFERENCE

JAKOBSEN, T., and S. TORHEIM. 1981. The Norwegian Fishery for shrimp, *Pandalus borealis*, off West Greenland in 1981. NAFO SCR Doc., No. 81/XI/156.

Table 1. Catches of shrimp and by-catches of fish in some trawl hauls by M/M "Pero" off West Greenland in May-June 1982.

Nos	Date	Time (hr)	Position N W		Direction towed	Towing time (hr)	Shrimp catches				By-catches (Nos)			
							Landings kg	Discards		Total kg	Cod	Gre. hal.	Red fish	Other
								kg	%					
1	29 May	0740	66°40'	56°19'	180°	4.00	235	25	10	260	7	63	30	20
2	29 May	1210	66°47'	56°05'	360°	3.66	510	70	12	580	5	-	170	125
3	30 May	0640	67°05'	56°19'	180°	3.66	1775	300	14	2075	-	1	152	18
4	30 May	2030	66°45'	56°15'	360°	4.00	510	120	19	630	2	46	120	156
5	31 May	1920	67°05'	56°20'	180°	4.00	910	140	13	1050	-	-	14	100
6	1 June	0745	66°55'	56°15'	180°	4.00	1175	220	16	1395	3	-	32	244
7	1 June	1255	67°07'	56°24'	185°	4.00	760	60	7	820	6	29	33	175
8	2 June	1235	67°05'	56°25'	292°	4.00	760	70	8	830	2	23	158	5
9	2 June	2040	66°54'	56°23'	360°	4.00	615	50	8	665	-	6	5	4
10	2 June	0640	67°02'	56°19'	180°	2.16	635	70	10	705	3	23	37	64
11	3 June	1100	67°59'	56°29'	360°	3.00	395	30	7	425	2	15	150	267
12	3 June	0800	67°04'	56°28'	180°	3.50	1410	400	22	1810	-	40	800	123
13	4 June	1800	67°18'	56°52'	360°	4.16	795	100	11	895	-	-	1200	508
14	5 June	0615	67°28'	56°57'	180°	4.00	1475	300	17	1775	-	62	300	93
15	5 June	1055	67°16'	56°48'	180°	3.00	975	200	17	1175	-	62	900	41
16	5 June	1530	67°28'	56°58'	362°	3.50	1430	140	9	1570	-	92	1200	60
17	6 June	0635	67°16'	56°47'	182°	4.00	1040	125	11	1165	-	39	300	44
18	6 June	1130	67°28'	57°02'	172°	3.00	710	120	14	830	-	-	600	127
19	6 June	1650	67°18'	57°04'	320°	4.50	1410	250	15	1660	8	207	1400	156
20	7 June	0300	67°31'	57°40'	362°	4.00	1650	270	14	1920	1	200	4000	467
21	7 June	1220	67°31'	54°41'	360°	3.75	1235	150	11	1385	-	92	400	219
22	7 June	1640	67°33'	57°24'	360°	4.00	2505	250	9	2755	-	11	200	2
23	8 June	0700	67°27'	57°43'	140°	4.00	1300	60	4	1360	-	60	350	55
24	8 June	1148	67°22'	57°25'	90°	4.00	1020	90	8	1110	1	38	300	109
25	8 June	1650	67°24'	57°25'	360°	4.00	1175	300	20	1475	-	55	400	126
26	9 June	0500	67°21'	57°16'	180°	4.50	1175	100	8	1275	-	21	150	109
27	9 June	1020	67°18'	56°55'	140°	4.50	1570	160	9	1730	6	150	300	95
28	9 June	1825	67°13'	56°36'	360°	4.16	1620	90	5	1710	4	-	350	222
29	10 June	0625	67°17'	56°58'	360°	4.00	875	95	10	970	-	10	47	142
30	10 June	1155	67°11'	56°32'	180°	2.00	475	90	16	565	3	5	150	88
31	11 June	1200	67°14'	56°32'	360°	4.00	1460	400	22	1860	-	3	60	190
32	11 June	1800	67°25'	56°50'	138°	2.50	710	60	8	770	-	37	250	98
33	12 June	1130	67°15'	56°38'	315°	3.50	1020	70	6	1090	-	42	350	121
34	12 June	1605	67°22'	56°40'	155°	4.00	1210	160	12	1370	-	200	150	-

Table 2. Length composition of random samples from shrimp catches by M/V "Pero" off West Greenland in May - June 1982. (Numbers in heading refer to tow numbers in the first column of Table 1).

Carapace- length (mm)	1	3	5	7	10	11	13	14	17	20	23	27	30	31	34	Total
12	-	-	-	-	-	-	-	-	2	-	-	-	-	2	1	5
13	-	-	-	-	-	-	1	2	1	-	-	-	-	7	1	12
14	-	-	-	-	-	-	3	1	-	1	-	-	-	3	2	10
15	1	1	1	1	-	-	11	6	10	1	-	3	1	6	8	50
16	7	3	6	7	1	3	11	32	29	4	-	5	2	18	22	150
17	24	11	14	11	4	3	15	41	35	5	3	10	23	15	41	255
18	22	18	18	15	5	6	14	22	19	20	4	9	9	6	29	216
19	7	11	15	13	2	4	10	6	13	12	9	10	17	5	13	147
20	24	25	25	22	12	12	17	20	24	18	9	18	20	3	13	262
21	23	41	32	32	11	26	11	18	14	12	13	16	31	2	26	308
22	19	17	23	27	2	22	9	20	8	7	9	15	23	6	21	228
23	9	20	18	16	3	13	10	12	8	14	10	14	16	4	6	173
24	14	19	27	19	9	14	12	15	11	16	11	14	9	-	16	206
25	18	31	46	26	12	33	20	21	31	38	37	21	23	7	27	391
26	57	46	40	47	12	43	17	38	38	55	55	28	40	6	28	550
27	52	43	26	36	20	53	18	27	30	55	77	23	23	7	25	515
28	17	9	6	21	6	37	13	16	18	28	45	12	8	2	18	256
28	5	4	3	5	1	8	8	2	6	13	16	2	5	1	2	81
30	-	1	-	2	-	-	-	1	3	-	1	-	-	-	-	8
31	1	-	-	-	-	-	-	-	-	1	1	-	-	-	1	4
Total	300	300	300	300	100	277	200	300	300	300	300	200	250	100	300	3827

Table 3 . Catch (metric tons) and catch per hour trawling (CPUE) by month and division in 1981 and 1982 <sup>a)</sup>

Year	Month	1 B		1 C		1 D		Total catch
		catch	CPUE	catch	CPUE	catch	CPUE	
1981	Mar	58	0,349	1		4	0,118	64
	Apr							
	May							
	Jun	139	0,149			19	0,121	158
	Jul	596	0,158	50	0,132	40	0,114	686
	Aug	69	0,320					69
	Sub-Total	862	0,170	51	0,131	63	0,116	977
	Unspecified							79
	Total							1056
1982	May	25	0,117	2	0,083			27
	Jun	102	0,141			3	0,158	105
	Jul	91	0,254			168	0,263	259
	Total	218	0,169	2	0,083	171	0,261	391

a) Data for 1982 cover 46 % of total landings

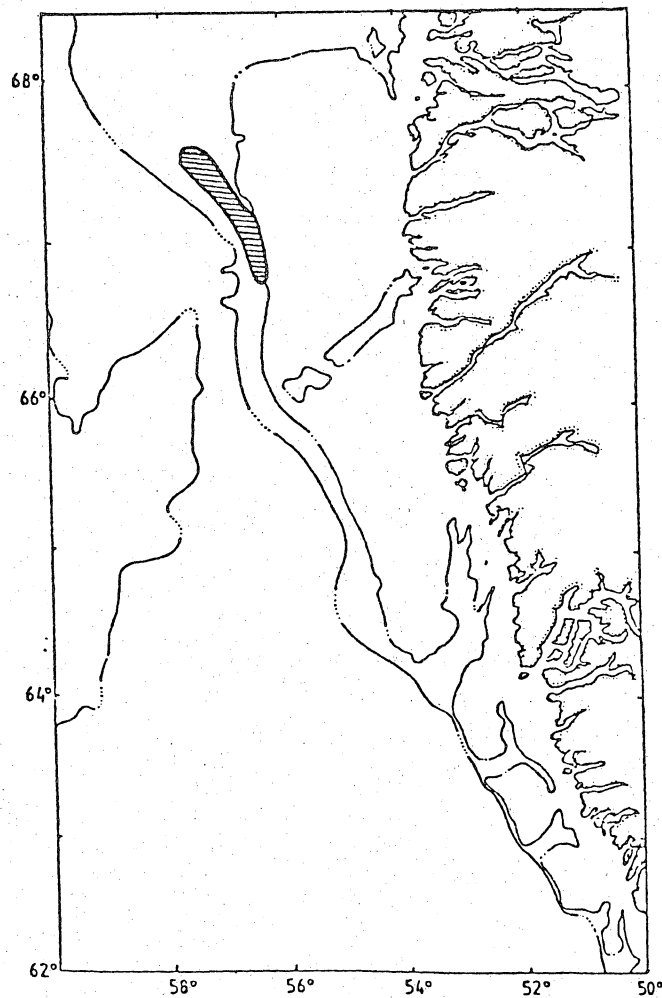


Fig. 1. Hatched area: Main area fished by MV "Pero" during the stay of the observer in May - June 1982.

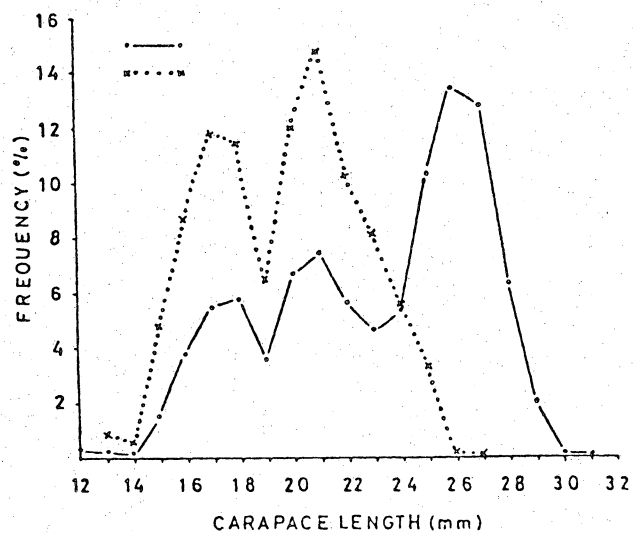


Fig. 2. Weighted mean length composition of shrimp taken at Store Hellefiske Bank in May - June 1982. 1) Landed shrimp 2) Discarded shrimp.

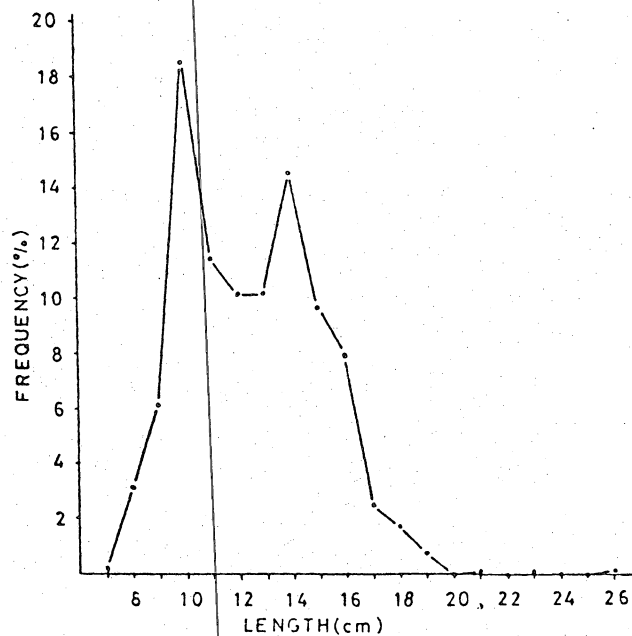


Fig. 3. Length composition of redfish taken as by catch with shrimp on the slope of Store Hellefiske Bank in May - June 1982.

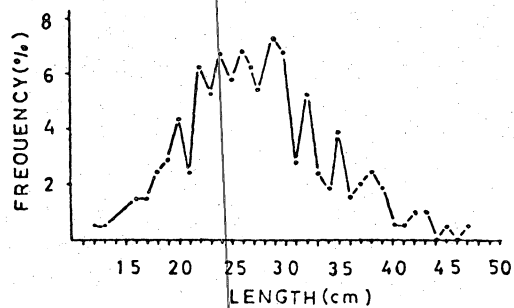


Fig. 4. Length composition of Greenland halibut taken as by catch with shrimp on the slope of Store Hellefiske Bank in May - June 1982.

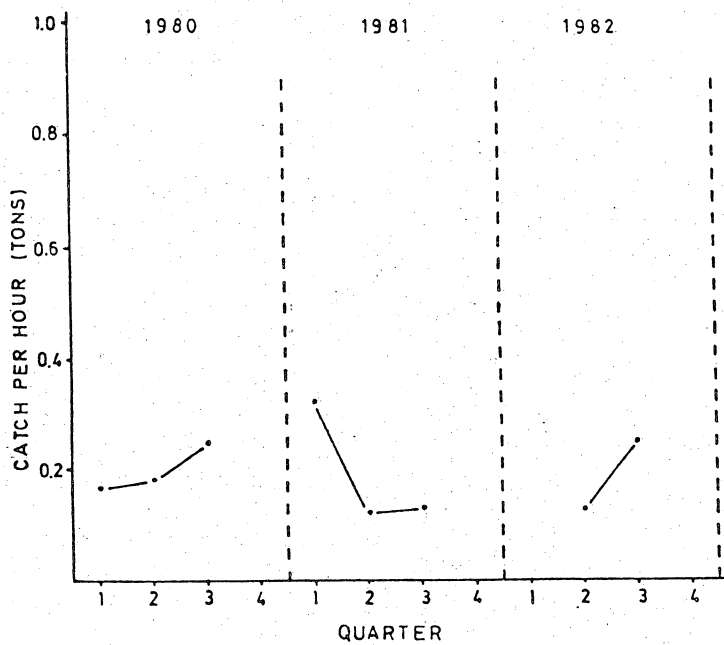


Fig. 5. Quarterly mean shrimp catch per hour trawling by Norwegian vessels in Div. 1 B 1980 - 1982.