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Catch, Effort and Biological Characteristics of Shrimp (Pandalus borealis) in the French Fishery off West Greenland, 1981.

by

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The french fishery for shrimp off West Greenland was conducted by two stern trawlers (OTB2-Class 6) in the summer of 1981 - the fishing logbook of one of these two trawlers (the Finlande III) was provided by the captain and five samples of shrimp were frozen for further analysis at the Saint-Pierre Laboratory.

Data including information on biological characteristics of samples and on the catches and fishing effort are presented here. Moreover, the evolution of abundance index, based on catch rates of the French fishery from 1976 to 1981 are overviewed.

I - Observations on samples.

In each sample, the different sexual stages were separated and weighted. Then the shrimps were measured to the half millimeter below from the hiatus of the eye to the middle of the posterior edge of the carapace.

The size distribution of shrimp taken by the trawl (stretched meshes of 40 mm in the codend), extended from 10 to 31 mm with the bulk ranging from 20 to 28 mm (Fig.1). The mean length of individuals in the catch, before sorting was 23.62 mm and the individual mean weight of 8.0 g against 24.9 mm and 8.8 g for the same period last year (DERIBLE et al. 1980).

The composition by sexual stages (Table 1 and Fig.1) indicates that three groups of males were present in the samples, ranging respectively from 10 to 15 mm, 15 to 20 mm and 20 to 25 mm. The transitionals stretched between 20 to 27 mm, the females with sternal spines from 22 to 28 mm and the females without sternal spines from 23 to 31 mm.

The main characteristics of the different samples examined are presented in the Table 1 and Fig.2. The males represented 50 % of number in the catch before sorting, the transitionals 12 % and the females 38 %.

Most transitionals and females presented ovaries well developed (92 % and 97 % of head roe respectively) but spawning was not yet observed. These observations are very similar to those made last year (DERIBLE et al.) in July.

## II - Observations on catches and fishing effort.

During this trip of Finlande III in the Davis Strait, from 29 June to 4 August, close to 700 hours of trawling were made and 228 metric tons of shrimps were processed. The C.P.U.E. per month are presented in the following table.

	June 29-30	July 1-31	August 1-4	Total
Number of tows	7	198	23	228
Catch in m.tons	6.4	210.1	24.1	240.6
Number of fishing hours	22	601	73	696
CPUE in kg/hour	291	350	330	346

The fishing grounds were located mostly on the Northwestern part of the Store Hellefiske Banke, and extruded from 67°25N to 68°00N and from 56°45W to 58°00W.

The depth of trawling ranged from 200 m to 335 m with most of tows made between 250 and 300 m.

Location of fishing efforts expressed in hours of trawling are presented by month in figures 3, 4 and 5, using the rectangular units (7.5' latitude x 15' longitude) as proposed by Danish scientists. A total of 21 units were fished during this trip representing an global area of about 3000 km<sup>2</sup>.

The monthly distribution of the French CPUE (kg/hour) including all tows on a 24 hours basis and without adjustment to the fishing time are reported in Fig. 6, 7 and 8 using again the rectangular unit areas. These figures show that the best yield were obtained in units KS2 in July and KN3 in August with respectively 620 and 586 kg/hour.

### III - Evolution of the French fishery from 1976.

The trawler Finlande III participate to the French fishery off West Greenland from 1976. The data on catch and CPUE of this vessel are presented in Table 3 on a yearly basis. Because the area and the period of fishing are more restricted in the last years, and for avoiding the bias resulting of the great variation in catch from month to other, the CPUE were calculated by using data obtained in July for NAFO Division 1B, the only common area and month for the different trips of Finlande III from one year to another. These figures are expressed in metric tons per day and in kg per hour when available, this last unit being more accurate.

After the record level of 1976 and 1977, the CPUE has dropped till 1979 from about 9 mt/day to 4 mt/day. In 1981, the CPUE has increased significantly : plus 66 % in tons per day or plus 45 % in kg/hour compared to 1979. Moreover, the length frequency distributions (Fig. 9) of the different samples collected on the total catch of Finlande III for 1978 to 1981 indicate a stability in the level of larger individuals this year and also evidence of good recruitment of small and medium shrimps than in previous year.

#### Acknowledgements.

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#### Reference

DERIBLE (P.), DUPOUY (H.) and MINET (J.P.), 1980.- Catch, Effort and Biological Characteristics of Shrimp (Pandalus borealis) in the French Fishery off West Greenland, 1980.- NAFO SCR DOC. Serial No. N246, 18 p.

Lcp mm <	:	M	T	Fws	Fns	:	Total
:	:	:	:	:	:	:	:
10	:	1				:	1
11	:	2				:	2
12	:	11				:	11
13	:	11				:	11
14	:	3				:	3
15	:	10				:	10
16	:	14				:	14
17	:	39				:	39
18	:	41				:	41
19	:	31				:	31
20	:	50	2			:	52
21	:	57	1			:	58
22	:	95	9	1	1	:	106
23	:	90	7	2	1	:	100
24	:	46	15	10	16	:	87
25	:	13	40	25	33	:	111
26	:		34	26	85	:	145
27	:		11	9	96	:	116
28	:			5	43	:	48
29	:				10	:	10
30	:				4	:	4
:	:	:	:	:	:	:	:
N	:	514	119	78	259	:	1001
Mean	:	20,93	25,38	26,04	27,04	:	23,62
S.d.	:	3,07	1,50	1,19	1,26	:	3,69

Tabl. 1 - Length distribution by sex of shrimps collected on board Finlande III (July 1981).

Tabl. 2 - Characteristics of samples collected on board Finlande III at West Greenland, 1981.

Sample No.	Date	Average position		Mean depth (m)	Duration of haul (GMT-3 h)	N° of shrimp examined	Composition by sex, in Percentage			
		Lat. N	Long. W				Male	Transitional	Females	
							NR	HR	BR	KR
1	July 4	67°50'	58°00'	300	05:30 - 08:30	212	56	12	32	
2	July 11	67°50'	58°00'	300	12:10 - 15:30	260	66	10	24	
3	July 18	67°45'	58°05'	290	03:45 - 06:45	195	32	2	14	1 51 0 0
4	July 25	67°42'	58°07'	280	04:10 - 07:10	187	18	0	15	2 65 0 0
5	August 1	67°30'	57°12'	220	16:00 - 19:30	191	78	1	6	1 14 0 0
						1045	50	12		38

Tabl. 3 - Evolution of catches and CPUE in the French fishery off West Greenland (Div. 1B and 0A).

Year	Period	Total catch (m.t.)	Catch in July (m.t.)	CPUE in July t/day	Variation %	CPUE in July kg/hour	Variation %
1976	July 2-Nov. 25	803	238	8.5			
1977	May 15-Déc. 5	829	48	9.6	+ 13		
1978	April 12-Déc. 3	721	67	5.2	- 46	322	
1979	July 4-Oct. 30	344	115	4.1	- 21	241	- 25
1980	July 16-Sept. 9	248	78	4.9	+ 20	285	+ 18
1981	June 29-Aug. 4	241	210	6.8	+ 39	350	+ 23

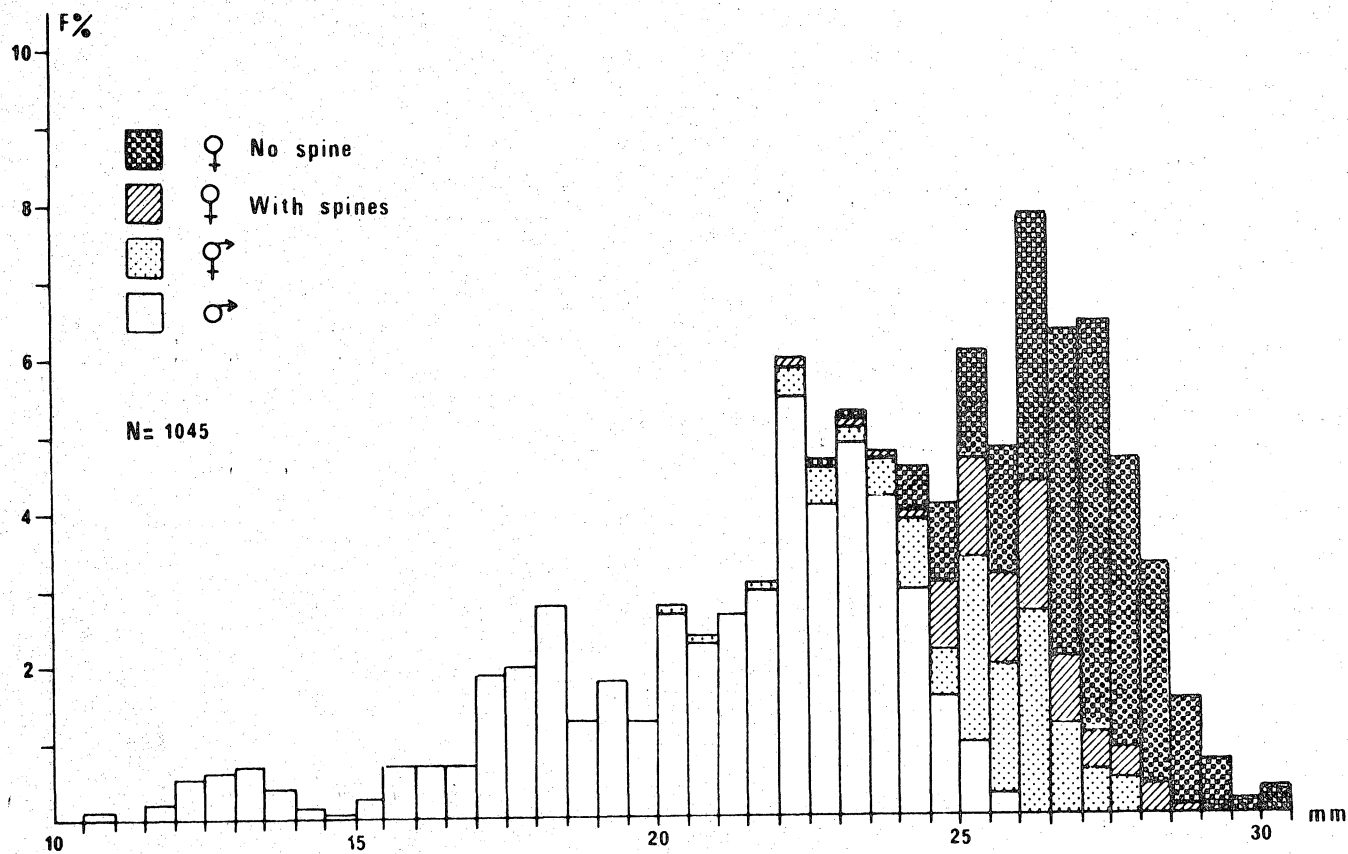


Fig. 1 - Length distribution of male, transitional and female shrimp in the catches (non sorted) of Finlande III during the trip (29 June 4 Aug. 1981) at West Greenland (Div. 1B )

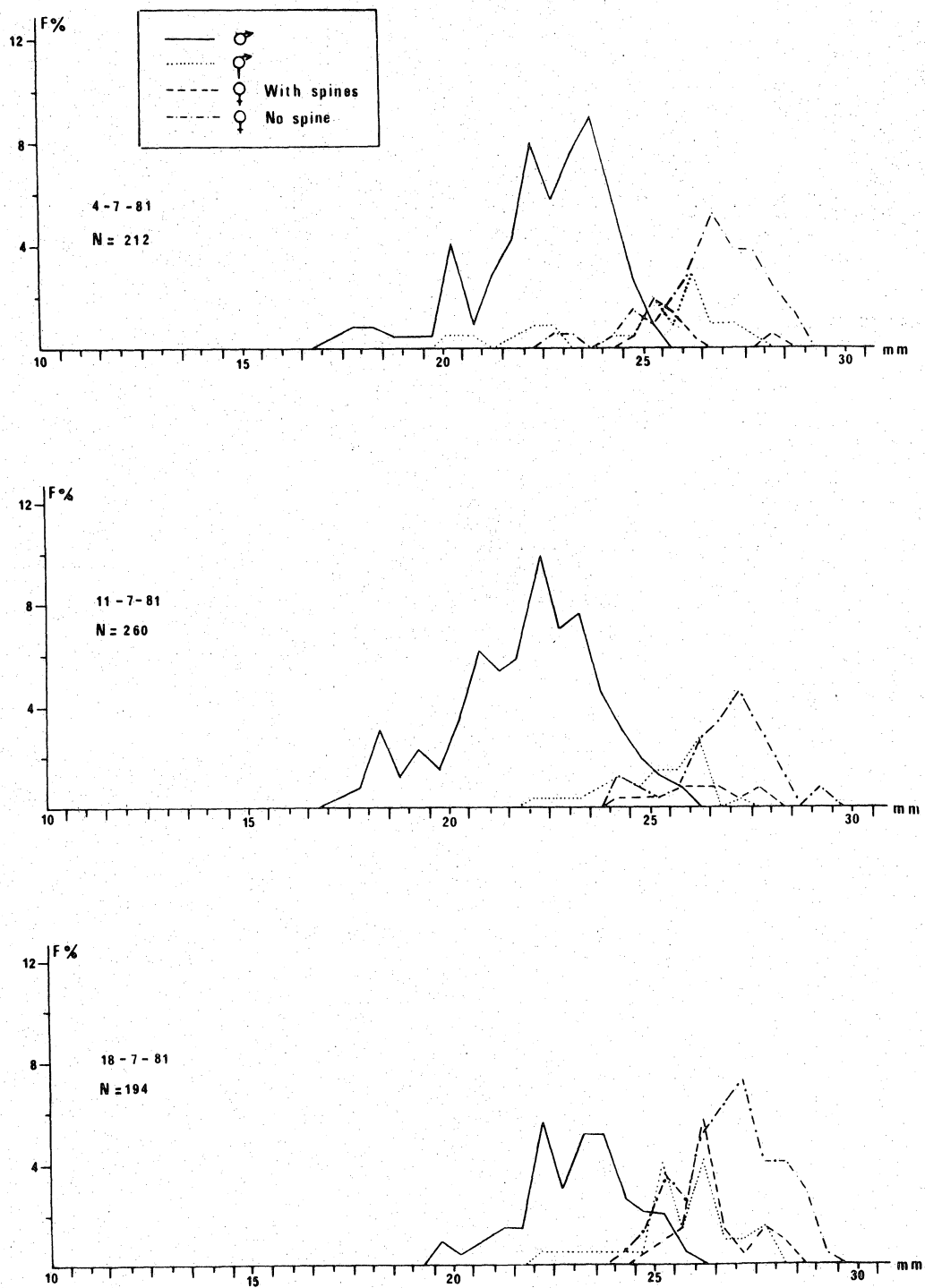


Fig. 2 - Length distribution (non sorted) of shrimp, male, transitional, female, in the samples collected during the trip of Finlande III at West Greenland in 1981 (Div. 1B)

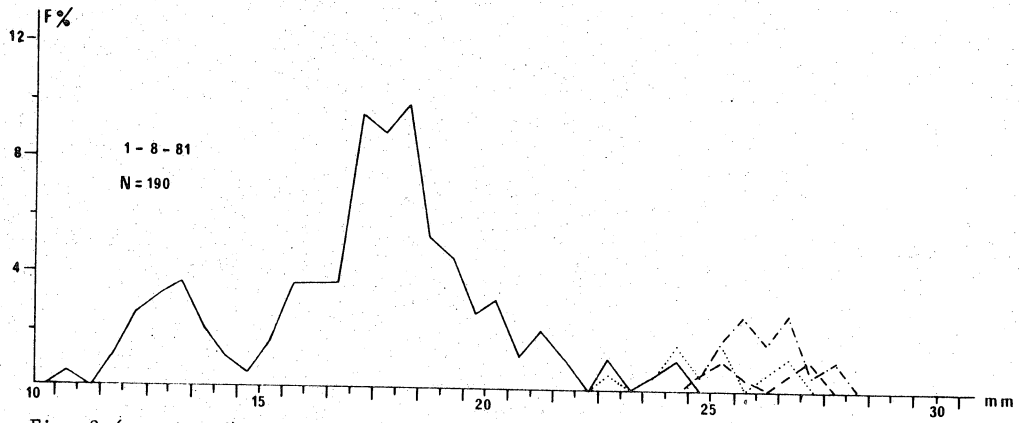
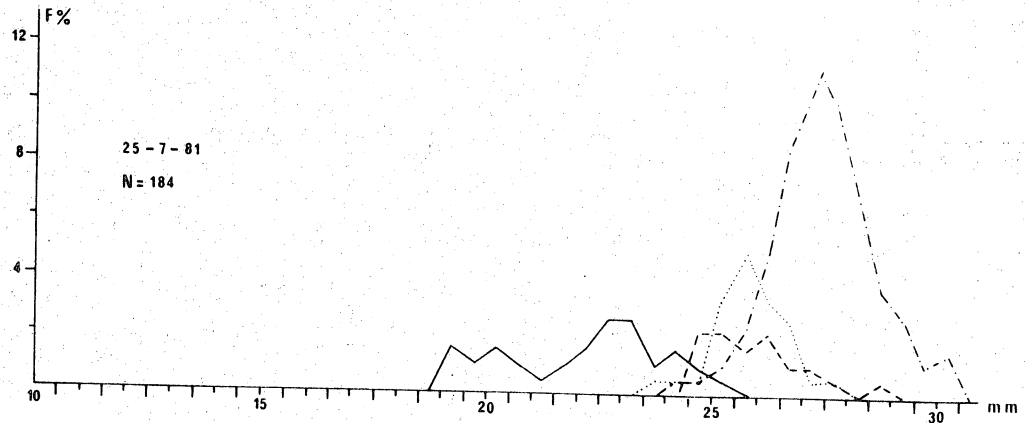


Fig. 2 (continued)



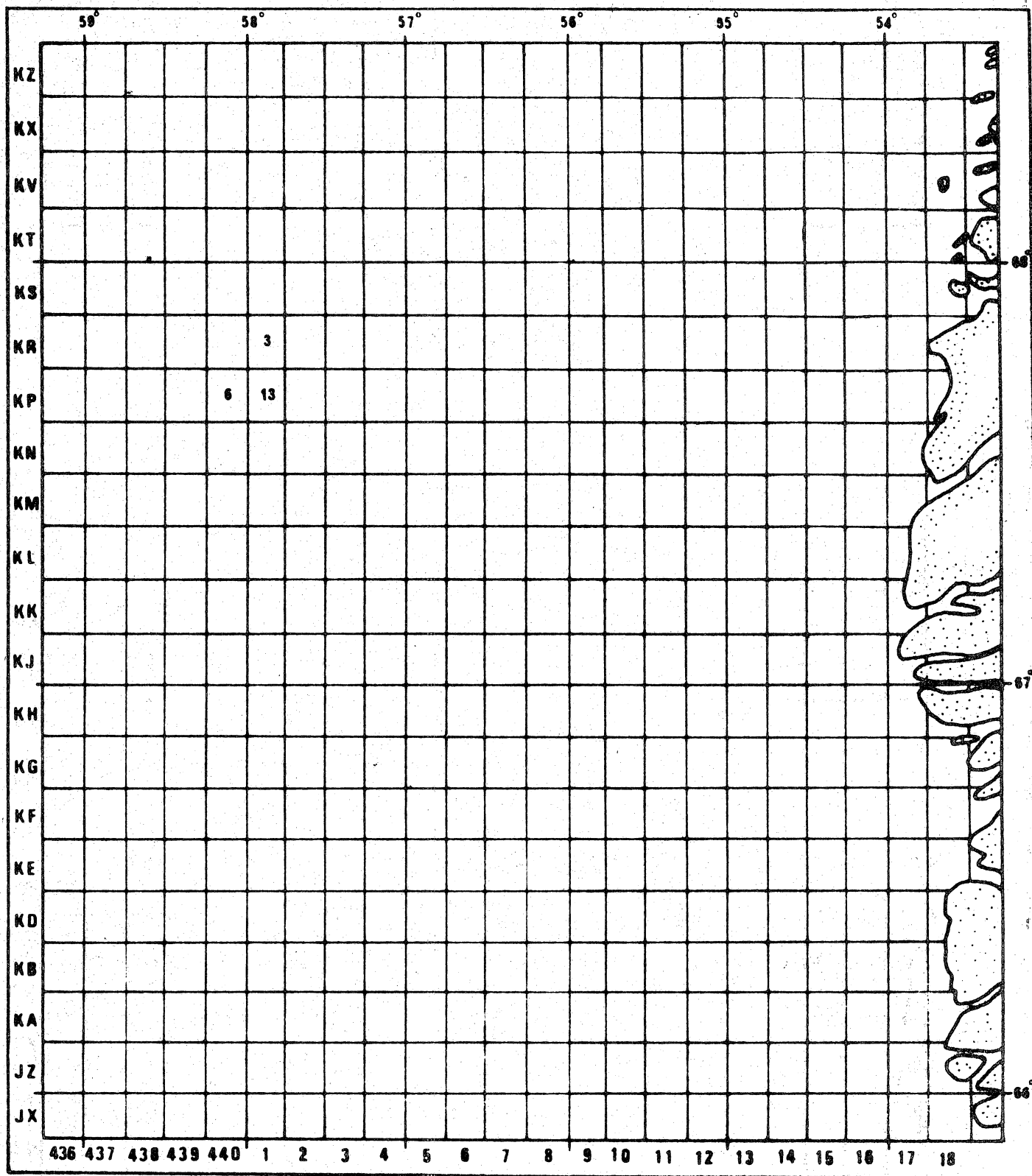


Fig. 3 - Distribution of the fishing effort (hours) of Finlande III at West Greenland in June 1981

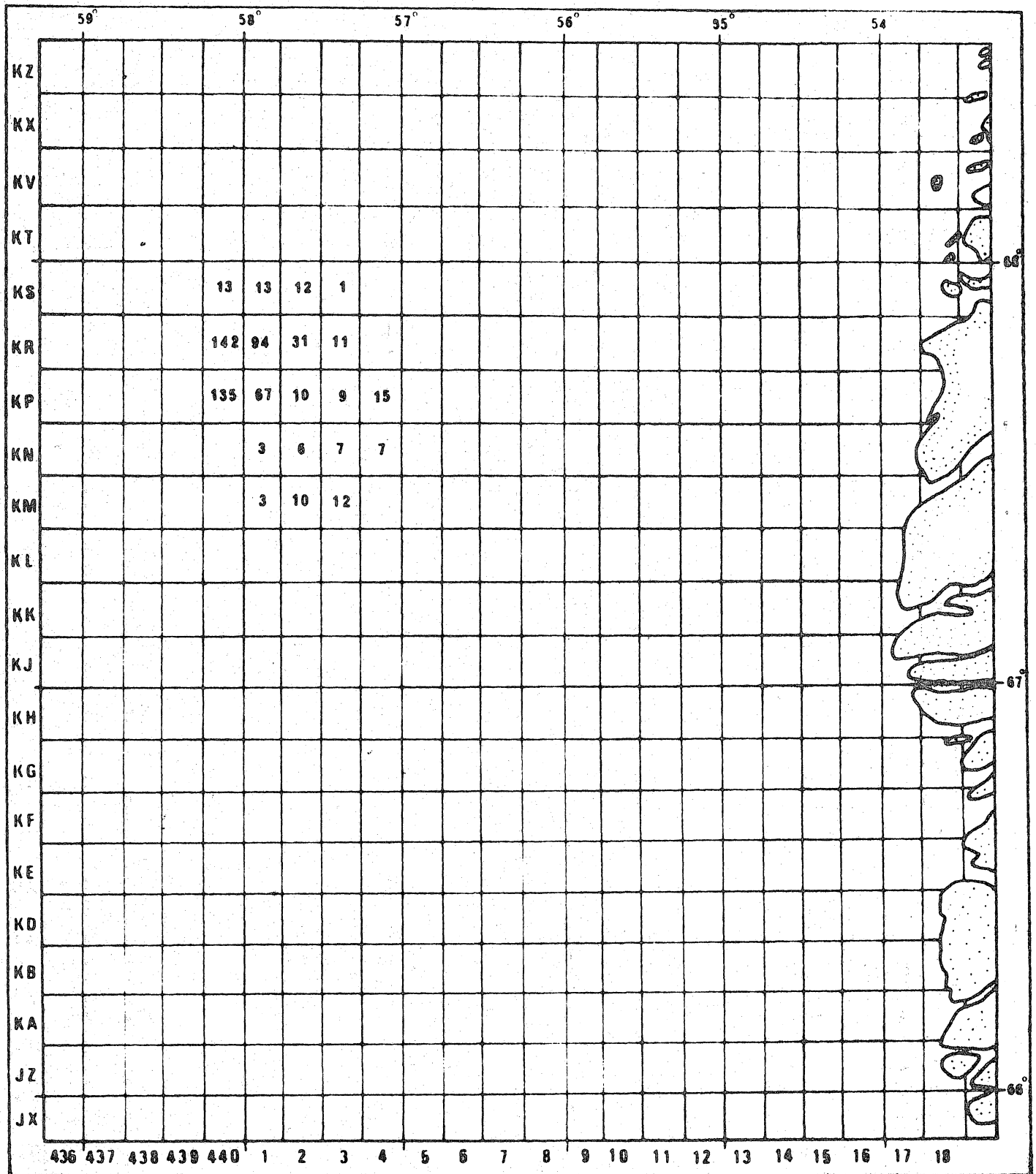


Fig. 4 - Distribution of the fishing effort (hours) of Finlande III at West Greenland in July 1981

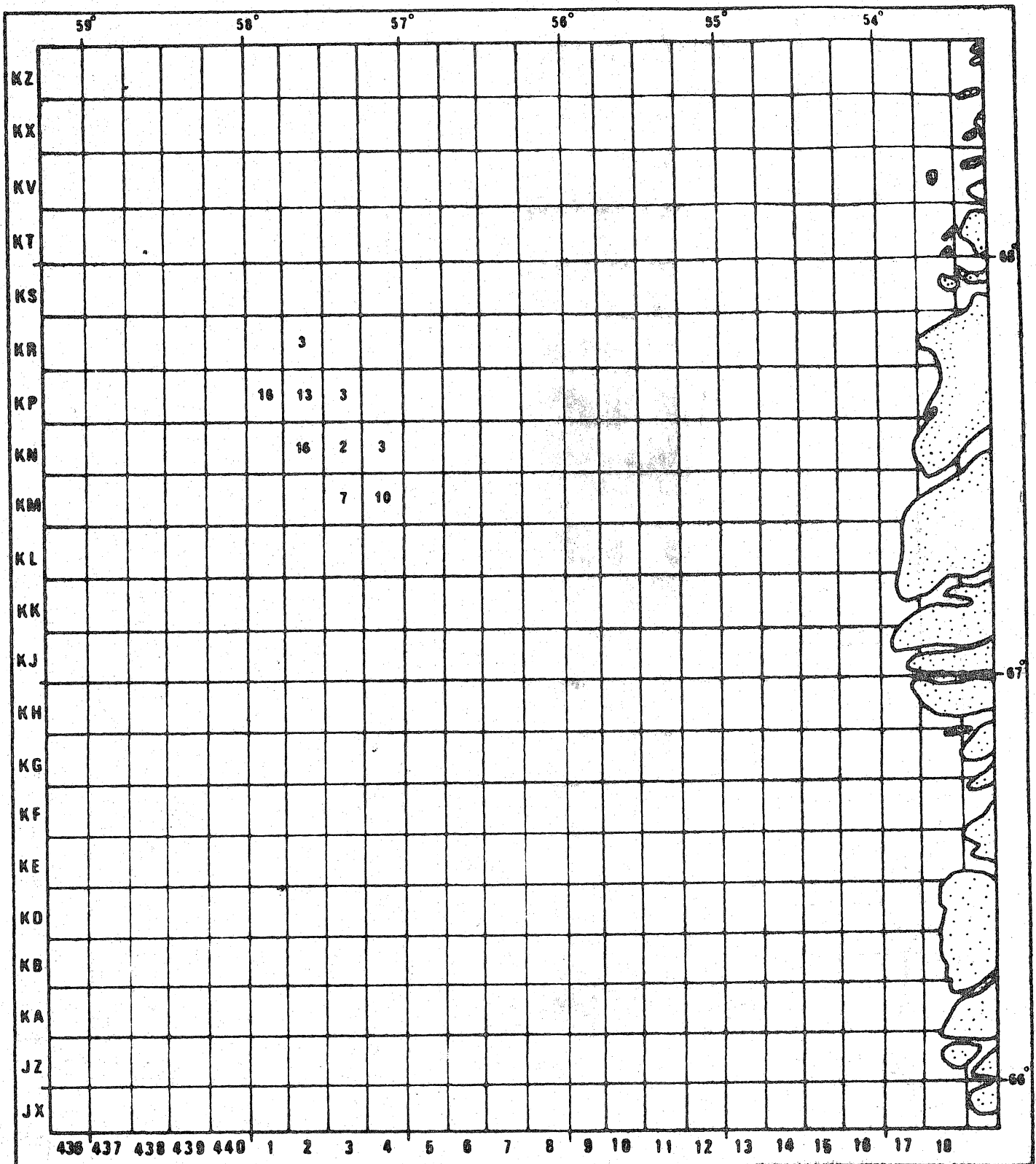


Fig. 5 - Distribution of the fishing effort (hours) of Finlande III at West Greenland in August 1981

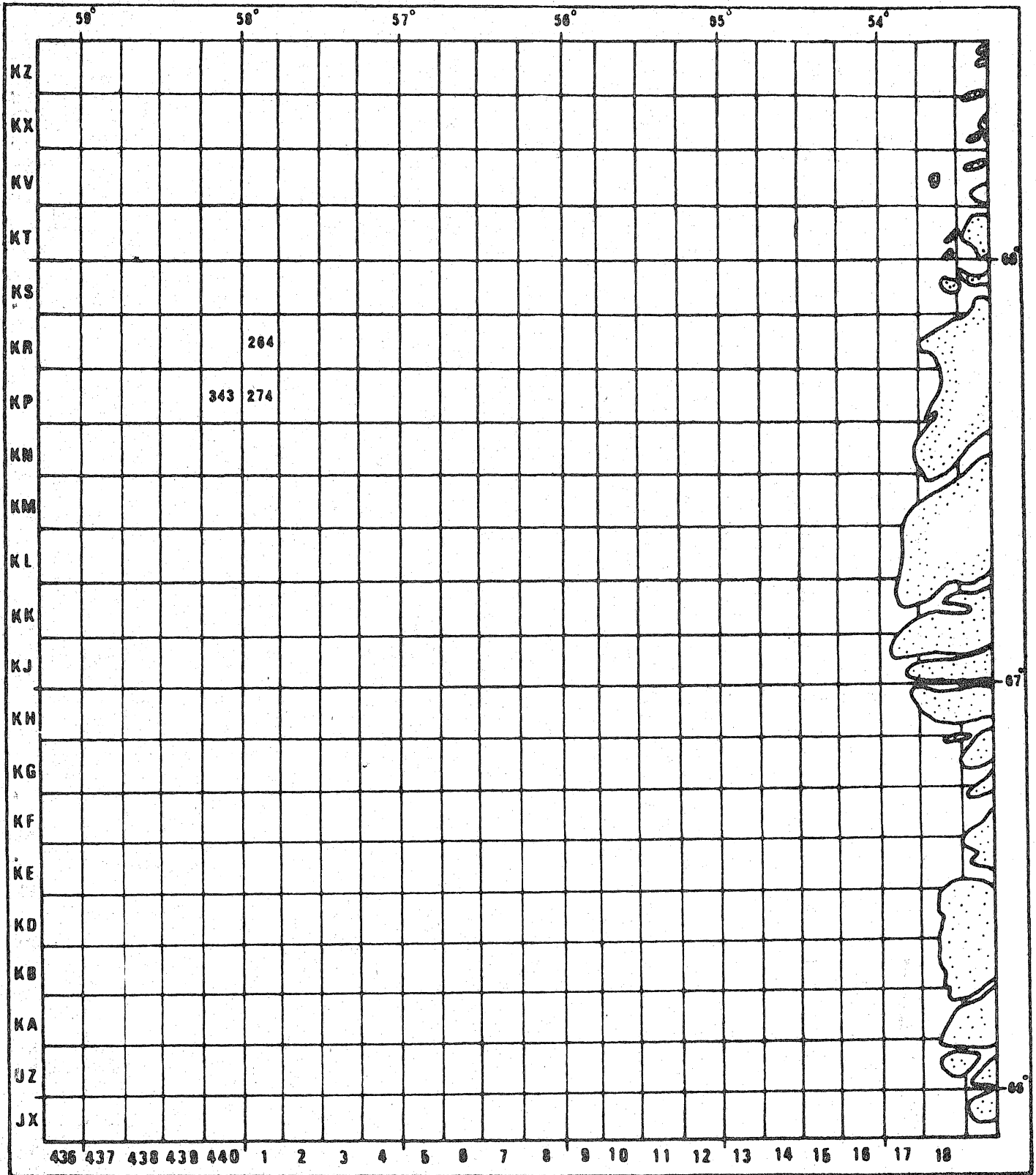


Fig. 6 - Distribution of the CPUE (kg/hour) of Finlande III at West Greenland in June 1981

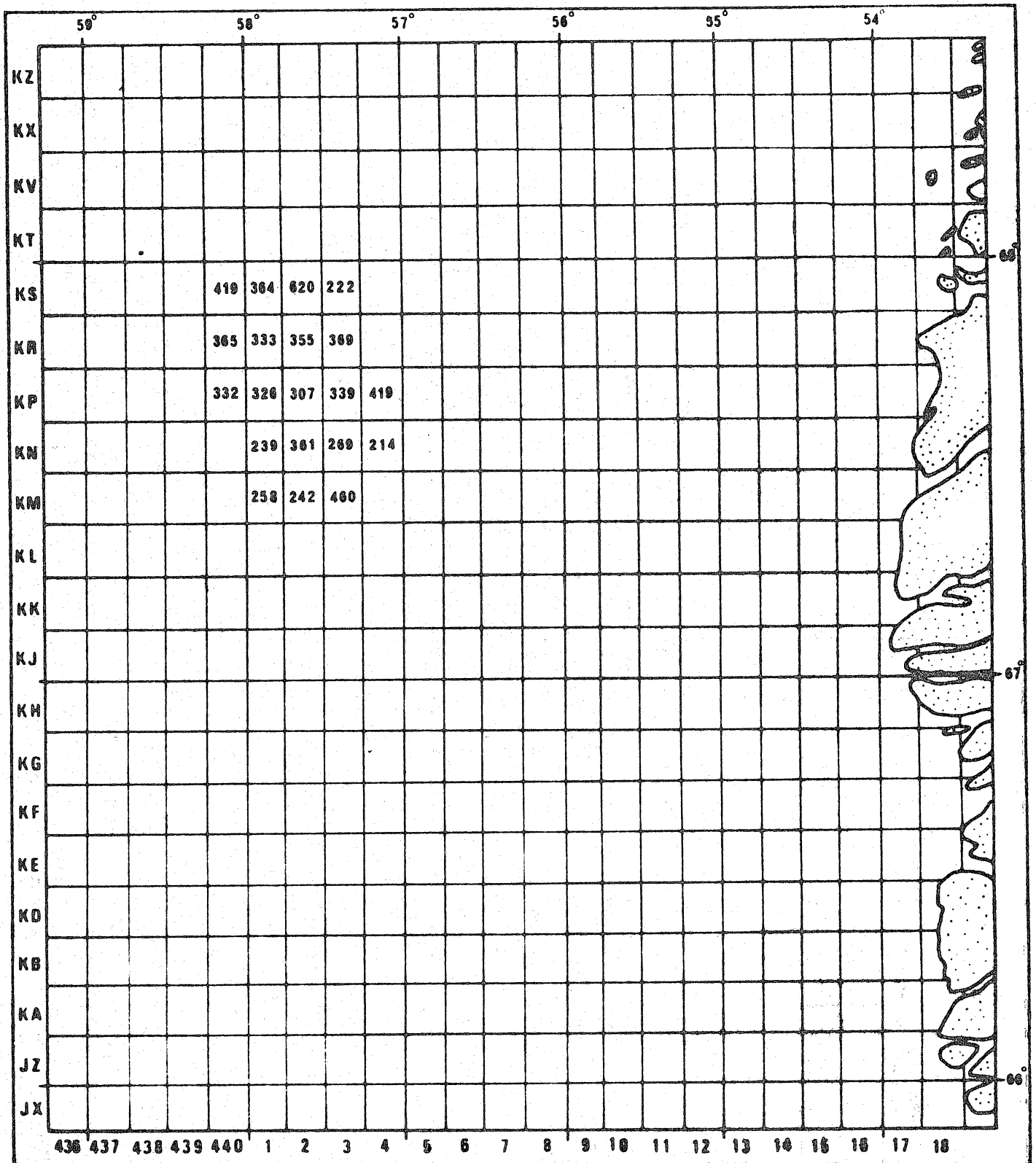


Fig. 7 - Distribution of the CPUE (kg/hour) of Finlande III at West Greenland in July 1981

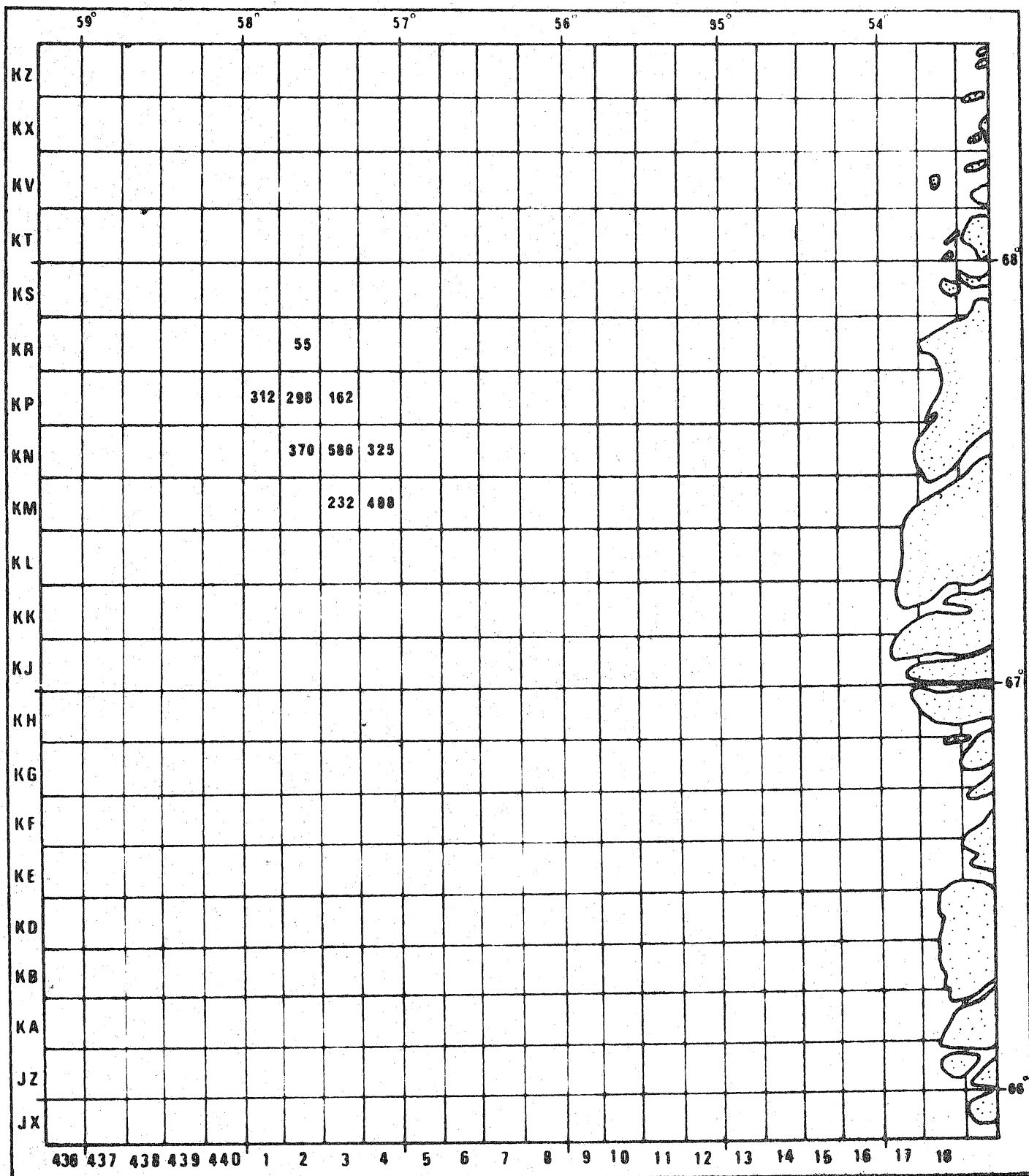


Fig. 8 - Distribution of the CPUE (kg/hour) of Finlande III at West Greenland in August 1981

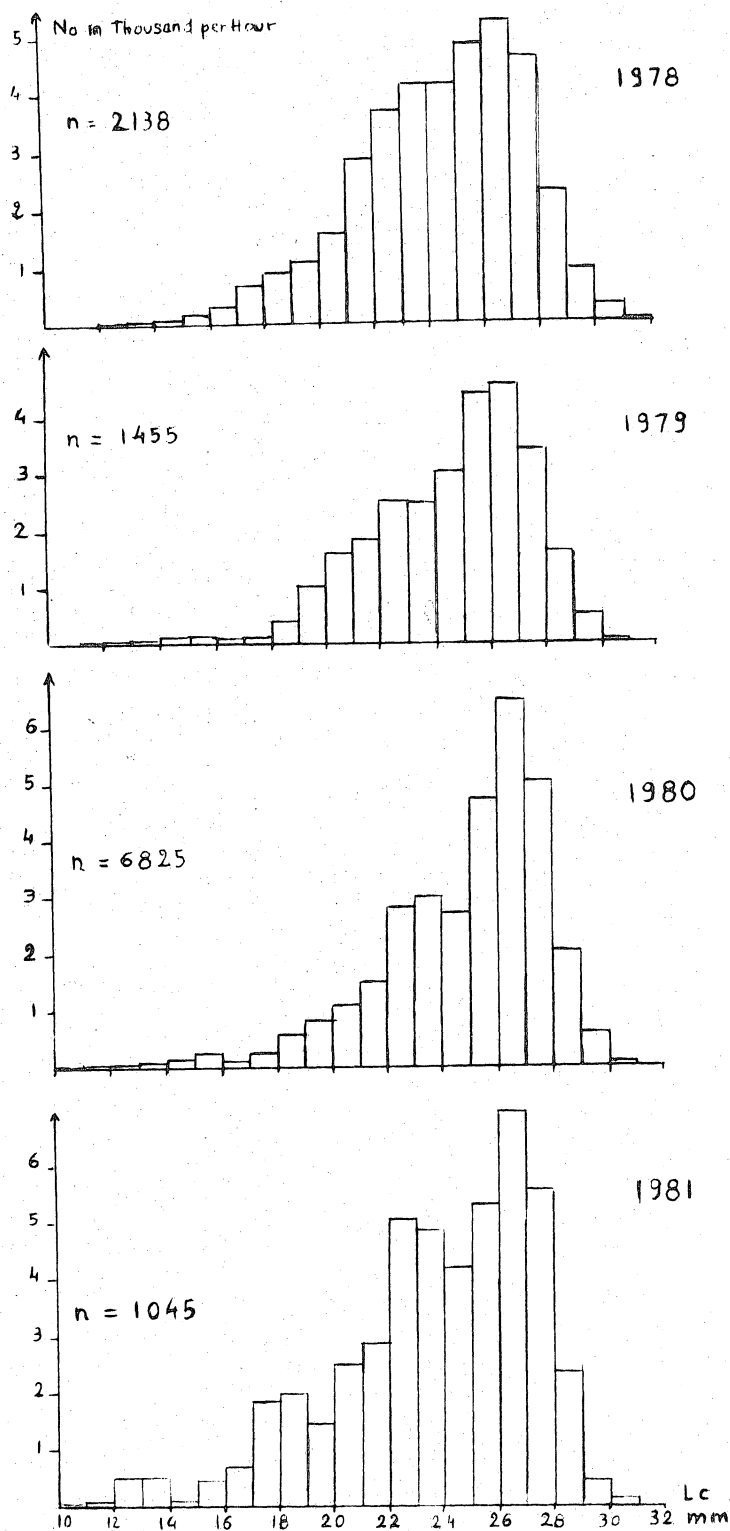


Fig. 9. Length distributions of shrimp, expressed in number per hour of trawling versus carapace lengths, in July-August 1978-1981 off West Greenland (French trawler Finlande III)

