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Information on Catch and Catch per Unit Effort for Shrimp, Pandalus borealis, off West Greenland, 1980

by

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Introduction

Nine of the twelve vessels licenced to fish in Subareas 0 and 1 in 1980 from the Canadian quota of 2,500 tons actively participated in the fishery. Approximately 325 MT remains to be taken in Subarea 0 and this has been reserved for one vessel only.

Information from observers' reports for vessels fishing the area is available up to September 1980 and provides data on catch rate and catch composition. Some comparison is made with catch rate data for 1979 determined from vessel logs.

Materials and Methods

Observers' estimates of total shrimp catch (including discards) and effort were compiled for each month when fishing occurred. These are presented both in summary and detailed according to the Danish statistical square. The distribution of catch and effort for 1979 based on vessel logs is also presented by statistical square.

The data summary is by NAFO Division and for this exercise entries west of 58°W are considered in 0A while those east of 58°W are considered in 1B. In instances where there is little overlap very close to the meridian all data are considered appropriately 0A or 1B. Thus, mixing of data from both areas is minimized.

Length distributions by depth and by month have been compiled for the whole 0 + 1 area for 1980.

Catch per Unit Effort

A breakdown of fishing effort and details of catch rate for 1979 are presented in Fig. 1. Table 1 gives monthly catch rates by NAFO Division. Most fishing by these vessels occurred in the early and late months of the year and it appears that, by March, ice had become a limiting factor to fishing effort. Catch rates for the first two months of 1979 in Div 1B compare favourably with those presented by Ulltang and Torheim (1979). From September to December effort concentrated in Div. 0A and 1B with catch rates declining to well below 200 kg per hour in some cases. Catch per unit effort from October to December, on average, was higher in 0A than 1B (220 vs 175 kg/hr, respectively).

The 1980 figures are not directly comparable with those for 1979 (Fig. 2, Table 1) since, in 1980, most observed effort by Canadian licensed trawlers occurred from April to July. Data for earlier months are lacking and the August-September figures are from patrol boardings on vessels fishing in Div. 0A. The sources of data also have an inherent inequality in that the observer reports in 1980 include discards. Presumably, this would inflate figures otherwise obtained from vessel logs.

Ice appears to have influenced the fishery up to April but in later months fishing activity increased into the western portions of 1B and eastern 0A. Catch rates from April to August in Div. 1B appear to be considerably higher than those reported by Norway for 1979 (Ulltang and Torheim, 1979) but the unweighted average for July and August in 1980 was 321 kg/hr while that for Greenland trawlers of similar fishing power was 386 kg/hr in 1979 (unpublished data).

Catch rates in 1B for July and August were only slightly lower than those in 0A for the same period (328 vs 340 kg/hr respectively). Good catch rates are also noted in some months in Div. 1C and 1D.

Shrimp Size Composition

Length frequencies for shrimp by month taken in depths greater and less than 300 m are given in Fig. 3 to 6. Ovigerous animals were present in the catch in significant numbers up to and including May with a higher percentage usually occurring in relatively shallow water. Most of these samples were taken from Div. 1B and 1C. Signs of the beginning of the egg-laying period were evident by September.

Catches in early months were characterized by a broad range of sizes with prominent peaks at 18, 22 and 26 mm. Some anomalies are evident in the February and March figures with the peak of ovigerous animals considerably reduced in length compared with other months. This may be a function of area sampled since these months produced considerable data from Div. 1C. Atypical peaks in deeper water in June may also be due to sampling.

During May, two peaks were prominent, 18-19 mm in deep water and 26 mm in shallow. Catch rates were relatively good in all areas during June and catches, especially in deeper water, consisted of animals greater than 17 mm with the most prominent peak at 20 mm. Samples from Div 0A and 1B in July indicate growth of about 1 mm for the 18 mm mode in April but none for the older groups. By August a shift to the right for all groups is indicated.

For the last two months for which samples are available, there is a tendency towards a greater proportion of the largest size group (probably representing a composite of ages). Indications of recruitment are uncertain from the commercial data probably due to depth preference by the fleet and selectivity of the trawl.

Reference

Ulltang, Ø and S. Torheim. 1979. Norwegian Investigations on Shrimp, Pandalus borealis, off West Greenland in 1979. NAFO/SCR Doc. 79/XI/2, Serial No. NO13.

Table 1. Catch (MT) and catch per hour by month and Division, 1979 and 1980 (0 + 1). Tonnage class 4, 5, 6

Year	Month	0A[1] Catch	0A[1] CPUE	1B[1] Catch	1B[1] CPUE	1C Catch	1C CPUE	1D Catch	1D CPUE	Total Catch
1979[2]	January			149	0.403					149
	February			22	0.270					22
	March			3	0.108					3
	April									
	May									
	June									
	July									
	August									
	September	57	0.495							57
	October	94	0.214	312	0.180	-	0.043			406
	November	262	0.230	247	0.171	7	0.134	-	0.053	516
	December	16	0.143	193	0.172	16	0.160			225
	Total	429	0.238	926	0.194	23	0.146	-	0.053	1378
1980[3]	January			5	0.118					5
	February					52	0.160			52
	March			4	0.656	7	0.123			11
	April			215	0.391	123	0.446	1	0.063	339
	May			172	0.315	102	0.306	3	0.226	274
	June			41	0.304	122	0.741	7	0.672	170
	July	13	0.439	89	0.355					102
	August	179	0.335	45	0.287					224
	September	58	0.275							58
	October									
	November									
	December									
	Total	250	0.322	571	0.338	406	0.351	11	0.266	1235

[1] West and East of 58°W

[2] From vessel logs

[3] From observer's reports

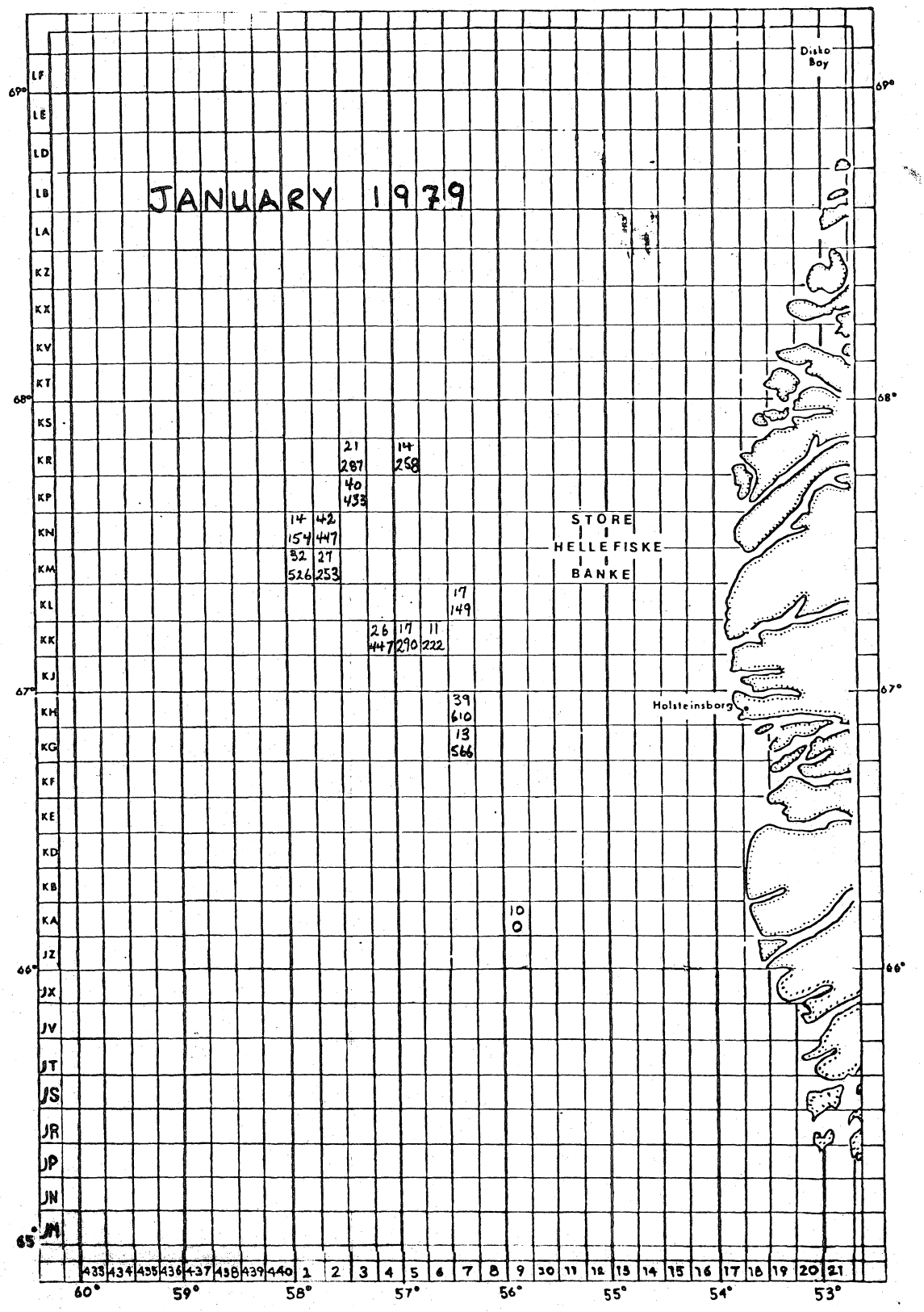
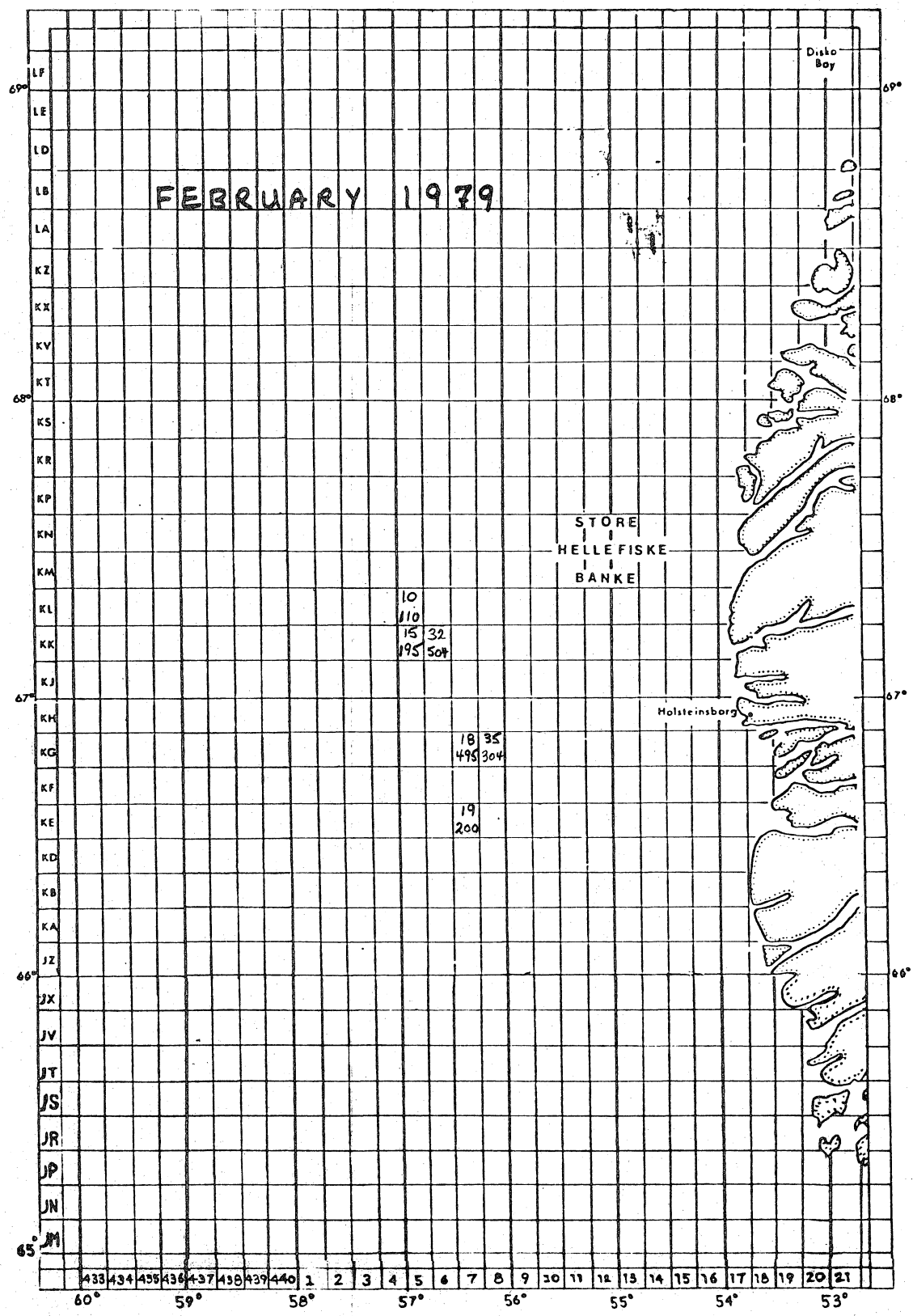


Fig. 1. Distribution of shrimp CPUE 0+1, 1979.



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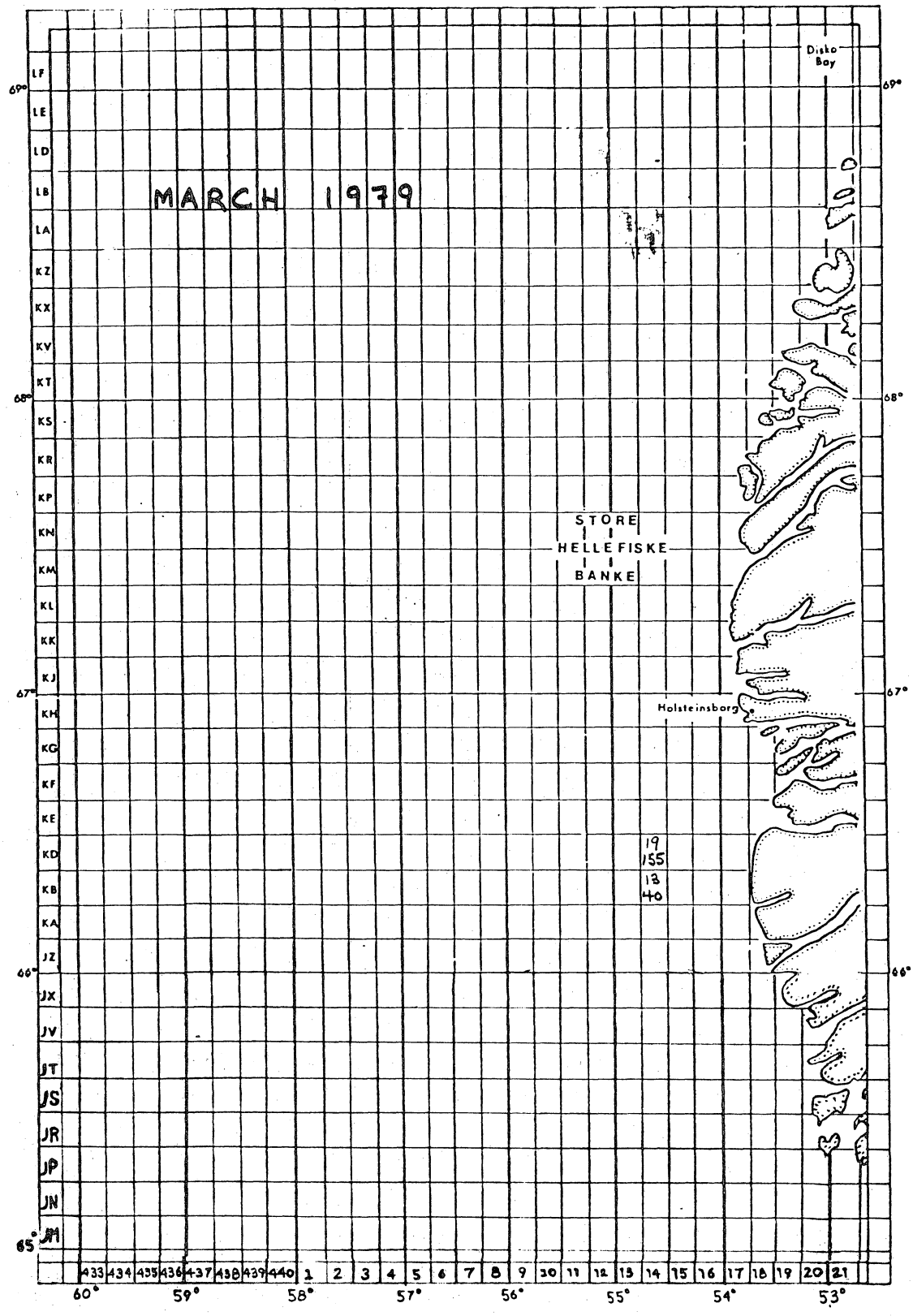

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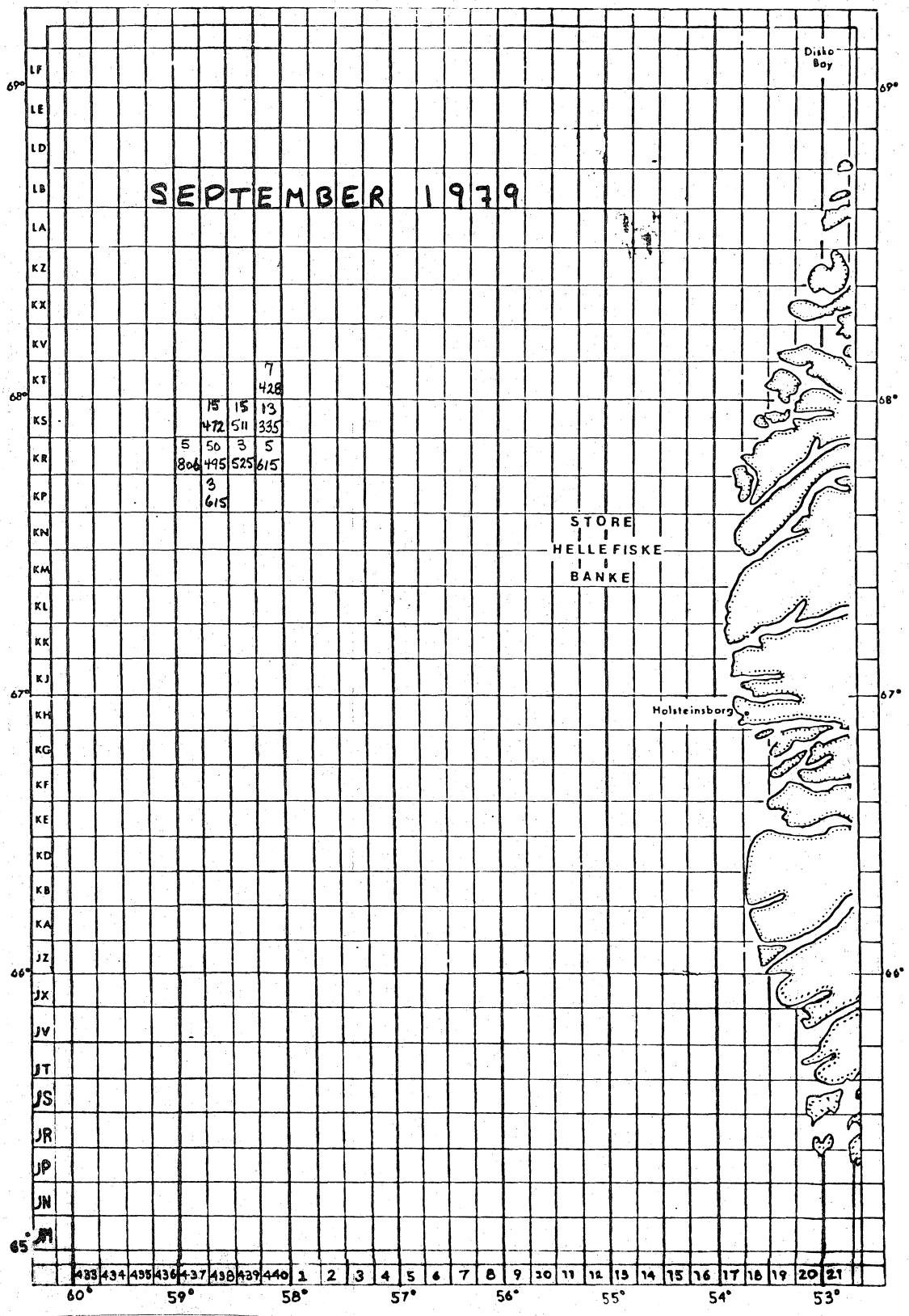

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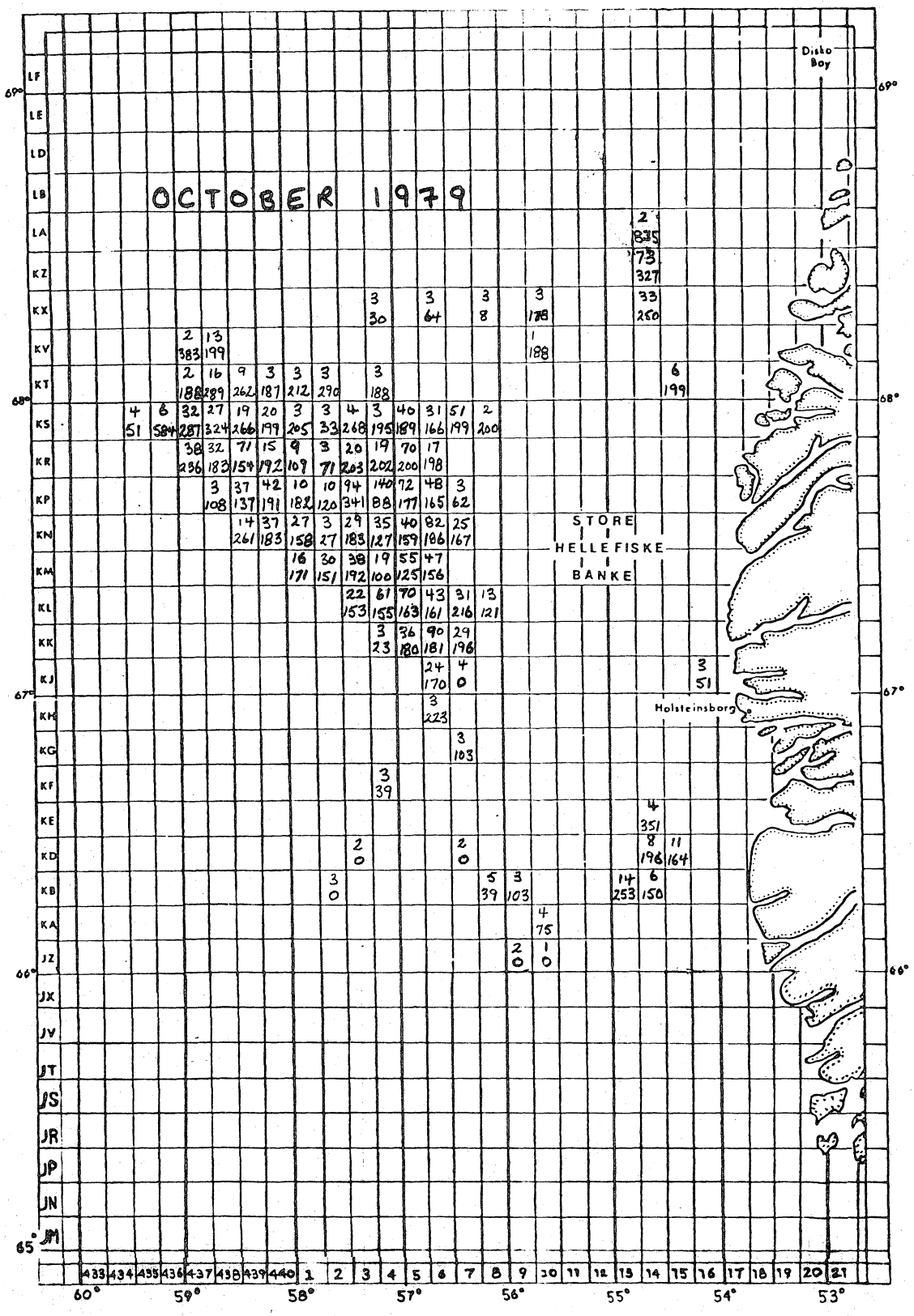

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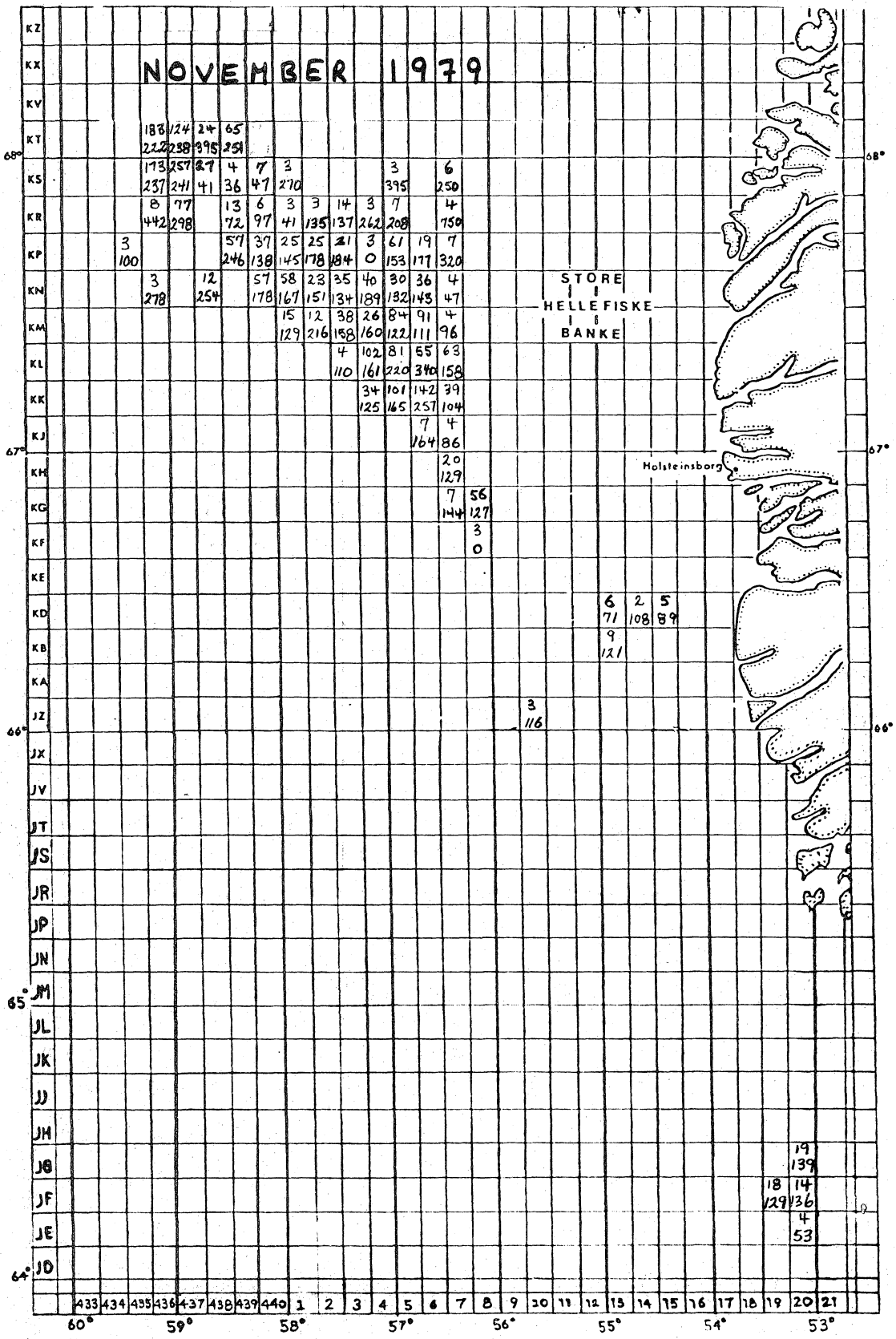

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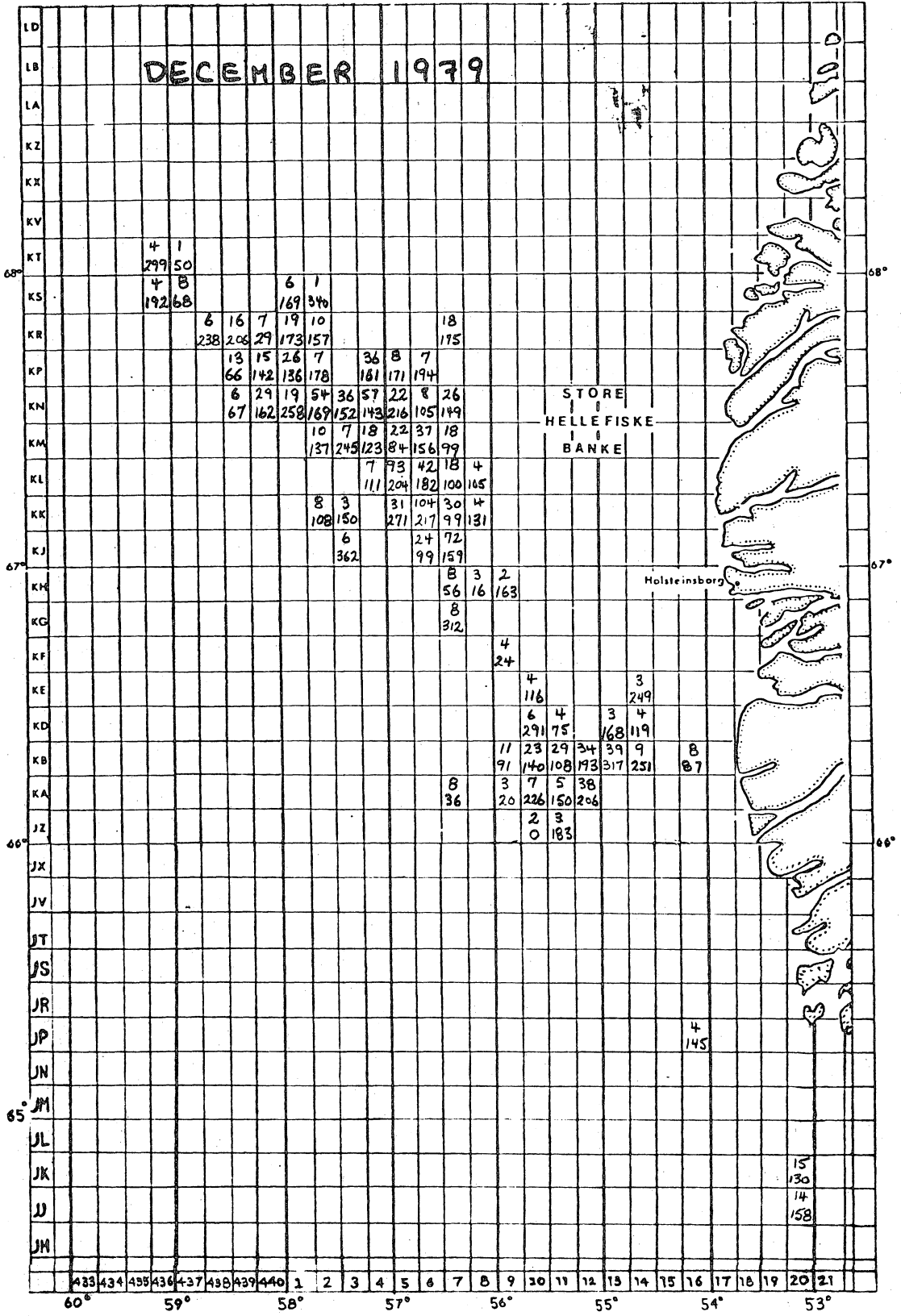

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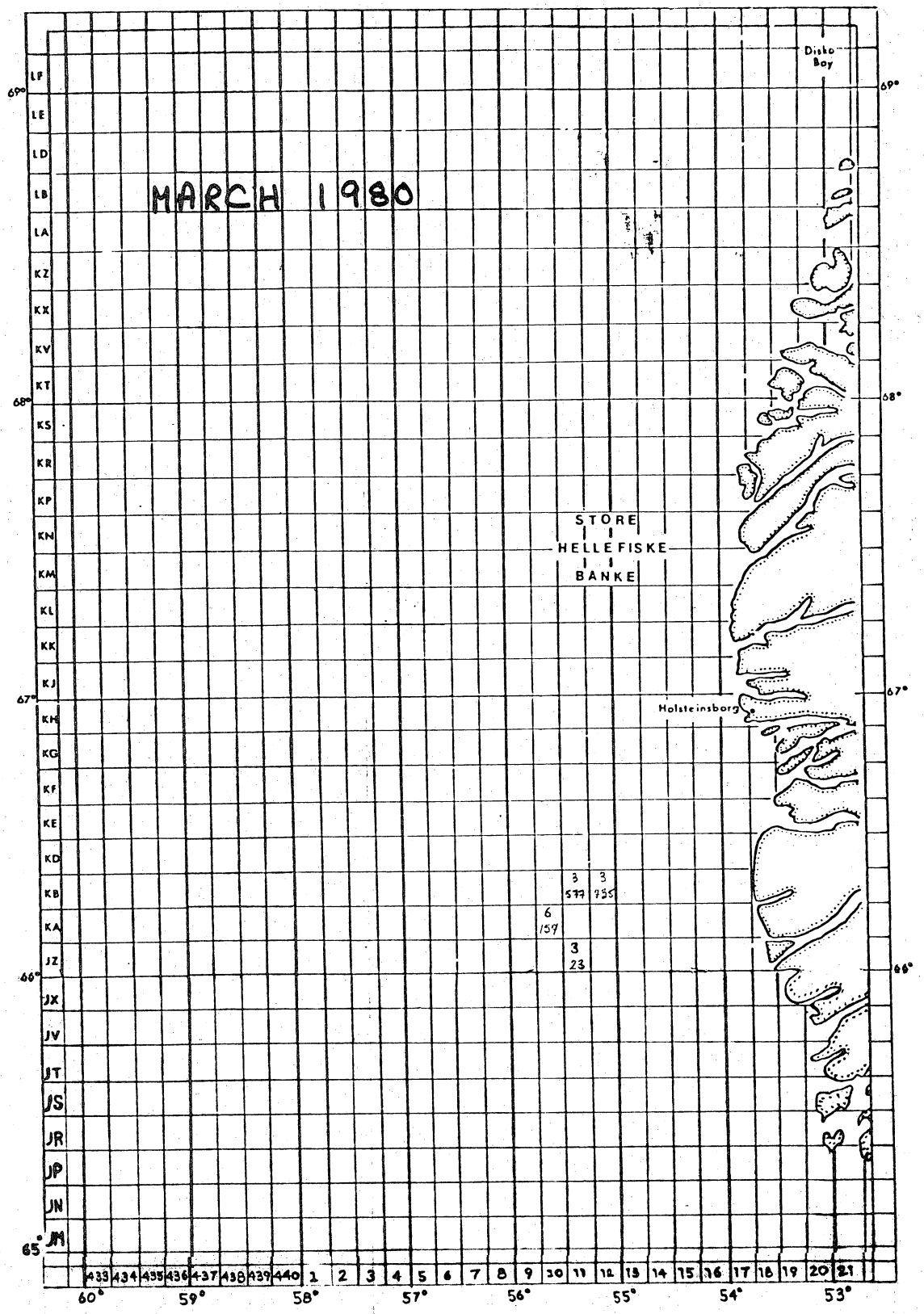
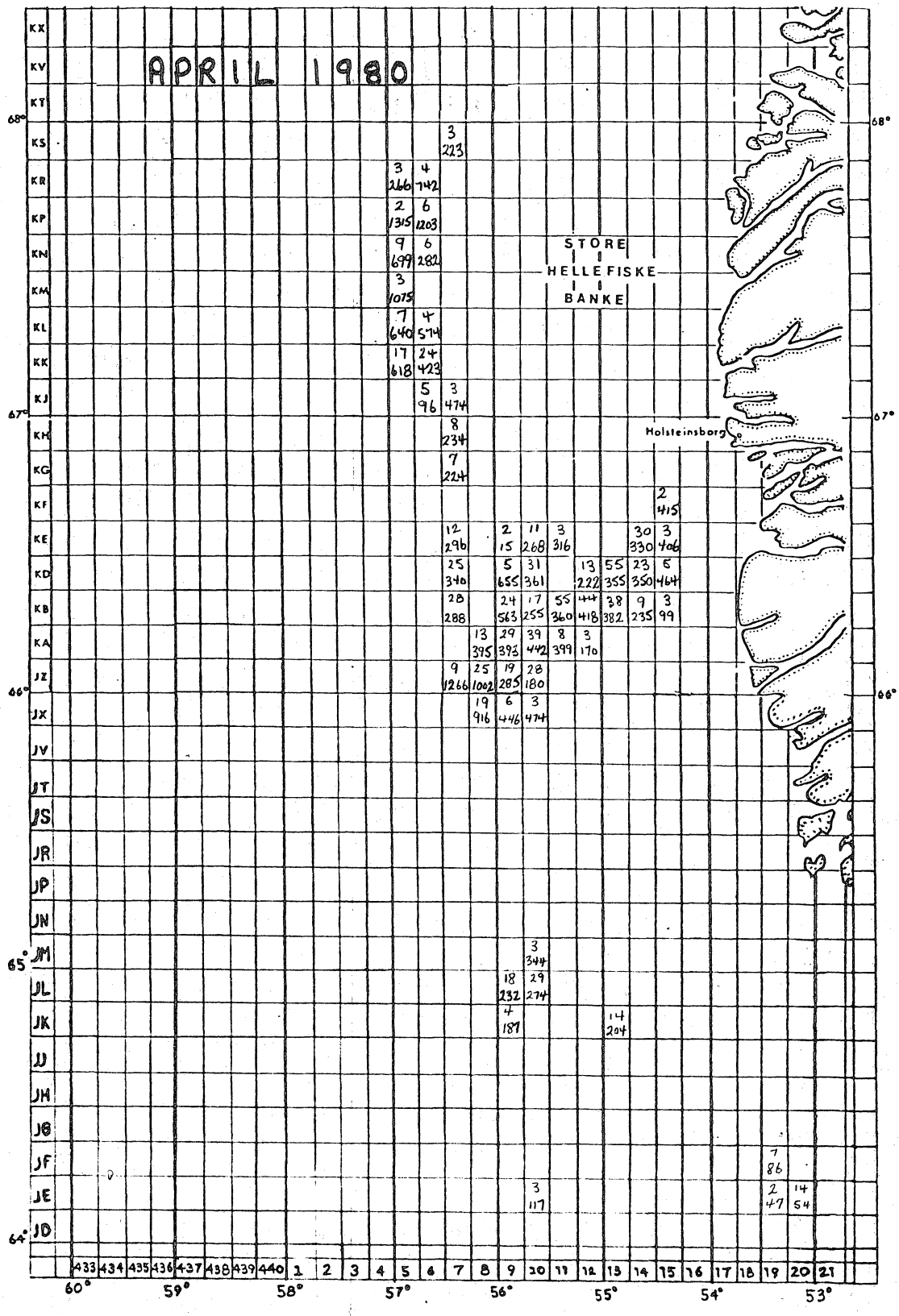


Fig. 2. Distribution of shrimp CPUE 0+1, 1980



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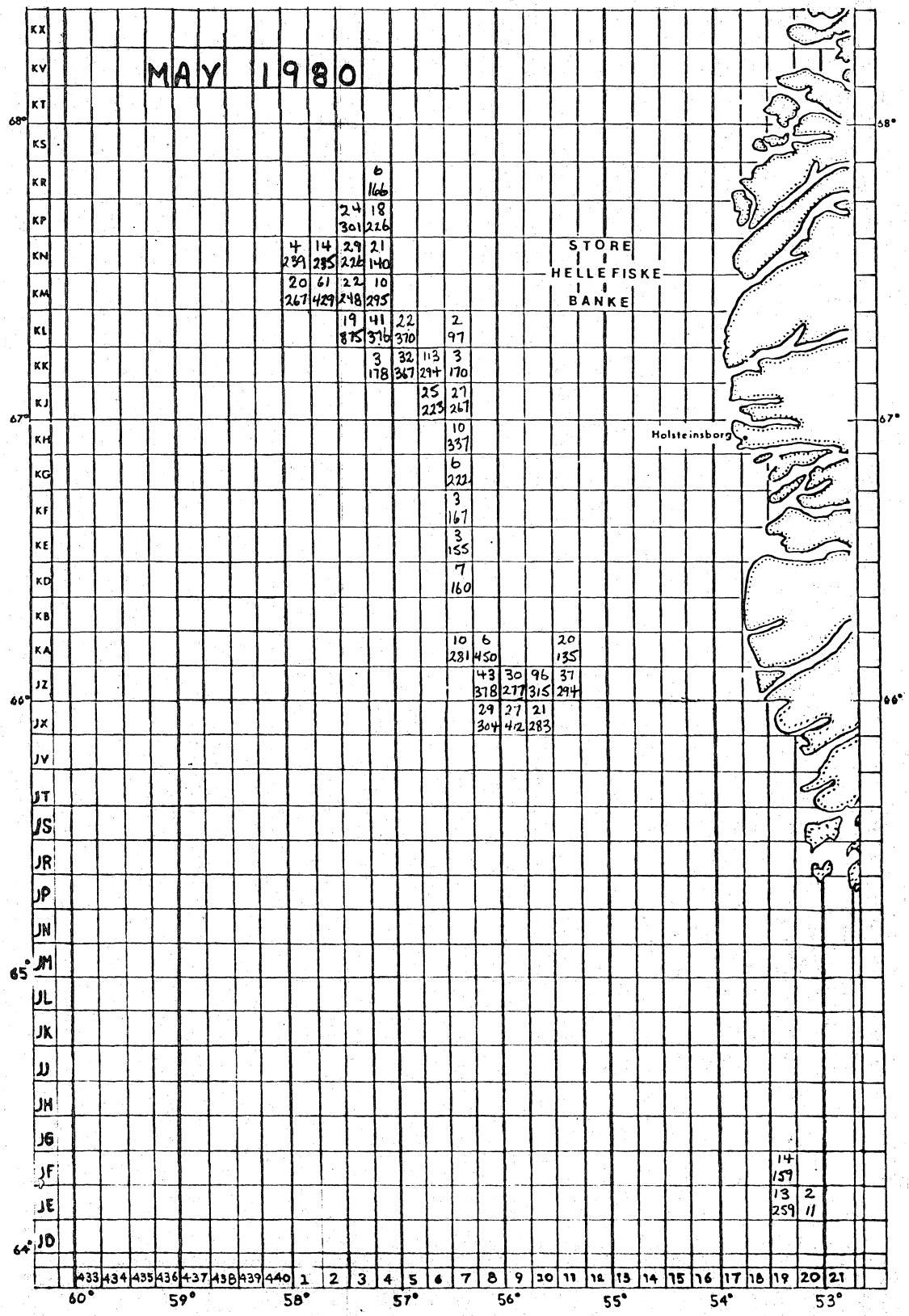

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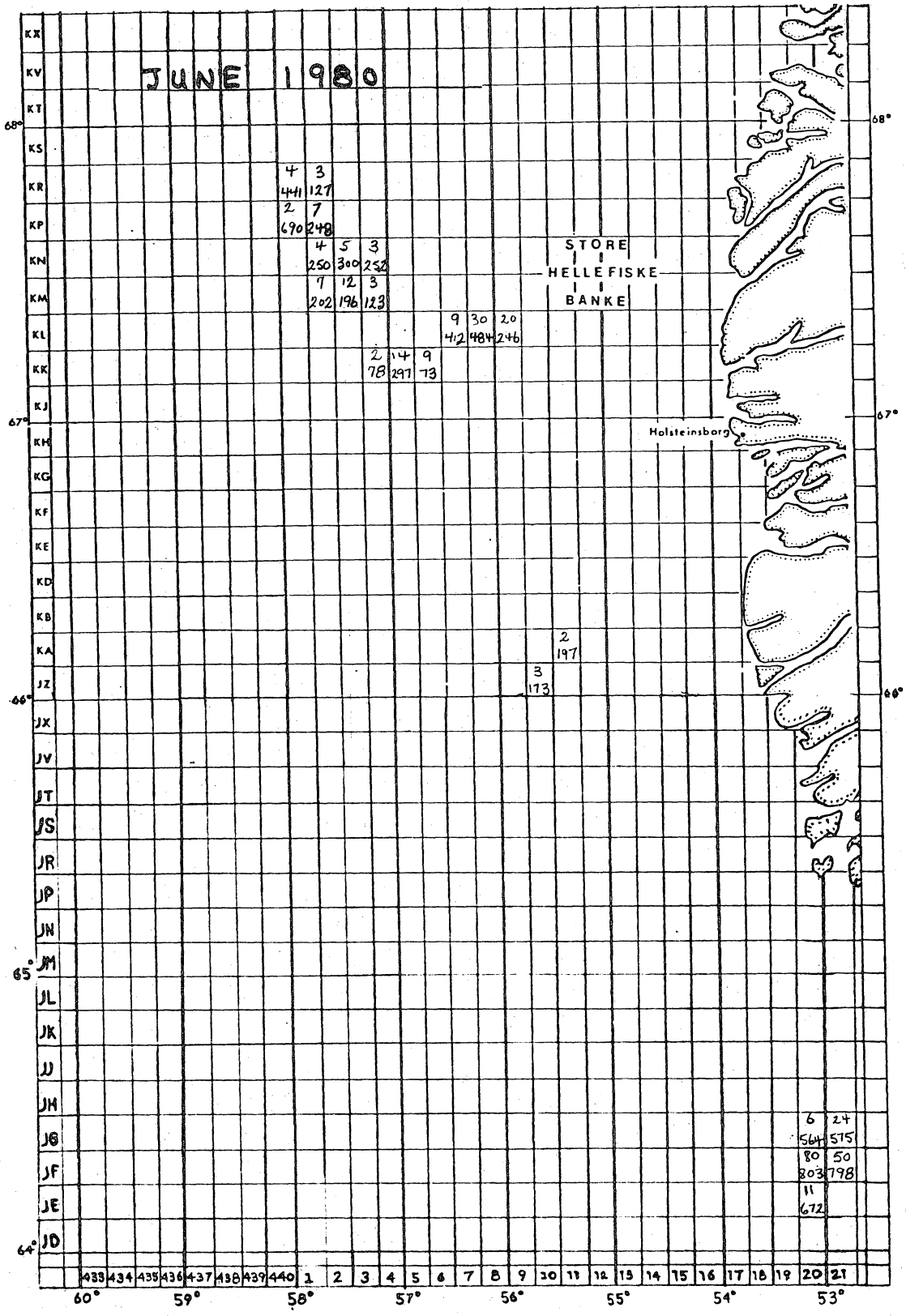

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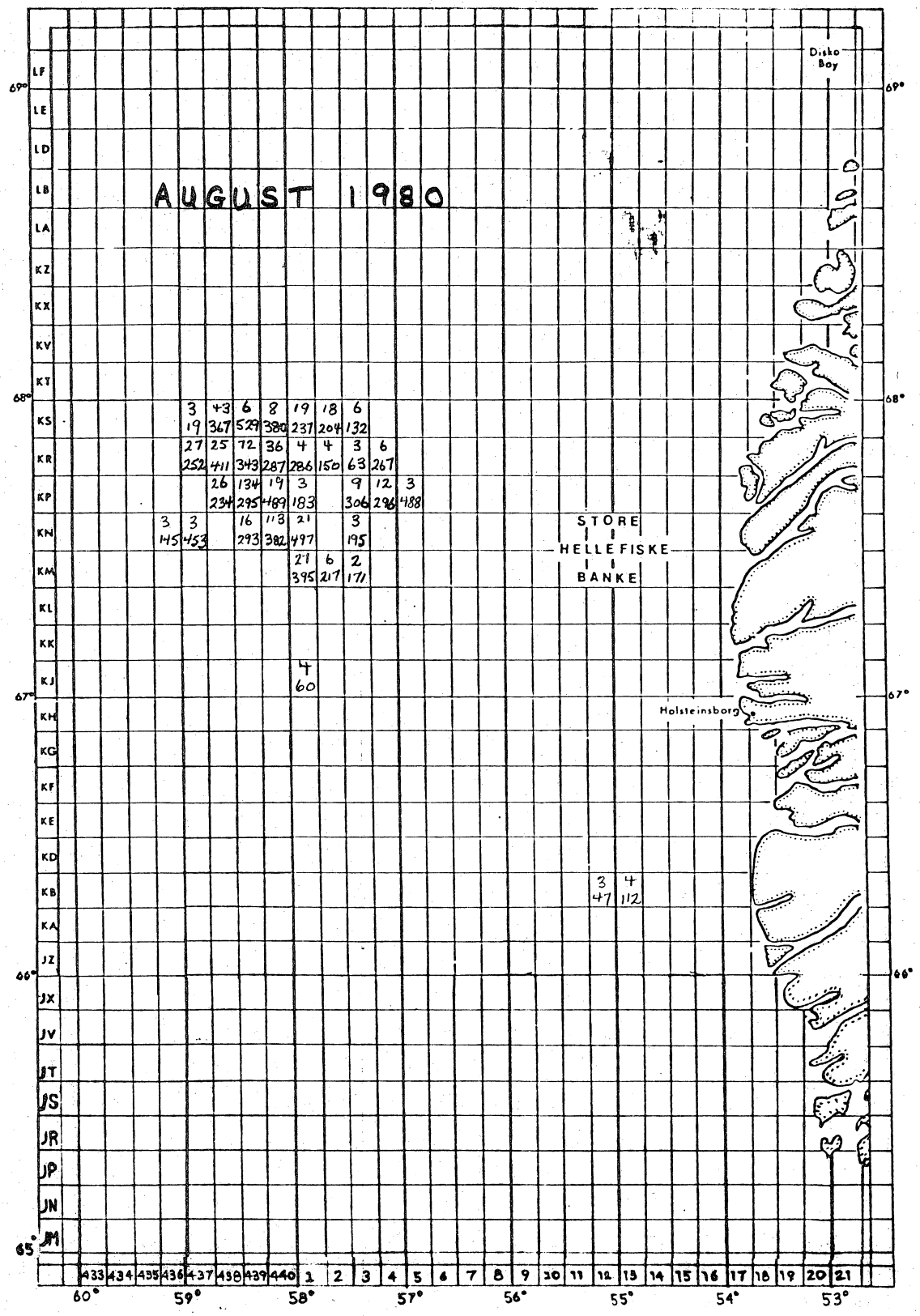

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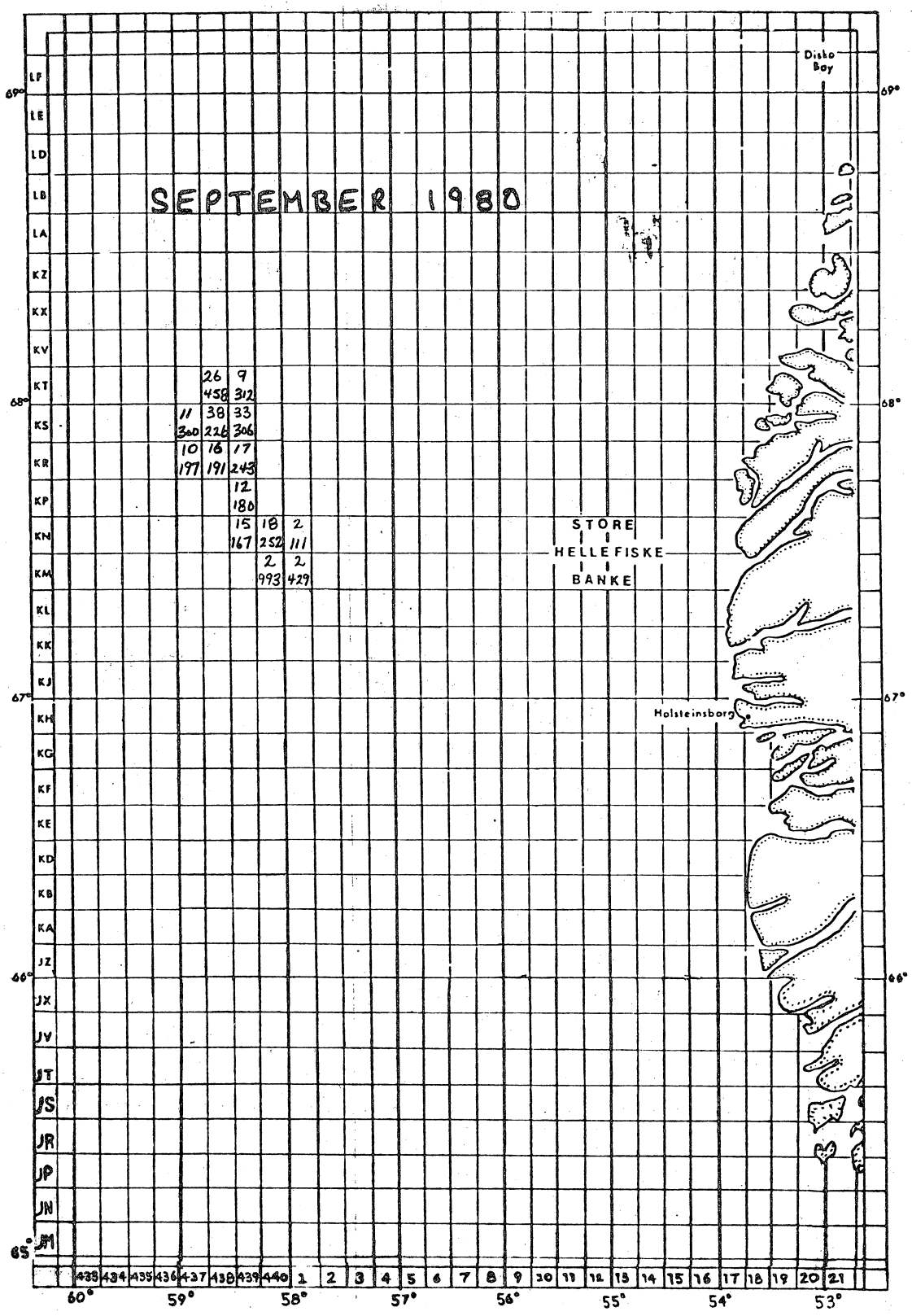

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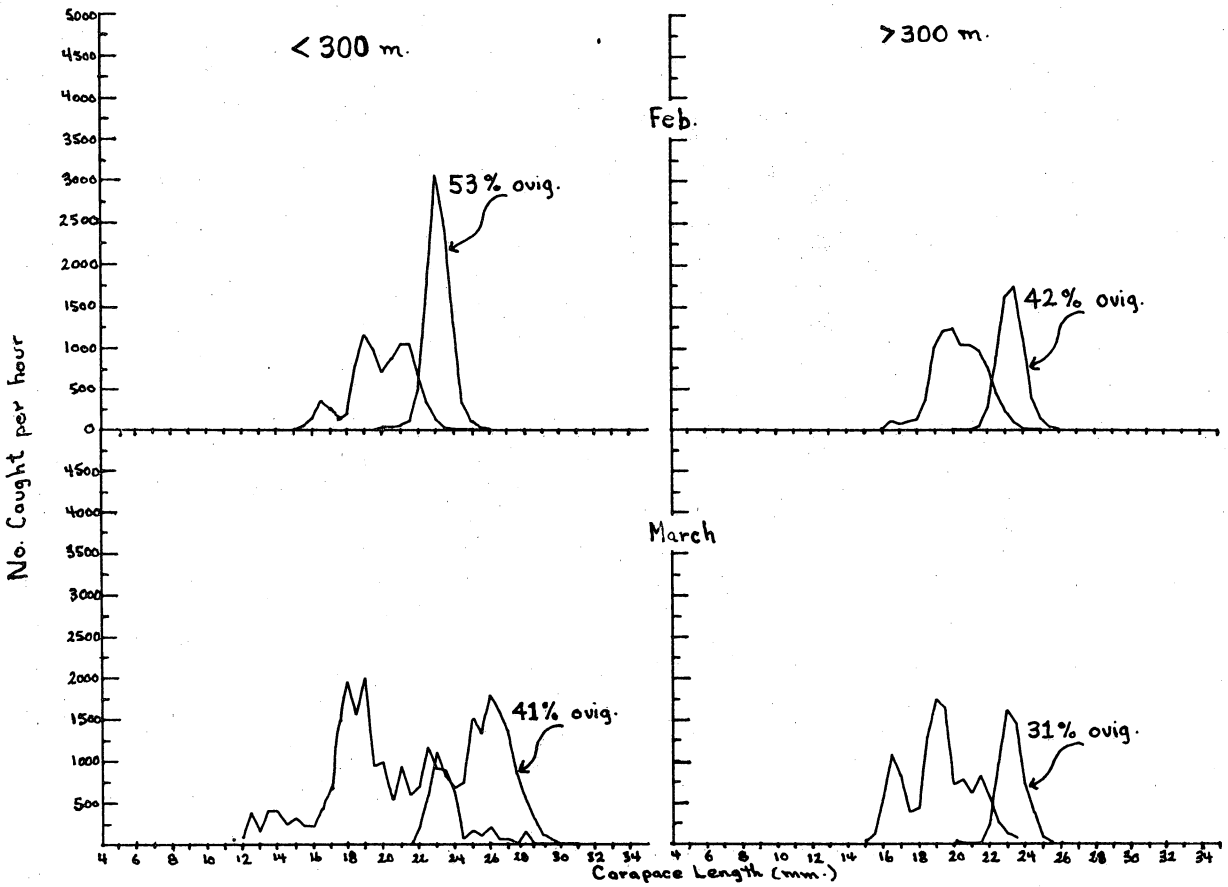

Fig. 3. Shrimp length distribution, February-March 1980 (West Greenland)

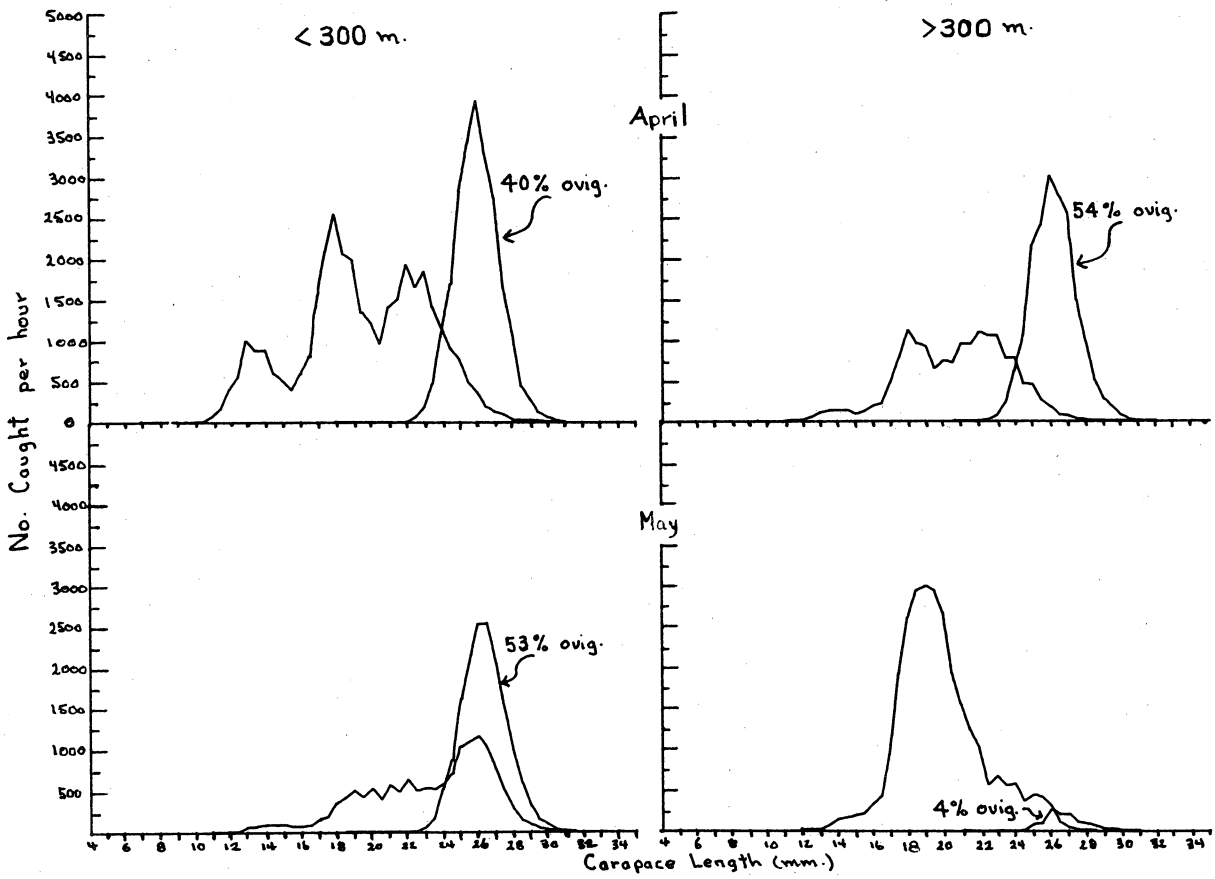

Fig. 4. Shrimp length distribution, April-May 1980 (West Greenland)

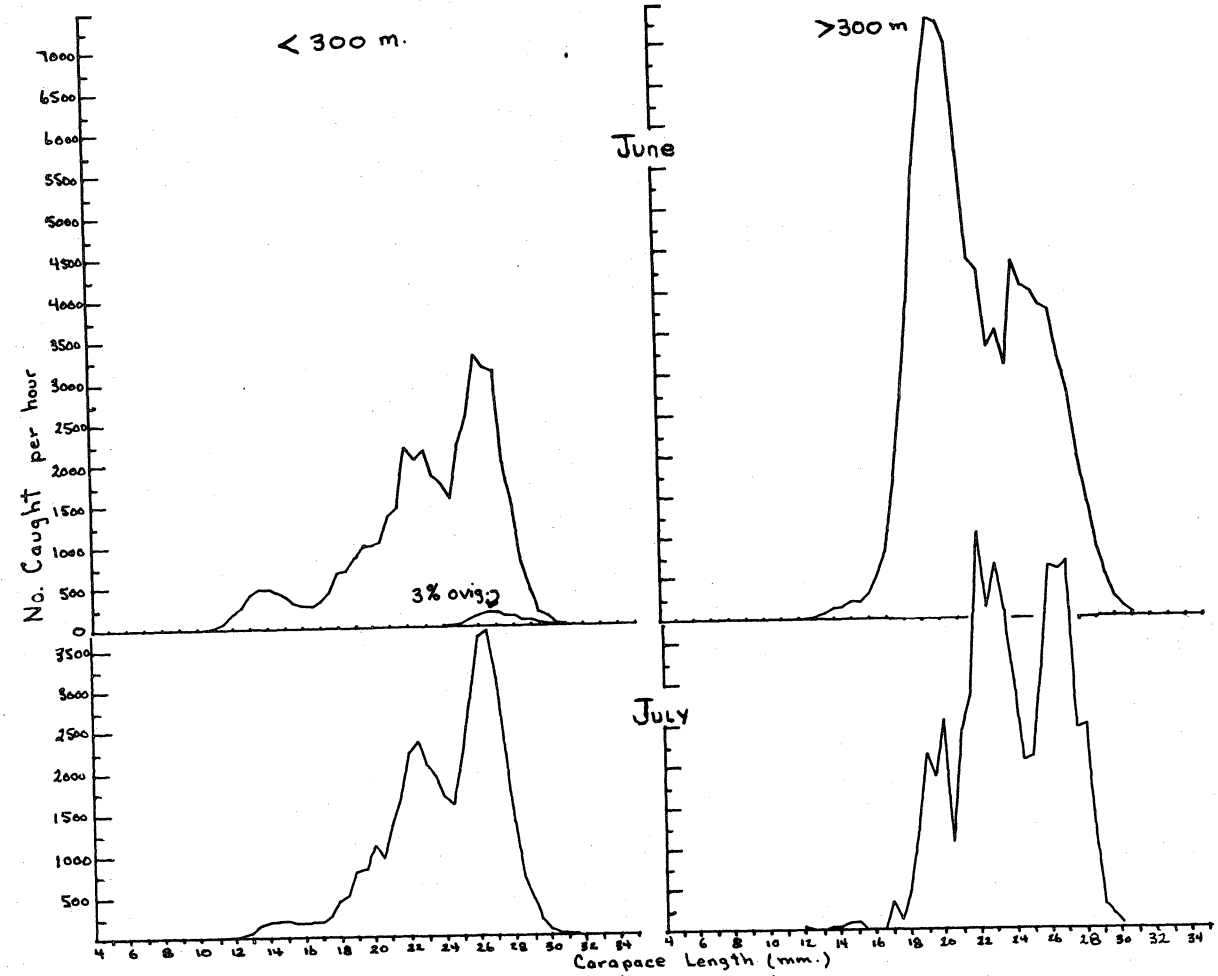

Fig. 5. Shrimp length distribution, June-July 1980 (West Greenland)

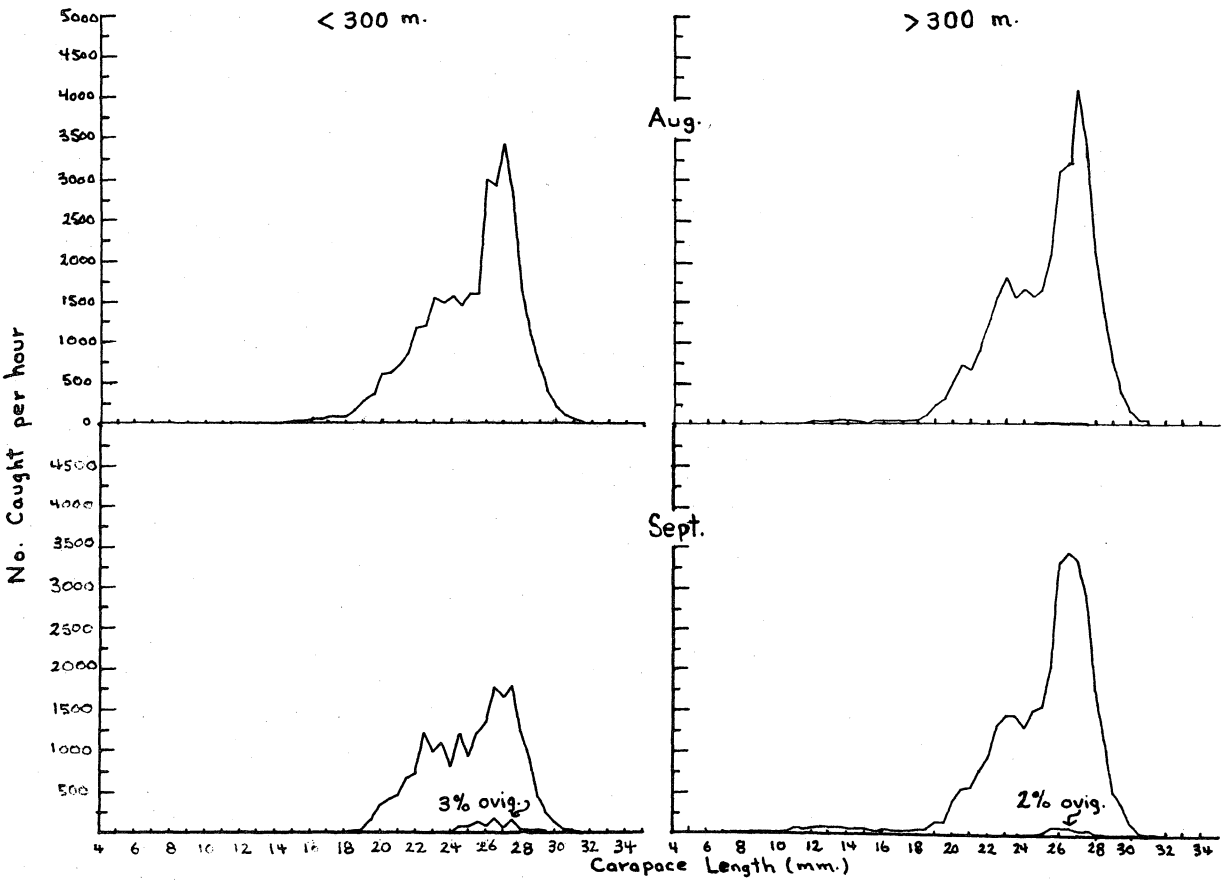

Fig. 6. Shrimp length distribution, August-September 1980 (West Greenland)