

Northwest Atlantic



Fisheries Organization

Serial No. N465

NAFO SCR Doc 81/XI/157

SPECIAL MEETING OF SCIENTIFIC COUNCIL - NOVEMBER 1981

Catch, Effort and Biological characteristics of
shrimp (*Pandalus borealis*) in the French Fishery
off East-Greenland in 1981

by

H. DuPouy, J.P. Minet and P. Derible
Institut Scientifique et Technique des Pêches Maritimes
Centre de Recherches de Saint-Pierre et Miquelon
BP. 1240-St. Pierre
F-97500-St. Pierre et Miquelon

INTRODUCTION

A French fishery off East Greenland was conducted during the spring of 1981 by two stern trawlers (OTB2-Class 6). The fishing logbook of one of these two trawlers (the FINLANDE III) was provided by the captain and seven samples of shrimp were frozen for further analysis in the Saint-Pierre Laboratory.

Information on the biological characteristics of shrimp and on the catches and fishing effort are presented in this paper.

OBSERVATIONS ON SAMPLES

In each sample the sexual components were separated by reference to the first pair of pleopods and then to the sternal spines, in three categories: Males, females with spines (Fws) and females without spines (Fns). The transitional stage was not separated but it is assumed that most of individuals of this group were mixed with females with spines.

The size (Lc) distribution of shrimp caught by the 40 mm stretched mesh trawl and measured from the hiatus of the eye to the middle of the edge of the carapace are ranging from 19 to 37 mm, with the bulk between 26 and 32 mm (Fig. 1 and 2). The mean length and weight of the individuals caught were, before commercial sorting, 28.9 mm and 16.1 g respectively (table 1).

The males represent about 20% of the catch and two modal groups have been identified using the method of GHENO and LE GUEN (1968) on the males distribution of table 1. The first group is ranging from 19 to 26 mm (mean at 23.0 mm) and the second from 24 to 31 mm (mean at 26.5 mm).

The females with sternal spines and transitionals represent about 10% of the

catch and only one modal group ranging from 25 to 32 mm (mean at 28.9 mm).

The remaining of the catch (about 70%) is composed of females without sternal spines which probably represent an accumulation of two or more modal groups.

These modal groups, although probably representing age-groups, have not been aged due to the lack of individuals in our samples smaller than 19 mm and due to poor information available on this particular stock.

It is interesting to note that the percentage of berried females is progressively decreasing in May (table 2) and that all the eggs examined were close to hatching. In June, no berried females were observed, indicating a complete hatching at this period. Referring to the observations made last year in mid-July, when 11% of the females had spawn (Minet et al., 1980), it is deduced that the incubation can last from July to May of the following year.

OBSERVATIONS ON CATCHES AND FISHING EFFORT

During the trip of FINLANDE III at East Greenland, from 21 April to 16 June 1981, 241 metric tons of shrimp were caught during 936 hours of fishing. The CPUE per month are presented in the following table:

Fishing Period	April 21-30	May 1-31	June 1-16	Total
No. of tows	61	187	86	334
Catch (tons)	68	136	37	241
Fishing effort (hours)	157	522	257	936
CPUE (kg/h)	433	261	144	257

On this total catch of 241 tons, only 2 tons (less than 1% of weight) were discarded from automatic sorting. Moreover the by-catches were composed of few tons of seabastes and of capelins.

The fishing area was located around the mean position of 66°15N and 30°00 W in April and May, with a northeastward shift in June. The exact location of the fishing efforts expressed in hours of trawling are presented by month in Fig. 3, 4 and 5, using the rectangular units (7.5' latitude x 15' longitude) as proposed by Danish scientists. A total of 39 units were fished during this trip, representing a total area of about 5500 km². The depth of fishing ranged from 290 m to 480 m with most of the hauls made from 350 m to 450 m.

The monthly distribution of the French CPUE (kg/hour) including all tows on a 24 hour basis and without adjustments to the fishing time are reported in Fig. 6, 7

and 8. The larger catch-rates were obtained in units Kf 111 and Jz 111 in April.

The CPUE progressively decrease from April to June as noted last year (NAFO Sc. Council, 1980 p. 159). This observation together with those presented in table 2 and Fig. 2 (percentages of males increasing in the catches) seems to indicate that an important part of the berried females either die after hatching or emigrate to other areas or depth.

REFERENCES

- GHEO, Y. et J. C. LeGuen, 1968. Détermination de l'âge et croissance de *Sardinella eba* dans la région de Pointe-Noire. ORSTOM Ser. Oceanogr. 6, (2), 68-82.
- MINET, J. P., H. DuPouy and P. Dérivable. 1980. Information on shrimp, *Pandalus borealis*, off East Greenland in 1980. NAFO SCR Doc. 80/XI/173, Serial No. N260, 5 p.

Table 1 - Length distribution by sex of shrimp collected on board Finlande III (May-June 1981) off East Greenland.

Lcp (mm <)	M	Fws	Fns	Total
19	1			1
20	4			4
21	10			10
22	21			21
23	23			23
24	32		1	33
25	31	1	1	33
26	49	6	13	68
27	26	12	57	95
28	10	44	134	188
29	1	27	154	182
30	1	12	138	151
31		5	93	98
32			52	52
33			25	25
34			13	13
35			2	2
36			1	1
<hr/>				
Total/1000	209	107	684	1000
Mean (mm)	25.13	28.86	30.04	28.90
S.d. (mm)	2.04	1.19	1.77	2.64
PM (g)	9.5	14.9	18.3	16.1

Table 2 - Characteristics of samples collected on board Finlande III off East Greenland in 1981.

Sample N°	Date	Average position		Mean depth (m)	Duration of haul (GMT - 2 h)	N° of shrimp examined	Composition by sex in percentage			
		Lat. N	Long. W				Males		Females	
							NR	HR	BR	KR
1	May 2	66°10'	30°02'	340	12:40 - 02:30	102	0	0	0	100
2	May 9	66°14'	30°06'	370	03:20 - 06:25	92	3	1	0	96
3	May 16	66°15'	30°00'	320	00:40 - 04:25	113	12	9	0	76
4	May 23	65°50'	30°04'	375	14:50 - 18:30	108	0	2		96
5	May 30	66°18'	29°50'	315	00:00 - 03:20	112	5	4		78
6	June 6	66°40'	28°31'	320	04:00 - 07:25	150	43	31	0	26
7	June 13	66°38'	28°35'	325	14:20 - 17:15	146	56	16	0	28
							823			

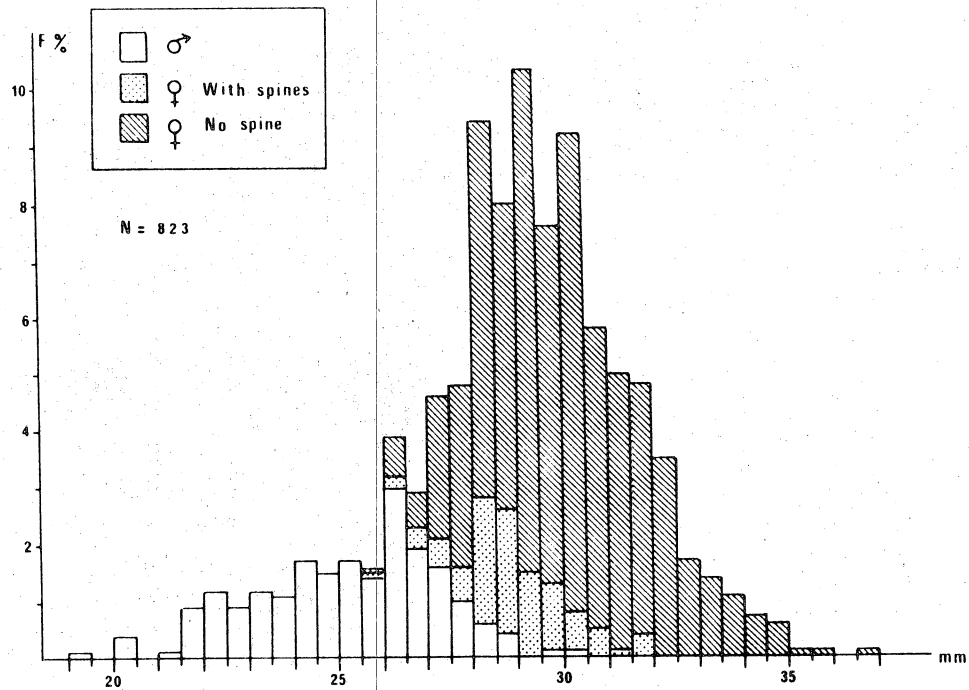


Fig. 1. Total length distribution of shrimp caught by Finlande III at East Greenland in May-June 1981.

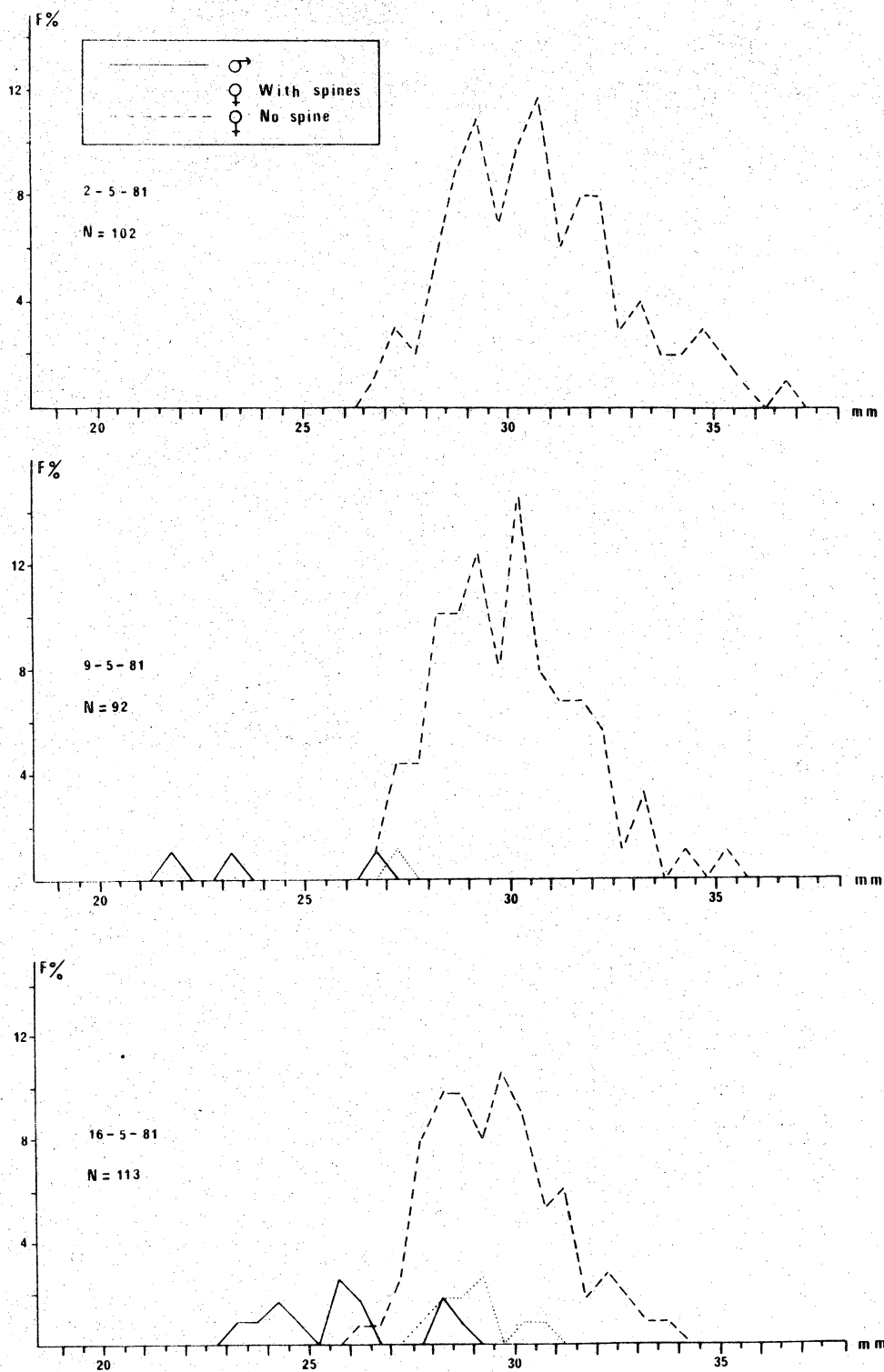


Fig. 2. Length distribution of shrimp in the samples collected on Finlande III at East Greenland in May-June 1981.

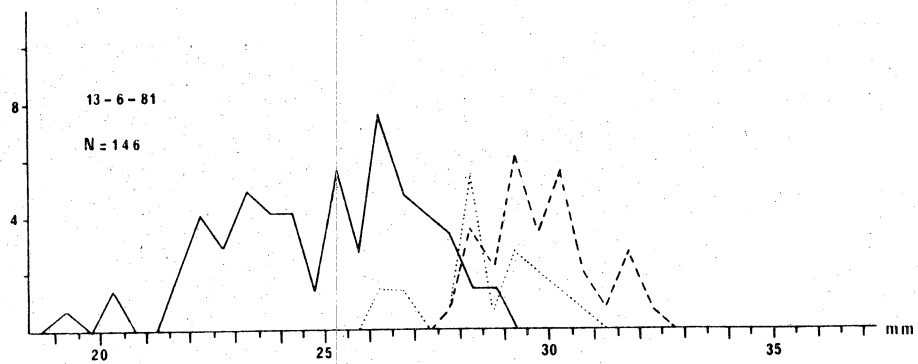
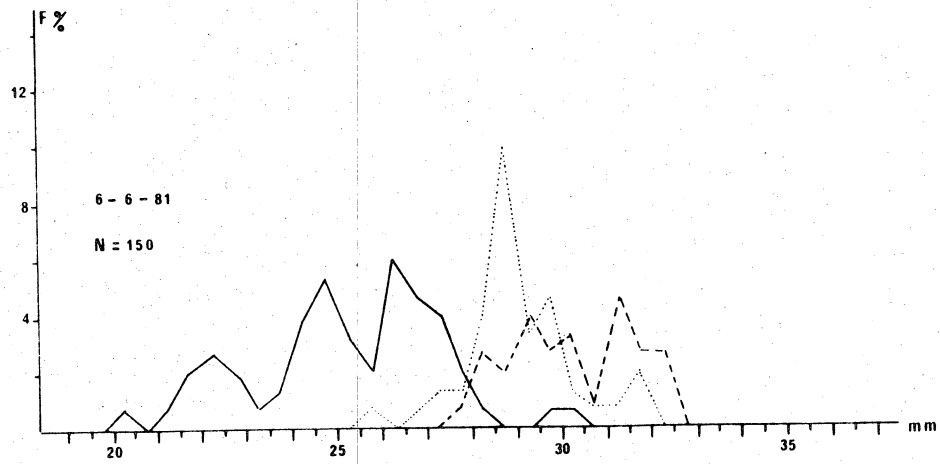
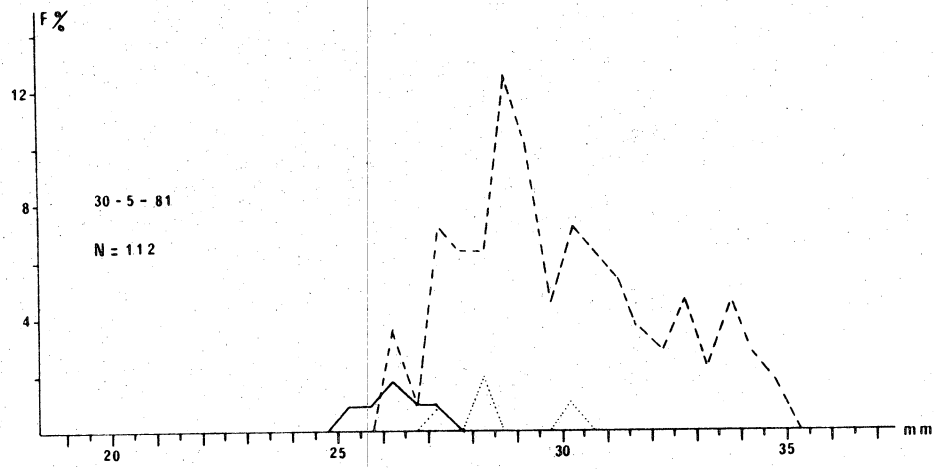
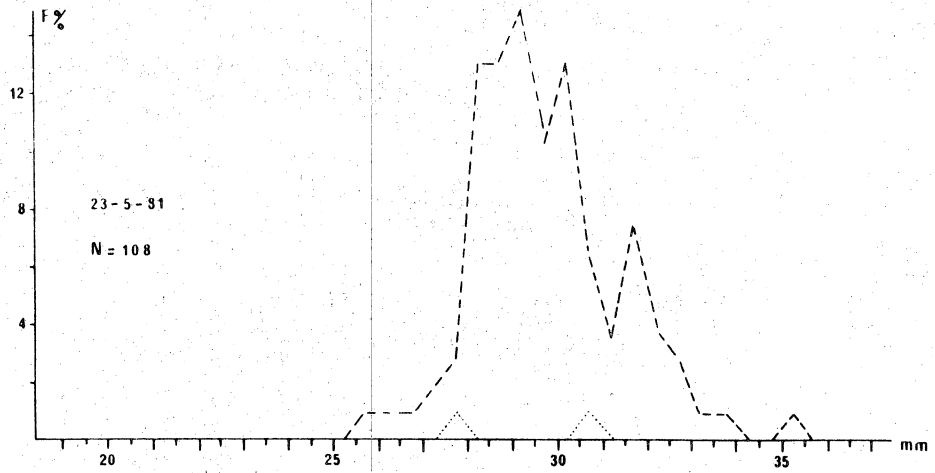


Fig. 2. (Continued)

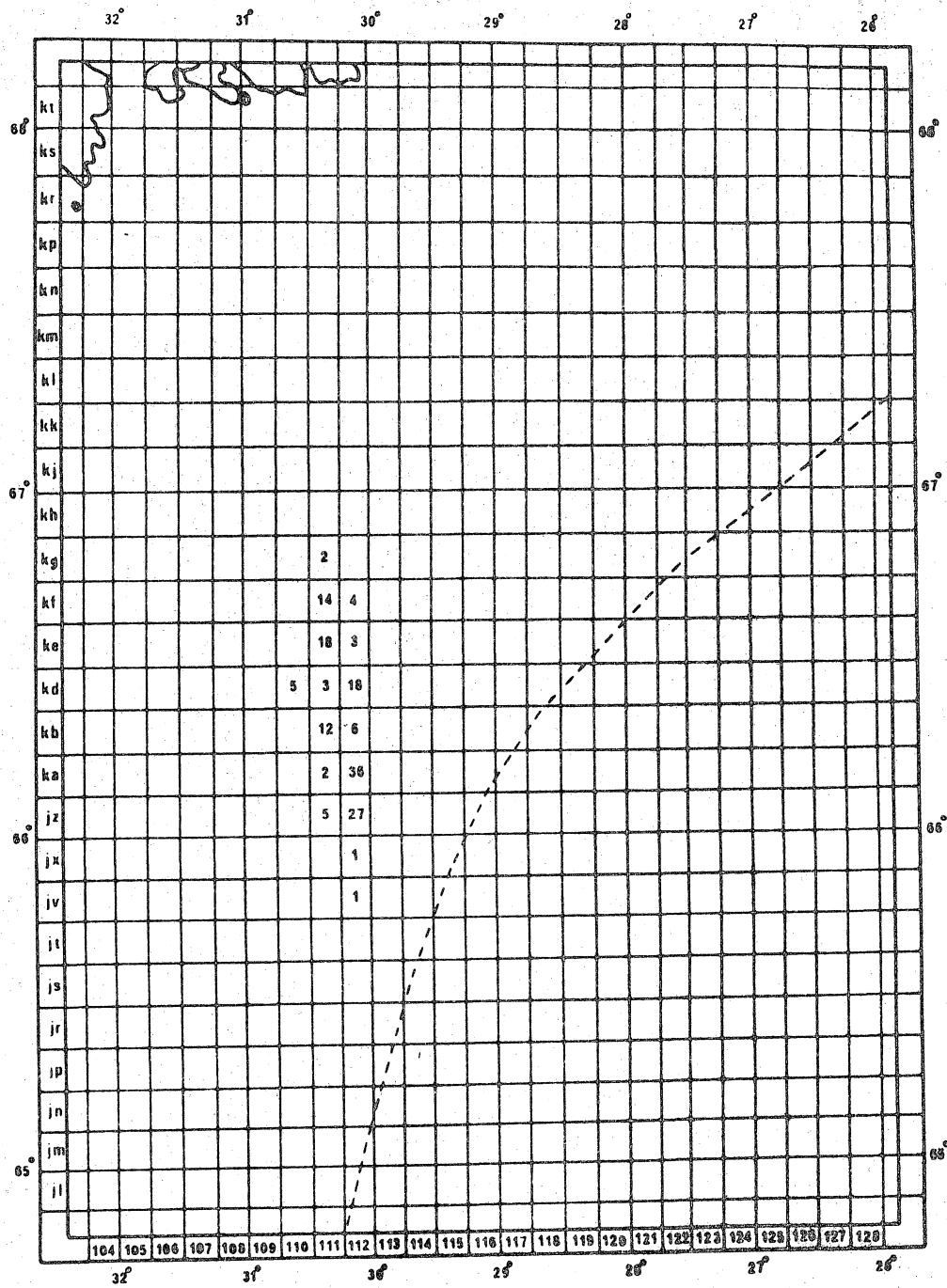


Fig. 3. Distribution of fishing effort in hours of trawling of Finlande III in April 1981.

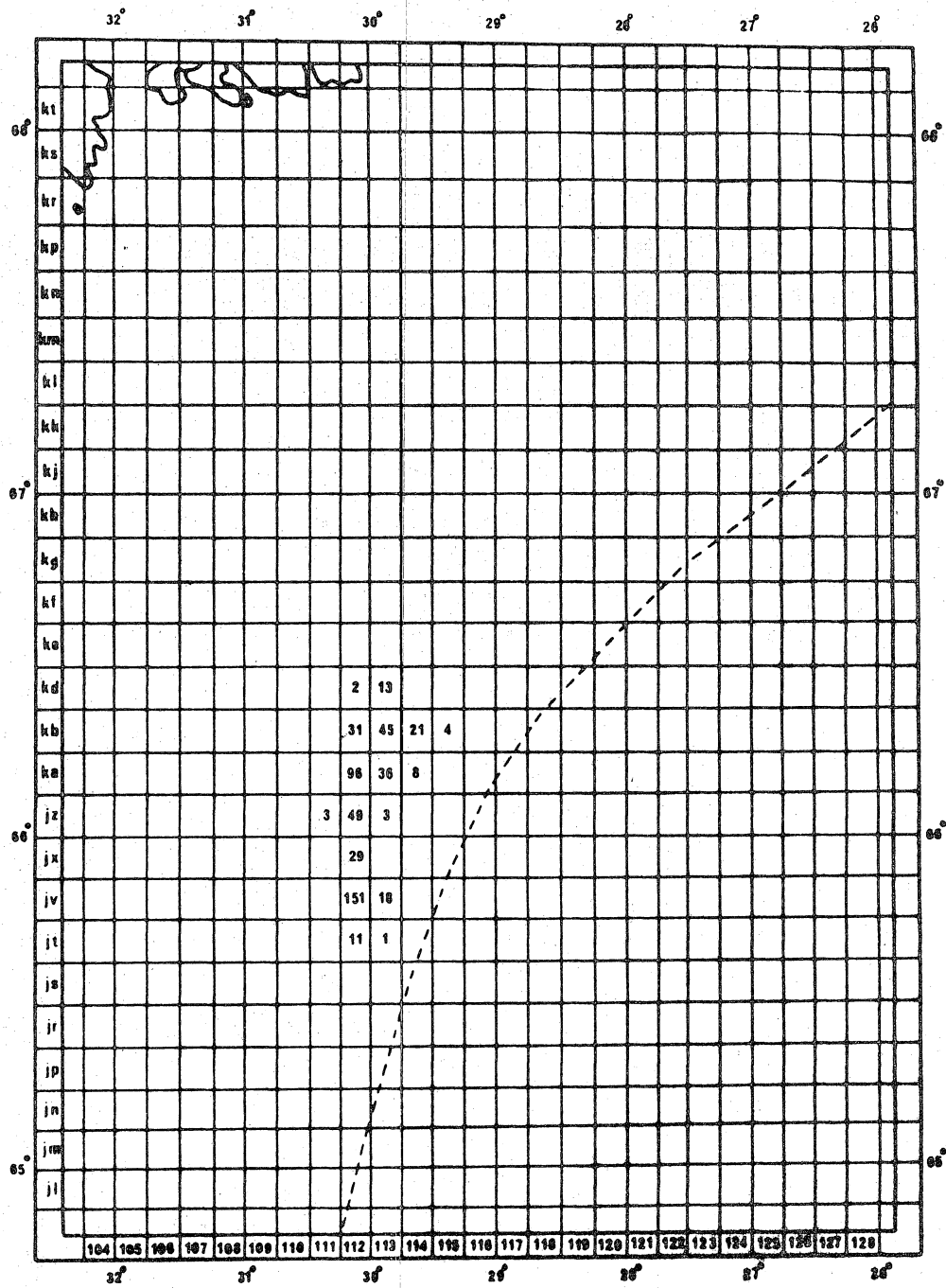


Fig. 4. Distribution of fishing effort in hours of trawling of Finlande III in May 1981.

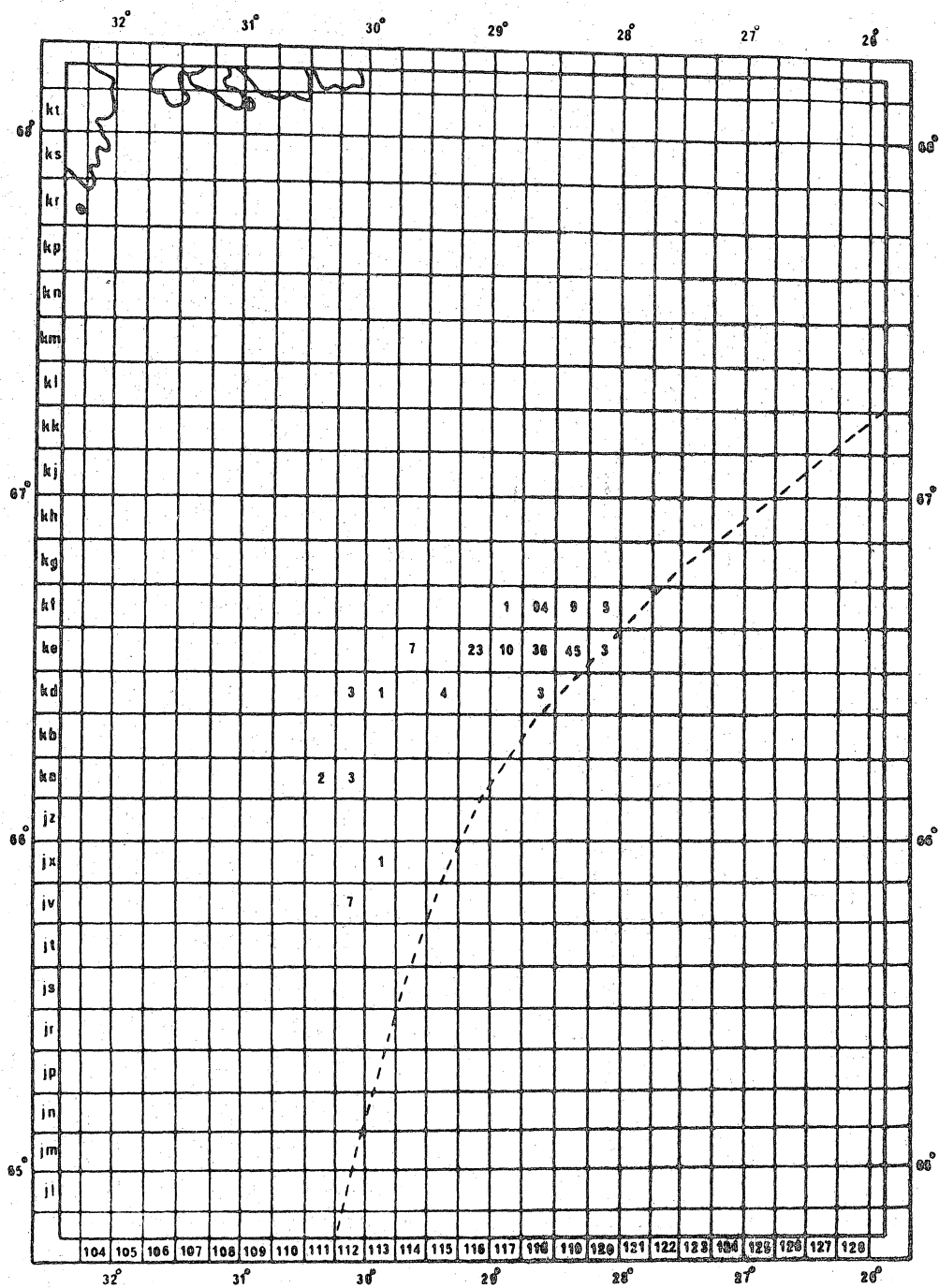


Fig. 5. Distribution of fishing effort in hours of trawling of Finlande III in June 1981.

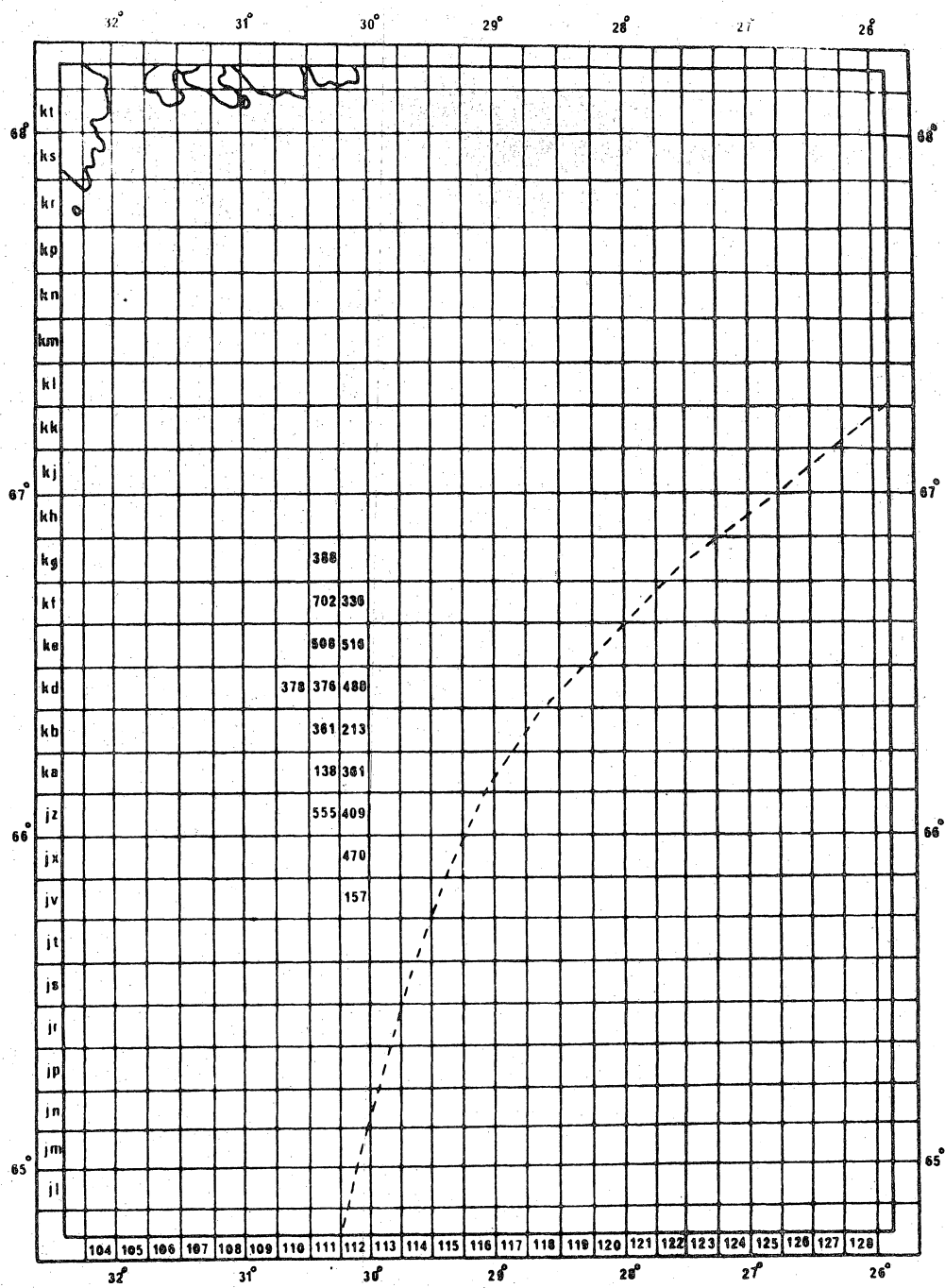


Fig. 6. CPUE in kg per hour of trawling of Finlande III in April 1981.

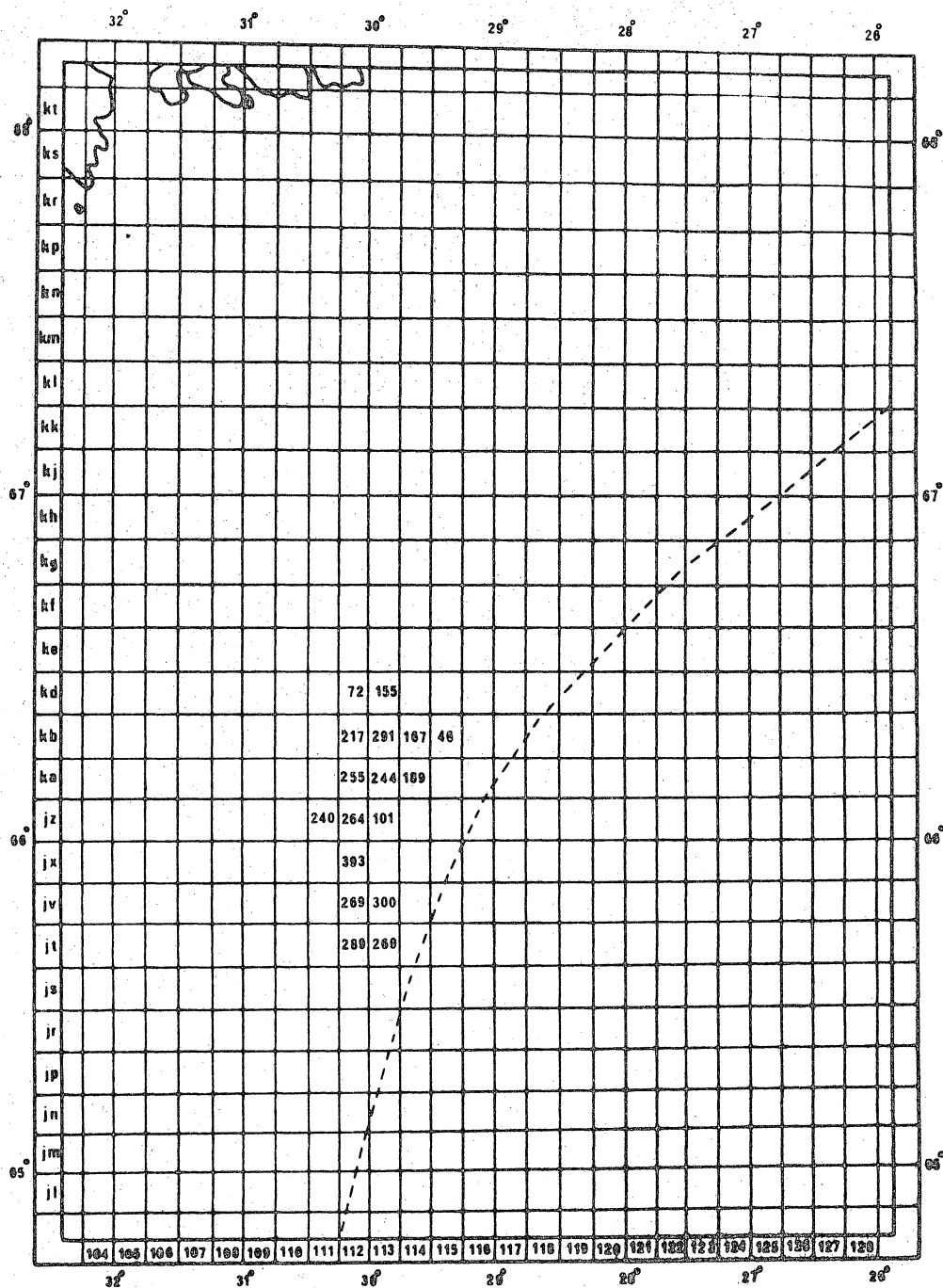


Fig. 7. Distribution of fishing effort in hours of trawling of Finlande III in May 1981.

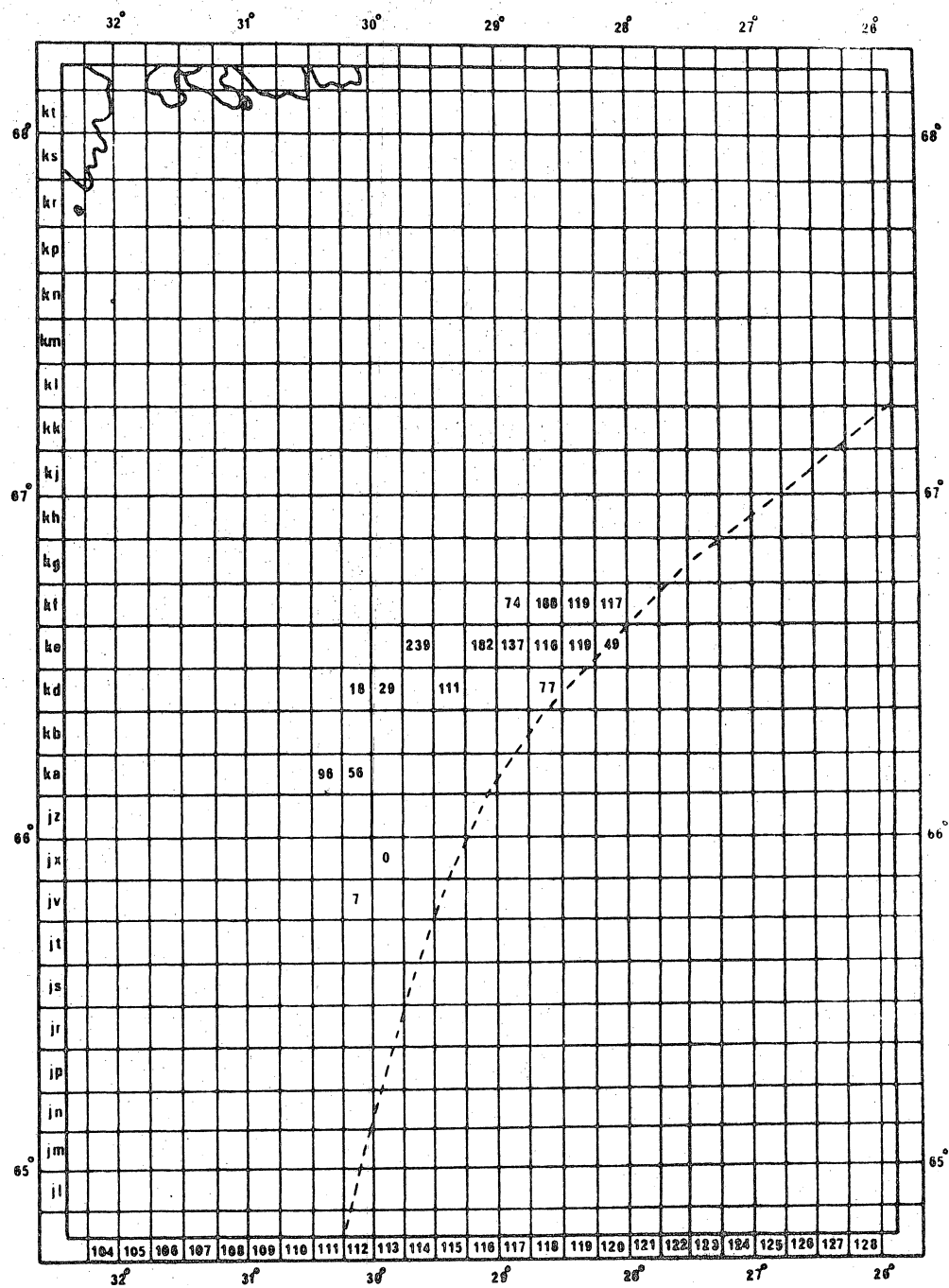


Fig. 8. Distribution of fishing effort in hours of trawling of Finlande III in June 1981.

