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Data on the Shrimp Fishery in NAFO Subarea 0+1 in 1980 and 1981

by

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Introduction

In 1980 eighty-three trawlers above 80 GRT participated in the shrimp fishery in NAFO Subarea 1; in 1981 the corresponding figure was 57 trawlers. In both years 27 trawlers have been fishing under Greenland (DEN-G) allocations.

The total offshore catch in 1980 by these trawlers was approximately 31,700 tons, of which the Greenland catch accounted for approximately 24,000 tons. In 1981 through October the total catch was approximately 26,500 tons or about 88% of the 30,000 tons allocated (the catch figures do not include minor catches of Greenland trawlers under 80 GRT).

Haul-by-haul logbook information is available for both years (for 1981 including data from September) from eight trawlers of the Royal Greenland Trade Department. Data on the shrimp fishery following the line of previously presented information (Carlsson, 1980) is given below.

The Offshore Shrimp Fishery in 1980 and 1981

Trawlers above 80 GRT fishing in NAFO Subarea 1 are obliged to report their position and catch once a week to Greenland authorities. Table 1 shows the reported catches by month and nation for the two years and Table 2 the corresponding numbers of reporting vessels. In 1981, 27,000 of the total allocation of 30,000 tons has been allocated to Greenland. By the end of October approximately 77% of the Greenland allocation had been taken by the same number of trawlers as in 1980, when only 22,000 tons of the TAC of 29,500 tons was allocated to Greenland. At the end of September 1981 the eight trawlers of the Royal Greenland Trade Department accounted for approximately 9,000 tons of the

at that time approximately 21,000 tons taken by Greenland trawlers, i.e. approximately 43% of the Greenland fishery is covered by the logbook system.

Geographical Distribution of the Shrimp Fishery

Only Greenland trawlers are allowed to fish shrimp north of 68° northern latitude. Fig. 1 (a-f) shows the distribution of shrimp hauls in 1980 and 1981 (through September) in Subarea 1 based on logbook recordings for seven trawlers (473-722 GRT) of the Royal Greenland Trade Department. The northward shift of the fishery in relation to earlier years (Carlsson, 1980) is seen again in 1981, however in this year there has also been a high activity in the Holsteinsborg Dyb between 66° and 67°N. Figure 2 shows the distribution of the fishery on a monthly basis (1980 through September 1981) including number of hauls and mean catch of shrimp per hour fished. The high activity in the Holsteinsborg Dyb took place especially in February and March and again in July. Ice conditions may have caused the southern location of the fishery in early spring, however, catch rates are higher than the year before, although they are not at the level of the spring fishery in the earlier years at the beginning of the offshore west Greenland shrimp fishery (Carlsson, 1980).

Trends in Catch Rates

Figure 3, 4 and 5 show the variation in mean catch rate (kg/hour) from October 1975 to September 1981 in NAFO Division 1A, 1B and 1A+B respectively on a monthly basis by six trawlers (722 GRT) of the Royal Greenland Trade Department (Table 3 shows the corresponding number of hours trawled, on which the catch rates are based). Peak catch rates are found every year in the spring, followed by declining catch rates throughout the year. Addition of Div. 1A figures (Fig. 3) to the 1B - figures (Fig. 4) does not change the general picture significantly (Fig. 5). Spring catch rates are assumingly based on fishery on concentrations of berried females. These catch rates are in 1981 higher than in 1980 and at the same level as in 1979. Table 4 shows the mean catch rates by month and NAFO Division in a south to north 7 1/2' latitude grid for 1980 to September 1981 (Table 5 gives the corresponding number of hours trawled) showing the same declining catch rates and the northward shift of the fishery throughout each single year. In 1981, however, the northward shift is not as significant as in earlier years.

To avoid the influence of ice conditions on availability of the shrimp early

in the year and the influence of quota regulations late in the year, the period from July to September has been chosen for comparison of catch rates from year to year. The number of hours trawled and the mean catch per hour in Division 1B in July to September throughout the years 1976 to 1981 for the six 722 GRT trawlers of the Royal Greenland Trade Department are as follows:

	1976	1977	1978	1979	1980	1981
Hours trawled	1005	2966	3446	3588	1872	5162
kg/hour	740	548	499	375	468	441

The corresponding mean catch rate for Division 1A+B are:

	1976	1977	1978	1979	1980	1981
Hours trawled	1007	3028	3456	3588	2437	5509
kg/time	746	541	499	375	479	442

Again the inclusion of data from the fishery in Div. 1A has no significant influence on the catch rates. The decline in catch rate from 1976 to 1979 is followed by a stabilization at approximately 450 kg/hour, although 1981 figures are a little lower than 1980 figures.

#### By-catches

Table 6 shows the by-catches reported in logbooks of seven trawlers from January 1980 to September 1981. There is a steady decline in reported by-catch in the shrimp fishery, especially regarding redfishes, which were recorded in much higher quantities in earlier years (Carlsson, 1980). In 1980 cod was reported as by-catch in significant quantities in the shrimp fishery in Division 1B for the first time in several years; in 1981, however, this species has not been recorded at all in the available logbook information.

#### Conclusions

The total allowable catch for the shrimp fishery in NAFO Subarea 1 has been set at the same level (approximately 29,500 tons) for several years. Logbook information from trawlers of the Royal Greenland Trade Department shows that the fishery in 1980 exploited more northerly areas in Division 1A than in the years before. The same areas were exploited in 1981, but this year also the previously important fishing grounds in the southern part of Division 1B were fished again on a significant level, with catch rates higher than in the last few years, although not reaching the size of the early years of the offshore shrimp fishery at West Greenland. The mean catch rates in Division 1A and 1B from July to September where ice and quota regulations should not influence

the geographical distribution of the fishery, are stabilized around 450 kg/hour, while spring catch rates in 1981 are higher than the year before.

By-catches in the shrimp fishery are according to logbook information very small compared to earlier years.

#### References

CARLSSON, D. M., 1980. Data on the Greenland shrimp fishery in NAFO Subarea 0+1 in 1980 compared to earlier years. NAFO SCR Doc. 80/XI/174 (mimeo.).

Table 1. Catches of shrimp (tons) at West Greenland (NAFO Subarea 1) by month and nation as reported to the Greenland authorities in 1980(a) and 1981 (Jan-Oct.: b).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
a. 1980													
Greenland	1698	1357	1361	2569	2469	2805	3537	2233	1902	2107	1432	479	23949
Denmark	77	169	-	-	11	81	191	342	-	-	-	-	871
Faroe Islands	458	389	135	-	-	28	128	390	196	85	106	-	1915
Norway	214	487	130	67	200	627	520	178	12	-	-	-	2435
France	-	-	-	-	-	-	54	91	-	-	-	-	145
Canada	-	241	468	339	682	363	238	59	-	-	-	-	2390
Total	2447	2643	2094	2975	3362	3904	4668	3293	2110	2192	1538	479	31705
b. 1981													
Greenland	1690	2322	1999	1422	4234	1896	2302	3193	2201	1897	-	-	23156
Denmark	-	-	531	-	103	206	-	118	17	-	-	-	975
Faroe Islands	-	-	-	-	56	112	301	39	56	122	-	-	686
Norway	-	10	53	-	-	183	670	148	-	-	-	-	1064
France	-	-	-	-	-	-	273	231	40	-	-	-	544
Total	1690	2332	2583	1422	4393	2397	3546	3729	2314	2019	-	-	26425

Table 2. Number of vessels in the shrimp fishery at West Greenland (NAFO Subarea 1) by month and nation as reported to the Greenland authorities in 1980 (a) and 1981 (Jan-Oct: b).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
a. 1980													
Greenland	22	22	23	25	26	23	22	20	21	20	22	16	27
Denmark	3	2	-	-	-	1	3	3	-	-	-	-	4
Faroe Islands	12	9	3	-	-	2	6	7	6	5	3	-	17
Norway	7	12	6	3	6	10	10	4	3	-	-	-	25
France	-	-	-	-	-	-	1	1	-	-	-	-	1
Canada	-	6	5	5	6	4	2	1	-	-	-	-	9
Total	44	51	37	33	38	40	44	36	30	25	25	16	83
b. 1981													
Greenland	22	23	21	21	25	23	24	24	22	22	-	-	27
Denmark	-	2	2	-	2	3	-	3	1	-	-	-	3
Faroe Islands	-	-	-	-	2	3	8	5	5	5	-	-	11
Norway	-	2	2	-	-	6	14	7	-	-	-	-	14
France	-	-	-	-	-	-	2	2	1	-	-	-	2
Total	22	27	25	21	29	36	48	41	29	27	-	-	57

**Tabel 3.** Number of hours trawled per month and year from October 1975 through September 1981 in NAFO Division 1A, 1B and 1A+B, based on logbook information by six trawlers (722 GRT) of the Royal Greenland Trade Department.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1A	1975												
	1976								2				
	1977								4	58			
	1978								10				100
	1979	77			91	65	143						
	1980	39	118	93	46	70	979	171	199	255	319		
	1981	187		13	71	369	178	66	209	72			
1B	1975												
	1976	12				7	252	326	309	370	329		
	1977	104	84	245	391	643	839	874	1053	1039	1297	1293	957
	1978	233			13	948	1209	1226	1326	894	1282	1199	626
	1979	27	18	823	752	991	972	1191	1521	876	911	922	891
	1980	771	627	685	670	1330	131	469	822	581	254		
	1981	857	172	366	729	1059	1167	1915	1816	1431			
1A	1975												
+	1B	1976	12			7	252	326	311	370	329		
	1977	104	84	254	391	643	839	874	1057	1097	1297	1293	957
	1978	233			13	948	1209	1226	1336	894	1282	1199	726
	1979	104	18	823	842	1058	1115	1191	1521	876	911	922	891
	1980	810	745	778	716	1400	1110	640	1021	776	573		
	1981	1044	172	379	800	1428	1345	1981	2025	1503			

Table 4. Mean catch per hour (kg/hour) in NAFO Subarea 0+1 as reported in logbooks of seven trawlers of the Royal Greenland Trade Department (473-722 GRT) in 1980 and 1981 in a south to north grid (7 1/2 degree latitude scale - see Fig. 1).

100. 4.

Table 5. No. of hours trawled in NAFO Subarea 0+1 as reported in logbooks of seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in 1980 and 1981 in a south to north grid (7 1/2 degree latitude scale - see Fig. 1).

Table 6. Reported by-catch in the shrimp fishery by month, NAFO Division and species from January 1980 to September 1981 in logbooks of seven trawlers (473-722 GRT) of the Royal Greenland Trade Department.

Species	8001	8002	8003	8004	8005	8006	8007	8008	8009	8010	8101	8102	8103	8104	8105	8106	8107	8108	8109
0A Redfishes	-	-	-	-	-	-	11.5	9.2	68.8	17.4	-	-	-	-	-	-	0.1	-	
1A Redfishes	2.3	8.2	2.2	4.3	1.0	0.3	-	-	-	0.4	-	-	0.4	-	0.1	-	-	-	
1B Gr. Halibut	-	-	-	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	
Redfishes	71.5	52.2	71.1	40.3	65.7	2.3	2.9	11.3	24.9	17.9	3.3	6.8	0.1	4.5	16.5	6.0	5.4	1.1	2.6
1C Cod	-	-	-	-	-	4.1	11.9	-	-	-	-	-	-	-	-	-	-	-	
Gr. Halibut	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	8	
Redfishes	1.0	-	16.0	5.4	0.6	8.2	9.1	-	-	2.3	2.5	0.4	-	0.4	0.4	-	-	0.1	
Gr. Cod	-	-	-	-	-	4.0	-	-	-	-	-	-	-	-	-	-	-	-	
1D Cod	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	
Gr. Halibut	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	
Redfishes	-	-	0.1	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	
Tot:																			
Redfishes	74.8	60.4	89.3	50.1	67.3	10.8	23.5	20.6	93.7	35.3	6.0	9.3	0.5	4.9	16.9	6.5	5.4	1.2	2.7
Gr. Halibut	-	-	-	-	-	0.4	-	1.6	-	-	-	-	-	-	-	-	-	-	
Cod	-	-	-	-	-	4.9	11.9	-	-	-	-	-	-	-	-	-	-	-	
Gr. Cod	-	-	-	-	-	4.0	-	-	-	-	-	-	-	-	-	-	-	-	
All. spec.	74.8	60.4	89.3	50.1	67.3	20.5	35.4	22.2	93.7	35.3	6.0	9.3	0.5	4.9	16.9	6.5	5.4	1.2	2.7

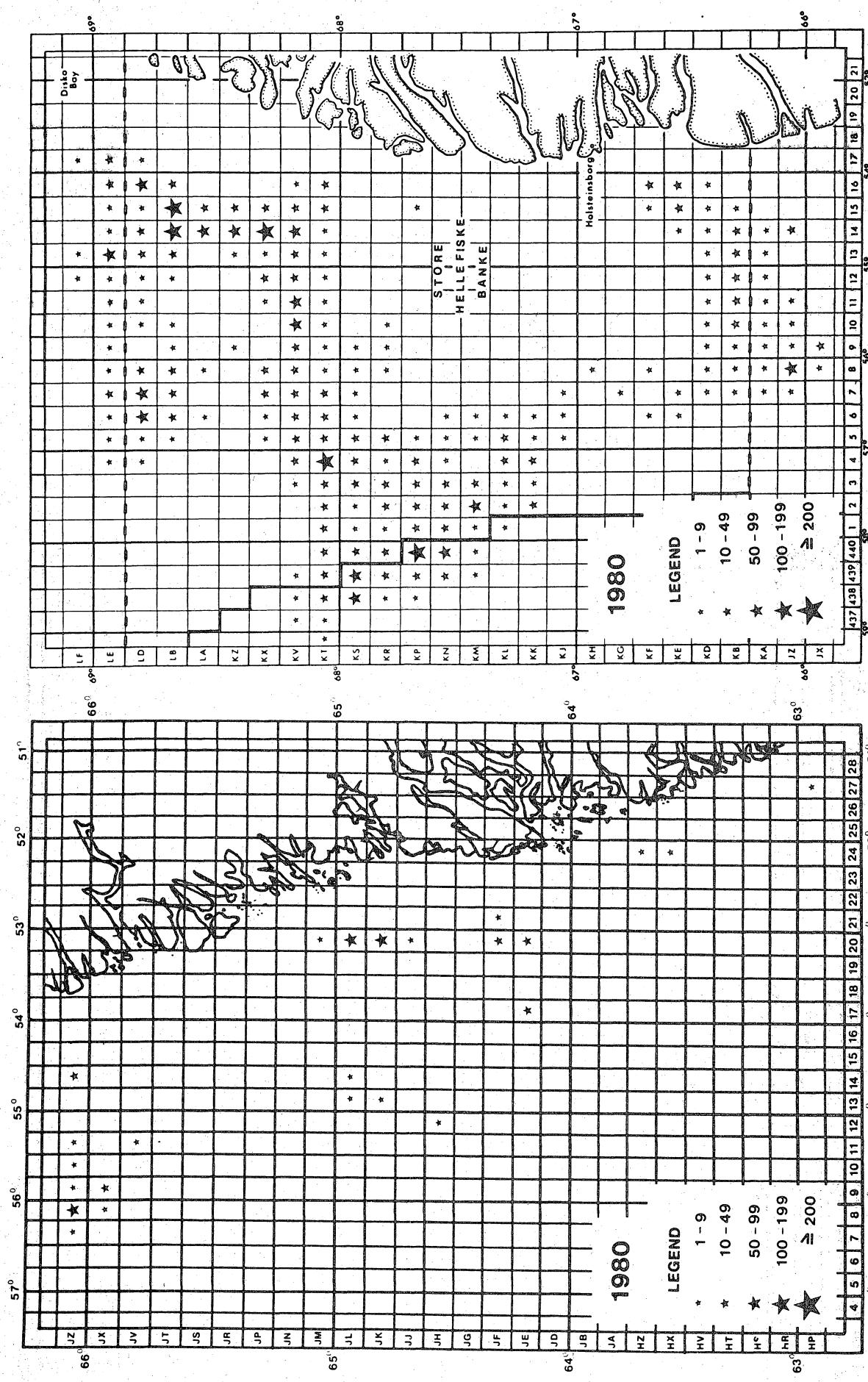


Fig. 1a Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Sub-area 1 between 62°50'N and 66°10'N in 1980.

Fig. 1b Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Sub-area 1 between 65°50'N and 69°10'N in 1980.

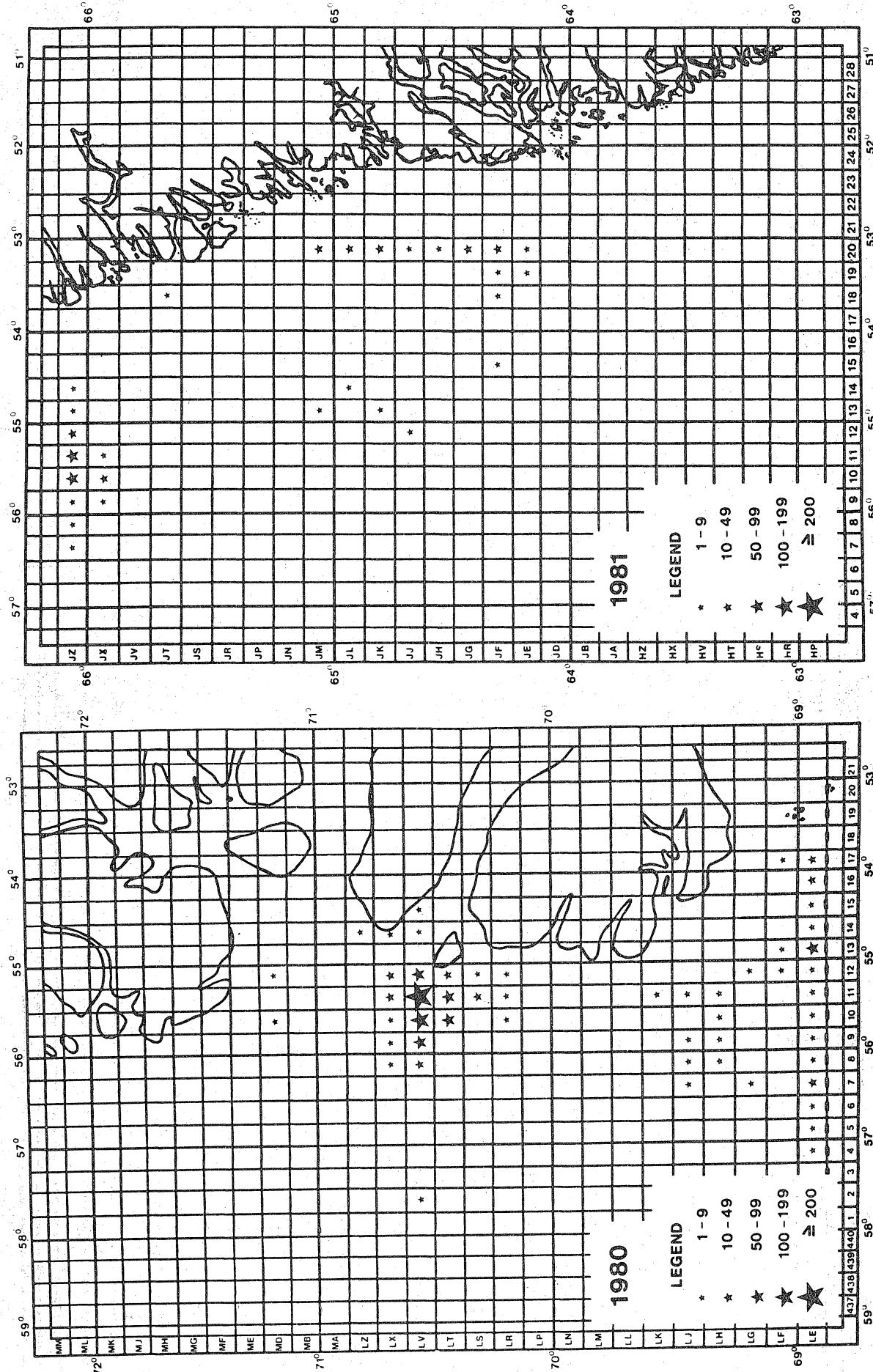


Fig. 1c Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Sub-area 1 between 68°50'N and 72°10'N in 1980.

Fig. 1d Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Sub-area 1 between 62°50'N and 66°10'N in January through September 1981.

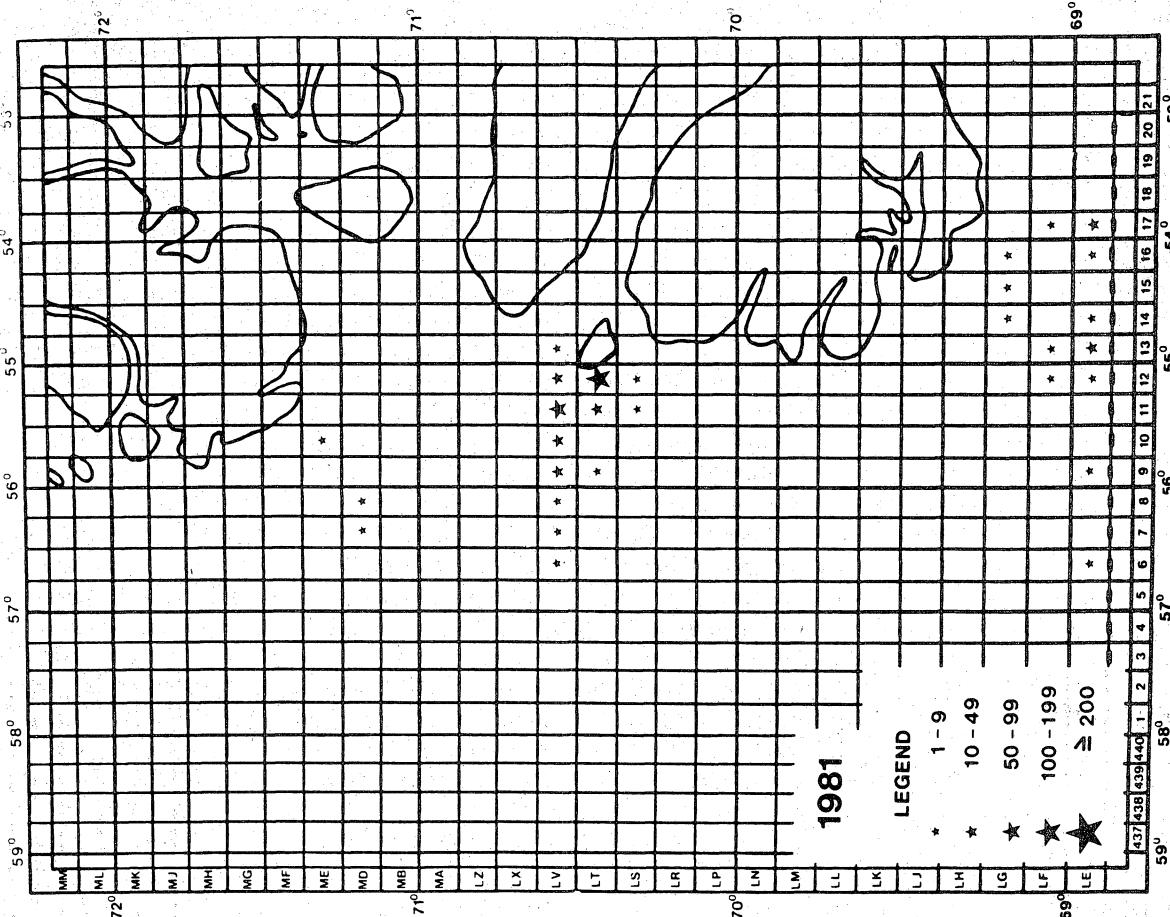


Fig. 1e Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Subarea 1 between 65°50'N and 69°10'N in January through September 1981.

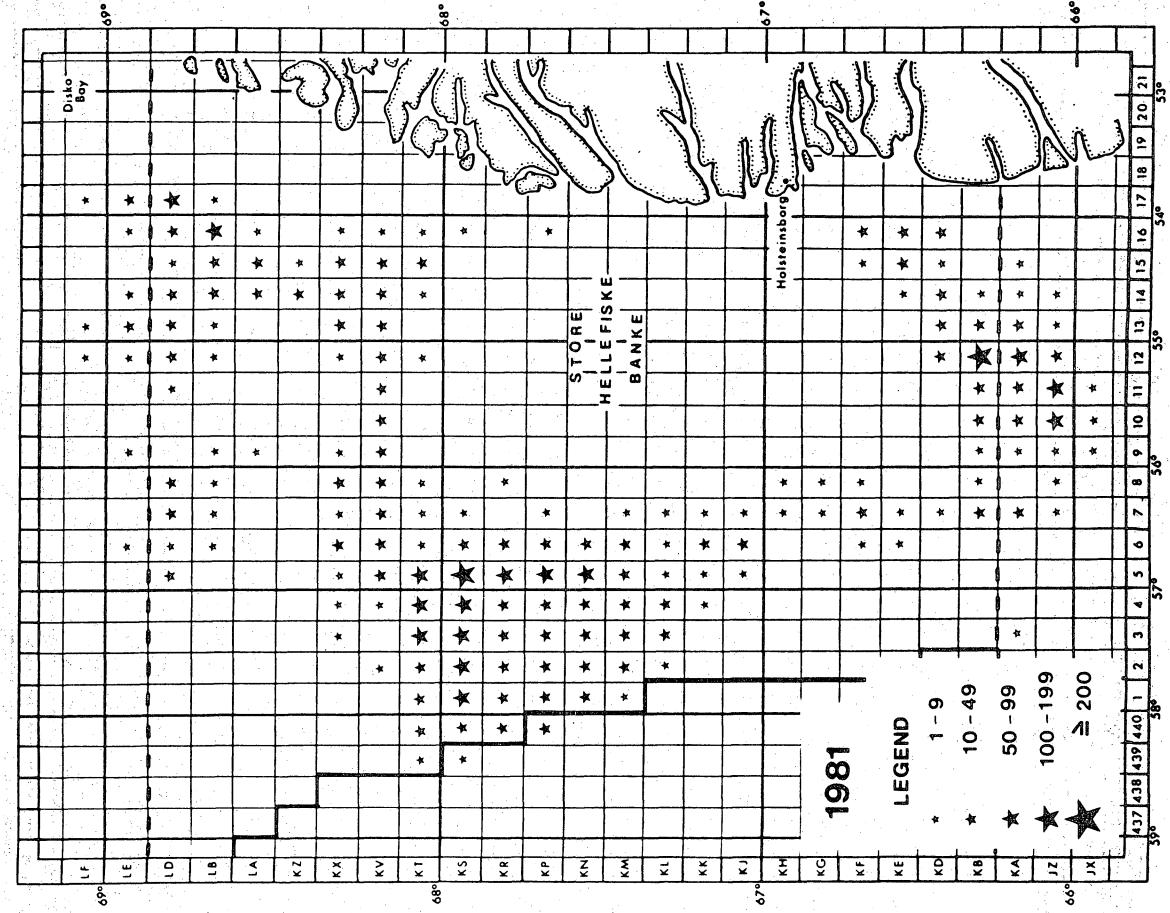


Fig. 1f Distribution of hauls by seven trawlers (473-722 GRT) of the Royal Greenland Trade Department in NAFO Subarea 1 between 68°50'N and 72°10'N in January through September 1981.

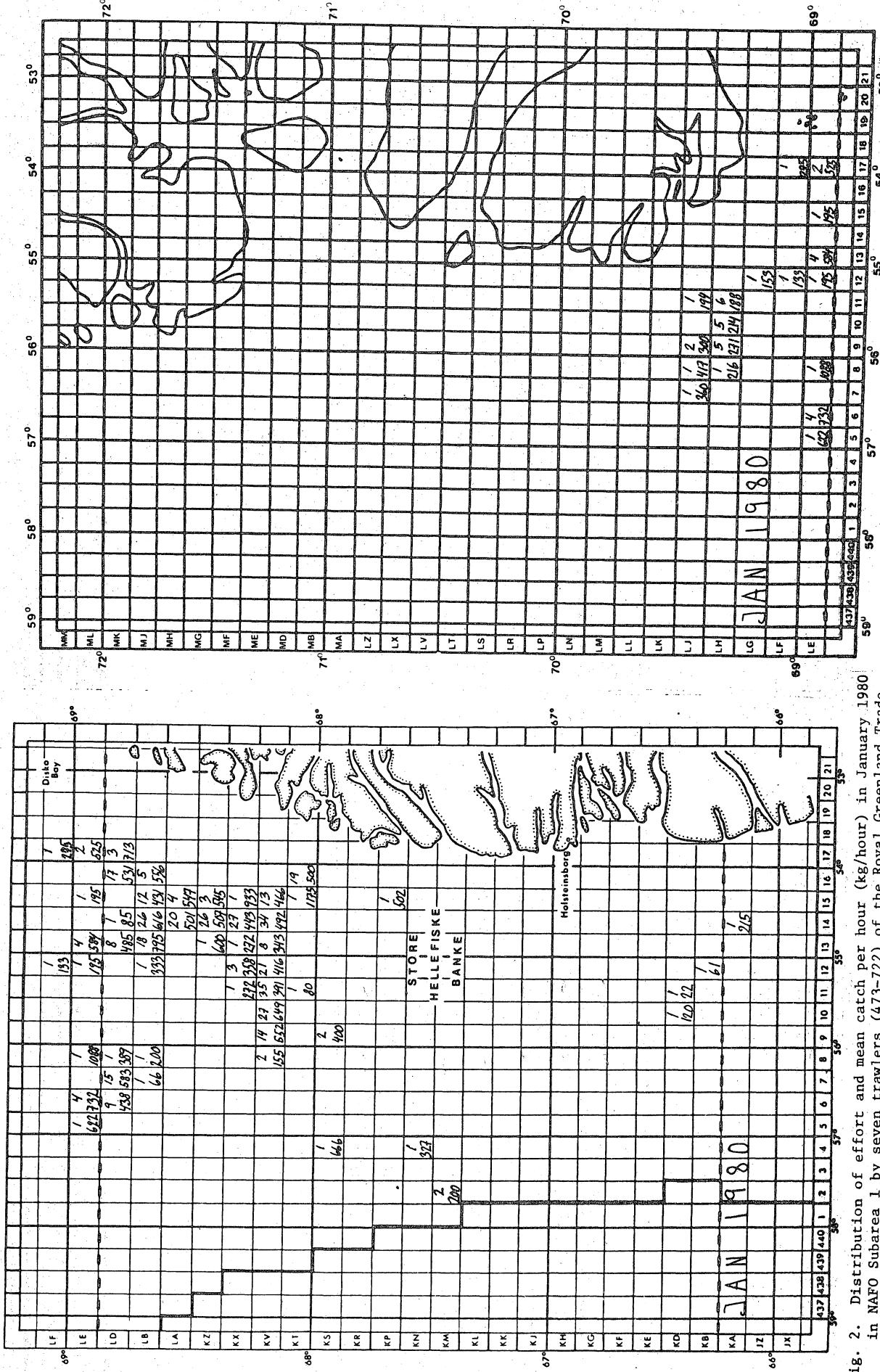


Fig. 2. Distribution of effort and mean catch per hour (kg/hour) in January 1980 in NAFO Subarea 1 by seven trawlers (473-722) of the Royal Greenland Trade Department. Upper figure in each statistical square unit is No. of hauls, lower figure is the mean catch per hour (kg/hour).

Fig. 2 continued. January 1980

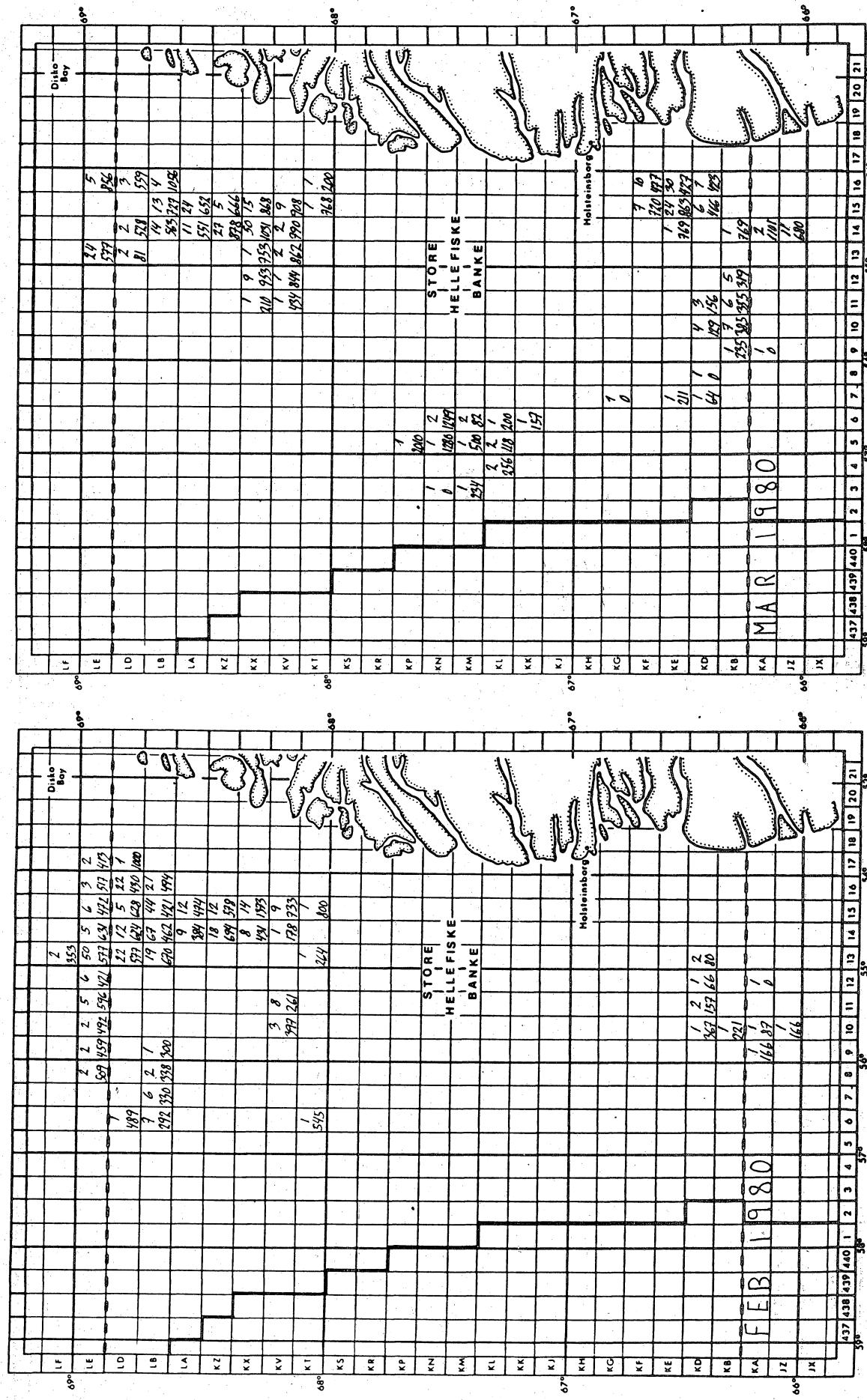


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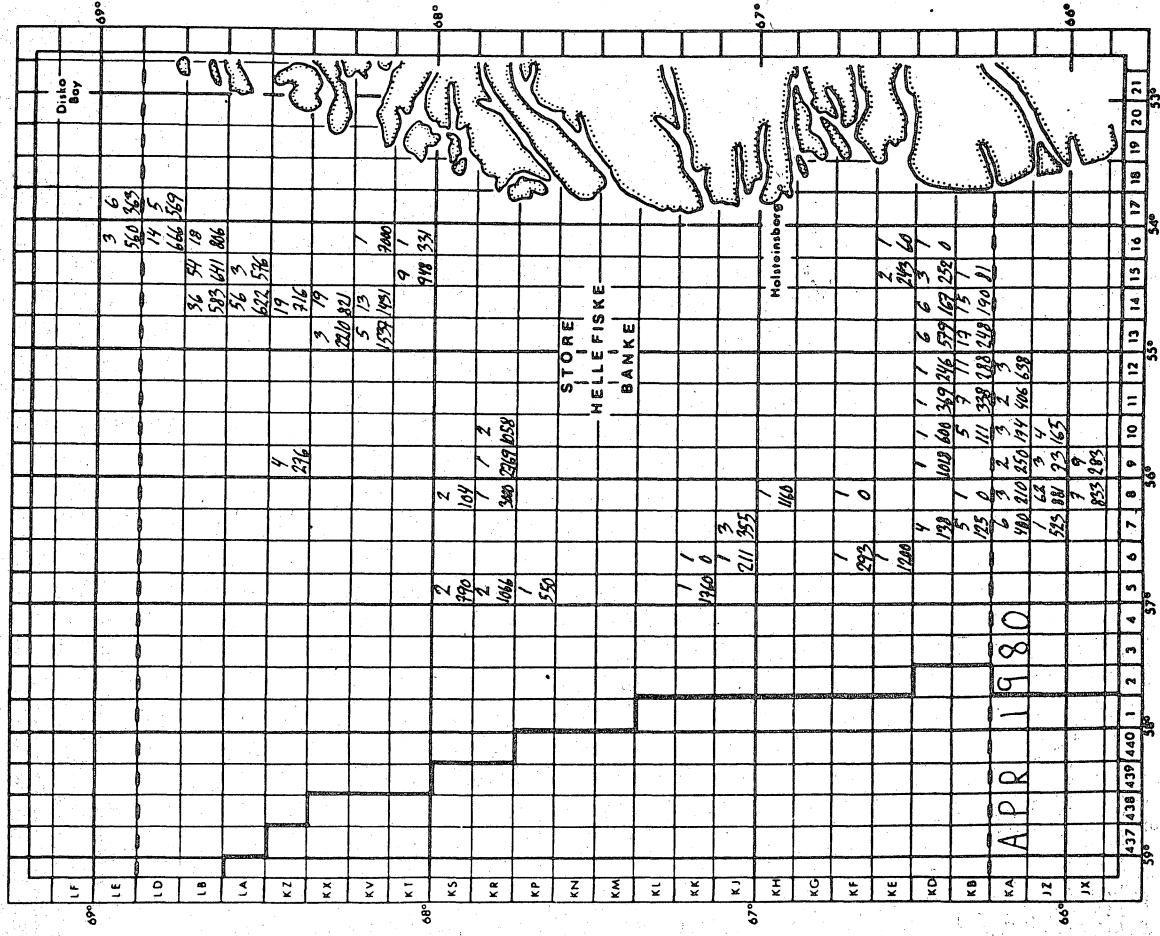
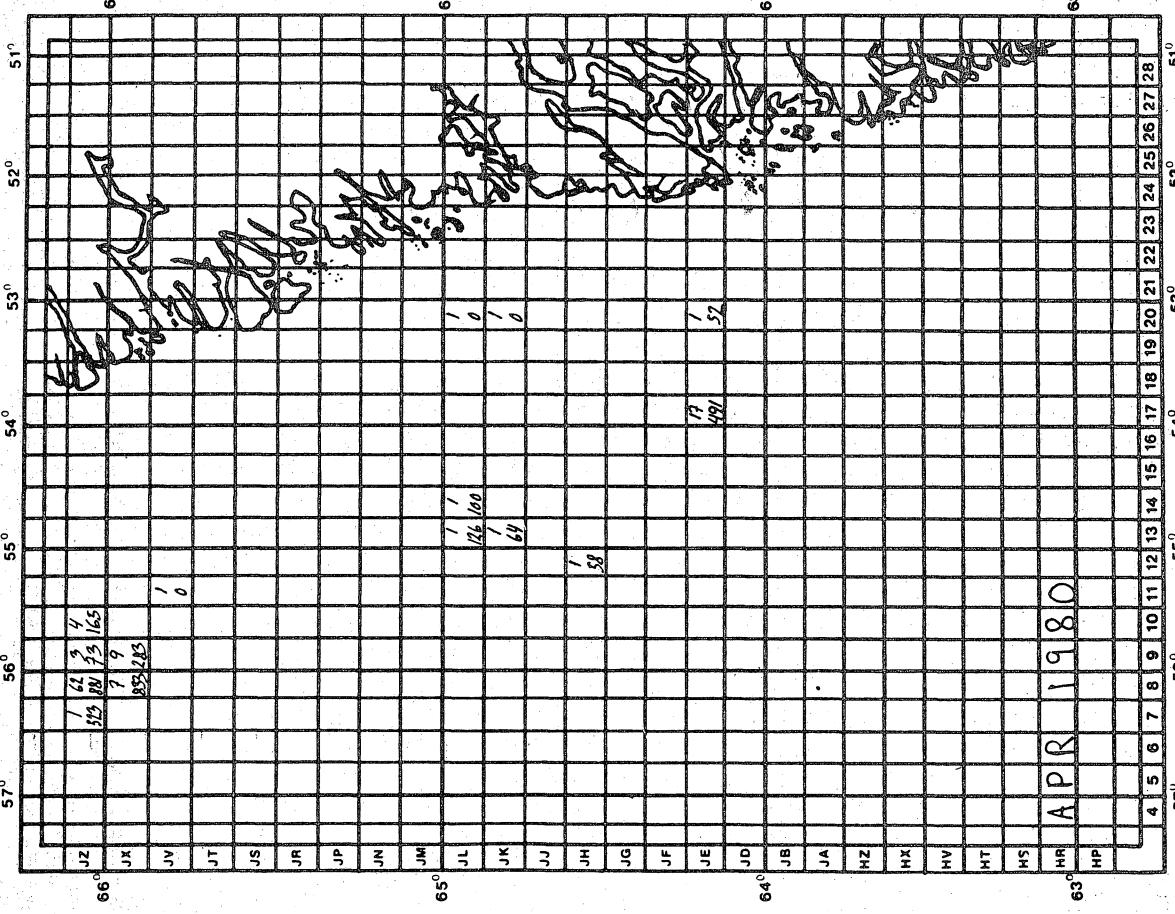


Fig. 2 continued. April 1980

Fig. 2 continued. April 1980

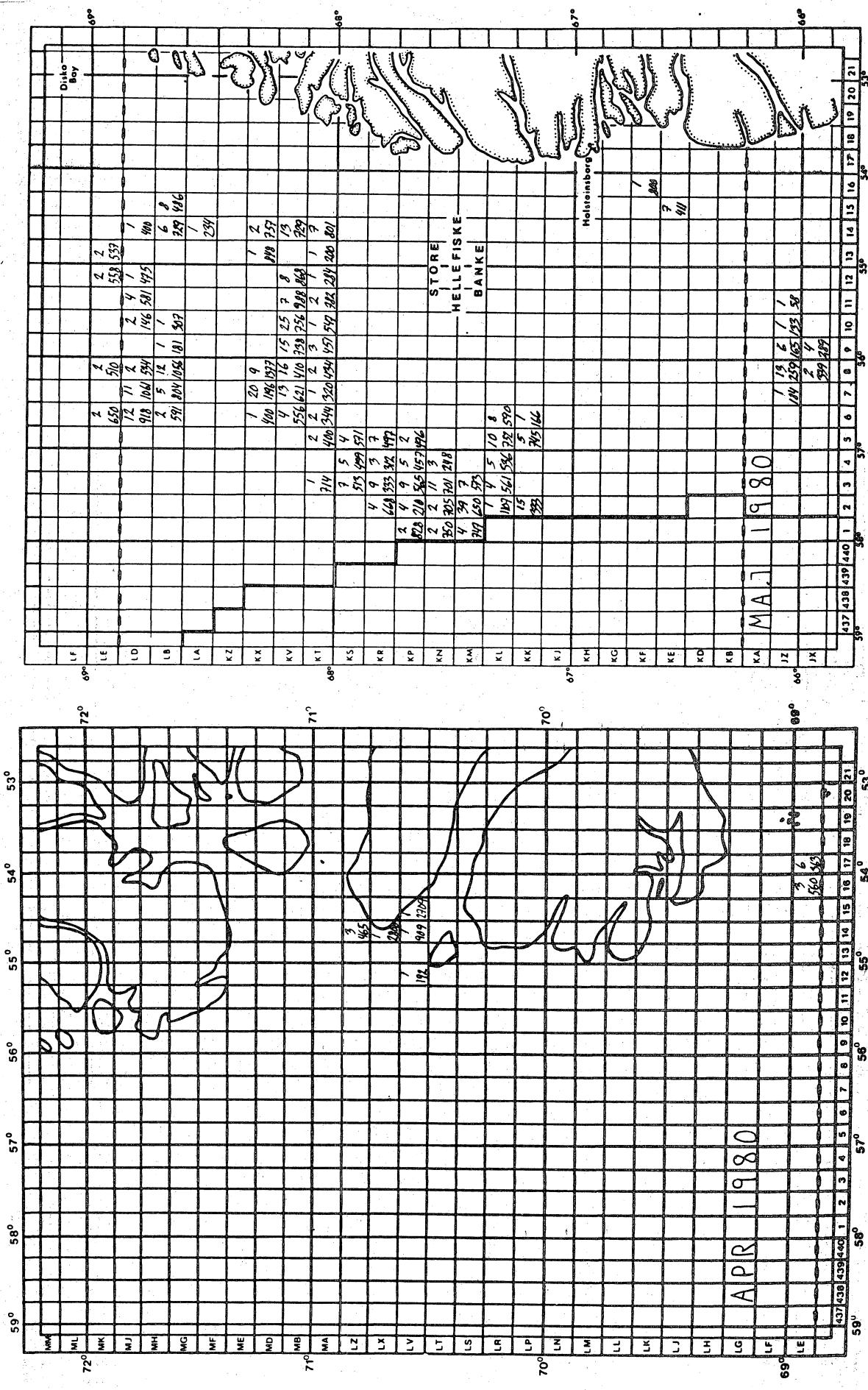


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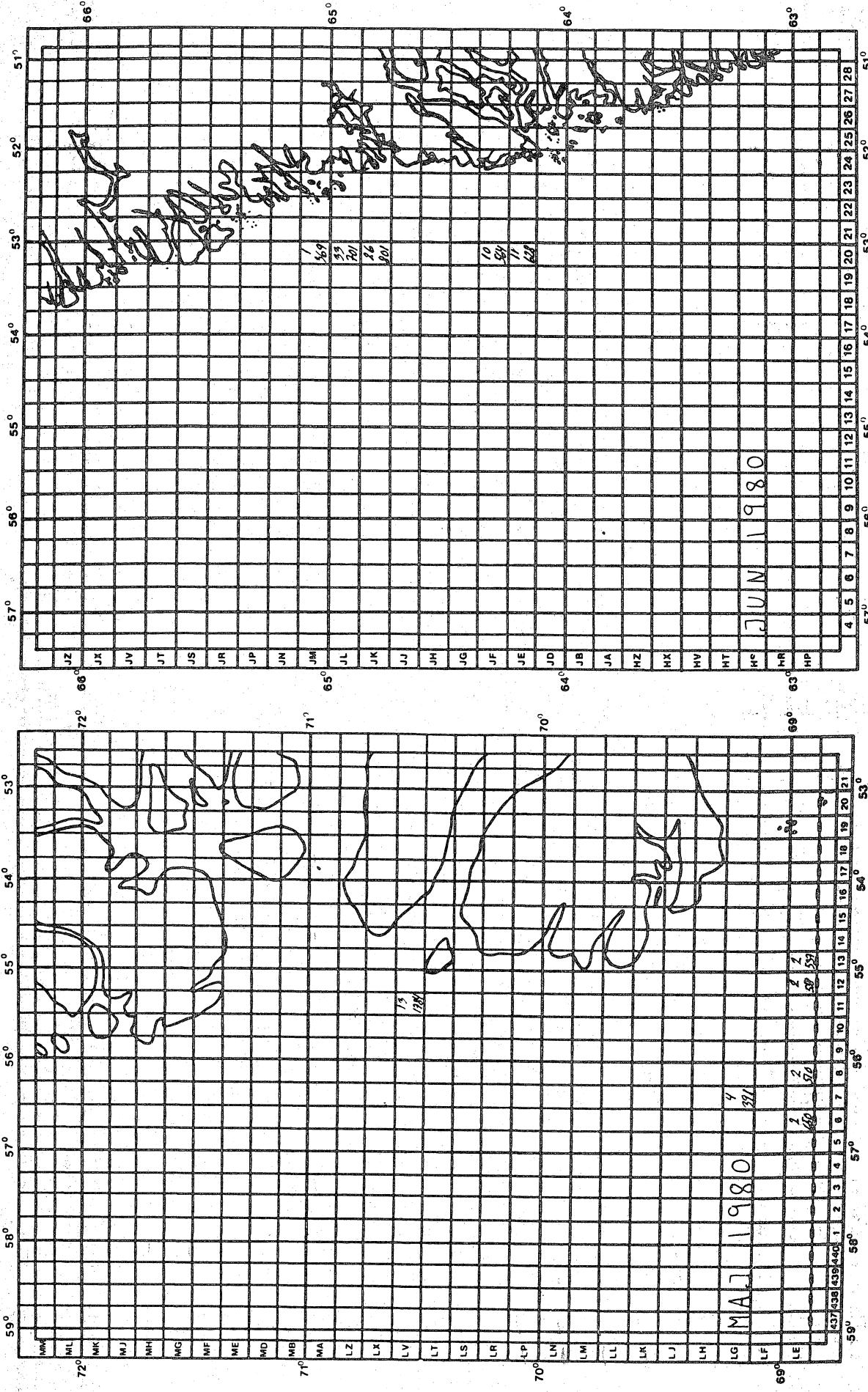


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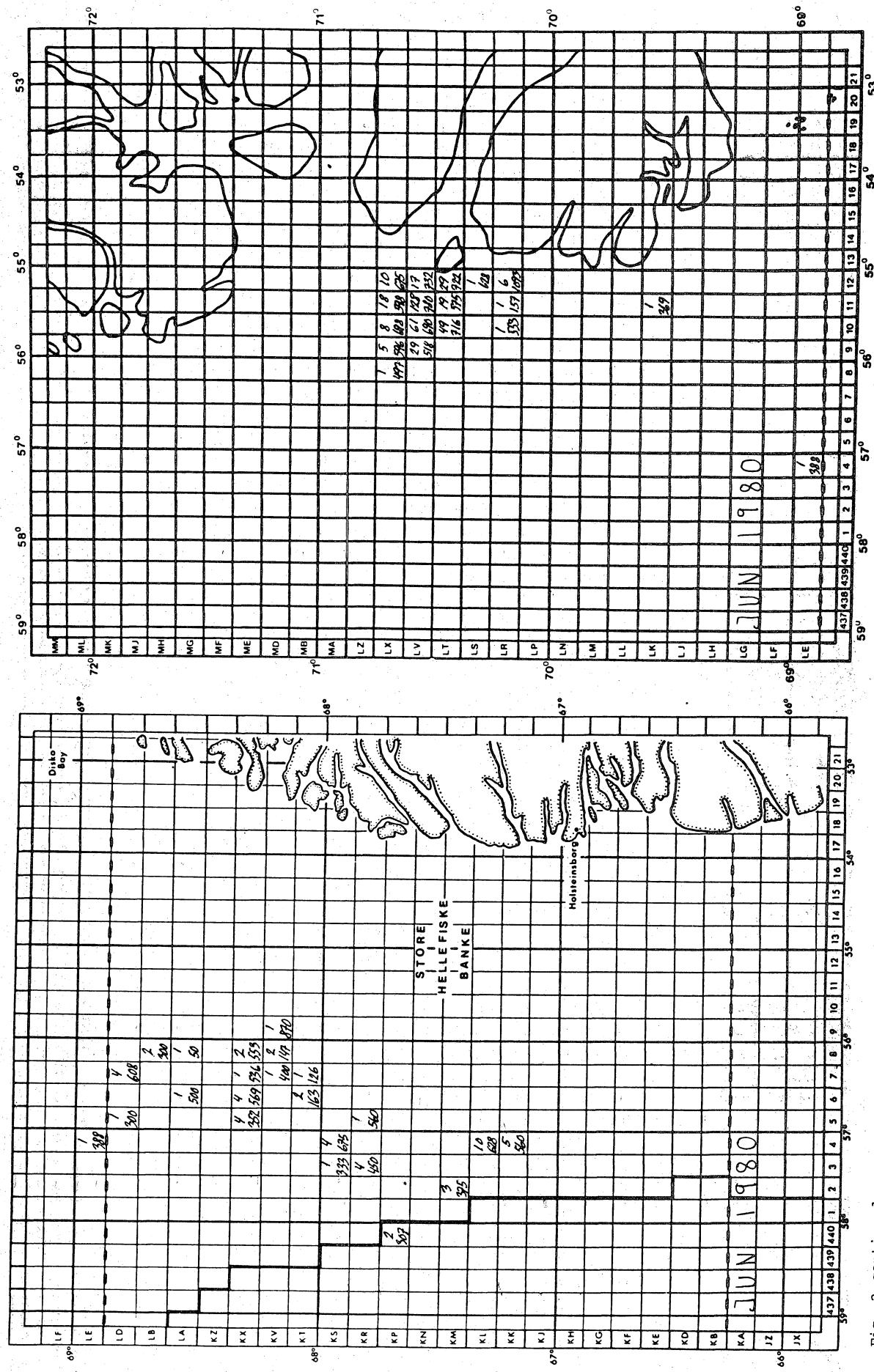


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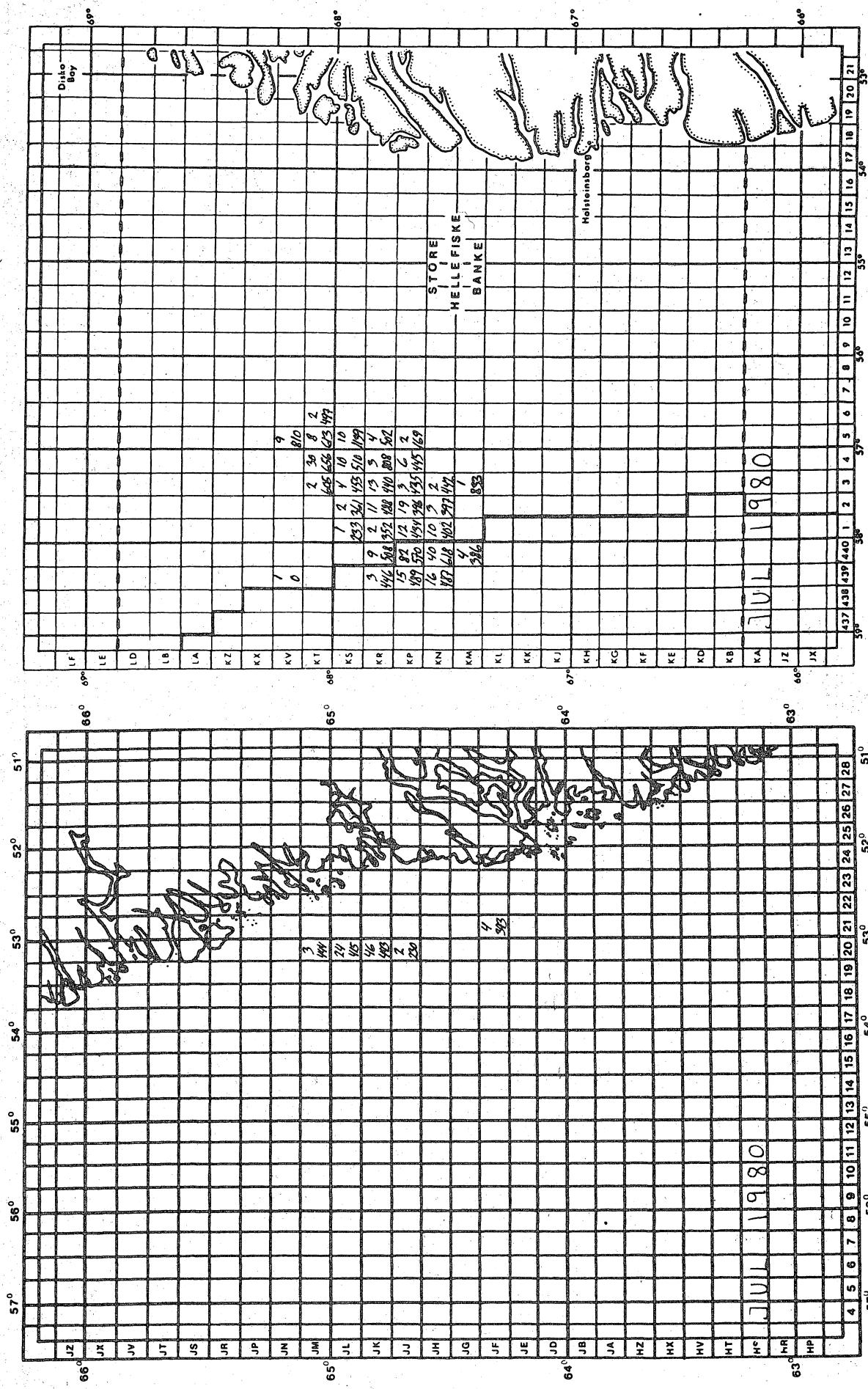


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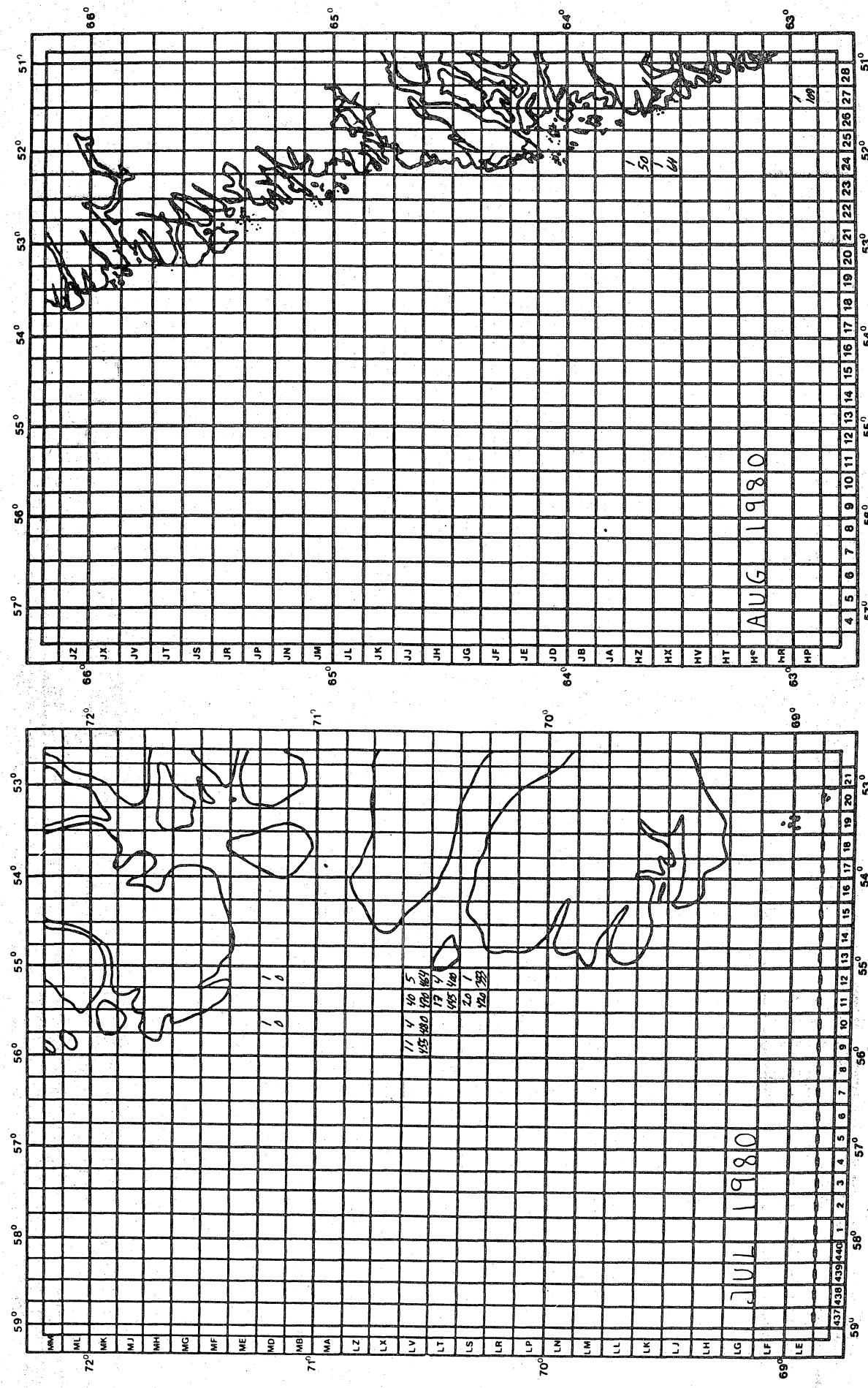


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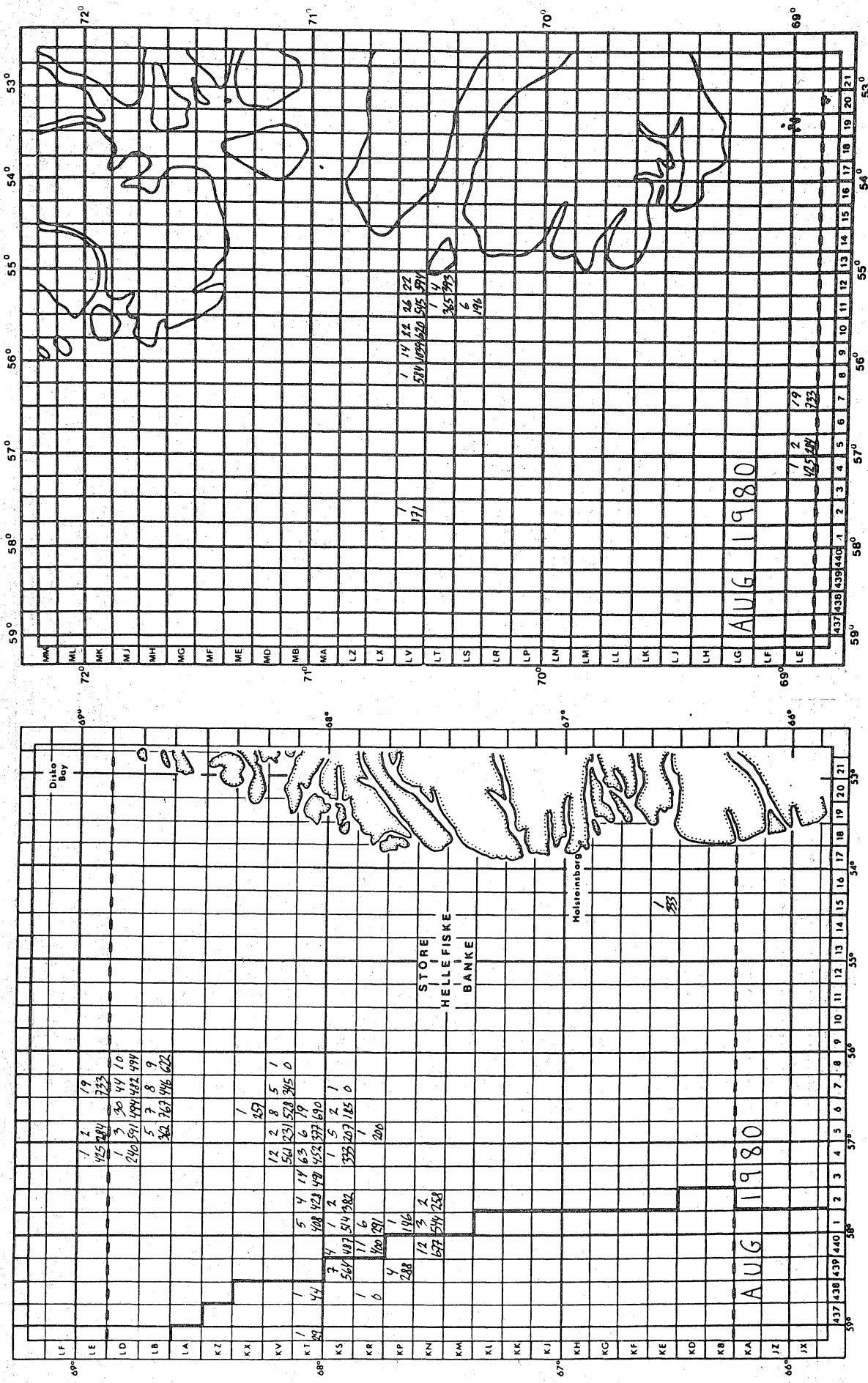


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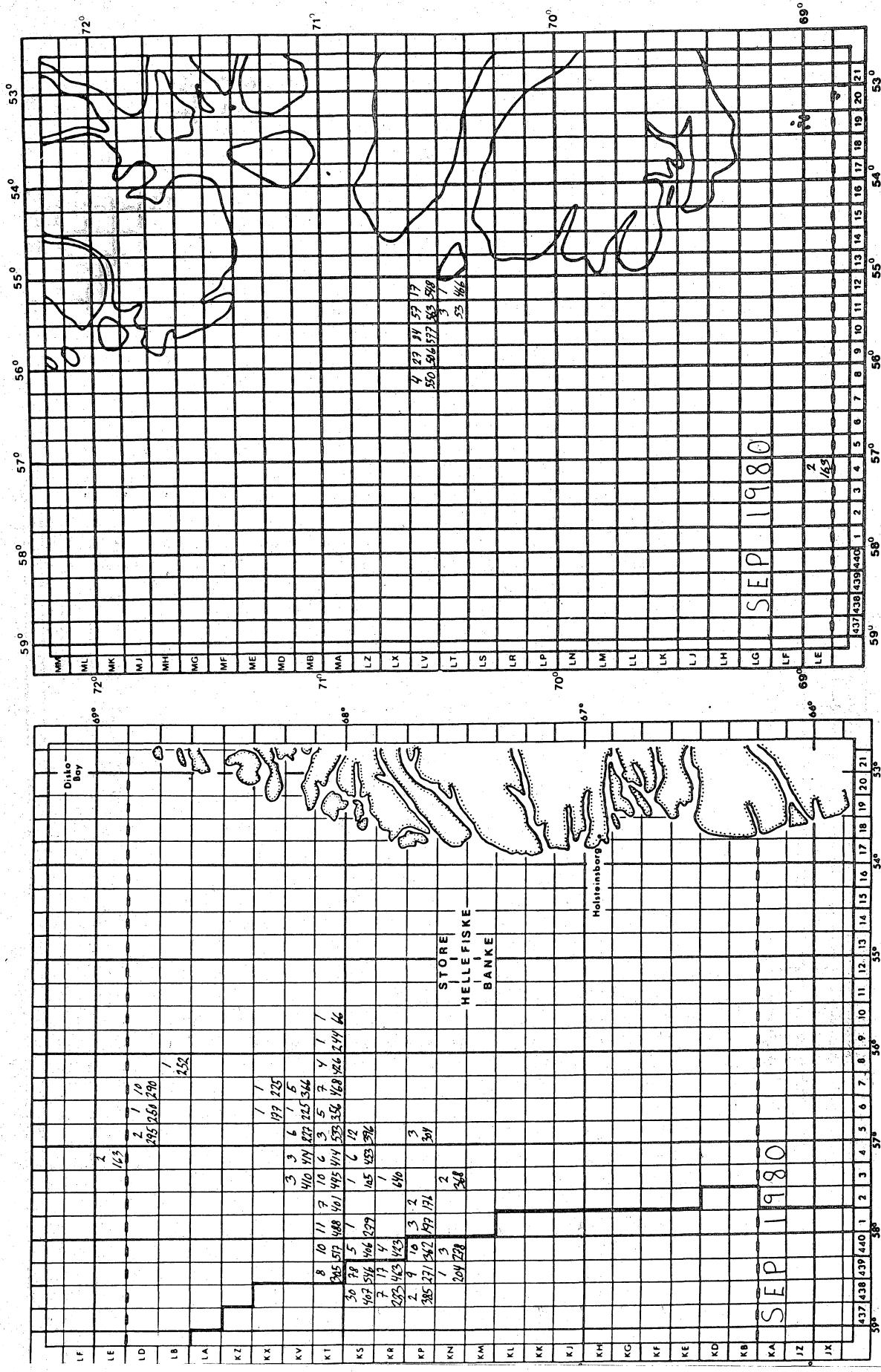


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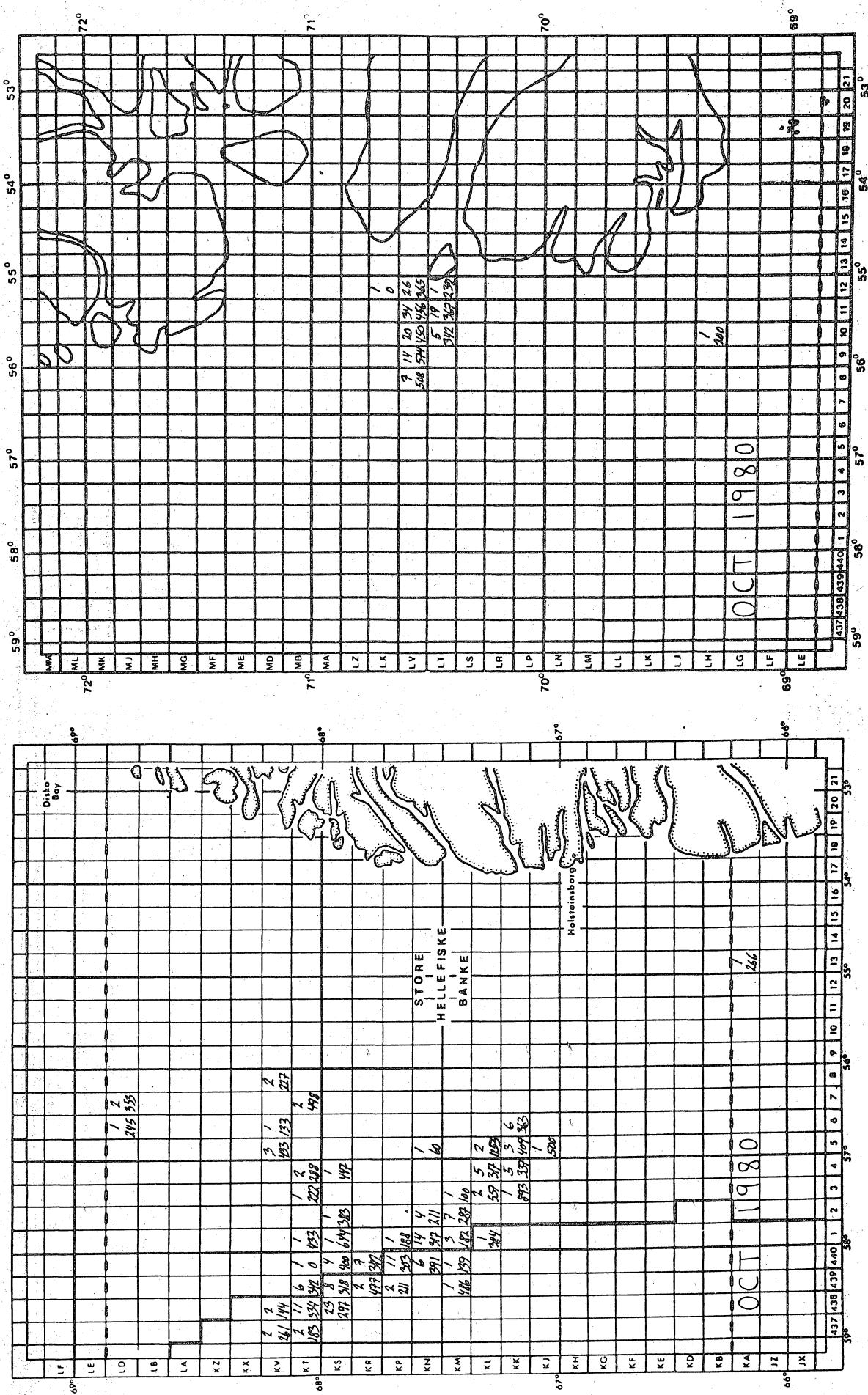


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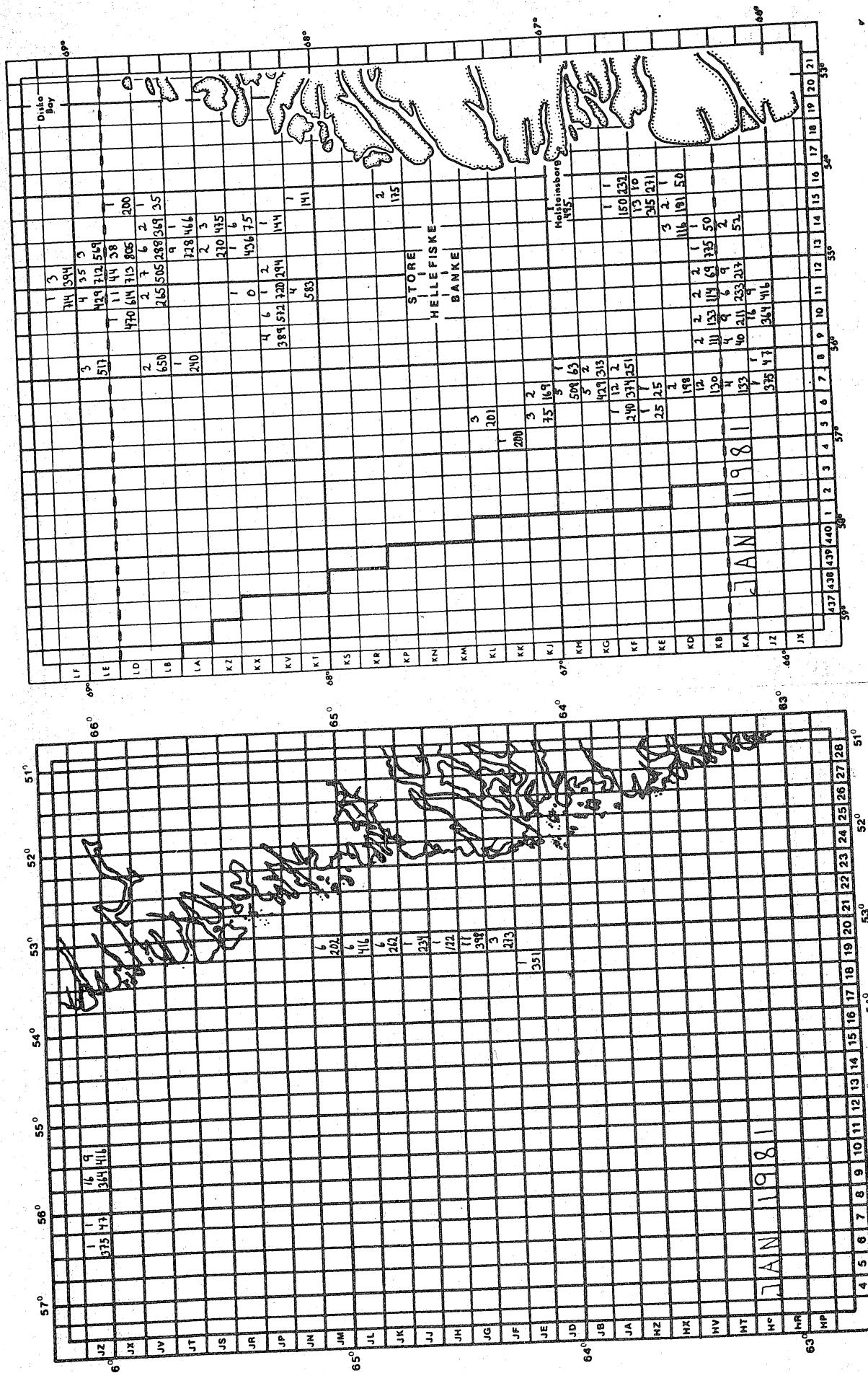


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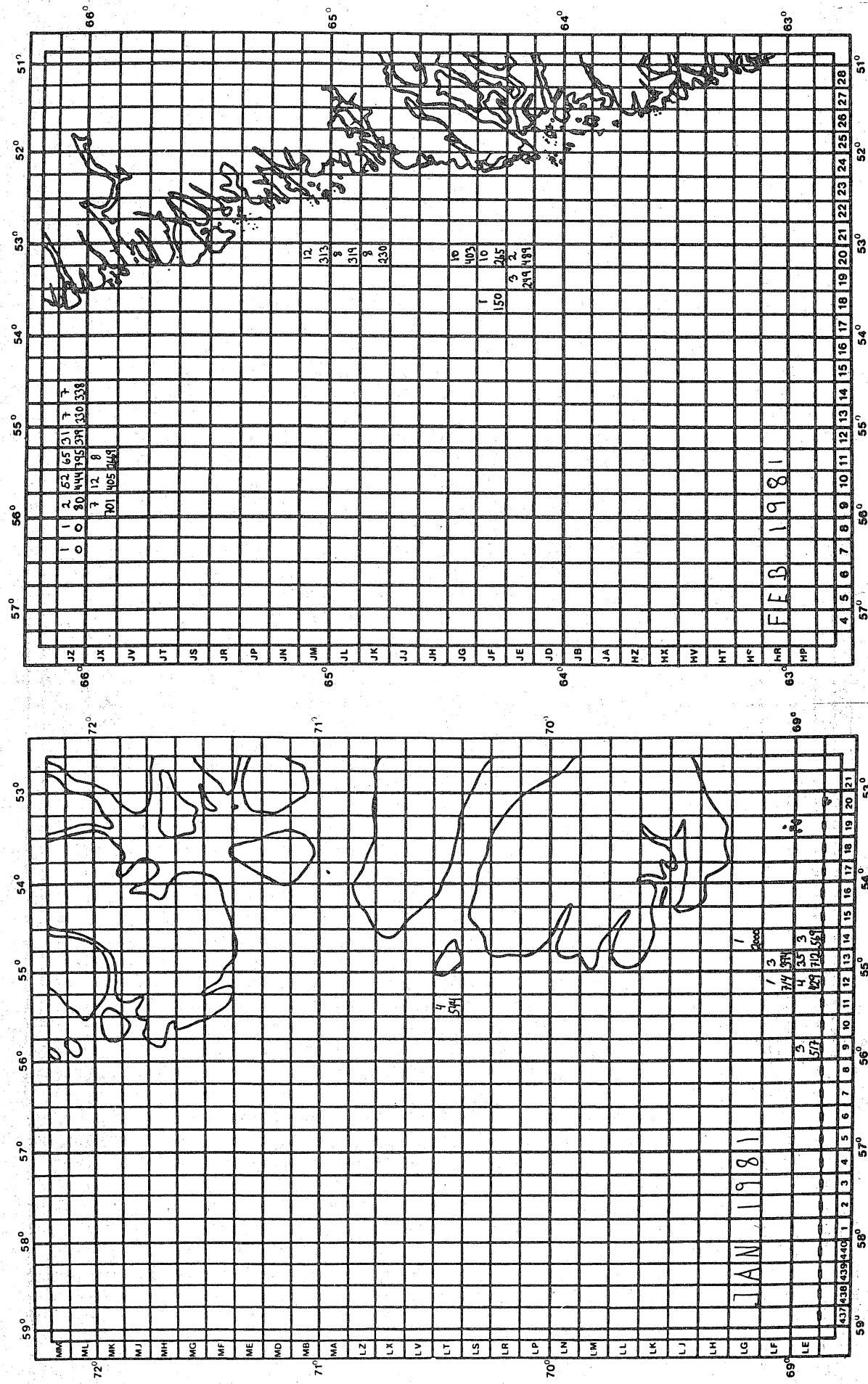


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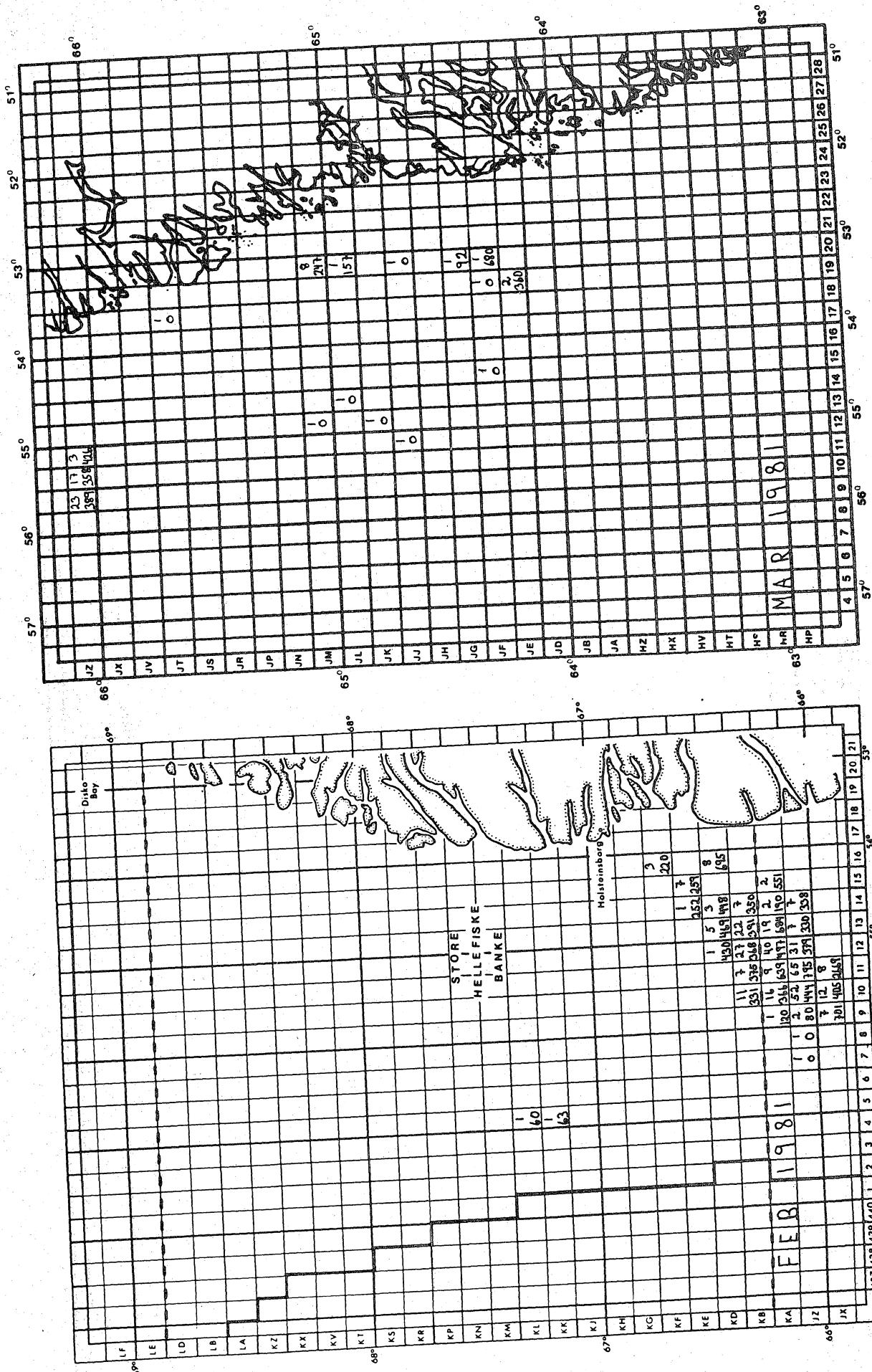


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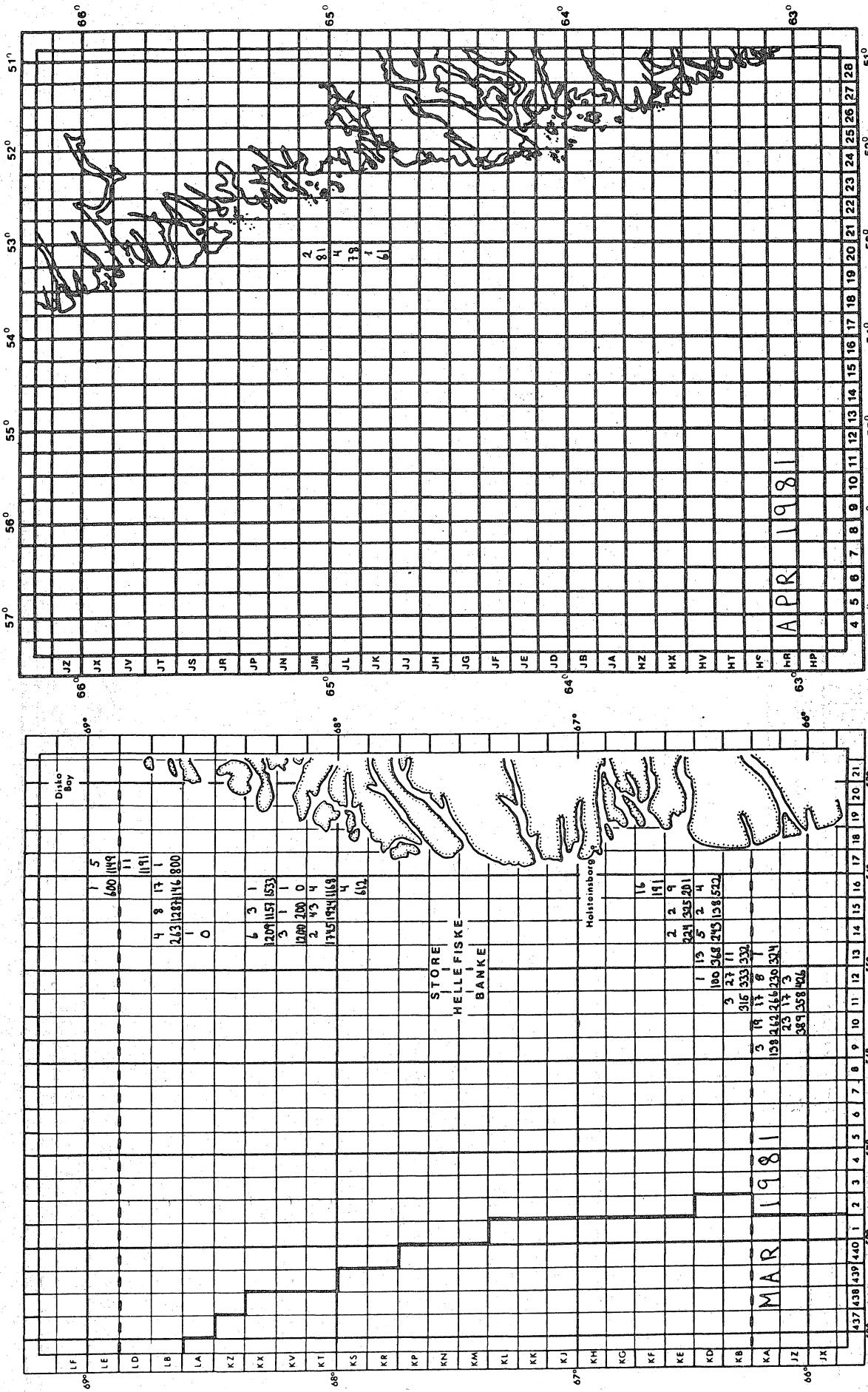


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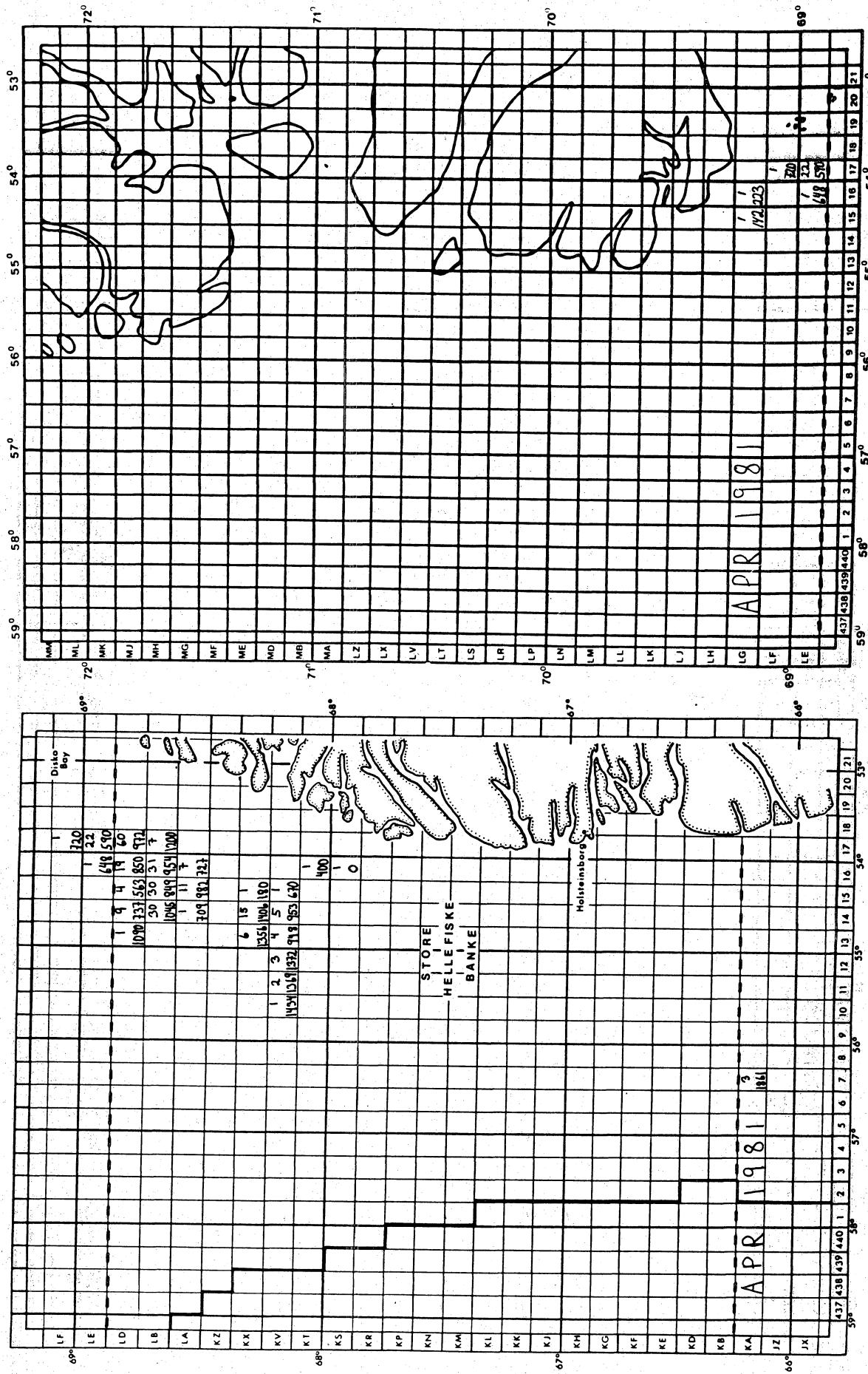


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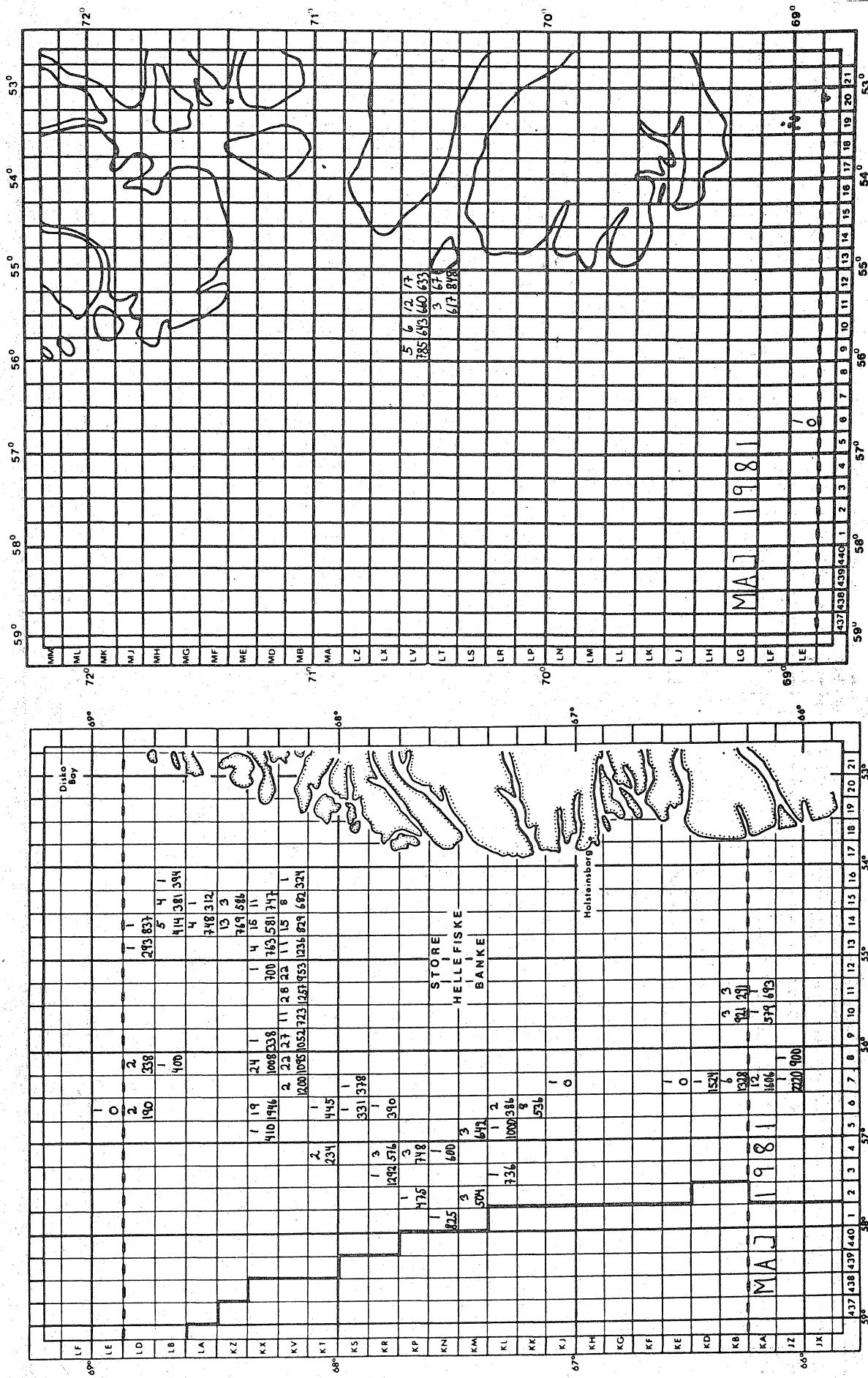
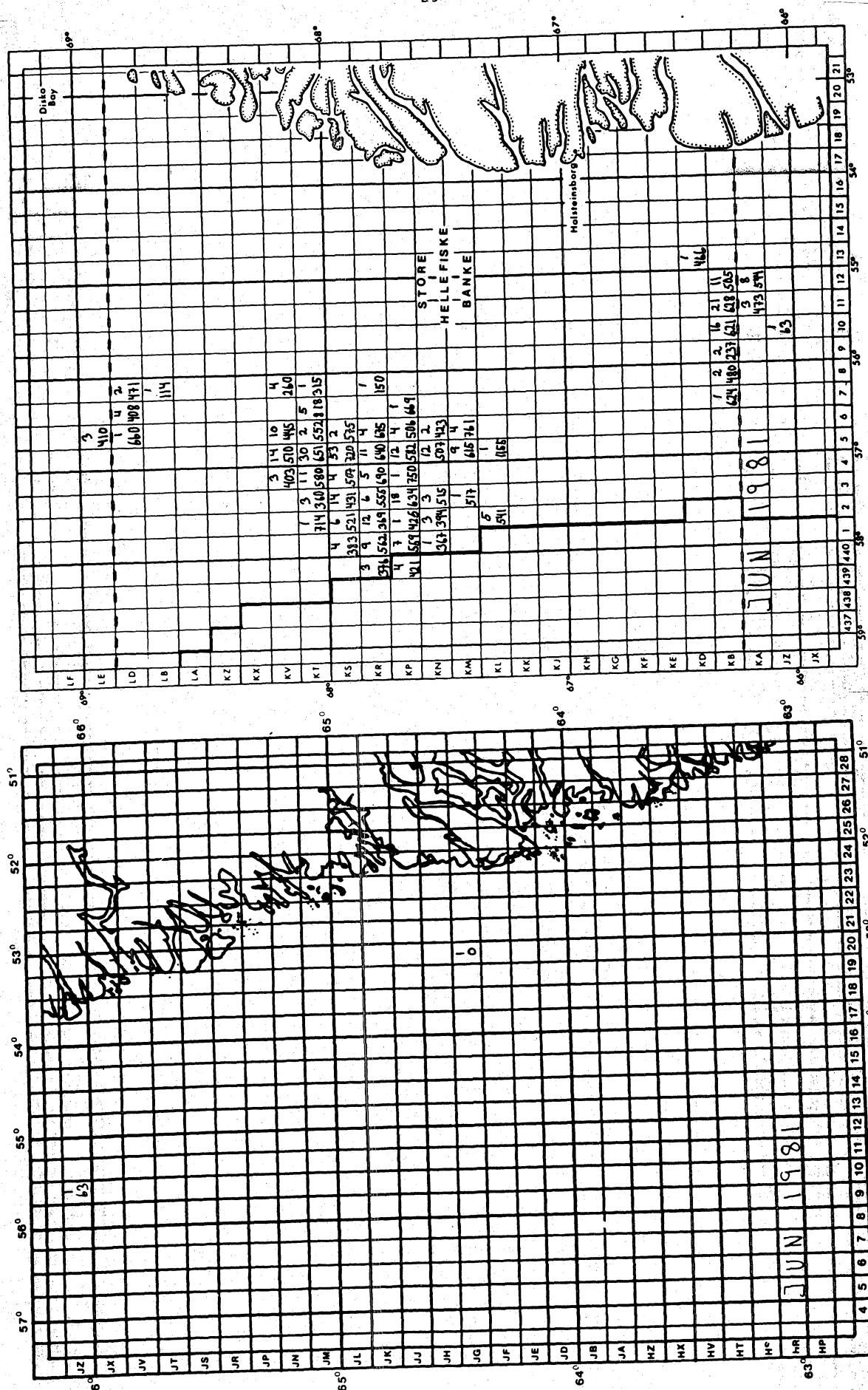


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Fig. 2 continued. May 1981



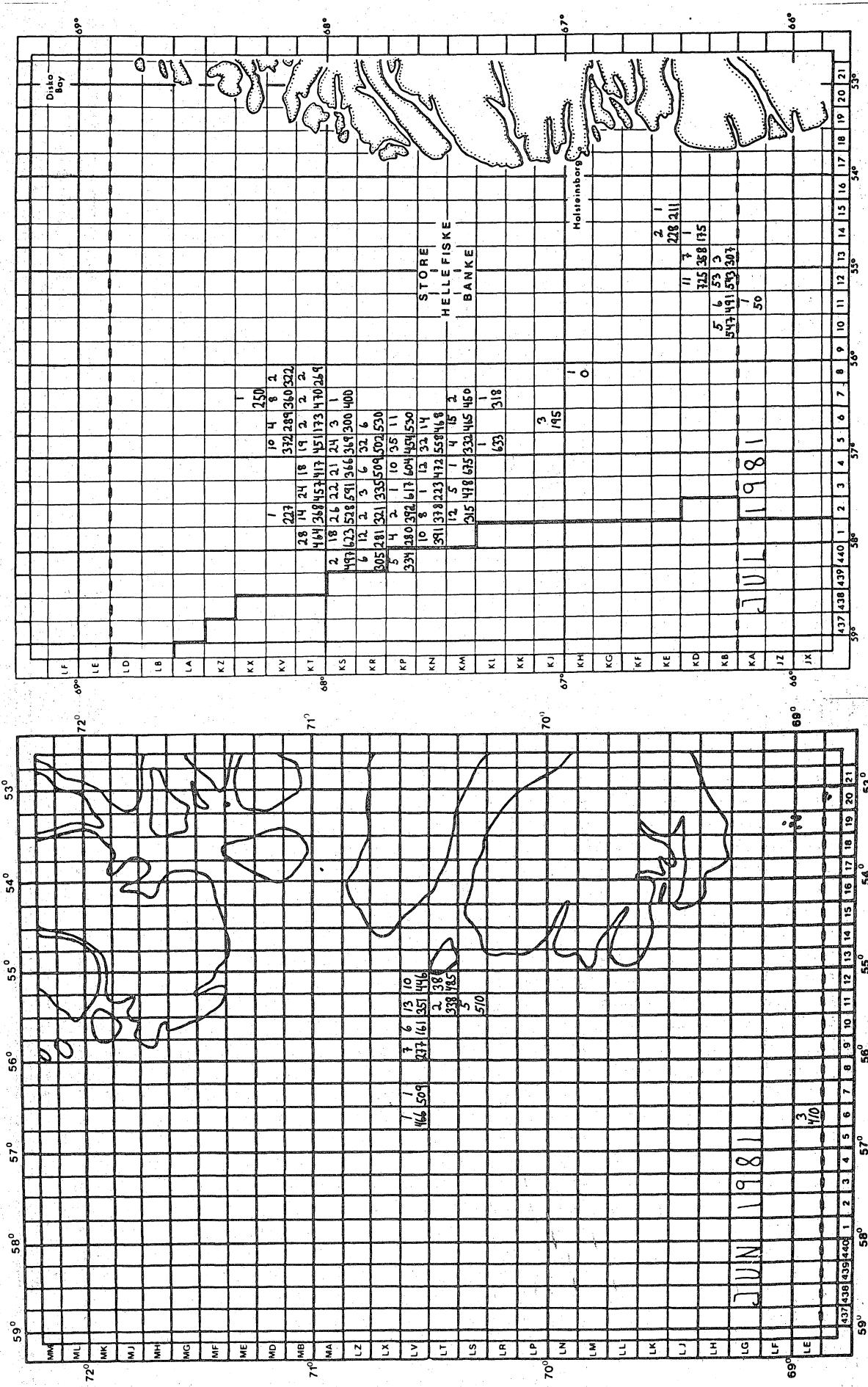


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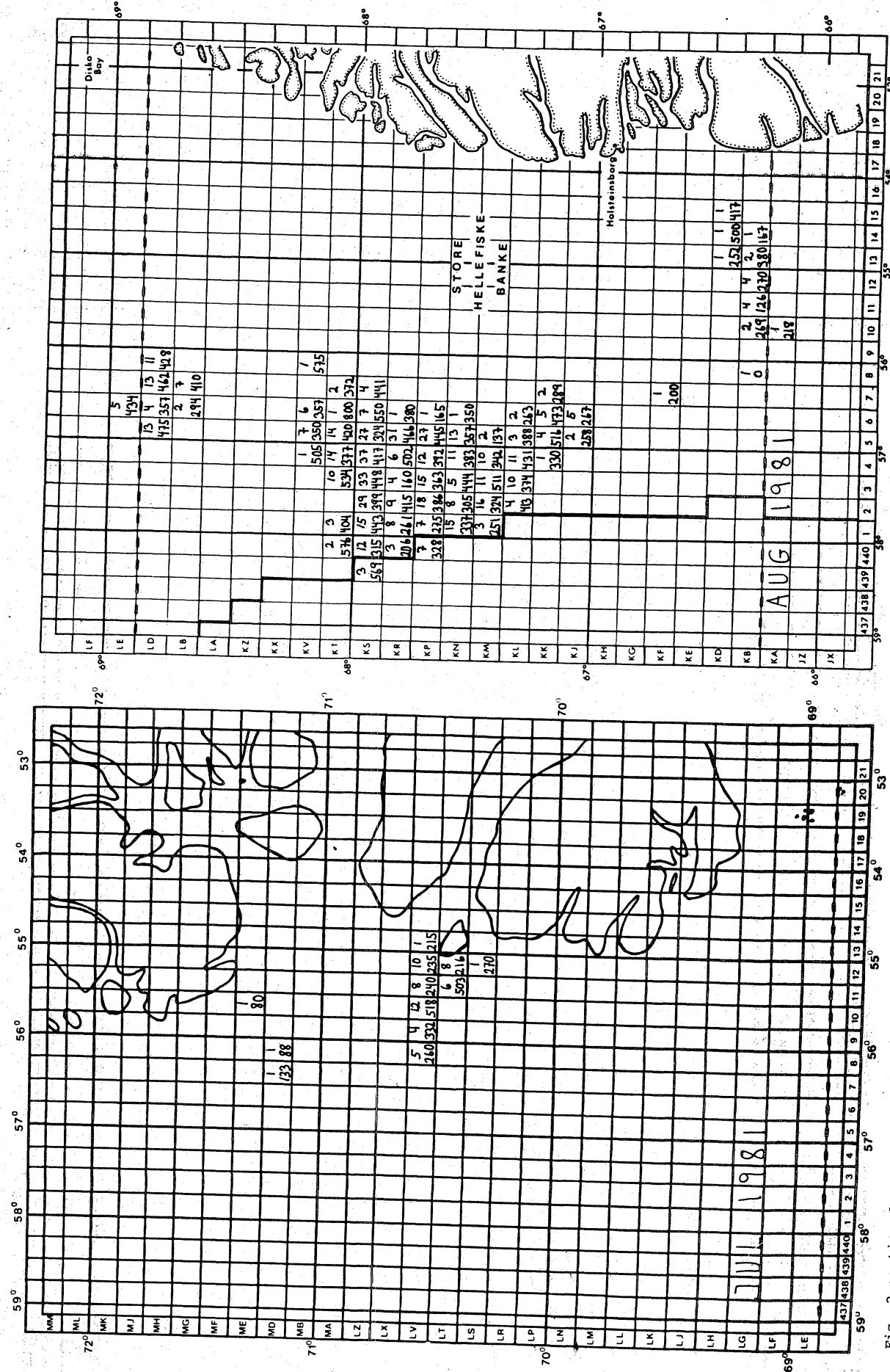


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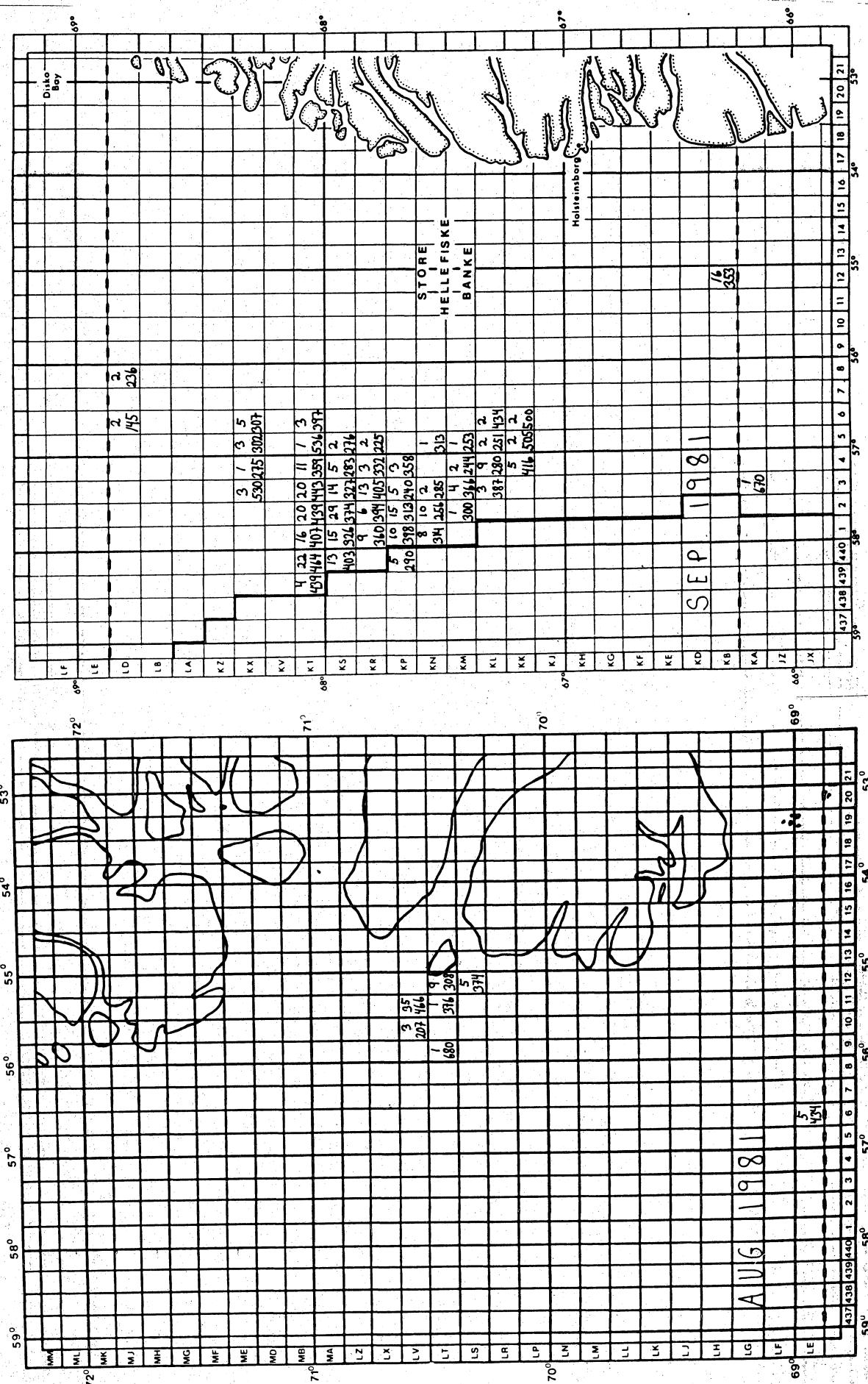


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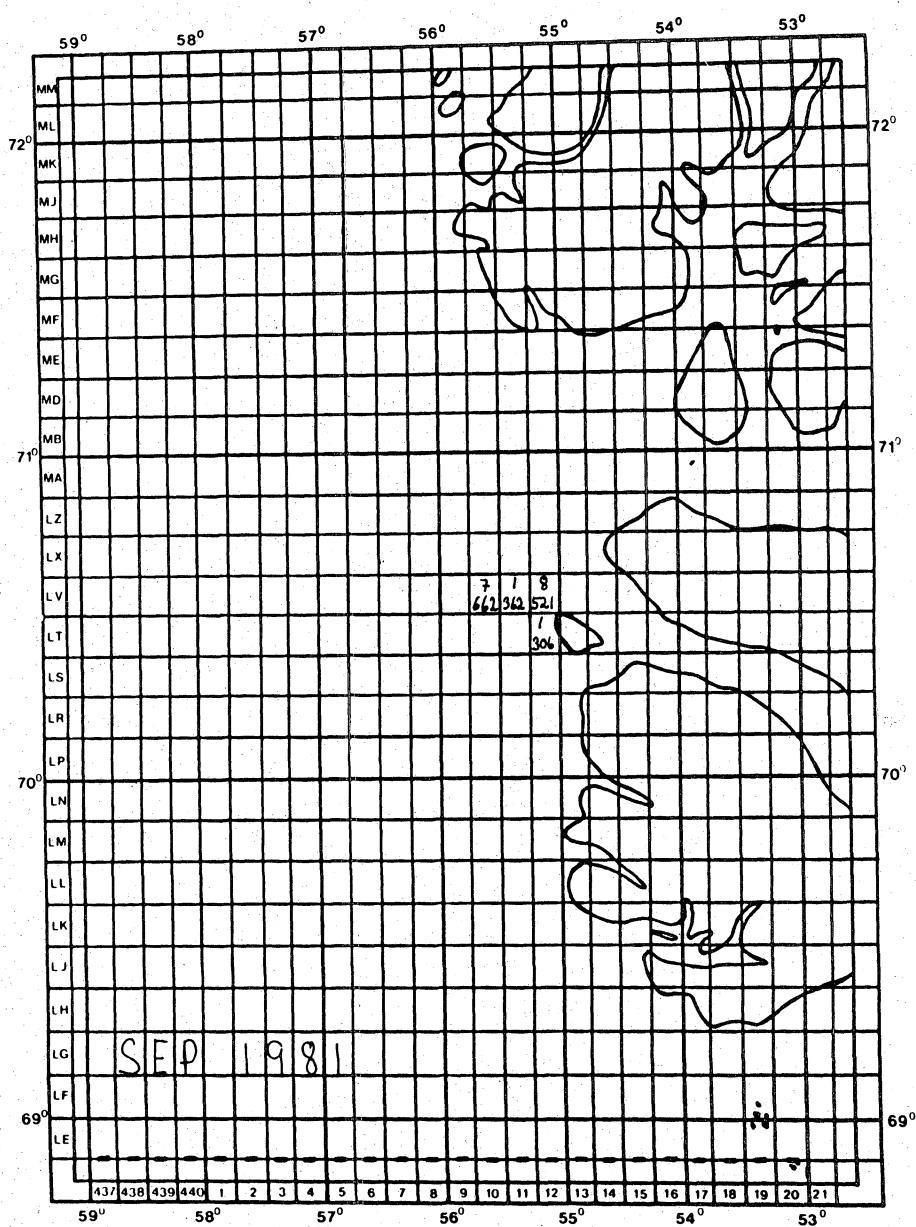


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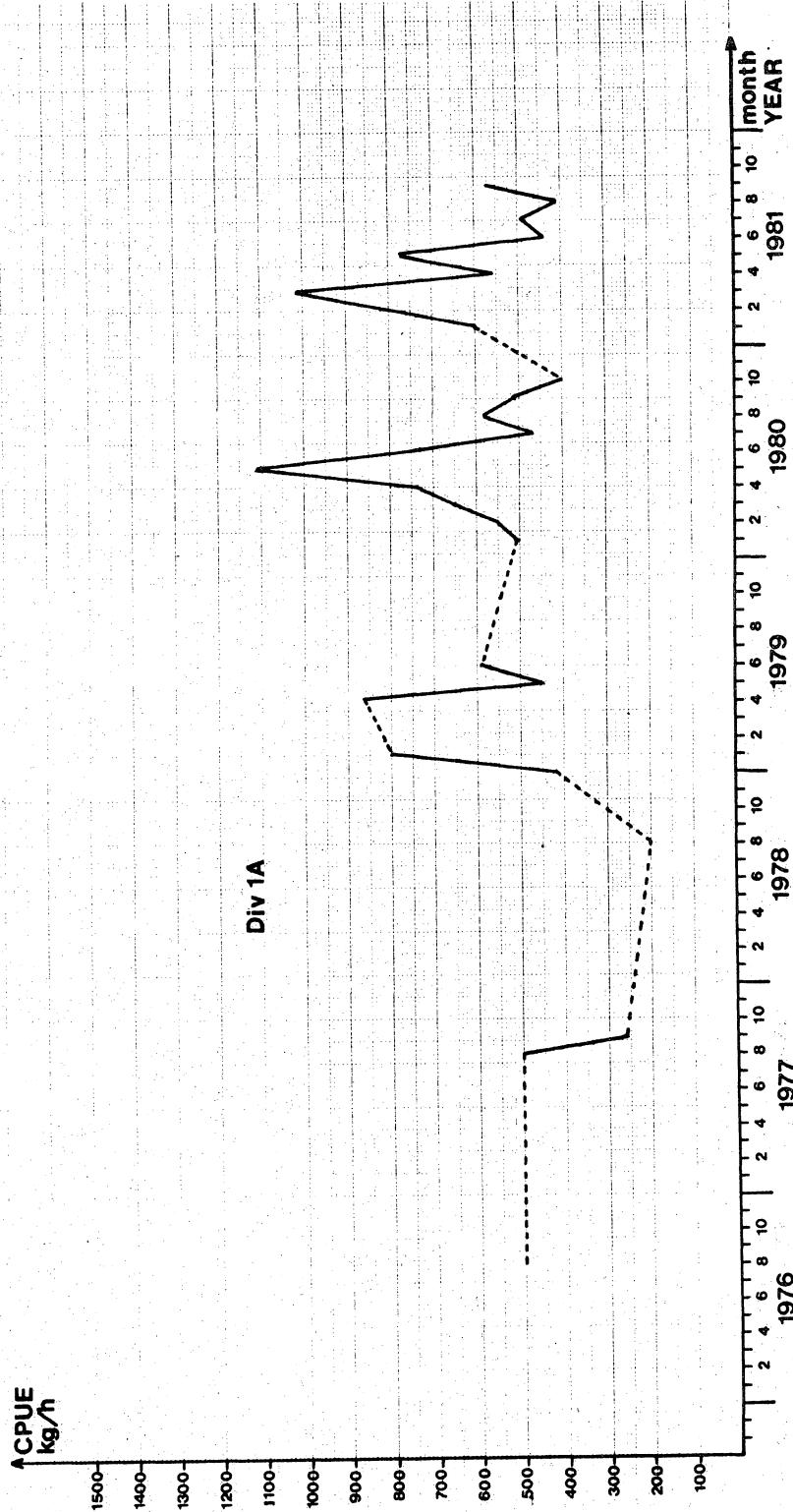


Fig. 3. Monthly mean catch per unit effort (kg/hour) in Division 1A from August 1976 to September 1981 based on logbook information and landings from six trawlers (722 GRT) of the Royal Greenland Trade Department (corresponding numbers of hours trawled are given in Table 5.)

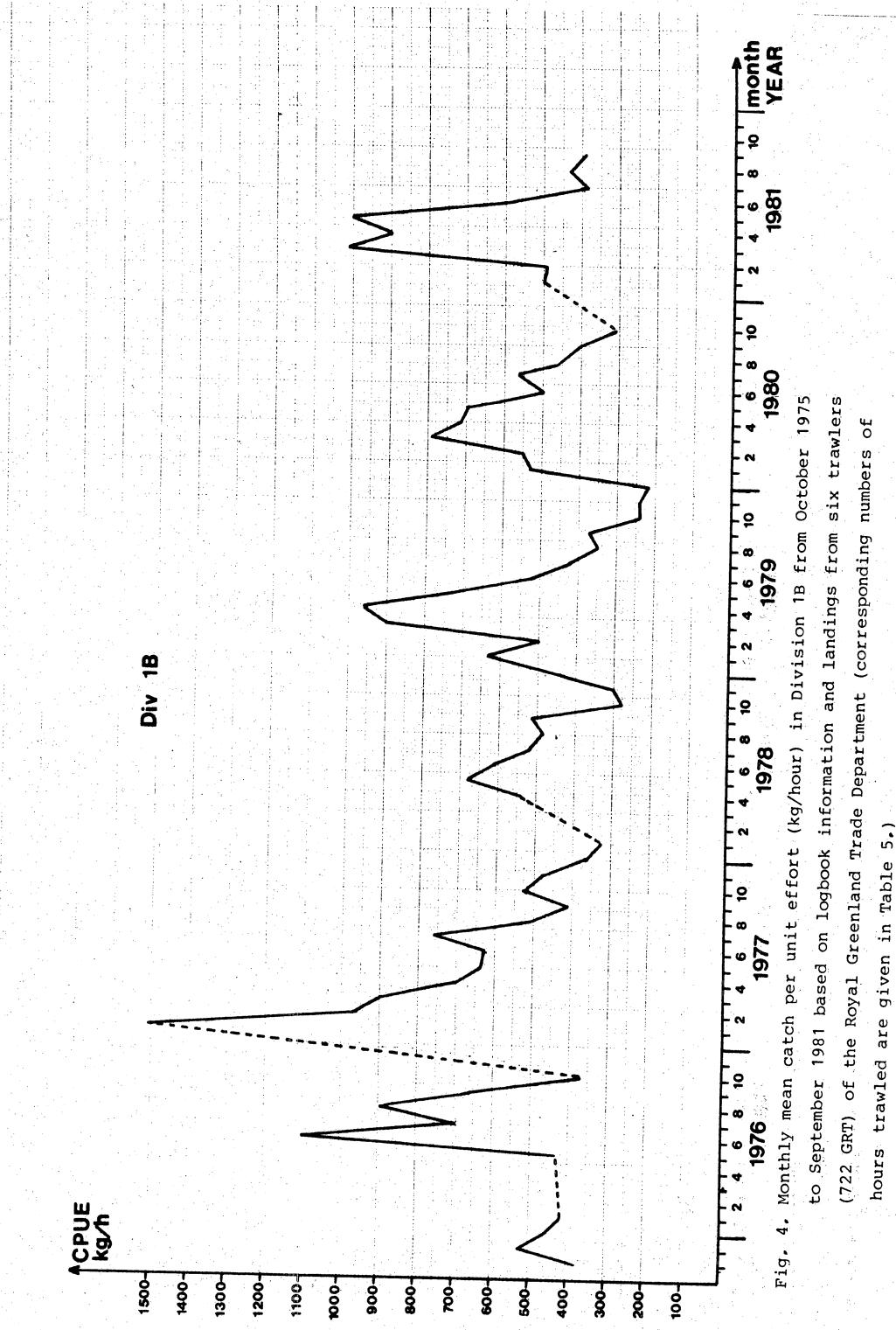


Fig. 4. Monthly mean catch per unit effort (kg/hour) in Division 1B from October 1975 to September 1981 based on logbook information and landings from six trawlers (722 GRT) of the Royal Greenland Trade Department (corresponding numbers of hours trawled are given in Table 5.)

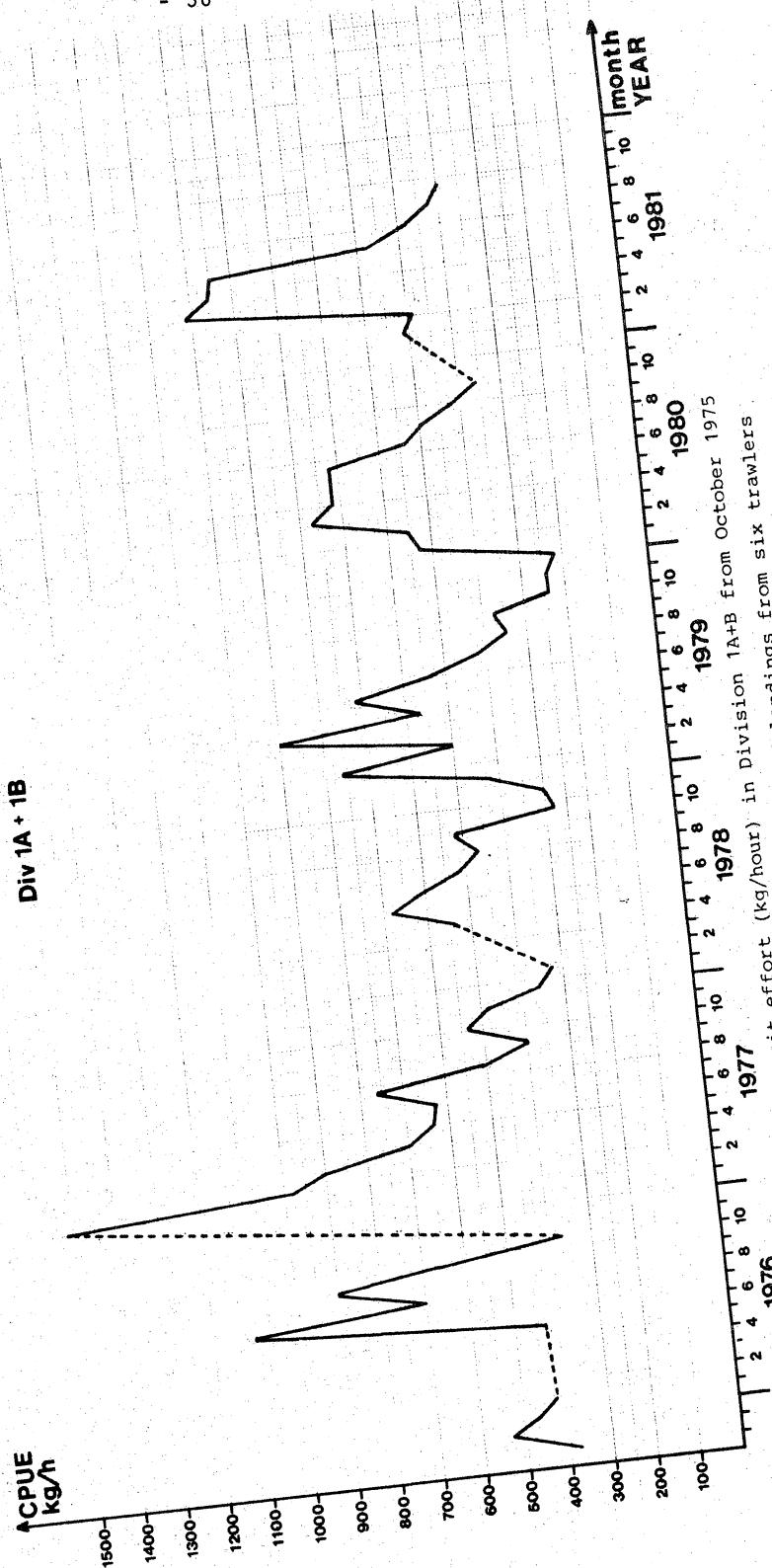


Fig. 5. Monthly mean catch per unit effort (kg/hour) in Division 1A+B from October 1975 to September 1981 based on logbook information and landings from six trawlers (722 GRT) of the Royal Greenland Trade Department (corresponding numbers of hours trawled are given in Table 5.)