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Norwegian Investigations on Shrimp (*Pandalus borealis*) in East Greenland Waters in 1987

by

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INTRODUCTION

The Norwegian quota of shrimp in East Greenland waters in 1987 was 2050 tons. 21 vessels participated in the fishery. According to the fishing logbooks received, the data represented in the present paper cover catches of 2026 tonnes.

Results of field investigations together with commercial fishery data for the years 1985 and preliminary catch and effort data for 1986 were reported by Smedstad and Torheim (1986). The results of investigations carried out in 1987 together with final commercial fishery data in 1986 and 1987 are presented in this paper.

LOCATION OF THE FISHERY

The ice conditions were good but bad weather hampered the shrimp fishery during the whole winter and early spring. From 11 March to 24 March one of the authors was on board the sterntrawler "Lyshaug". During that time the fishing area of "Lyshaug" was located around 66^0N and 30^0W (Fig.1). Fig 7 - 15 show the location of the Norwegian fishery in the periods January - May and August - November.

MATERIAL AND METHODS

The shrimp were sorted in "landing" and "discard" 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 length to nearest mm below) (Table 2). In addition length compositions were obtained from by-catches of Greenland halibut (Fig.3), redfish (Fig.4) and cod (Fig.5).

Monthly catch and effort data from 1980 - 1987 are compiled from logbooks of the vessels participating in the fishery. For 1987 the data cover 99 % of the quota (Table.3).

SIZE COMPOSITION OF SHRIMP

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

DISCARD

The discard varied from 1.2 - 7.2 %. On an average 3.0 % of the total catch was discarded. The discarded shrimp consisted mostly of broken shrimp of relatively large size.

CATCH AND CATCH PER UNIT EFFORT

Table 3 shows catch and catch per hour trawling (CPUE) by month for the Norwegian fishery off East Greenland (ICES Div. XIV B) from 1982 to 1987. The quarterly CPUE for the period 1980 - 1986 are shown in Fig. 6. Only for the second quarter data exist for all years. In this quarter the CPUE has been relatively stable although a slight decline may be observed from 1984 to 1987.

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. The category others consisted of small skates, plaice and catfish.

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 - 1987.

	Mean number per tow					
Species	1982	1983	1984	1985	1986	1987
Cod	23	3	3	3	1	9
Greenland halibut	7	9	120	7	1	2
Redfish	53	47	87	74	103	293
Others	13	5	3	17	3	12
Total	96	64	213	101	108	316
Nos of hauls observed	37	21	19	40	19	24
Mean shrimp catch (kg)	608	346	880	732	410	528
Nos of fish per kg shrimp	0.16	0.18	0.24	0.13	0.26	0.60

REFERENCES

Smedstad, O.M. and Torheim, S. 1987. Norwegian Investigations on shrimp (Pandalus borealis) in East Greenland waters in 1986. NAFO SCR Doc. 87/3: 1 - 9.

Table 1. Catches of shrimp and by-catches of fish in some trawl hauls by M/V "Lyshaug" off East-Greenland in march 1987.

Nos	Date	Time	Position		Direction towed	Towing time	Shrimp catches				By-catches (Nos)			
							Landings	Discards		Total	Cod	Gre. hal	Red fish	Other
		(hr)	N	W		(hr)	kg	kg	%	kg				
1	11 March	1400	66°05'	30°08'	350°	1.80	1230	37	2.9	1267	-	-	30	1
2	11 March	1715	66°10'	30°10'	170°	3.25	520	20	3.7	540	-	3	70	5
3	13 March	0230	66°06'	30°09'	350°	3.00	1890	58	3.0	1948	-	11	210	-
4	13 March	0620	66°13'	30°03'	180°	4.00	600	21	3.4	621	-	3	50	7
5	13 March	1145	66°06'	30°07'	350°	3.25	400	15	3.6	415	-	-	152	3
6	14 March	1545	66°05'	29°57'	70°	3.00	562	20	3.4	582	3	-	250	16
7	14 March	1930	66°09'	29°43'	190°	3.50	386	15	3.7	401	12	3	90	13
8	14 March	2345	66°08'	29°38'	70°	3.50	67	2	2.9	69	11	1	100	15
9	15 March	1250	66°07'	29°49'	60°	3.50	770	60	7.2	830	104	5	1200	41
10	15 March	2005	66°10'	29°33'	350°	4.00	165	10	5.7	175	12	-	600	40
11	16 March	0255	65°49'	30°03'	180°	4.00	532	10	1.8	542	3	5	150	2
12	16 March	0930	65°49'	30°02'	180°	4.50	411	5	1.2	416	2	2	300	-
13	17 March	1250	65°43'	30°04'	15°	4.25	584	10	1.7	594	2	-	400	11
14	17 March	1935	65°49'	30°01'	785°	4.50	347	5	1.4	352	3	2	400	14
15	18 March	0915	65°50'	30°01'	206°	4.00	610	10	1.6	620	1	-	700	12
16	18 March	1800	65°41'	30°02'	10°	4.50	655	25	3.7	680	18	-	200	61
17	19 March	0435	65°42'	30°03'	120°	4.50	845	20	2.3	865	2	-	200	26
18	19 March	1440	65°40'	30°00'	15°	4.50	190	3	1.6	193	2	-	150	14
19	19 March	2035	65°50'	30°02'	170°	4.00	358	5	1.4	363	2	3	400	34
20	20 March	1035	65°41'	30°05'	350°	1.00	212	5	2.3	217	11	1	100	35
21	20 March	2020	65°52'	30°01'	160°	4.00	128	2	1.5	130	6	-	500	52
22	21 March	0450	65°53'	30°05'	180°	4.50	400	15	3.6	415	-	1	200	29
23	21 March	1245	65°43'	30°01'	175°	4.00	386	10	2.5	396	8	-	350	19
24	21 March	2315	65°51'	30°01'	180°	4.50	415	14	3.3	429	2	7	250	29

Table 2. Length composition of samples from shrimp catches by M/V "Lyshaug" off East Greenland in 1987. (Numbers in heading refers to tow numbers in the first column of Table 1).

Carapace-length (mm)	1	5	6	9	13	15	17	18	22	23	24	Total
17	1	-	-	-	-	-	-	-	-	-	-	1
18	1	-	2	-	-	-	-	-	-	-	-	3
19	1	-	2	-	-	-	-	-	-	-	-	3
20	2	-	-	-	-	-	-	-	-	-	-	2
21	3	2	1	2	-	-	-	-	-	-	-	8
22	4	1	2	4	-	-	-	1	-	-	-	12
23	6	1	5	3	-	-	1	0	-	-	-	16
24	10	5	5	9	2	2	3	1	2	-	6	45
25	7	10	10	18	2	3	2	0	0	-	2	54
26	14	19	15	19	4	3	2	5	2	4	7	94
27	11	24	17	12	6	5	6	12	7	5	8	113
28	28	25	34	21	30	53	31	48	35	36	38	379
29	45	41	31	40	64	63	74	65	46	77	71	617
30	42	42	40	42	49	56	101	43	62	87	91	655
31	34	27	20	31	41	36	18	16	35	28	21	307
32	8	14	11	10	11	8	11	9	18	8	7	115
33	4	4	1	4	2	6	5	5	5	3	-	39
34	-	1	1	-	-	-	2	1	1	-	-	6
Total	221	216	197	215	211	235	256	206	213	248	251	2469

Table 3. Catch (tonnes) and catch per hour trawling in division XIV B from 1982 to 1987.

	1982		1983 [1]		1984		1985		1986		1987	
Month	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Jan.	-	-	-	-	-	-	-	-	31	0.112	-	-
Feb.	-	-	-	-	79	0.232	-	-	208	0.141	150	0.187
Mar.	305	0.197	-	-	622	0.224	760	0.184	737	0.166	565	0.140
Apr.	761	0.171	350	0.128	732	0.183	995	0.166	548	0.133	601	0.123
May.	828	0.248	367	0.255	500	0.167	269	0.137	337	0.131	196	0.133
Jun.	-	-	257	0.143	-	-	-	-	-	-	-	-
Jul.	-	-	6	0.133	-	-	-	-	2	0.071	-	-
Aug.	-	-	61	0.098	-	-	-	-	116	0.131	32	0.124
Sep.	-	-	-	-	-	-	-	-	47	0.110	224	0.135
Oct.	-	-	-	-	-	-	-	-	-	-	187	0.091
Nov.	-	-	-	-	-	-	-	-	-	-	57	0.047
TOTAL	1896	0.203	1041	0.157	1933	0.191	2024	0.166	2026	0.143	2012	0.123

[1] 60 % of total landings

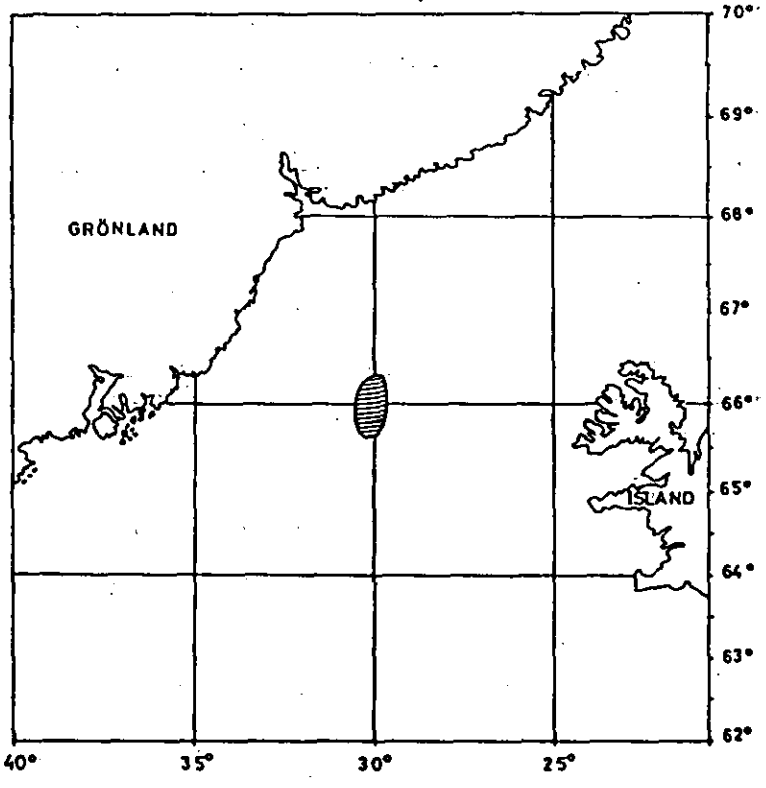

Fig.1. Hatched area: Area fished by M/V "Lyshaug" during the stay of the observer in March 1987.

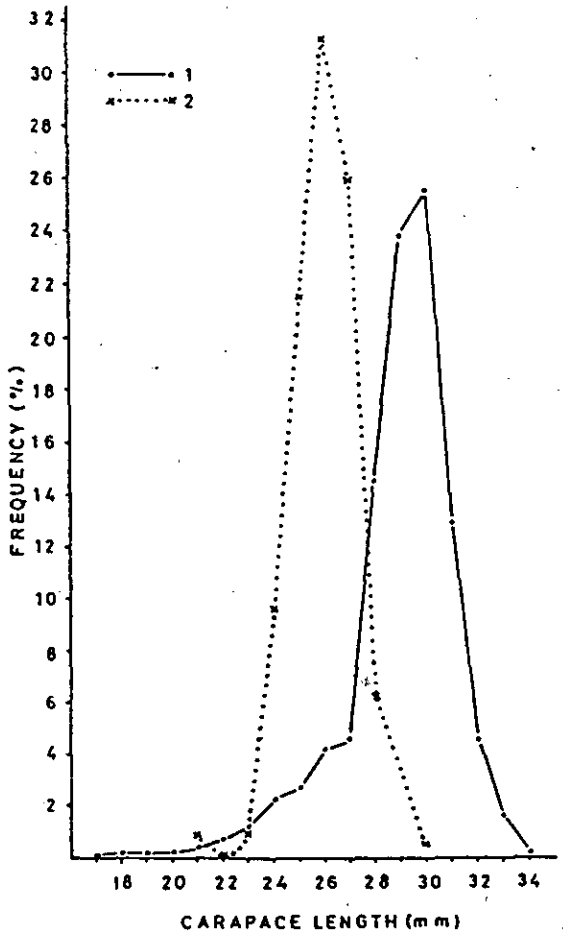

Fig.2. Weighted mean length composition of shrimp from samples taken off East Greenland in March 1987.
1) Landed shrimp 2) Discarded shrimp

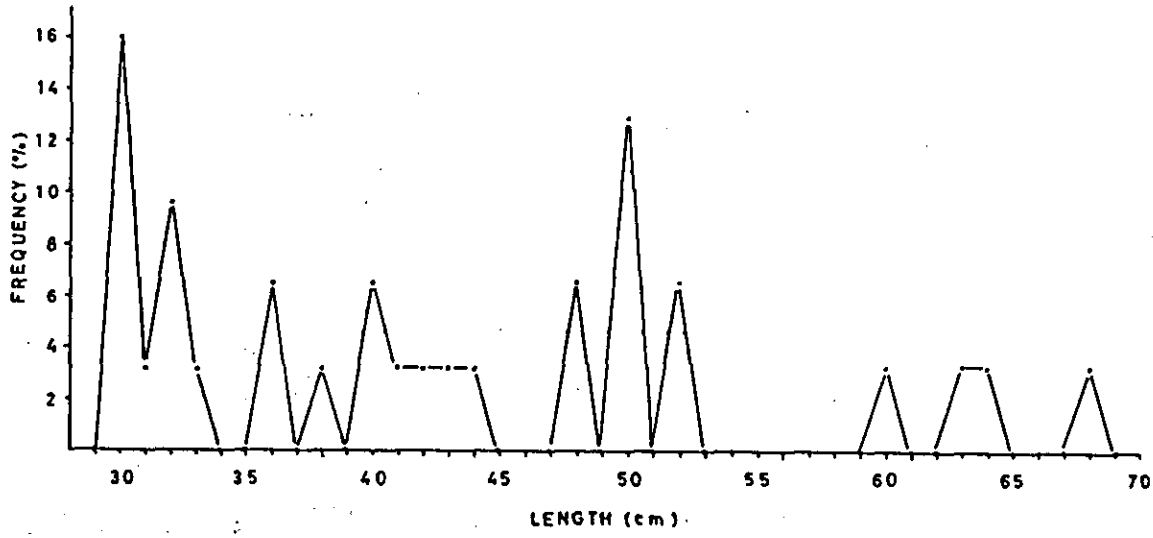

Fig.3. Length composition of Greenland halibut taken as by-catch with shrimp off East Greenland in March 1987.

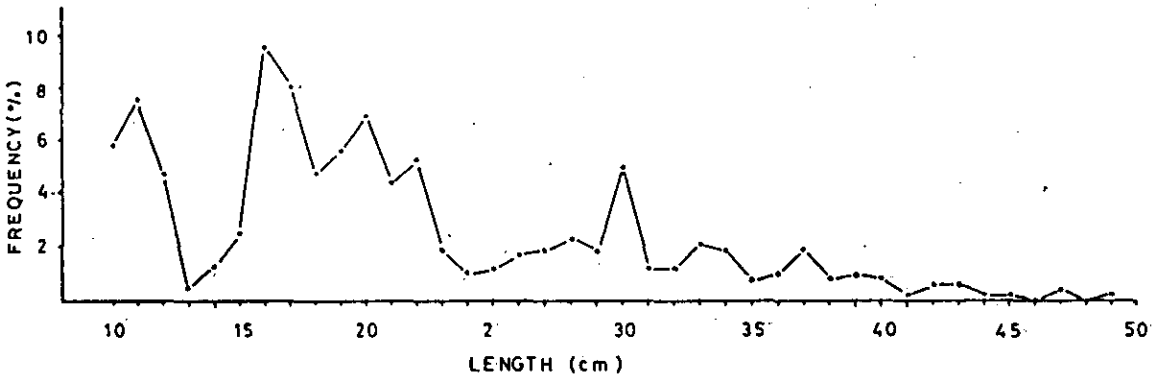

Fig.4. Length composition of red fish taken as by-catch with shrimp off East Greenland in March 1987.

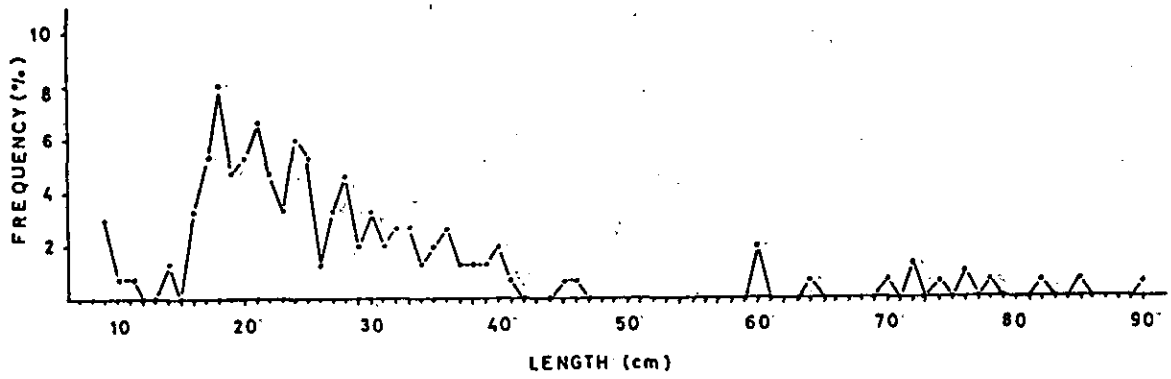

Fig.5. Length composition of cod taken as by-catch with shrimp off East Greenland in March 1987.

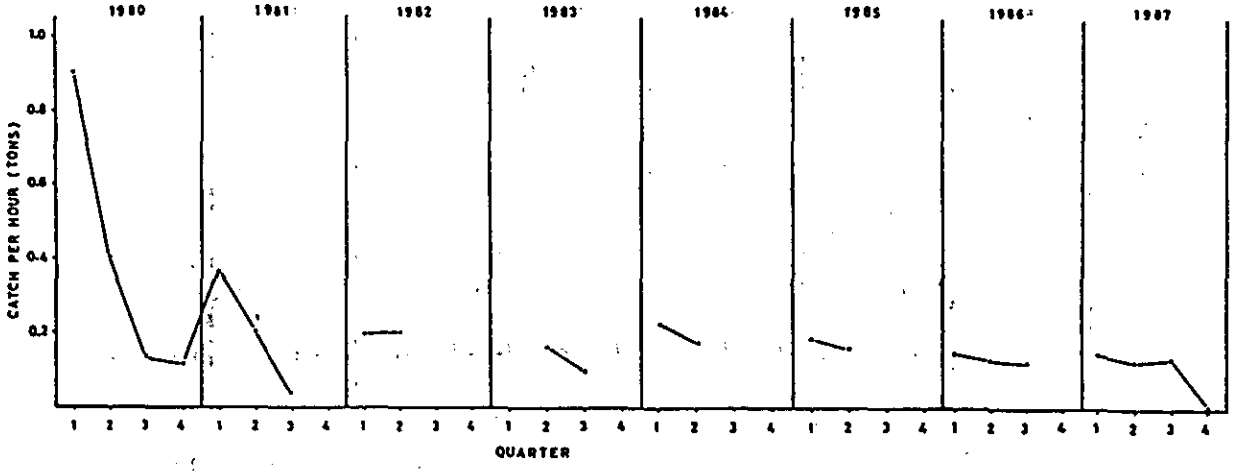

Fig.6. Quartely mean shrimp catch per hours trawling by Norwegian vessels in Div. XIV B 1980 - 1987.

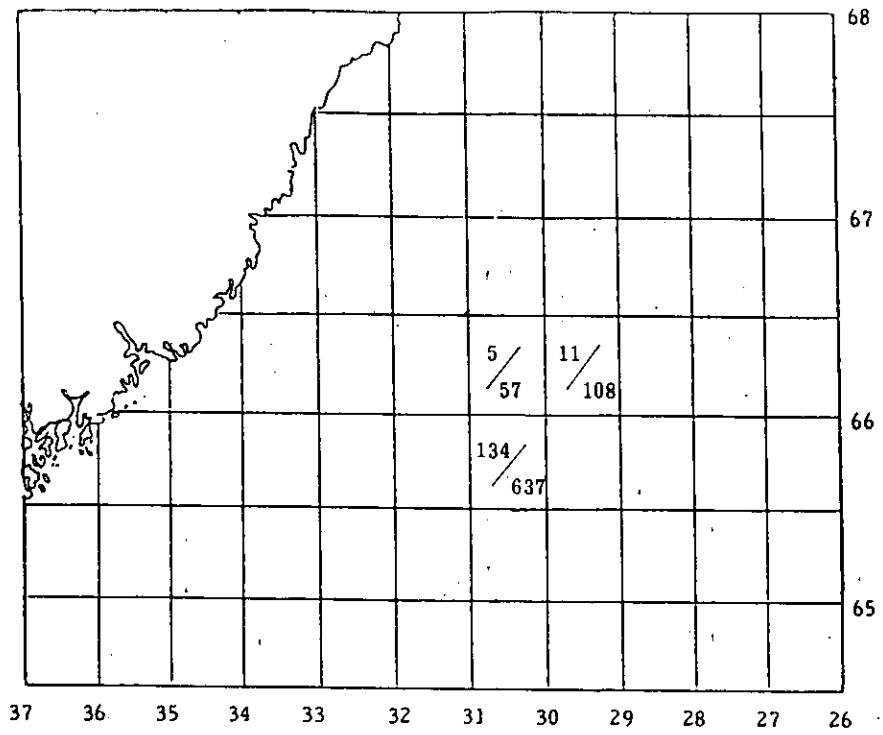

Fig.7. February (catch in tonnes/hours fished).

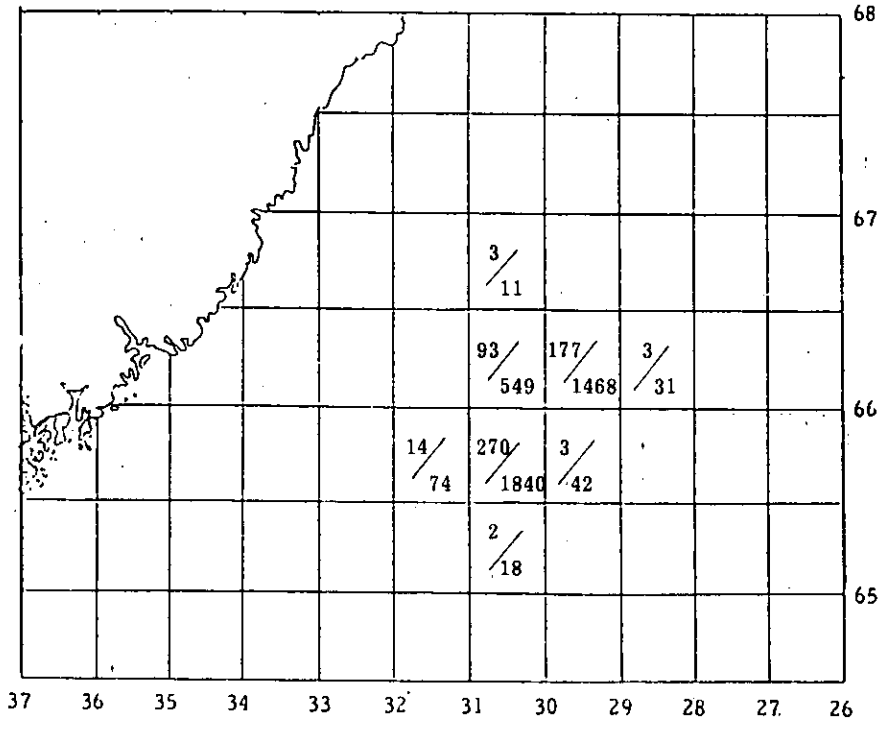

Fig.8. March (catch in tonnes/hours fished).

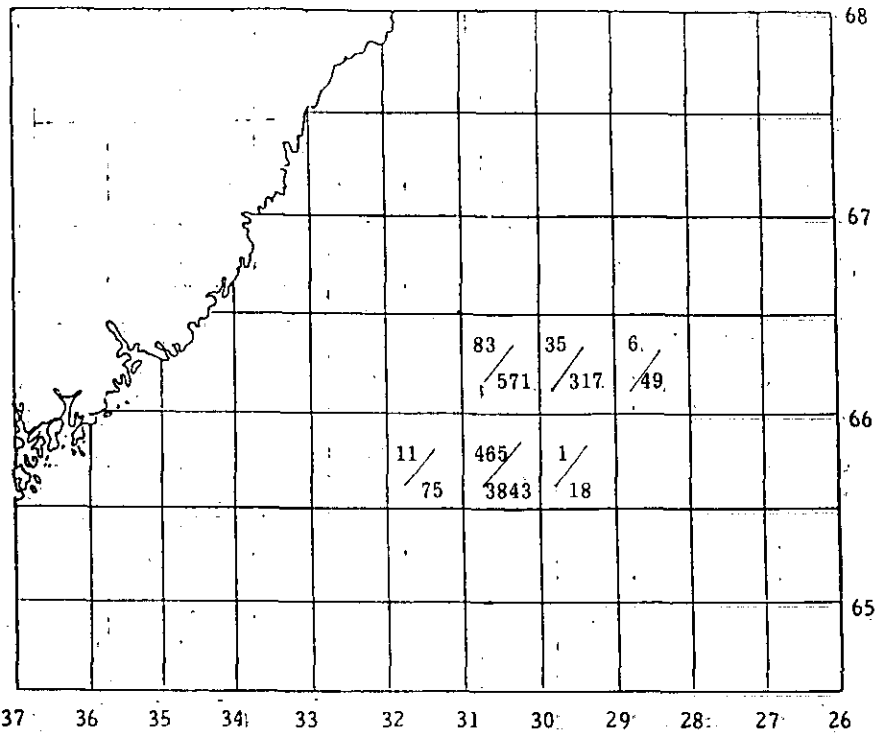

Fig. 9. April (Catch in tonnes/hours fished).

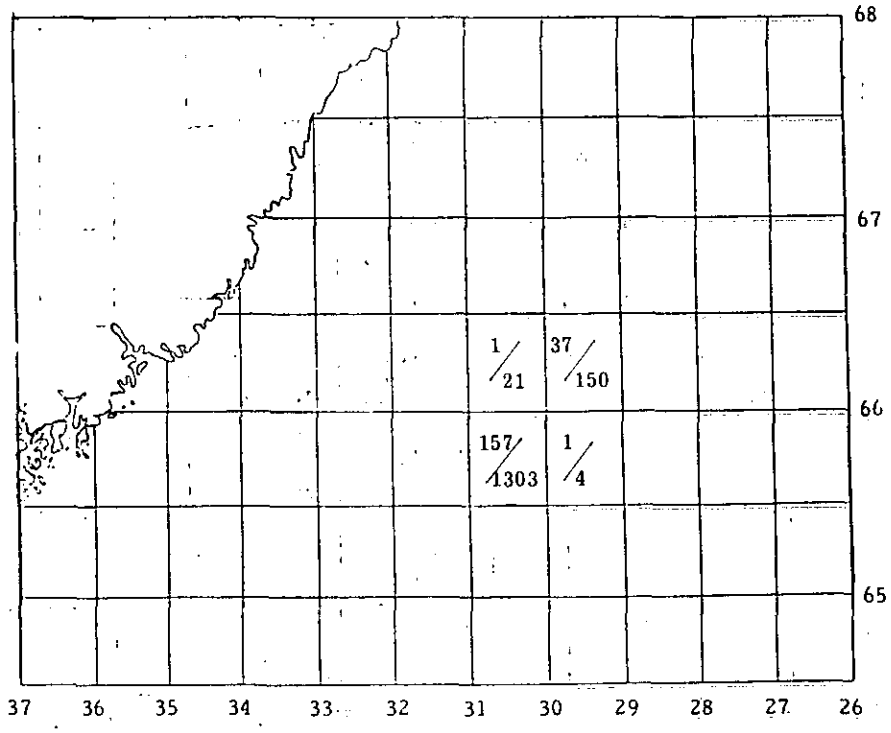

Fig. 10. May (Chatch in tonnes/hours fished).

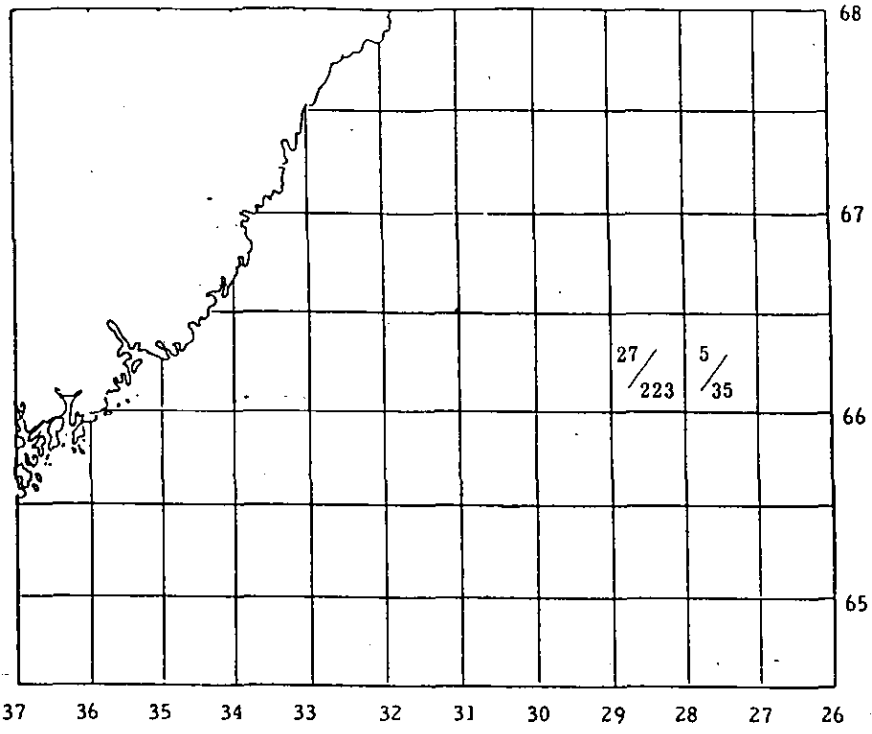

Fig. 11. August (Catch in tonnes/hours fished).

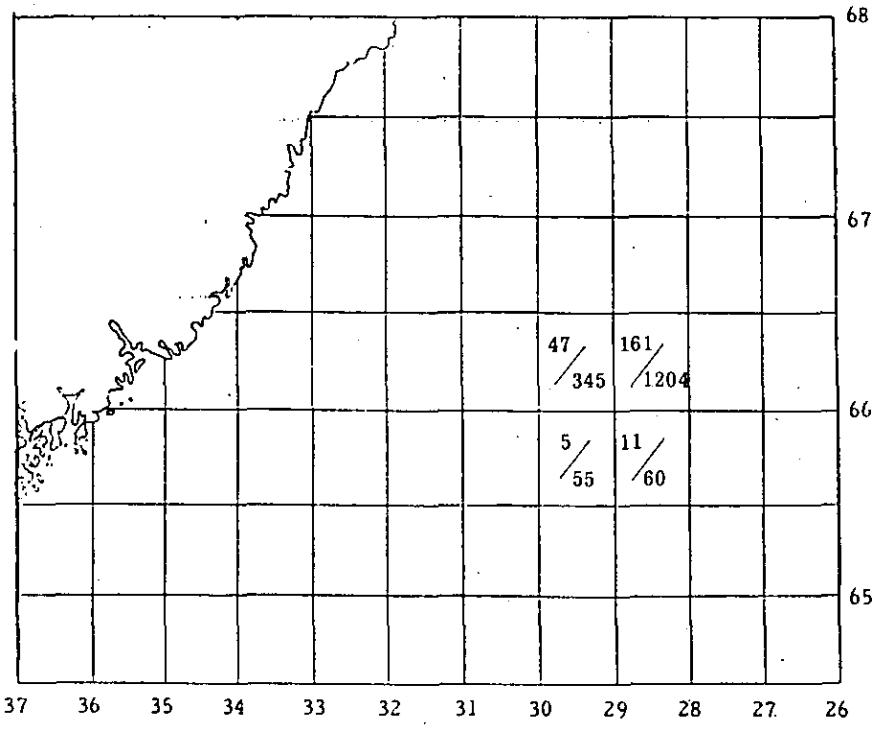

Fig. 12. September (Catch in tonnes/hours fished).

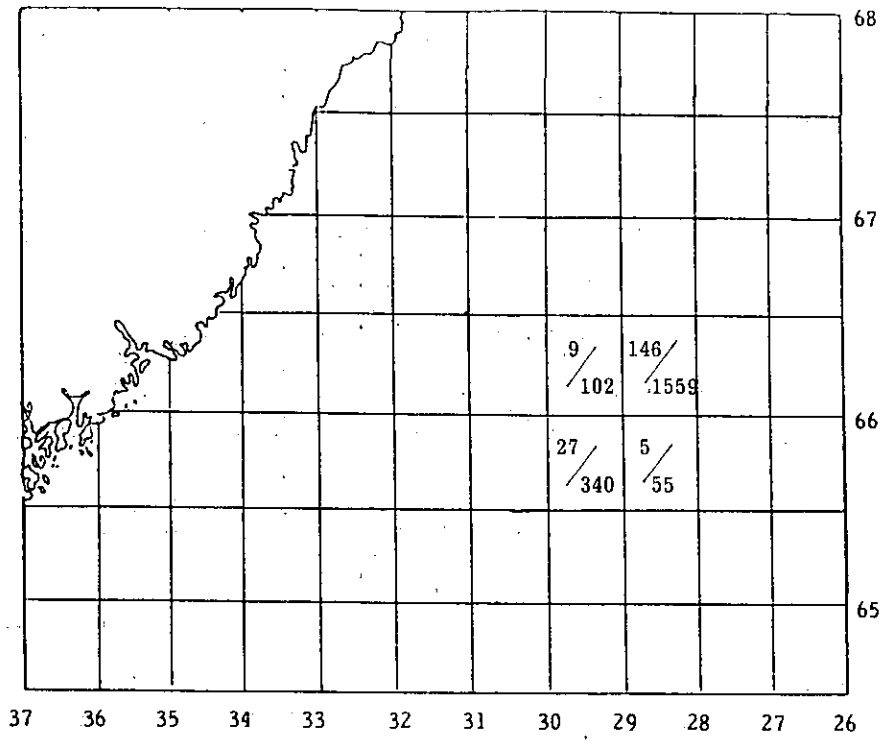

Fig. 13. October (Catch in tonnes/hours fished).

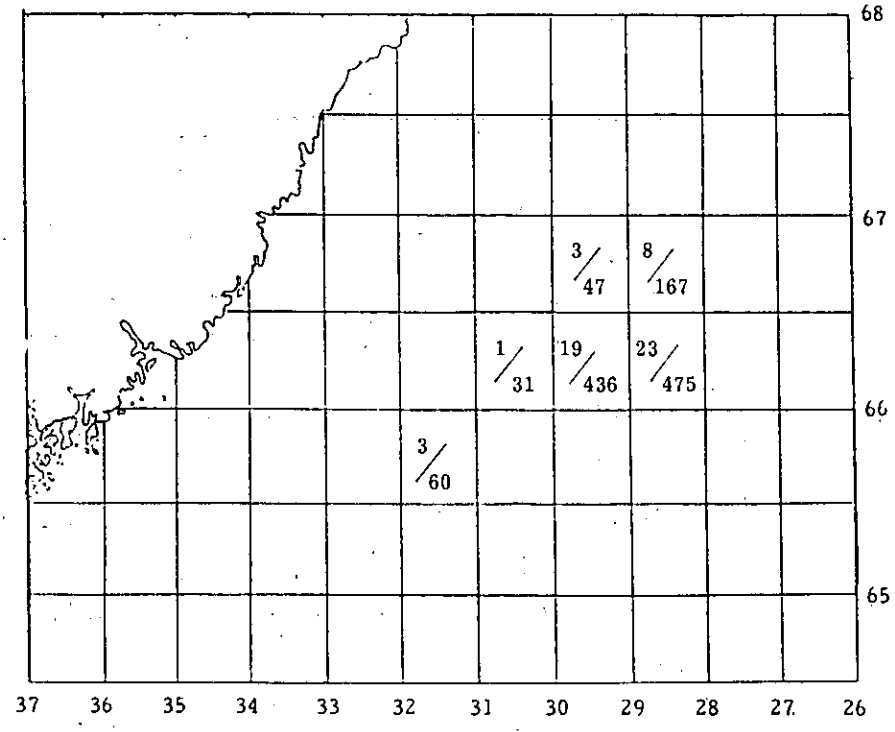

Fig. 14. November (Catch in tonnes/hours fished).

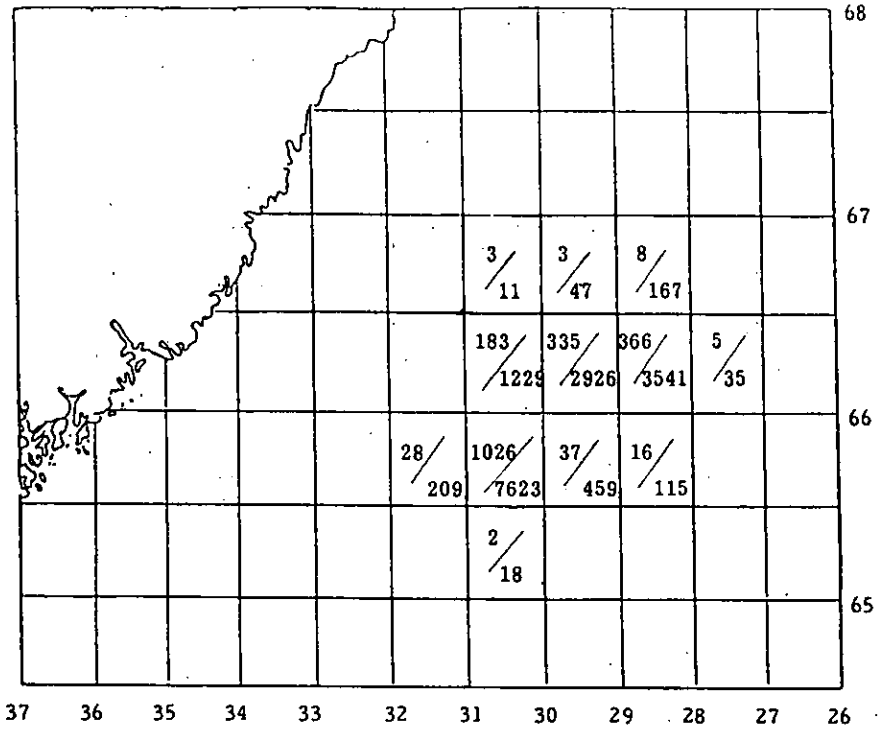

Fig.15. Total (Catch in tonnes/hours fished).