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Data on the Shrimp Fishery at East Greenland, 1980-82

by

D. M. Carlsson

Grønlands Fiskeriundersøgelse, Tagensvej 135,
DK-2200 København N, Denmark

INTRODUCTION

The commercial shrimp fishery at East Greenland began in 1980 with a total catch of about 7,000 tons. In 1981 and 1982 the fishery had been regulated with total allowable catches of 8,000 and 4,500 tons respectively, the corresponding reported catches being about 4,800 and 4,500 tons.

An ADP file is available at the Greenland Fisheries Investigations based on logbook haul-by-haul records of eight Danish and Greenland trawlers in 1980, five in 1981 and five in 1982.

Information on catches reported to the Greenland authorities, together with analyses of commercial fishery data were reported by Carlsson in 1980 and 1981. This paper presents updated information including the 1982 data.

REPORTED CATCHES IN 1981 AND 1982

Table 1 shows catches reported to the Greenland authorities in 1981 and 1982 by month and country and Table 2, the numbers of reporting vessels. Only trawlers above 80 GRT are obliged to report (once a week), but due to the environmental conditions and the distance from the fishing ground to landing ports, no smaller vessels are assumed to participate in this fishery.

According to the reports the fishery took place from March to June in 1981 and from February to June in 1982. While the total catch in the first year of regulations (1981) is far from the total allowable catch of 8,000 tons, the fishery in 1982 stopped due to achievement of the TAC of 4,500 tons.

As seen in Table 2, 45 vessels joined the fishery in 1982, i.e. the mean catch per boat is a little more than 100 tons. The high number of vessels makes it difficult for the authorities to control reported catches, and the total catch may be somewhat above the total figure based on reportings.

GEOGRAPHICAL DISTRIBUTION OF THE FISHERY

Figure 1 shows the distribution of the fishery in 1980-82 based on the available logbook information. While the fishery was spread over a larger area in 1980, being somewhat exploratory, it has been concentrated in the southernmost area of the fishing grounds in 1981 and especially in 1982, when a southward shift occurred, shifting the main effort to south of 66°N. Figure 2 gives the distribution of logbook catches in the same years, showing the same trend, with the largest part of the total catch in 1982 being taken south of 66°N in contradiction to the years before.

Lack of data from June makes it impossible to judge whether a spread of the fishery to north and north-east took place in 1982 as in earlier years.

According to personal information from a Danish skipper, ice did not influence the geographical distribution of the fishery in 1982.

CATCH AND EFFORT

Based on data from 1980 to 1982 the main fishing ground off East Greenland is defined as the area from 65°30'N to 67°38'N and from 31°W to the midline between Greenland and Iceland waters. Figure 4 shows the monthly mean catch rates in this area for the period from which logbook data is available (Table 3, corresponding number of hours trawled). In 1980 and 1981 peak catch rates were obtained in April-May, followed by declining catches throughout the year, although a slight increase is seen in September 1980. Spring peak catches have been obtained by the fishery on concentrations of berried female shrimp as is the case in the offshore shrimp fishery at West Greenland. In 1982, however, the spring peak catch rates are totally missing in the data from East Greenland, although the fishery, as seen from figure 3, is exploiting the same area as in 1981. Whether this is due to a geographical displacement of the female component of the stock or to depletion of this by the earlier fishery is not evident. The 1982 data show increasing catches rates during the period of fishing.

Figure 3 shows number of hauls and mean catch rate in each 7.5' x 15' statistical unit per month based on the available data and Table 4 and 5, the mean catch rates and corresponding number of hours fished in a south to north 7.5 minute latitude grid. The data confirms the shift in the fishery and in catch rates as described above.

BY-CATCHES AND DISCARDS OF SHRIMP

The logbook data includes no reporting on by-catch for 1982, indicating that by-catches are negligible, as described by Carlsson (1980 and 1981).

No information is available on the discard of shrimp. Discard is assumed to be very limited due to the lack of smaller shrimp as seen in shrimp samples from the commercial fishery (Table 6). The fishery in 1982 took place in a period, when soft-shelled shrimp should not be expected to occur in the catches.

BIOLOGICAL SAMPLES OF SHRIMP

Only one sample has been available to the Greenland Fisheries Investigations from the commercial fishery (from March 1982, see Table 6). The size distribution of shrimp is very similar to that presented by Carlsson (1980), showing a very limited occurrence of shrimp below 25 mm carapace length in the catches. Berried females are making up the major component in the catch, with peaks at 28.5-29.0 mm, 30.5 mm and in 1980, 32.5 mm carapace length. The lack of the latter peak in 1982 indicates an influence of the fishery on the stock composition, however, no firm conclusions can be drawn from the few samples available.

CONCLUSIONS

Data on the distribution of the fishery show a shift to the southernmost parts of the East Greenland shrimp fishery in 1982. Spring peak catch rates of earlier years in almost the same area do not show up in the 1982 data. A possible influence of the fishery on the abundance of female shrimp is noted. Although the recruitment pattern of the stock is not well known, this may lead to the conclusion, that a more cautious approach should be considered, when the level of fishing in 1983 is decided upon.

A lack of data on catch rates and distribution of the stock is noted due to the restricted fishing season in 1981 and 1982.

REFERENCES

CARLSSON, D. M. 1980. Observations on the shrimp fishery at East Greenland in 1980. NAFO SCR Doc., No. 80/XI/164, Ser. No. N251.

1981. Data on the shrimp fishery at East Greenland in 1980 and 1981. NAFO SCR Doc., No. 81/XI/165, Ser. No. N473.

Table 1. Catches of shrimp (tons) by trawlers above 80 BRT at East Greenland by month and nation as reported to the Greenland authorities in 1981 (A) and 1982 (B).

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
A. 1981													
GREENLAND	-	-	-	625	379	-	-	-	-	-	-	-	1004
DENMARK	-	-	-	364	203	-	-	14	-	-	-	-	581
FAROE ISLANDS	-	-	-	41	535	110	-	-	22	5	-	-	713
NORWAY	-	-	25	1042	833	185	-	59	-	-	-	-	2144
FRANCE	-	-	-	48	220	85	-	-	-	-	-	-	353
TOTAL	-	-	25	2120	2170	380	-	73	22	5	-	-	4795
B. 1982													
GREENLAND	-	26	644	424	5	16	-	-	-	-	-	-	1115
DENMARK	-	23	112	213	298	-	-	-	-	-	-	-	646
FAROE ISLANDS	-	94	108	243	92	-	-	-	-	-	-	-	537
NORWAY	-	59	258	773	715	-	-	-	-	-	-	-	1805
FRANCE	-	-	-	92	267	55	-	-	-	-	-	-	414
TOTAL	-	202	1122	1745	1377	71	-	-	-	-	-	-	4517

Table 2. No. of vessels above 80 GRT in the shrimp fishery at East Greenland by month and nation as reported to the Greenland authorities in 1981 (A) and 1982 (B).

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
A. 1981													
GREENLAND	-	-	-	7	8	-	-	-	-	-	-	-	11
DENMARK	-	-	-	2	3	-	-	1	-	-	-	-	3
FAROE ISLANDS	-	-	-	3	10	6	-	-	1	1	-	-	11
NORWAY	-	-	1	14	17	7	3	-	-	-	-	-	19
FRANCE	-	-	-	1	2	2	-	-	-	-	-	-	2
TOTAL	-	-	1	27	40	15	3	1	1	1	-	-	46
B. 1982													
GREENLAND	-	1	6	6	-	1	-	-	-	-	-	-	9
DENMARK	-	1	3	3	3	-	-	-	-	-	-	-	3
FAROE ISLANDS	-	7	10	10	5	-	-	-	-	-	-	-	11
NORWAY	-	3	7	16	14	-	-	-	-	-	-	-	17
FRANCE	-	-	-	1	2	2	-	-	-	-	-	-	2
TOTAL	-	12	26	36	24	3	-	-	-	-	-	-	42

Table 3. No. of hours trawled per month and year from April 1980 to May 1982 in the main fishing area of the shrimp fishery at East Greenland (see text) as reported in logbooks of 8 trawlers in 1980, 5 trawlers in 1981 and 5 trawlers in 1982.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1980	-	-	-	35	1295	315	60	32	482	1165	465	-	3849
1981	-	-	-	1343	914	6	-	-	-	-	-	-	2263
1982	-	-	764	1570	1395	-	-	-	-	-	-	-	3729

Table 4. Mean catch of shrimp per hour (kg/hour) on a monthly basis in the main fishing area at East Greenland as reported in logbooks of 8 trawlers in 1980, 5 trawlers in 1981 and 5 trawlers in 1982 in a south to north grid (7½ minute latitude scale - see Fig. 1).

	8004	8005	8006	8007	8008	8009	8010	8011	8104	8105	8106	8203	8204	8205
KN	-	-	-	-	-	-	-	97	-	-	-	-	-	-
KM	-	-	-	-	-	-	-	163	-	-	-	-	-	-
KL	-	-	-	-	-	-	233	119	-	-	-	-	-	-
KK	-	-	-	-	-	-	149	87	-	-	-	-	-	-
KJ	-	-	-	-	-	-	64	76	-	-	-	-	-	-
KH	-	-	-	-	0	130	169	180	189	-	-	-	-	-
KG	-	-	-	-	80	243	100	43	355	0	-	-	50	-
KF	0	-	163	92	14	173	101	82	332	0	-	114	129	-
KE	-	-	143	59	-	148	104	118	318	124	215	111	0	-
KD	312	337	120	86	-	250	35	195	588	332	-	153	150	86
KB	-	412	192	-	13	-	9	98	513	278	31	166	182	176
KA	725	415	127	-	-	-	0	-	447	249	-	196	183	157
JZ	768	357	118	-	0	-	0	-	418	254	-	172	182	148
JX	-	363	120	-	13	-	-	-	120	279	-	131	213	253
JV	-	277	-	-	-	-	-	-	-	267	-	143	201	265
JT	-	0	-	-	-	-	-	-	-	162	-	115	202	291
JS	-	-	-	-	-	-	-	-	-	225	-	86	129	278

Table 5. No. of hours trawled per month in the main fishing area at East Greenland based on logbook recording (see Table 4).

	8004	8005	8006	8007	8008	8009	8010	8011	8104	8105	8106	8203	8204	8205
KN	0	0	0	0	0	0	0	9	0	0	0	0	0	0
KM	0	0	0	0	0	0	0	74	0	0	0	0	0	0
KL	0	0	0	0	0	0	48	44	0	0	0	0	0	0
KK	0	0	0	0	0	0	28	15	0	0	0	0	0	0
KJ	0	0	0	0	0	0	20	12	0	0	0	0	0	0
KH	0	0	0	0	1	14	39	4	5	0	0	0	0	0
KG	0	0	0	0	3	81	335	5	7	4	0	0	2	0
KF	3	0	7	19	7	198	427	33	47	2	0	4	2	0
KE	0	0	23	37	0	155	236	80	82	5	3	10	1	0
KD	1	44	23	4	0	34	17	158	309	115	0	48	59	4
KB	0	313	65	0	8	0	11	31	448	114	3	175	132	7
KA	14	495	101	0	0	0	2	0	362	166	0	179	298	7
JZ	17	323	68	0	5	0	2	0	81	118	0	124	180	12
JX	0	116	28	0	8	0	0	0	2	89	0	78	277	80
JV	0	2	0	0	0	0	0	0	0	236	0	87	300	348
JT	0	2	0	0	0	0	0	0	0	62	0	55	275	663
JS	0	0	0	0	0	0	0	0	0	3	0	4	44	274

Table 6. Analysis of shrimp sample from the commercial fishery off East Greenland (statistical unit FV112) on March 25, 1982.

10 DKT-179	Jesber Belinda	820325	0	820325	*								
11 Østerinland	JV112	400	400	9999 0000	0 *								
13 nk	0	0	1/ 1	0.0 5.9 sc 0.1 HAF KLN	*								
mm	M+JUV.	TRANS.		FEMALES (after first spawning)				LOST CARAP.		UNID. TOTAL			
		UR	HR	UR	HR	BR	HBR	UR+EH	HR+EH	UR	HR		
23.5	1	0	0	0	0	1	0	0	0	0	0	0	2
24.0	1	0	0	0	0	0	0	0	0	0	0	0	1
24.5	0	0	0	0	0	0	0	0	0	0	0	0	0
25.0	2	0	0	0	0	0	0	0	0	0	0	0	2
25.5	3	0	0	0	0	0	0	0	0	0	0	0	3
26.0	1	0	1	0	1	1	2	0	0	0	0	0	6
26.5	3	0	0	0	0	1	0	0	0	0	0	0	4
27.0	0	0	0	0	0	7	0	0	0	1	0	0	8
27.5	0	0	1	0	0	13	4	0	0	0	0	0	18
28.0	0	0	0	0	0	26	5	0	0	0	0	0	31
28.5	0	0	2	0	1	30	5	0	0	0	0	0	38
29.0	0	0	2	0	1	16	10	0	0	0	0	0	29
29.5	0	0	1	0	1	25	6	0	0	0	0	0	33
30.0	0	0	2	0	3	33	9	0	0	0	0	0	47
30.5	0	0	0	0	1	13	7	0	0	0	0	0	21
31.0	0	0	0	0	1	23	3	0	0	0	0	0	27
31.5	0	0	0	0	2	15	4	0	0	0	0	0	21
32.0	0	0	0	0	0	12	5	0	0	0	0	0	17
32.5	0	0	0	0	0	11	1	0	0	0	0	0	12
33.0	0	0	0	0	0	6	2	0	0	0	0	0	8
33.5	0	0	0	0	0	3	1	0	0	0	0	0	4
34.0	0	0	0	0	0	2	0	0	0	0	0	0	2
34.5	0	0	0	0	0	0	1	0	0	0	0	0	1
>34.5	0	0	0	0	0	1	0	0	0	0	0	0	1
Unmeas	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	11	0	10	0	11	239	65	0	0	1	0	0	337
Paras.	0	0	0	0	0	0	0	0	0	0	0	0	0

Males + Juveniles % of total: 3.3
 Transitionals % of total: 3.0
 Females % of total: 93.5
 Unid. + lost carapaces % of total: 0.3

Females UR % of total: 0.0
 % of females: 0.0

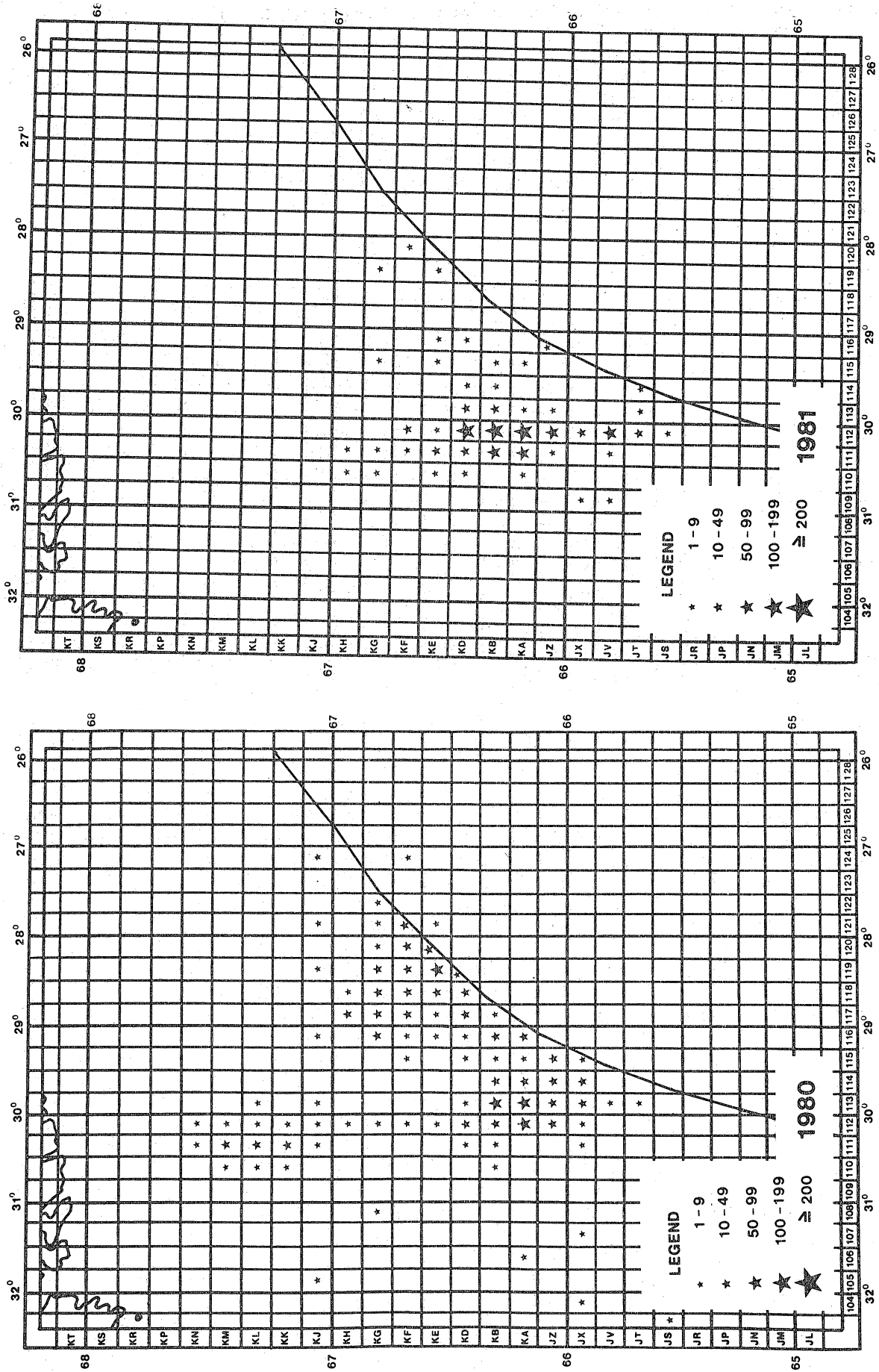
Females UR + (UR+EH) % of total: 0.0
 % of females: 0.0

Berried females % of total: 90.2
 BR + HBR % of females: 96.5
 % of fem. + trans.: 93.5

Females, multiple spawners % of total: 19.3
 HBR + (HR+EH) % of females: 20.6

	small <19.5 mm	medium 19.5-29.0 mm	large >29.0 mm
No. of shrimp measured	0	142	193
% of shrimp measured	0.0	42.4	57.6

Total no. of shrimps: 337
 No. per kg: 57



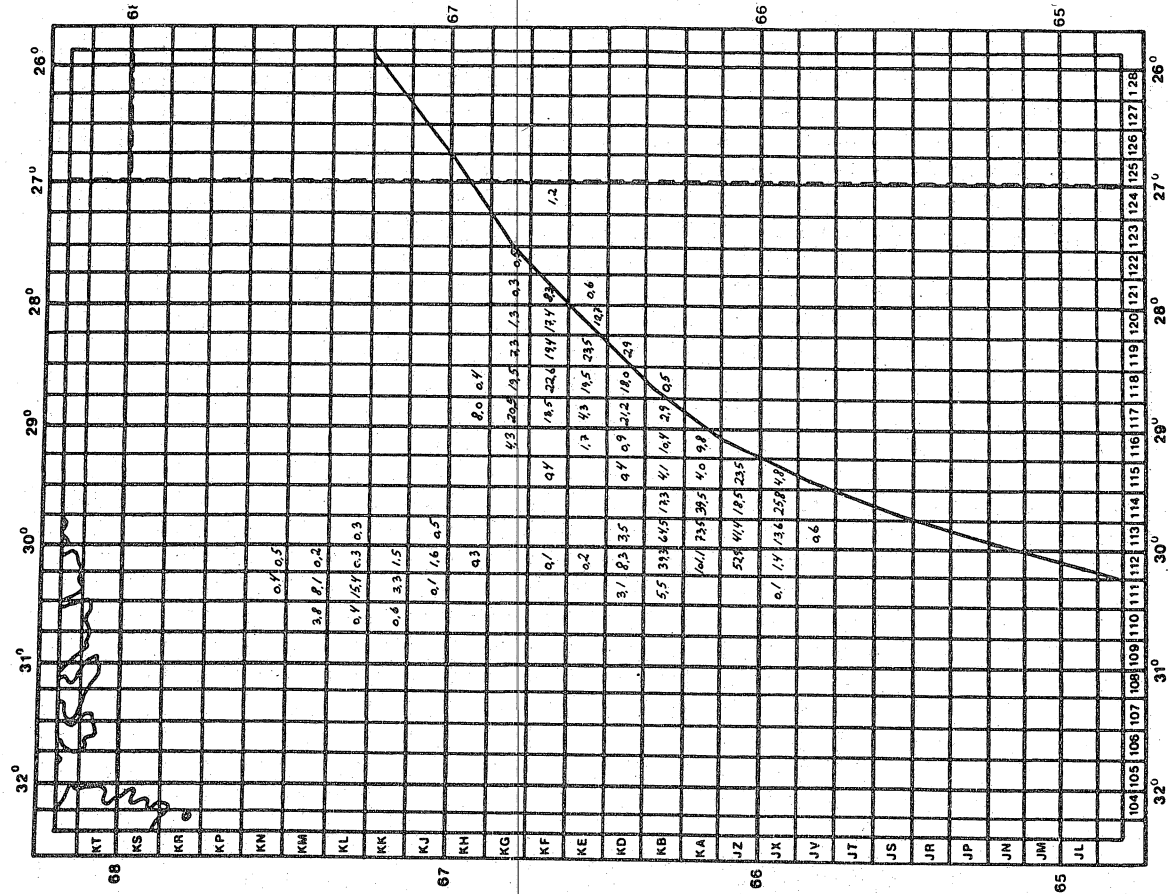


Fig. 2a. Distribution of total catches of shrimp (tons) of eight trawlers fishing at East Greenland in 1980 (based on logbook recordings) - excluding 13 hauls off the map.

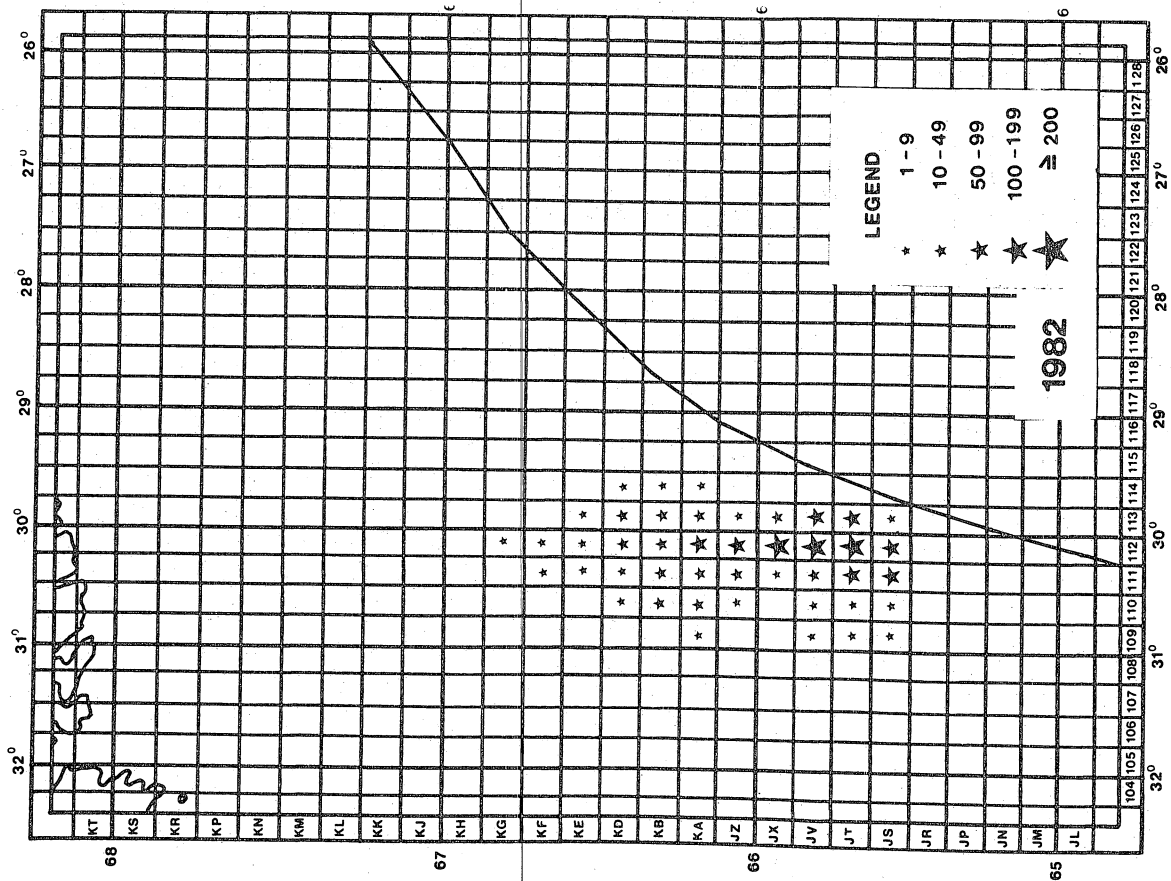


Fig. 1c. Distribution of hauls of 5 trawlers in the shrimp fishery at East Greenland in 1982, based on logbook information.

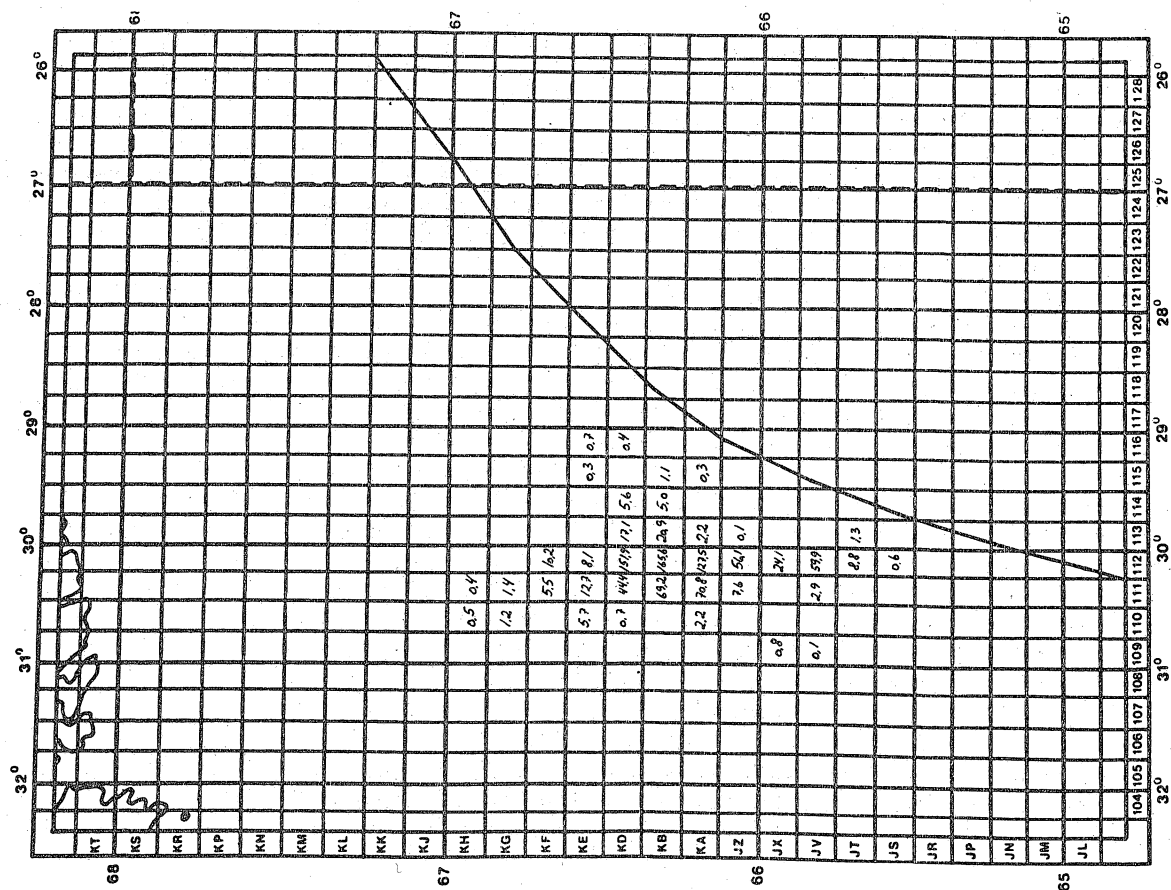


Fig. 2b. Distribution of total catches of shrimp (tons) of five trawlers fishing at East Greenland in 1981 (based on logbook recordings).

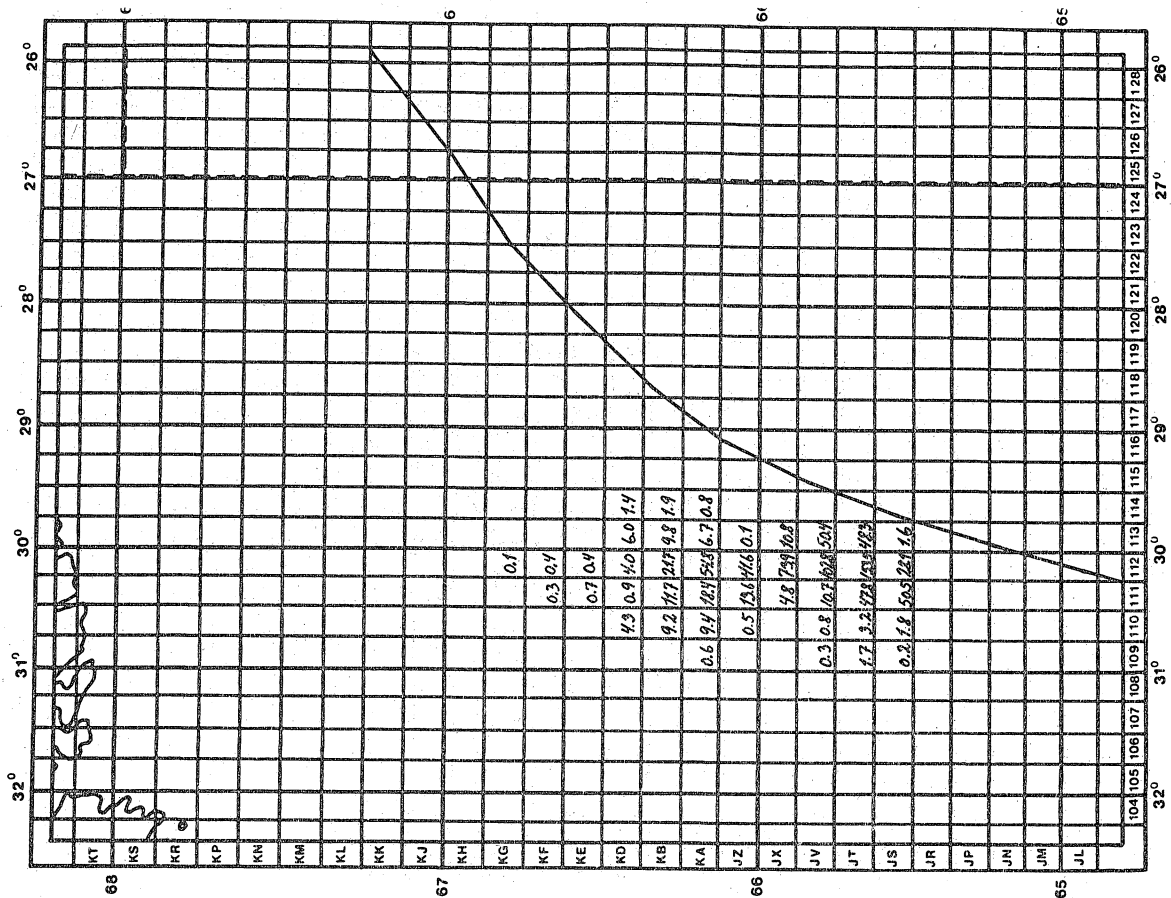


Fig. 2c. Distribution of total catches of shrimp (tons) of five trawlers fishing at East Greenland in 1982 (based on logbook recordings).

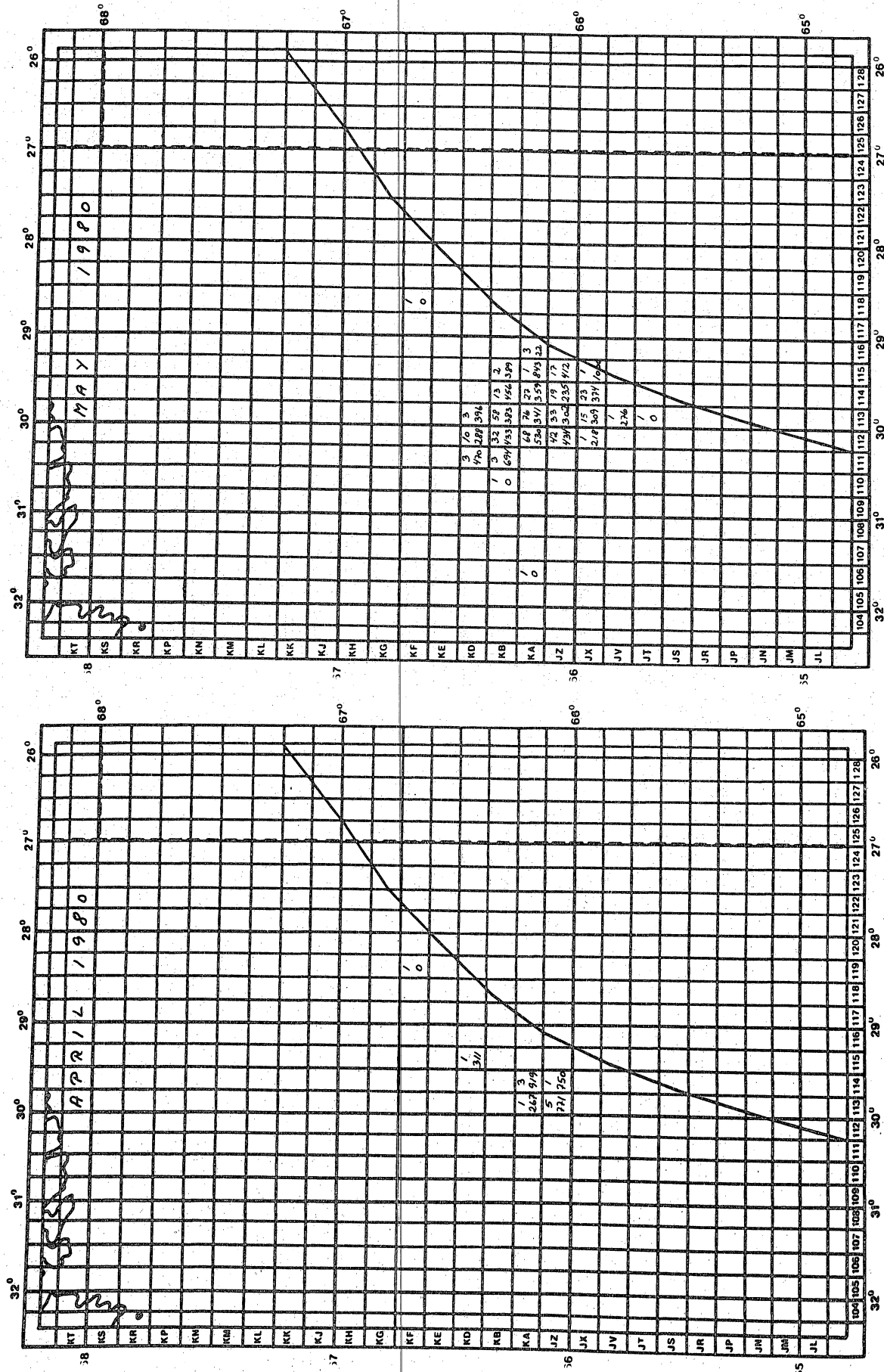


Fig. 3. Distribution of effort and mean catch of shrimp per hour in April 1980 in the shrimp fishery of 8 trawlers at East Greenland. Upper figure in each statistical square unit is no. of hauls, lower figure is the mean catch per hour.

Fig. 3. Continued. May 1980.

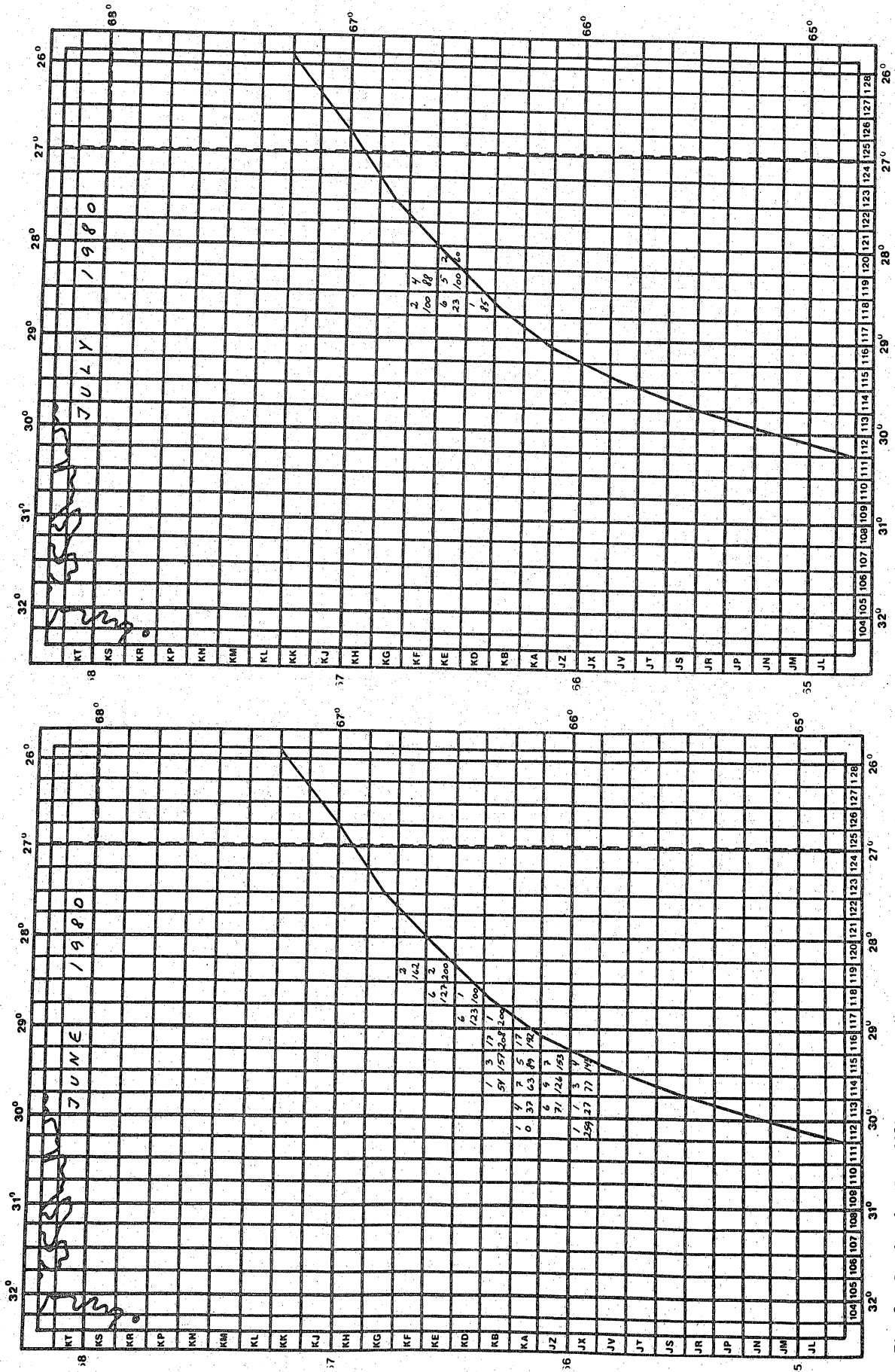


Fig. 3. Continued. July 1980

Fig. 3. Continued. June 1980.

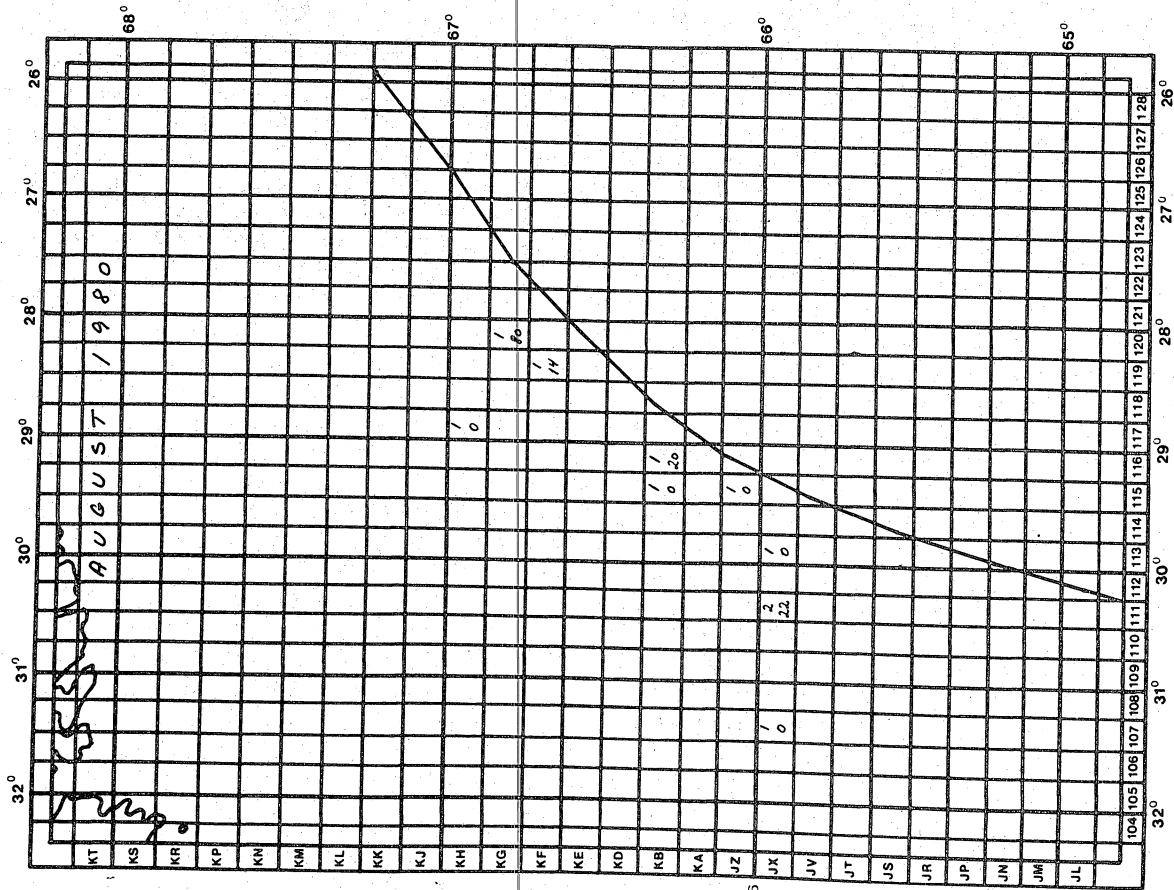


Fig. 3. Continued. August 1980.

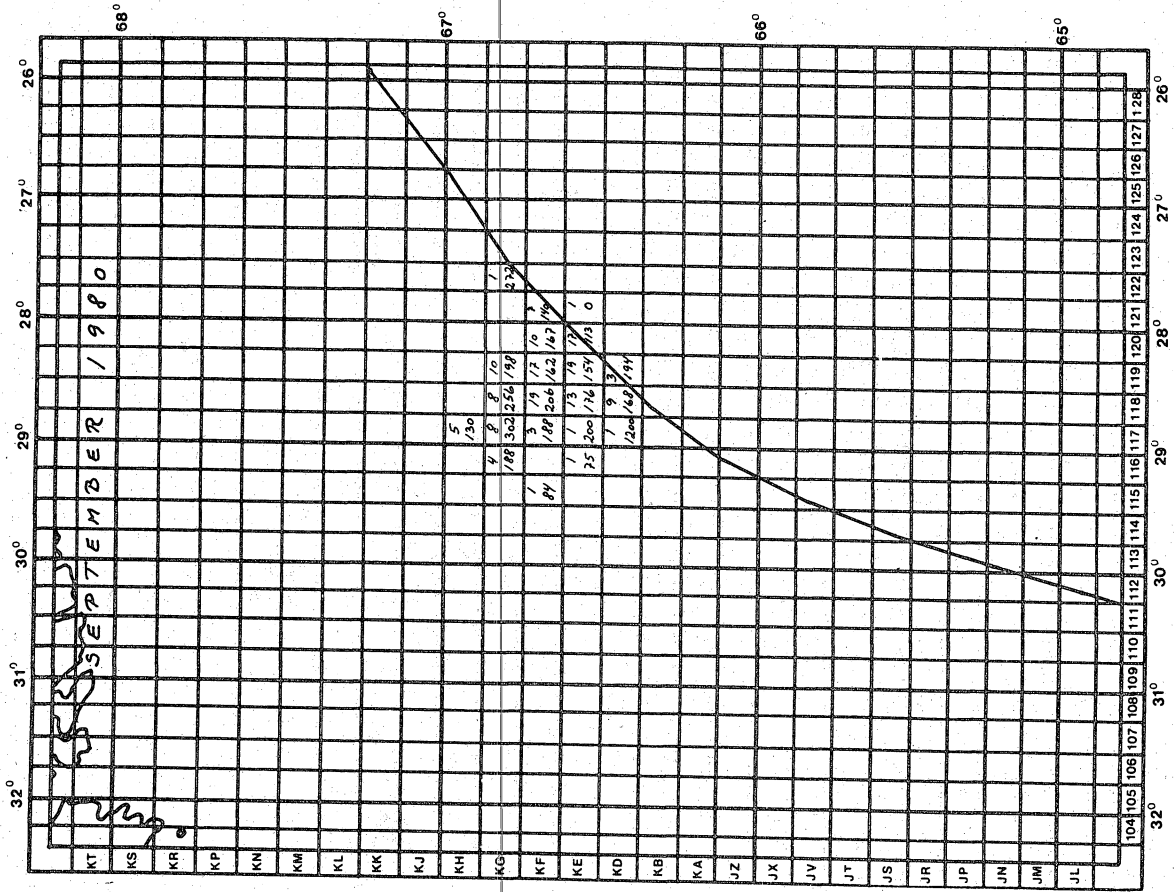


Fig. 3. Continued. September 1980.

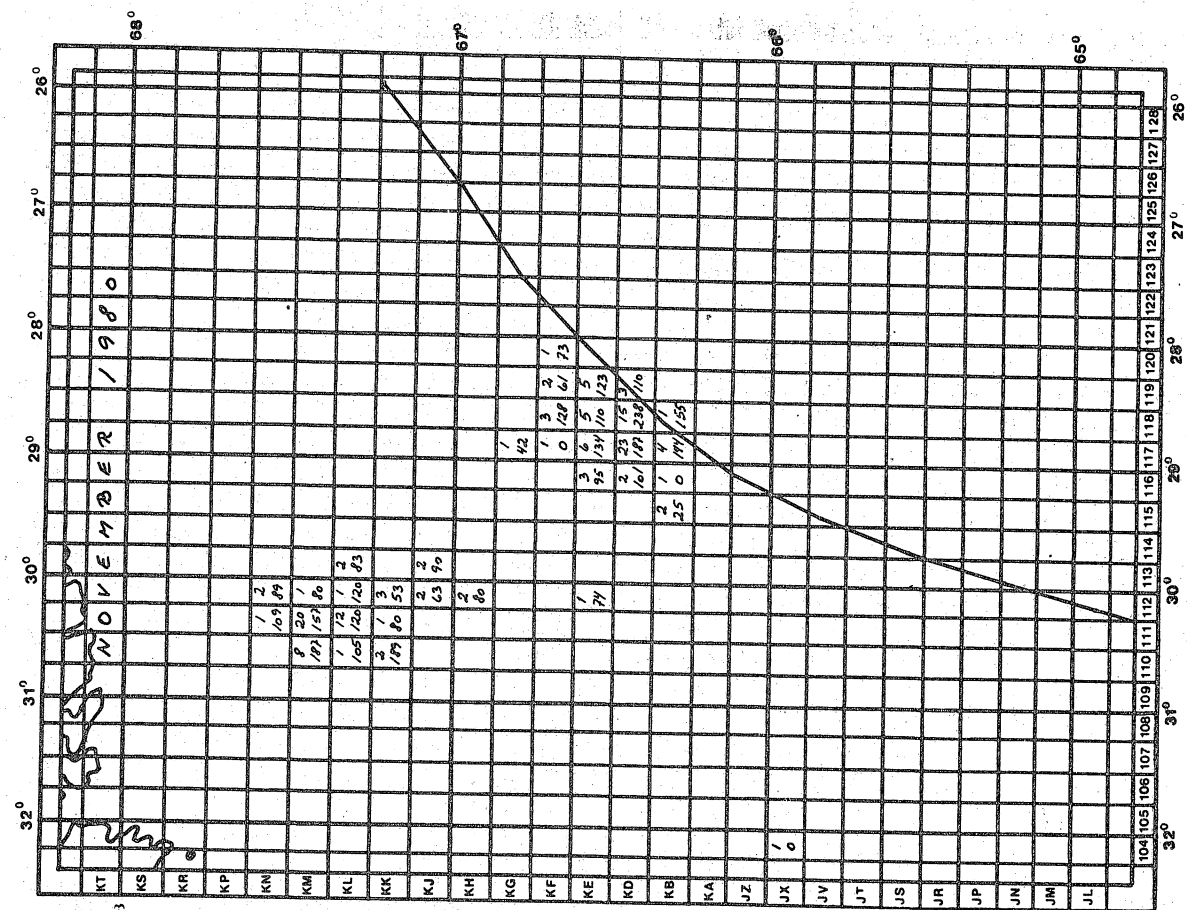


Fig. 3. Continued. November 1980.

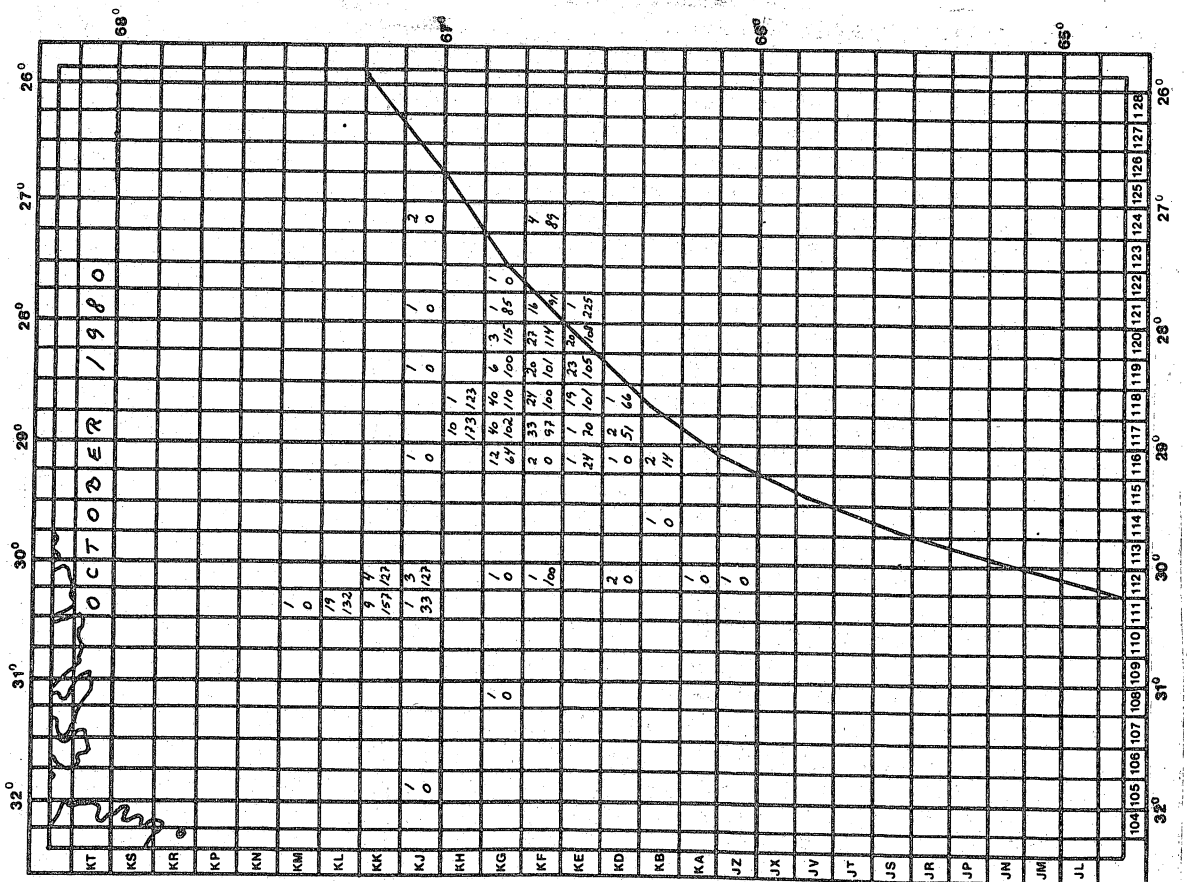


Fig. 3. Continued. October 1980.

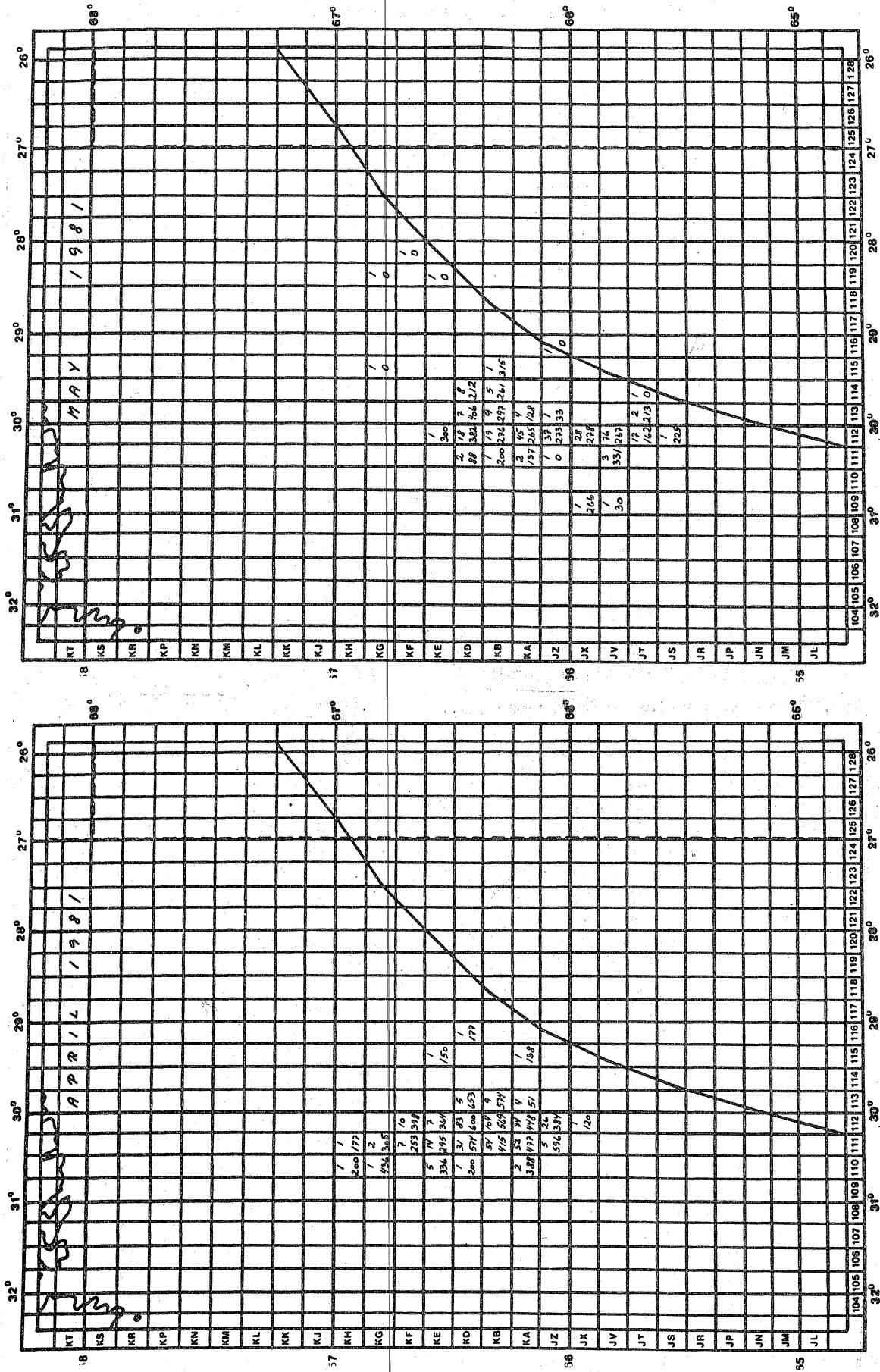


Fig. 3. Continued. April 1981 (shrimp fishery of 5 trawlers).

Fig. 3. Continued. May 1981.

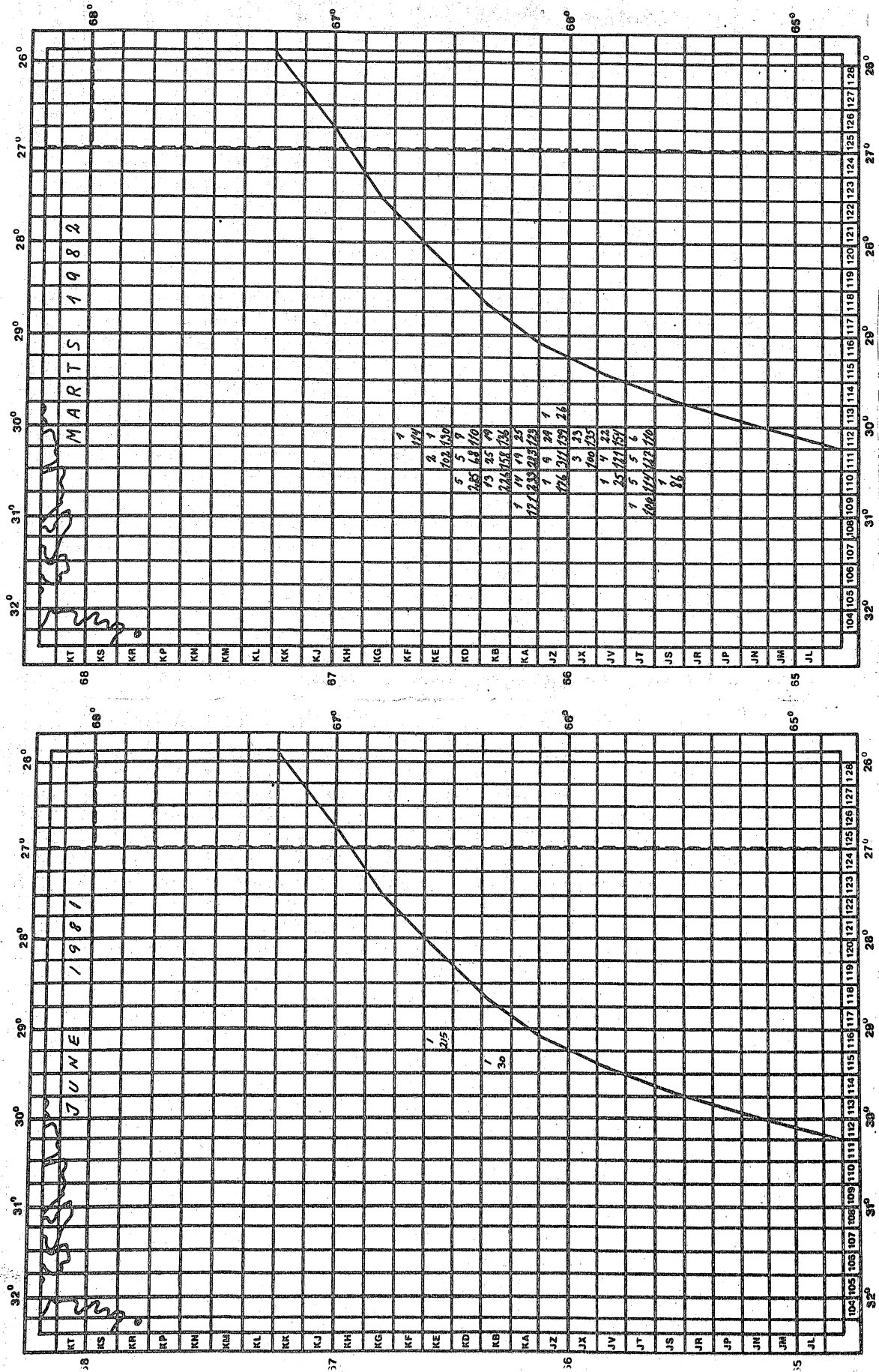


Fig. 3. Continued. March 1982 (shrimp fishery of 5 trawlers).

Fig. 3. Continued. June 1981.

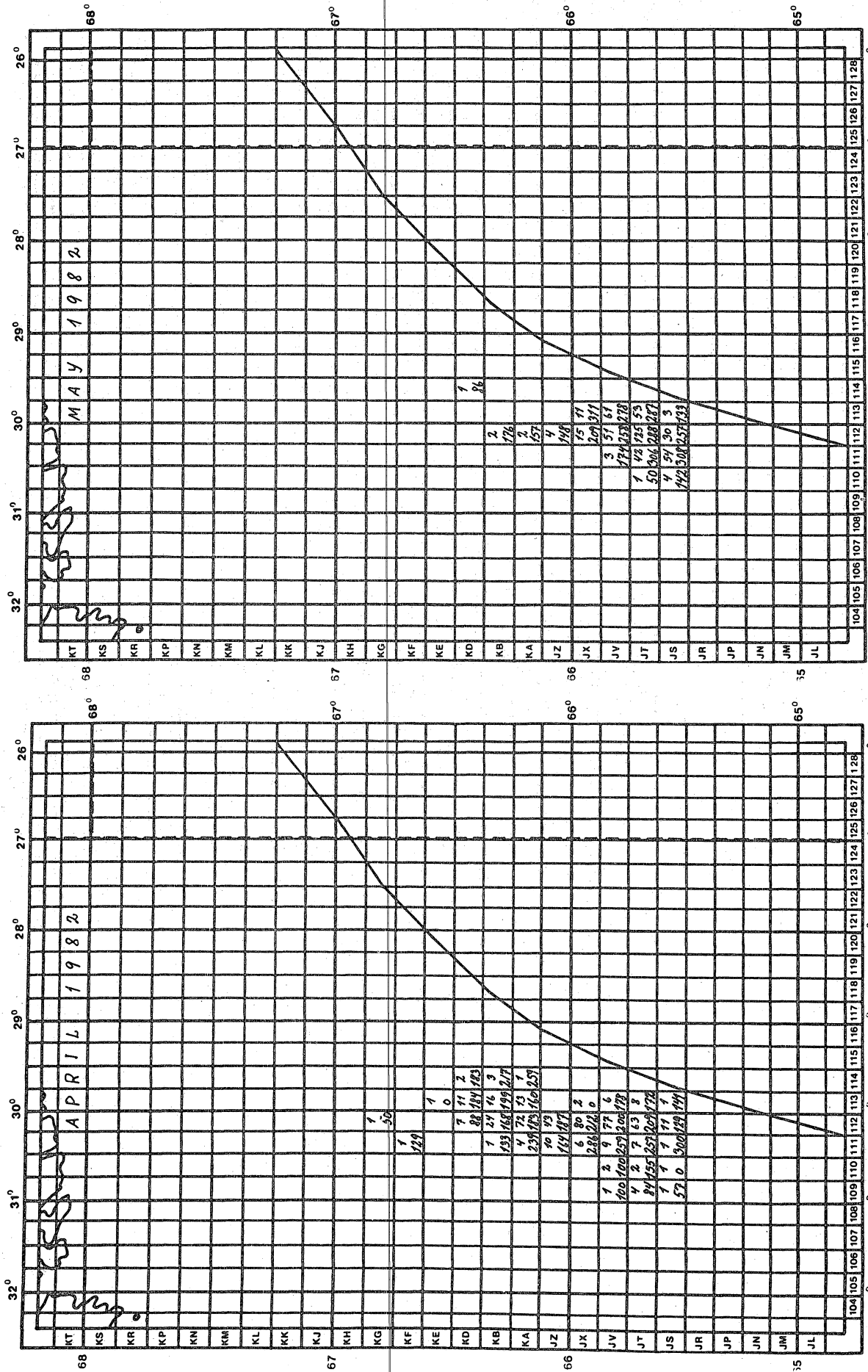


Fig. 3. Continued. April 1982.

Fig. 3. Continued. May 1982.

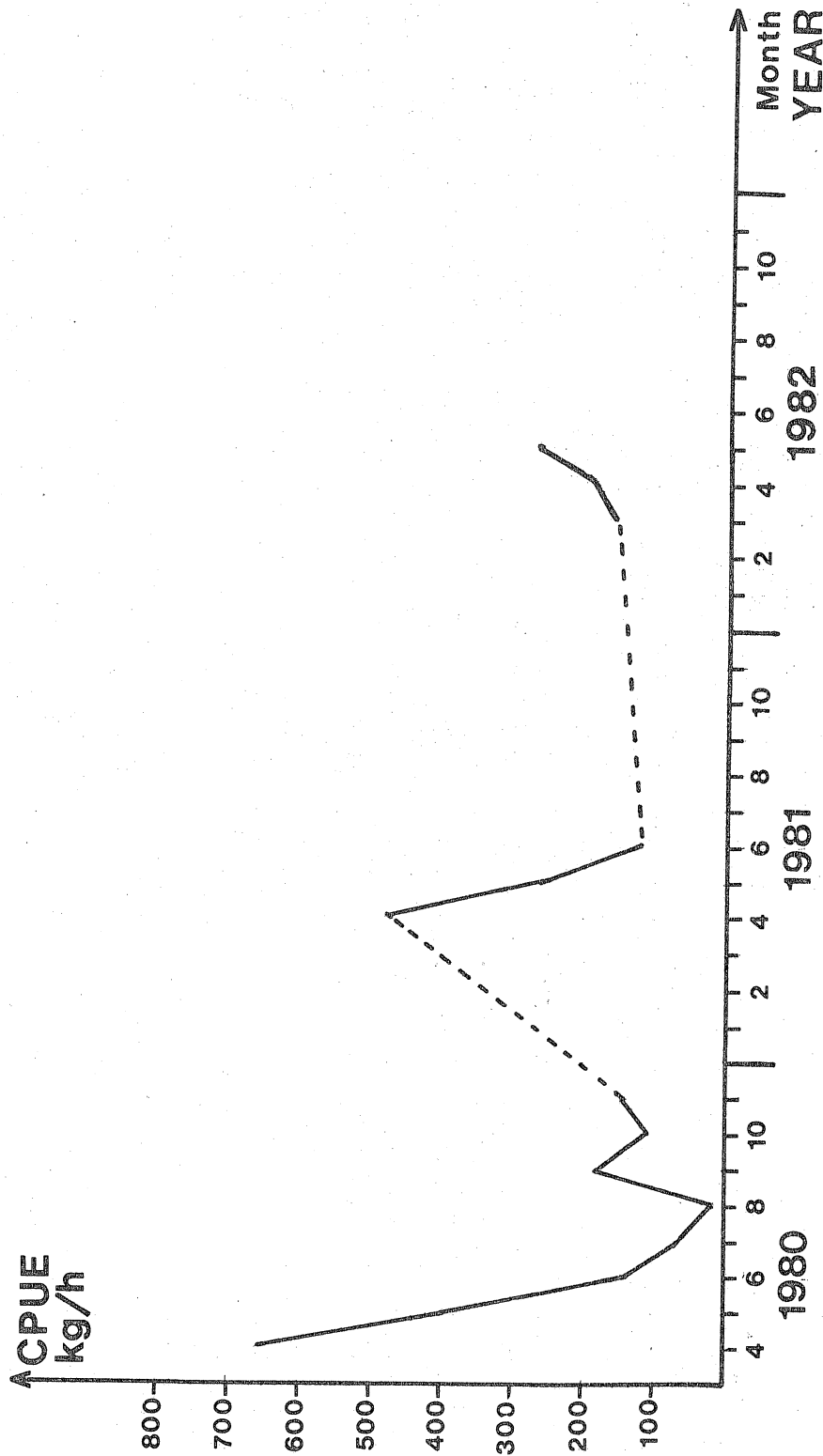


Fig. 4. Monthly mean catch of shrimp per unit effort (kg/hour) in the main fishing area at East Greenland (see text) from April 1980 to May 1982 based on logbook information from 8 trawlers in 1980, 5 trawlers in 1981 and 1982 (Table 3 shows the corresponding no. of hours trawled).