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Norwegian Investigations on Shrimp (Pandalus borealis)
in East Greenland Waters in 1986

by

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INTRODUCTION

The Norwegian quota of shrimp in East Greenland waters in 1986 was 2050 tons. 22 vessels participated in the fishery.

Results of field investigations, together with commercial fishery data for the years 1984 and preliminary catch and effort data for 1985 were reported by Smedstad and Torheim (1986). The results of investigations carried out in 1986 are presented in this paper.

LOCATION OF THE FISHERY

Bad weather and ice conditions hampered the shrimp fishery during the winter 1986. From 28 February to 10 March one of the authors was on board the sterntrawler "Lyshaug". During that time the fishing area of "Lyshaug" was located south of 66° N and 30° W (Fig. 1.). Fig. 5 - 9 show the location of the Norwegian fishery in the period February - May and in August 1986, when most of the catch was taken.

MATERIAL AND METHODS

The shrimp were sorted into "landings" 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 redfish (Fig 3), Greenland halibut and cod.

Monthly catch and effort data from 1980 to 1986 are compiled from logbooks of the vessels participating in the fishery. For 1986 the preliminary data cover 85 % of the landings (Table 3).

SIZE COMPOSITION OF SHRIMP

Length compositions of shrimp in samples collected by the observer on board "Lyshaug" are given in Table 2 and Fig. 2. Shrimps with carapace length around 29 - 30 mm were dominating. Very few small shrimps were caught.

DISCARD

The discard varied from nothing to 1.6 % of the total catch (Table 1). On an average 0.9 % of the total catch was discarded. The discarded shrimp consisted mostly of broken shrimps 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 1986. The quarterly CPUE for the period 1980 - 1986 are shown in Fig. 4. 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 - 1986.

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 bycatch per tow is given below:

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

REFERENCES

Smedstad, O.M. and Torheim, s. 1986. Norwegian Investigations on shrimp (Pandalus borealis) in East Greenland waters in 1985. NAFO SCR Doc. 86/9: 1-6.

Table 1. Catches of shrimp and by-catches of fish in some trawl hauls by M/V "Lyshaug" off East Greenland in February - March 1986.

| Nos | Date | Time (hr) | Position | | Direction towed | Towing time (hr) | Shrimp catches | | | By-catches (Nos) | | | | |
|-----|----------|--------------|----------|--------|--------------------|------------------------|----------------|----------------|-------------|------------------|--------------|-------------|-------|---|
| | | | N | W | | | Landings kg | Discards kg | Total kg | Cod hal. | Gre. hal. | Red fish | Other | |
| | | | | | | | | | | | | | | % |
| 1 | 28 Feb. | 1030 | 65°40' | 30°25' | 45° | 3.33 | 885 | 10 | 1.1 | 895 | - | - | 10 | - |
| 2 | 3 March | 0945 | 65°37' | 30°30' | 115° | 3.50 | 525 | 5 | 0.9 | 530 | - | - | 20 | 1 |
| 3 | 3 March | 1420 | 65°36' | 30°16' | 280° | 3.50 | 315 | 5 | 1.6 | 320 | - | - | - | - |
| 4 | 4 March | 0445 | 65°40' | 30°28' | 40° | 4.00 | 185 | 3 | 1.6 | 188 | 3 | - | 600 | 5 |
| 5 | 4 March | 0845 | 65°40' | 30°26' | 45° | 4.00 | 20 | 0 | - | 20 | 1 | - | 42 | 3 |
| 6 | 4 March | 1045 | 65°41' | 30°15' | 40° | 4.25 | 515 | 8 | 1.6 | 523 | 1 | 6 | 12 | 5 |
| 7 | 5 March | 1605 | 65°45' | 30°18' | 160° | 4.00 | 290 | 2 | 0.7 | 292 | - | 1 | 200 | - |
| 8 | 6 March | 0730 | 65°51' | 30°08' | 180° | 4.00 | 700 | 10 | 1.4 | 710 | - | 2 | 10 | - |
| 9 | 6 March | 1230 | 65°45' | 30°06' | 5° | 4.00 | 645 | 5 | 0.8 | 650 | 1 | 2 | 26 | 2 |
| 10 | 7 March | 0800 | 65°45' | 30°06' | 10° | 4.00 | 715 | 5 | 0.7 | 720 | - | 2 | 78 | 1 |
| 11 | 7 March | 1730 | 65°53' | 30°06' | 170° | 4.00 | 350 | 2 | 0.6 | 352 | - | - | 200 | - |
| 12 | 8 March | 0800 | 65°40' | 30°16' | 150° | 3.50 | 75 | 0 | - | 75 | - | - | 72 | 7 |
| 13 | 8 March | 1600 | 65°39' | 30°18' | 10° | 3.00 | 355 | 3 | 0.8 | 358 | 1 | 1 | 170 | 5 |
| 14 | 8 March | 2105 | 65°45' | 30°18' | 160° | 4.00 | 290 | 2 | 0.7 | 292 | - | - | 130 | 3 |
| 15 | 9 March | 0900 | 65°51' | 30°08' | 180° | 4.00 | 410 | 6 | 1.5 | 416 | - | 1 | 80 | 2 |
| 16 | 9 March | 1300 | 65°51' | 30°08' | 180° | 4.00 | 410 | 5 | 1.2 | 415 | 1 | - | 120 | - |
| 17 | 9 March | 1900 | 65°35' | 30°28' | 40° | 3.50 | 220 | 1 | 0.5 | 221 | - | 1 | 30 | 5 |
| 18 | 10 March | 0400 | 65°38' | 30°25' | 10° | 4.00 | 875 | 10 | 1.1 | 885 | - | 1 | 60 | 6 |
| 19 | 10 March | 0915 | 65°39' | 30°30' | 180° | 4.00 | 25 | 0 | - | 25 | 1 | - | 105 | 5 |

Table 2. Length composition of random samples from shrimp catches by M/V "Lyshaug" off East Greenland in March 1986.

| Carapace-length mm. | Haul no | | total |
|---------------------|------------|------------|------------|
| | 3 | 6 | |
| 19 | - | 1 | 1 |
| 20 | - | - | - |
| 21 | - | - | - |
| 22 | 1 | 1 | 2 |
| 23 | 1 | - | - |
| 24 | - | - | - |
| 25 | 4 | 2 | 6 |
| 26 | 10 | 3 | 13 |
| 27 | 11 | 18 | 29 |
| 28 | 33 | 55 | 88 |
| 29 | 63 | 65 | 128 |
| 30 | 58 | 67 | 125 |
| 31 | 23 | 36 | 59 |
| 32 | 8 | 17 | 25 |
| 33 | 7 | 3 | 10 |
| 34 | - | - | - |
| 35 | - | 1 | 1 |
| Total | 219 | 269 | 488 |

Table 3. Catch (tonnes) and catch per hour trawling in division XIV B from 1982 to 1986.

| Month | 1982 | | 1983 ¹ | | 1984 | | 1985 | | 1986 ² | |
|--------------|-------------|--------------|-------------------|--------------|-------------|--------------|-------------|--------------|-------------------|--------------|
| | Catch | CPUE | Catch | CPUE | Catch | CPUE | Catch | CPUE | Catch | CPUE |
| Jan. | - | - | - | - | - | - | - | - | 31 | 0.112 |
| Feb. | - | - | - | - | 79 | 0.232 | - | - | 208 | 0.141 |
| Mar. | 305 | 0.197 | - | - | 622 | 0.224 | 760 | 0.184 | 618 | 0.145 |
| Apr. | 761 | 0.171 | 350 | 0.128 | 732 | 0.183 | 995 | 0.166 | 502 | 0.125 |
| May | 828 | 0.248 | 367 | 0.255 | 500 | 0.167 | 269 | 0.137 | 268 | 0.123 |
| Jun. | - | - | 257 | 0.143 | - | - | - | - | - | - |
| Jul. | - | - | 6 | 0.133 | - | - | - | - | 2 | 0.071 |
| Aug. | - | - | 61 | 0.098 | - | - | - | - | 105 | 0.131 |
| Sep. | - | - | - | - | - | - | - | - | 18 | 0.114 |
| TOTAL | 1896 | 0.203 | 1041 | 0.157 | 1933 | 0.191 | 2024 | 0.166 | 1752 | 0.133 |

¹) 60 % of total landings

²) 85 % of total landings

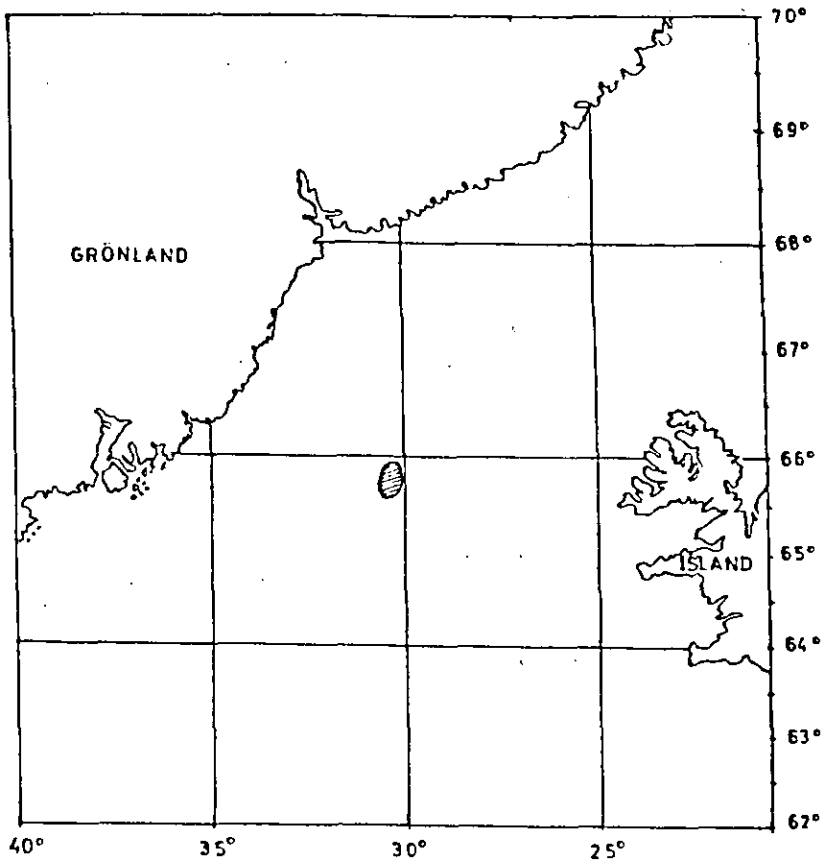


Fig.1. Hatched area: Area fished by M/V "Lyshaug" during the stay of the observer in March-April 1986.

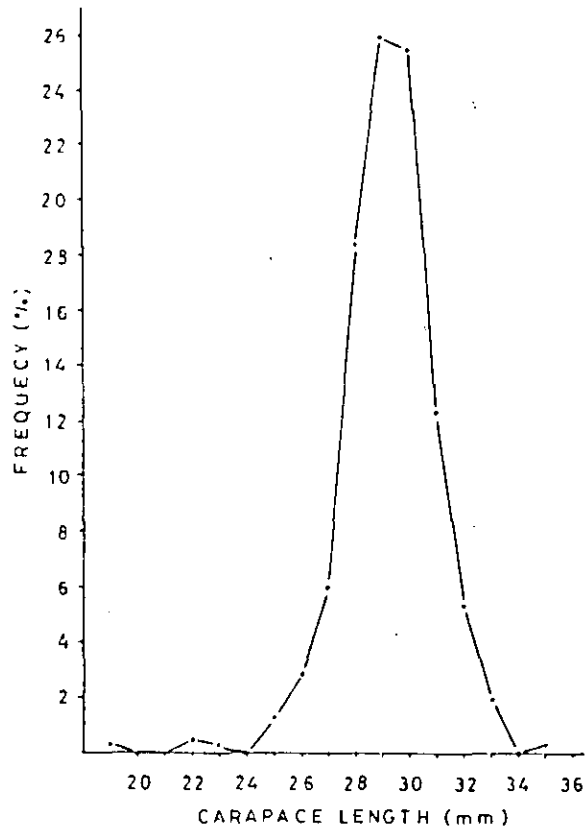


Fig.2. Weighted mean length composition of shrimp from samples taken off East Greenland in February-March 1986.

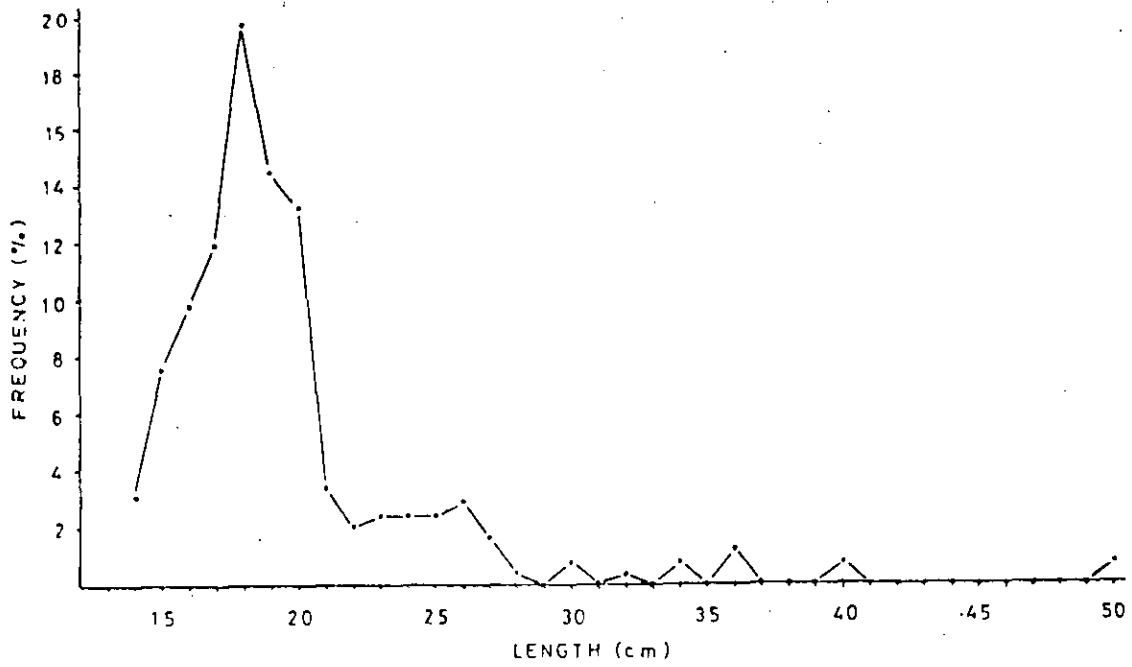


Fig.3. Length composition of redfish taken as by-catch with shrimp off East Greenland in February-March 1986.

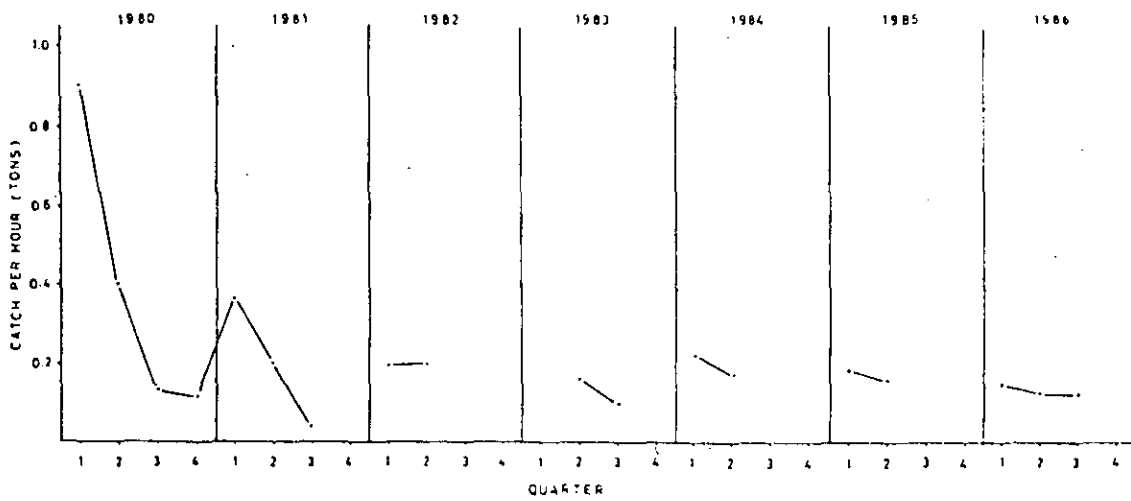


Fig.4. Quarterly mean shrimp catch per hour trawling by Norwegian vessels in Div. XIV B 1980 - 1986.

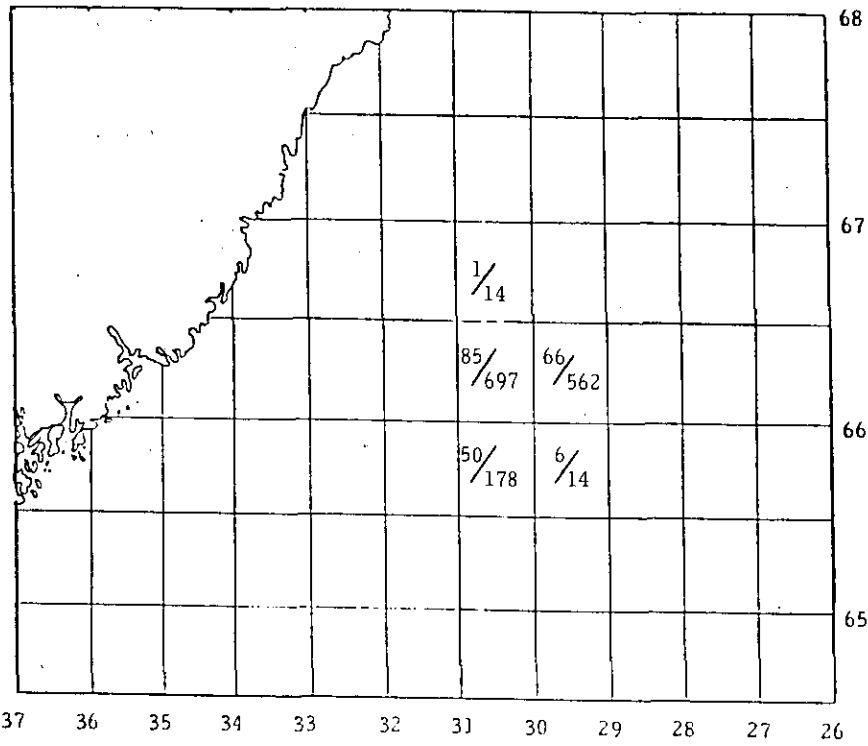


Fig.5. February (Catch in tonnes/ hours fished).

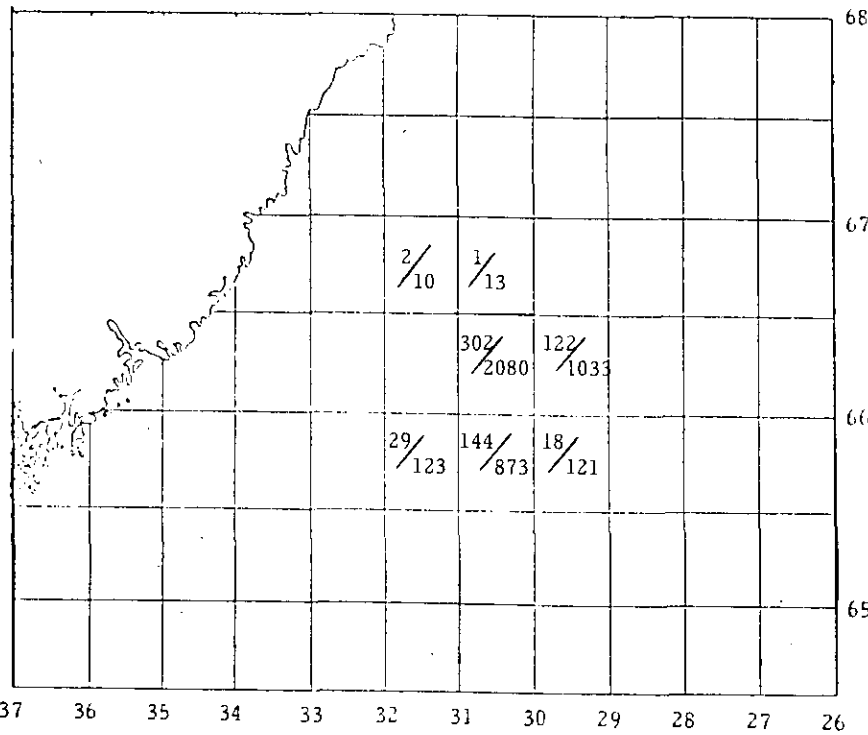


Fig.6. March (Catch in tonnes/ hours fished).

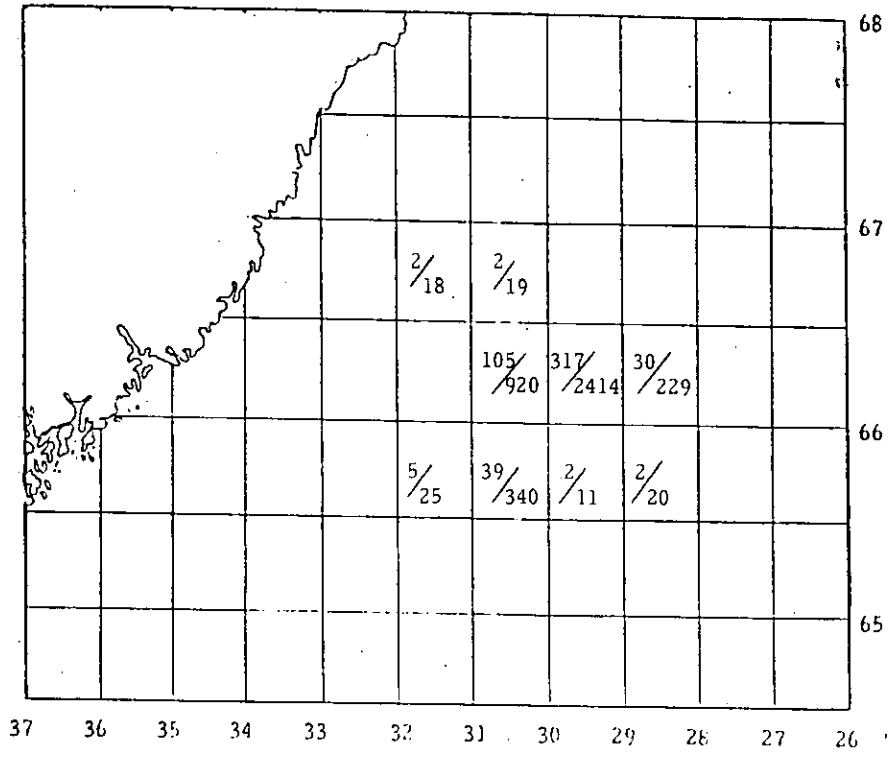


Fig.7. April (Catch in tonnes/ hours fished).

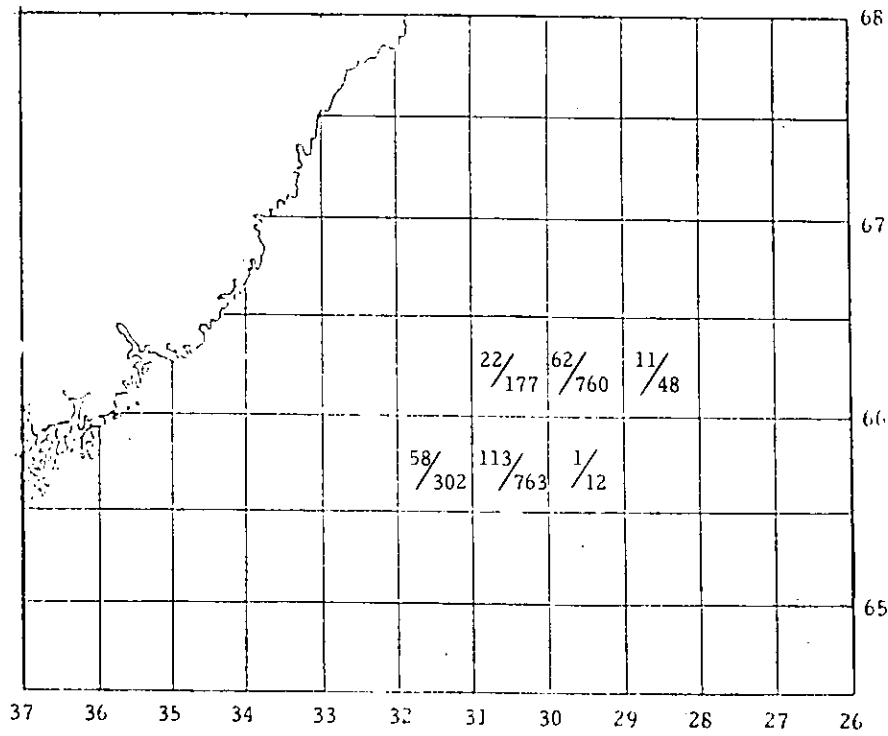


Fig.8. May (Catch in tonnes/ hours fished).

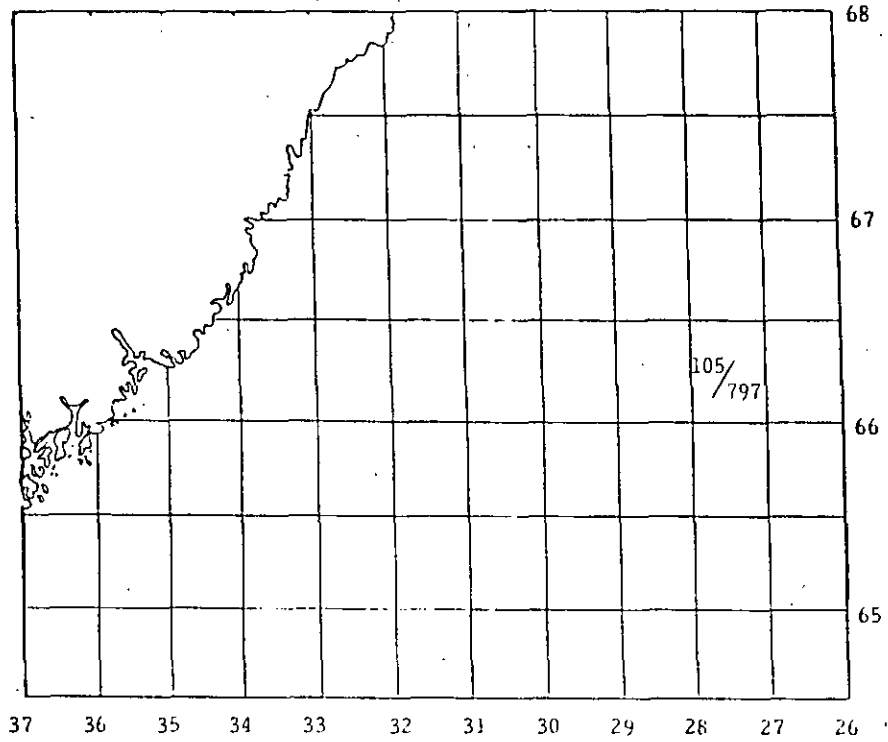


Fig.9. August (Catch in tonnes/ hours fished).

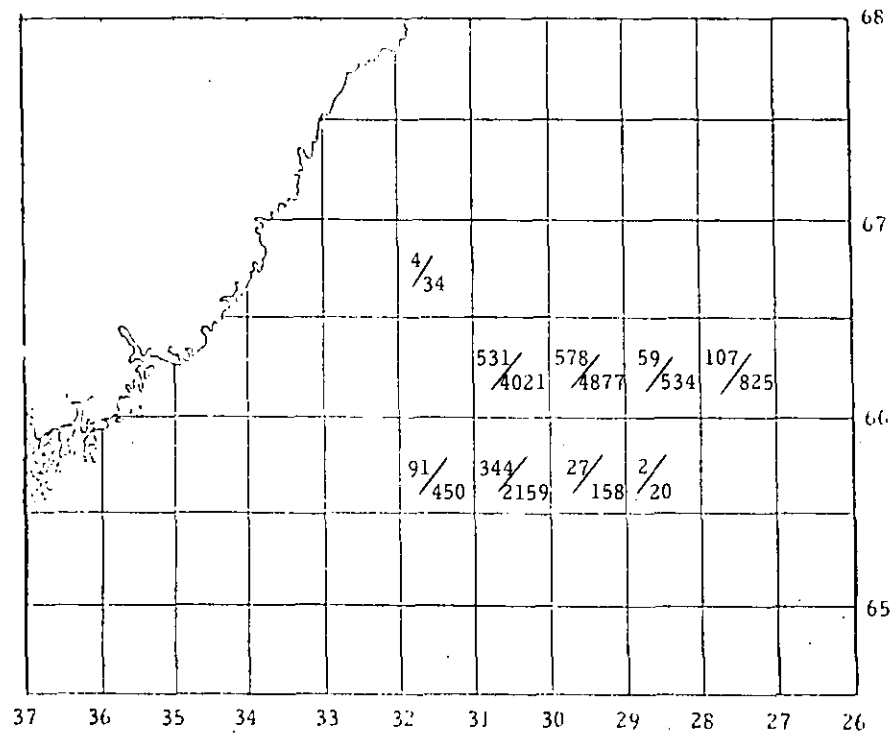


Fig.10. Total (Catch in tonnes/ hours fished).