

The 1980–81 foreign and joint venture squid jig fishery around New Zealand

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START A NEW SHEET EACH DAY

DATE:		
Day	Month	Year
B	A	4

RADIO CALL SIGN:
J-N-71-2

NOT FISHING

無漁業

FISHING OPERATION:

LATITUDE 緯度	LONGITUDE 經度	DEPTH 深度	SEA SURFACE TEMPERATURE 海面溫度	WIND SPEED 風速	WIND DIRECTION 風向
N 0°	E 0°	Bottom Lure m	Bottom Lure m	0	0
S 0°	E/W	m	0°C	m/s	0

TIME FISHING 釣魚時間	Day Hours 0-12	Night Hours 12-24	TIME FISHING 釣魚時間	
			Day Hours 0-12	Night Hours 12-24

CATCH:

TOTAL CATCH (KG) 總捕獲量(KG)	NUMBER CAUGHT 捕獲數量
Arrow Squid 2尾 1kg	2
Other Squid 1尾 1kg	1
Other (Specify) 1尾 (請詳註)	1

TOTAL CATCH (KG) 總捕獲量(KG)	NUMBER CAUGHT 捕獲數量
Octopus	2
Shark	1
Other (Specify) 1尾 (請詳註)	1

TRAY TALLY:

Number of squid per tray 每盤的章魚數量	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-150	151+	TOTAL 總計
Number of trays c/s 每盤的盤數													
7-2	WHOLE 1	WITHOUT LEGS 1											

Fig. 1: Squid logbook return form.

Introduction

New Zealand's arrow squid, *Nototodarus* spp., are among the most abundant commercial species in the 200-mile Exclusive Economic Zone (EEZ) and are the basis of a substantial jig and trawl fishery. The fishery is on two closely related species of arrow squid, but because of their similarity no differentiation is currently made in fishing or marketing operations. In 1980-81 it was the second most valuable New Zealand fishery, with export earnings of \$27 million f.o.b.

The trawl fishery is centred mainly around Auckland Islands and accounts for about 45% of the total annual squid catch of 70 000-90 000 t. The jig fishery is over a much larger area, from the North Taranaki Bight to Greymouth on the west coast and from Cook Strait down the east coast to south of Snares Islands.

The jig fishery started with experimental fishing by a few Japanese vessels in 1971 and has expanded to a current annual influx of 100-180 vessels from three nations, in both foreign-licensed and joint-venture capacities. The fishing season is from December to June, and the annual catch is 40 000-50 000 t. During the 1980-81 season, 126 vessels from Japan, Korea, and Taiwan caught 37 803 t.

Data presented here are from squid logbook returns (Fig. 1). The 1980-81 report is one of a series of annual reports of the squid jig fishery.

For the purpose of this report, the New Zealand region has been divided into seven areas (I-VII) based on distribution of fishing effort, not on existing EEZ management zones, which are less applicable to the squid jig fishery.

Table 1 shows catch in each area, percentage of total catch, and catch per vessel-day for this and previous seasons. Data from seasons before 1980-81 have only been divided into east and west coast values, pending further analysis.

Figure 2 shows the total catch (to the nearest tonne) for the whole season by $\frac{1}{2}^{\circ}$ squares.

Fishing effort has been measured as catch per vessel-day, where 1 vessel-day is a 24-hour period during which some fishing took place. Catch and effort data have been summarised in Tables 2-5 and Figs. 3 and 4. Twenty-four vessel-days fished, for which positions were not recorded in the logbooks, resulted in a total catch of 52 t.

Squid are sorted aboard jig vessels according to size and then packed into trays and frozen. For the size analysis (Fig. 5), only data from Japanese and Japanese joint-venture vessels were used because only these vessels consistently use standard 8.0- to 8.5-kg trays. (Of the total fleet of 126, 89 were Japanese, or Japan-New Zealand joint venture vessels.)

Figures 6 and 7 show average catch rates by bottom depth and sea surface temperature, respectively, in areas fished.

TABLE 1: Catch (t) by area and season and catch per vessel-day

Season	Catch (t)		Catch (t) with position not given	Total catch (t)	Catch (t) per vessel-day				
	East coast	West coast							
1978-79	19 134 79%*		4 954 21%	0	24 088 1.5				
1979-80†	22 928 57%		17 518 43%	53	40 500 2.5				
1980-81	16 656 44%		21 095 56%	52	37 803 3.5				
	I	II	III	IV	V	VI	VII		
1980-81	983 3%	0	20 110 53%	89 <1%	0	15 789 42%	780 2%	52	37 803 3.5

* Percentages refer to the proportion of a season's catch for each area.
 + Provisional figures.

TABLE 2: Squid Jigging catch and effort data by nation, 1980-81

	No. of vessels	Total vessel-days squid caught† (total A)	No. of hours fishing	No. of vessel-days squid caught, but no hours given*	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch (total B)	No. of vessel-days with nil catch, but no hours given†	Total catch (†)	Catch (†) per vessel-day
Japan	71	5 933	79 236	139	104	602	2	22 557.6	3.7
Korea	4	447	5 389	6	0	0	0	1 229.2	2.7
Joint venture	51	4 412	54 031	436	24	162	4	14 016.2	3.2
Total	126	10 792	138 656	581	128	764	6	37 803.0	3.5

* Included in total A.

† Included in total B.

TABLE 3: Squid Jigging catch and effort data from Japanese vessels, 1980-81

Month	Total vessel-days squid caught† (total A)	No. of hours fishing	No. of vessel-days squid caught, but no hours given*	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch (total B)	No. of vessel-days with nil catch, but no hours given†	Total catch (†)	Catch (†) per vessel-day
Dec	628	8 943	17	8	45	0	3 685.3	5.8
Jan	1 849	22 929	31	41	263	1	6 165.0	3.3
Feb	1 720	24 281	31	32	140	1	5 302.5	3.0
Mar	1 504	19 943	50	20	132	0	6 325.8	4.1
Apr	232	3 140	10	3	22	0	1 079.0	4.6

* Included in total A.

† Included in total B.

TABLE 4: Squid Jigging catch and effort data from Korean vessels, 1980-81

Month	Total vessel-days squid caught (total A)	No. of hours fishing	No. of vessel-days squid caught, but no hours given*	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch	No. of vessel-days with nil catch, but no hours given†	Total catch (†)	Catch (†) per vessel-day
								No. of vessel-days with nil catch, but no hours given†
Dec	39	430	1	0	0	0	104.0	2.7
Jan	115	117	1	0	0	0	212.9	1.9
Feb	92	1230	1	0	0	0	216.5	2.4
Mar	93	157	0	0	0	0	311.4	3.3
Apr	74	973	3	0	0	0	304.4	4.1
May	34	482	0	0	0	0	80.0	2.4

* Included in total A.

† Included in total B.

TABLE 5: Squid Jigging catch and effort data from joint-venture vessels, 1980-81

Month	Total vessel-days squid caught (total A)	No. of hours fishing	No. of vessel-days squid caught, but no hours given*	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch	No. of vessel-days with nil catch, but no hours given†	Total catch (†)	Catch (†) per vessel-day
								No. of vessel-days with nil catch, but no hours given†
Dec	353	4 501	38	2	27	0	1 347.1	3.8
Jan	1 365	15 786	144	14	95	4	3 162.3	2.3
Feb	1 282	16 045	147	3	17	0	3 673.4	2.9
Mar	986	12 027	105	4	17	0	3 834.4	3.9
Apr	340	4 544	2	1	6	0	1 681.9	4.9
May	86	1 128	0	0	0	0	0	317.1

* Included in total A.

† Included in total B.

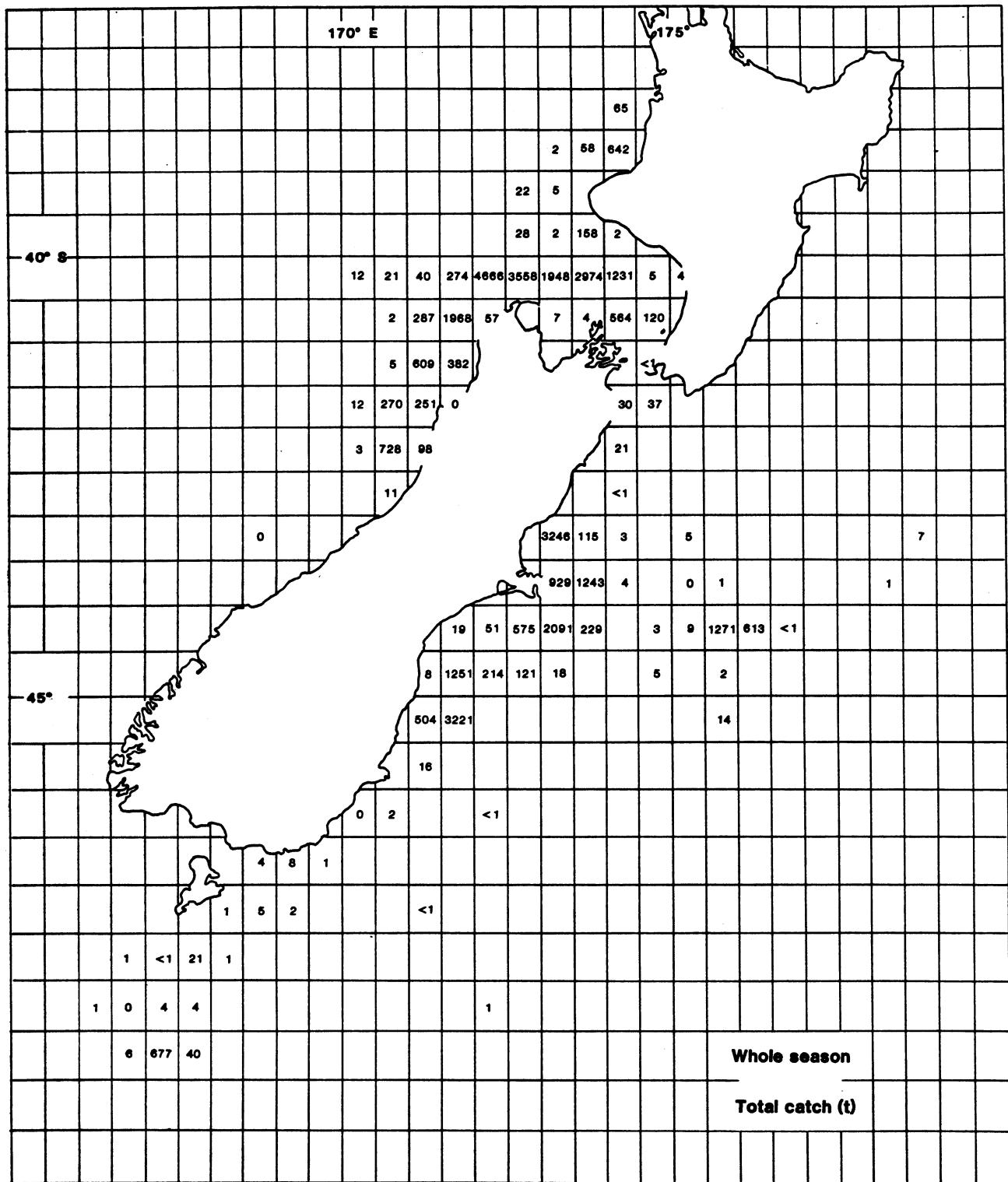


Fig. 2: Total catch (t) for the whole season by 1/2° squares.

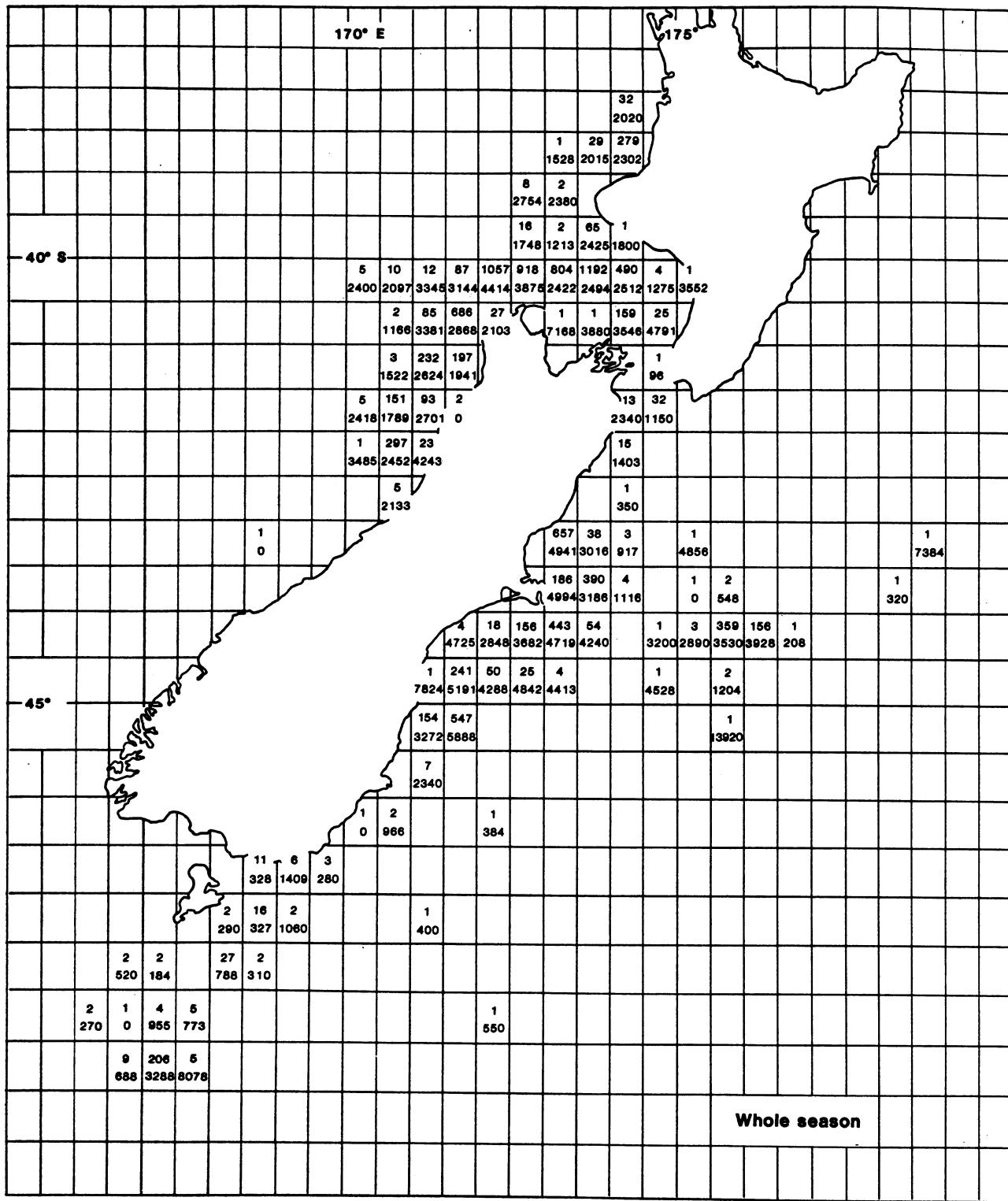


Fig. 3: Seasonal summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $1/2^\circ$ squares.

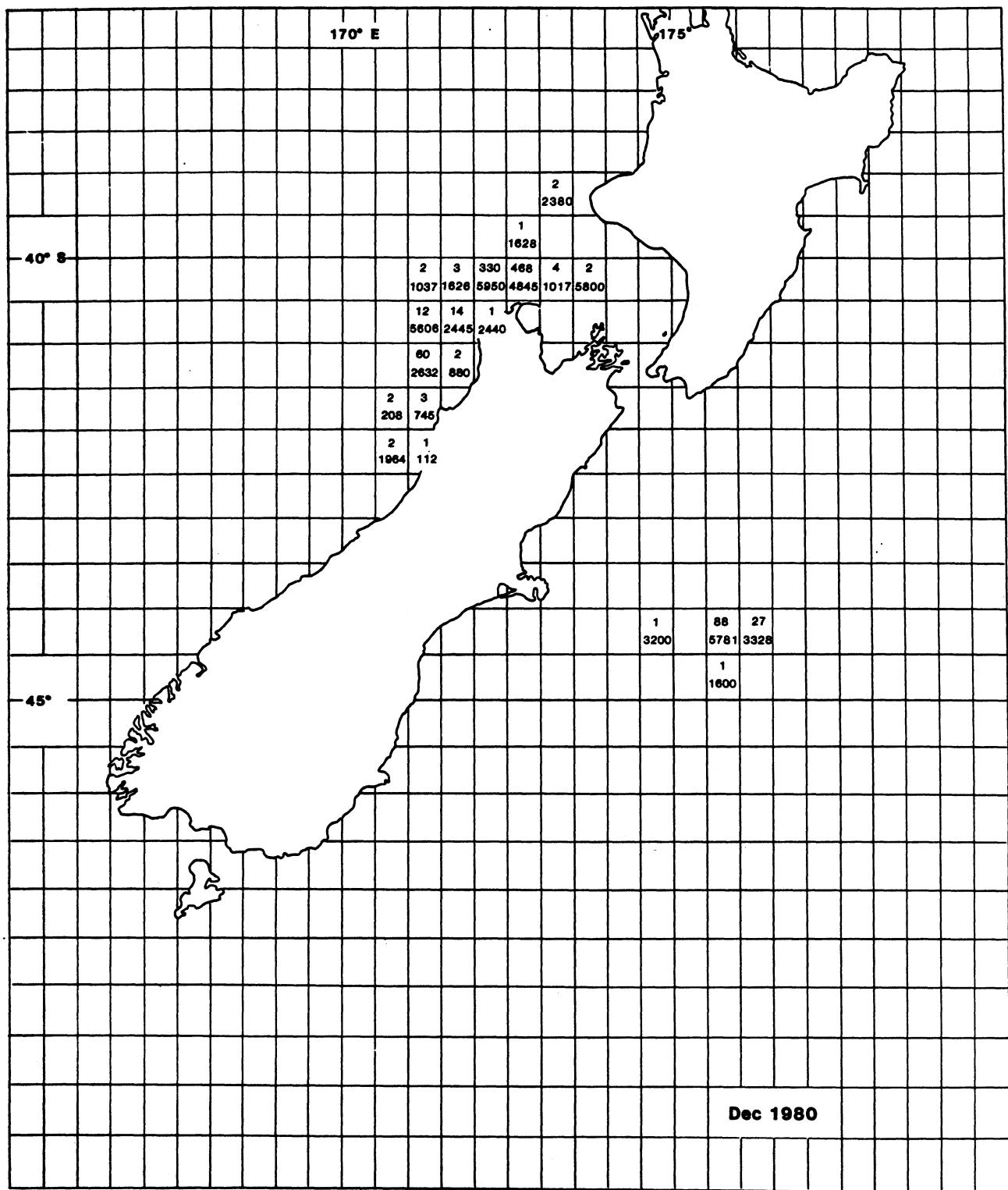


Fig. 4: Monthly summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by 1/2° squares.

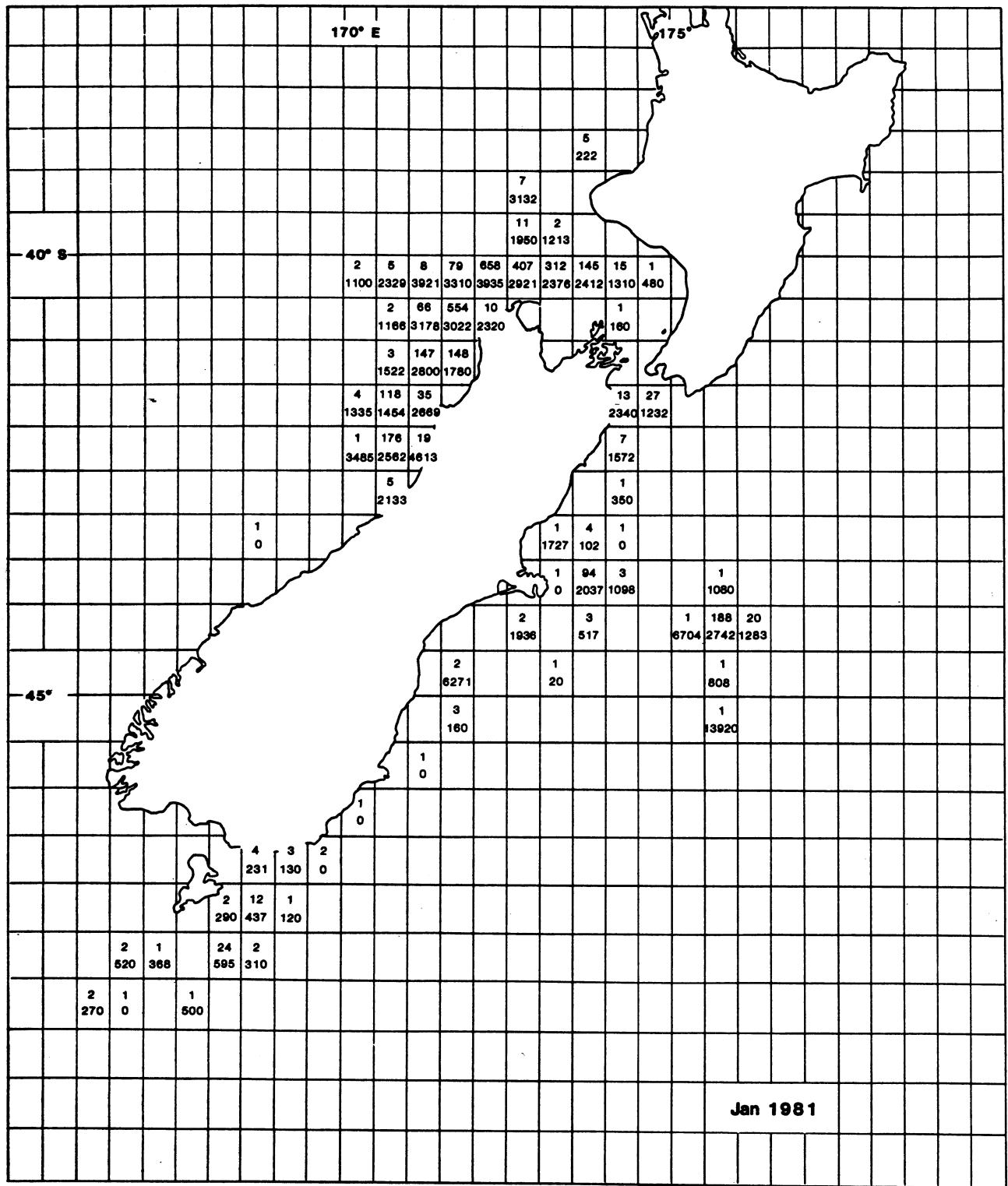


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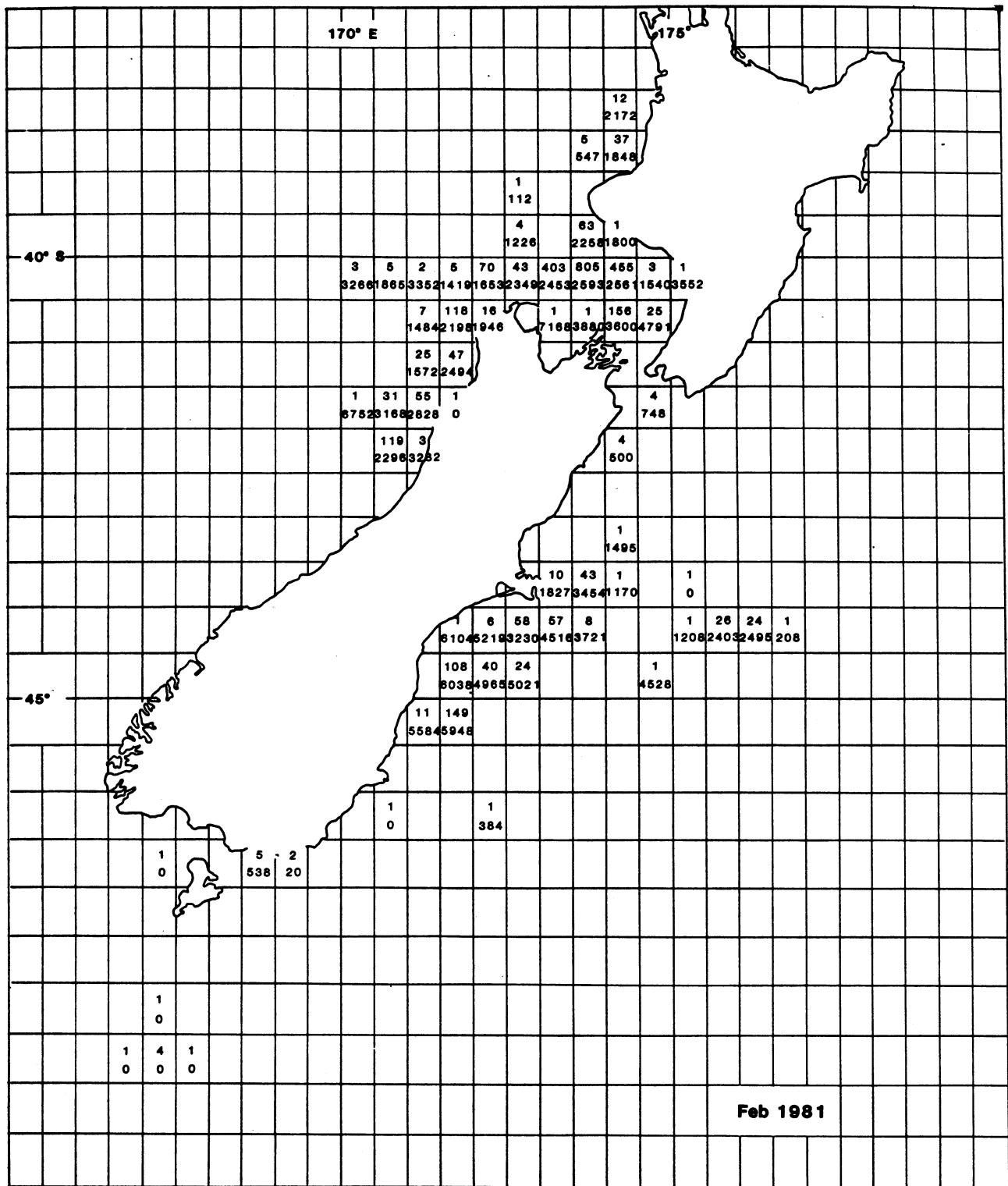


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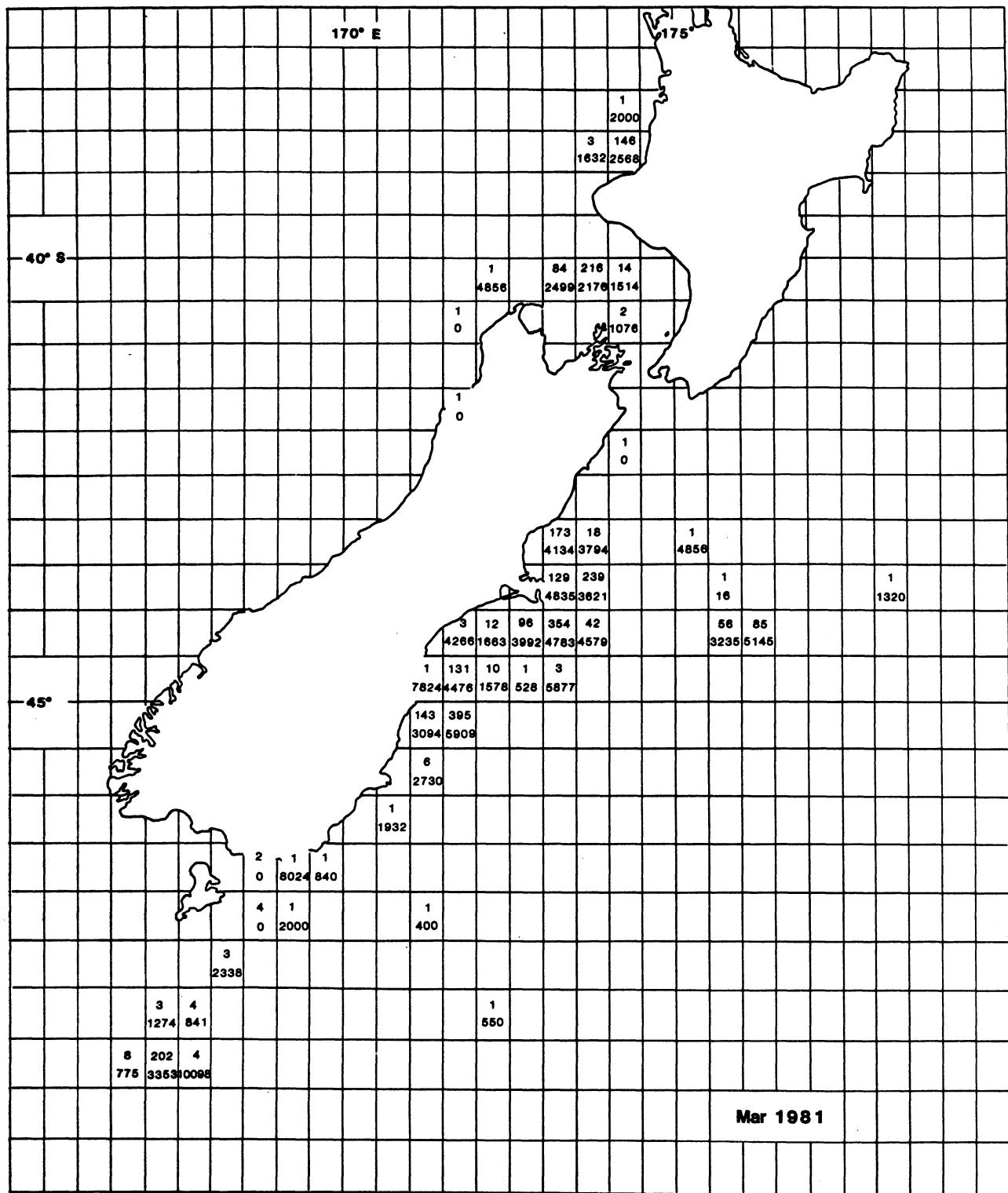


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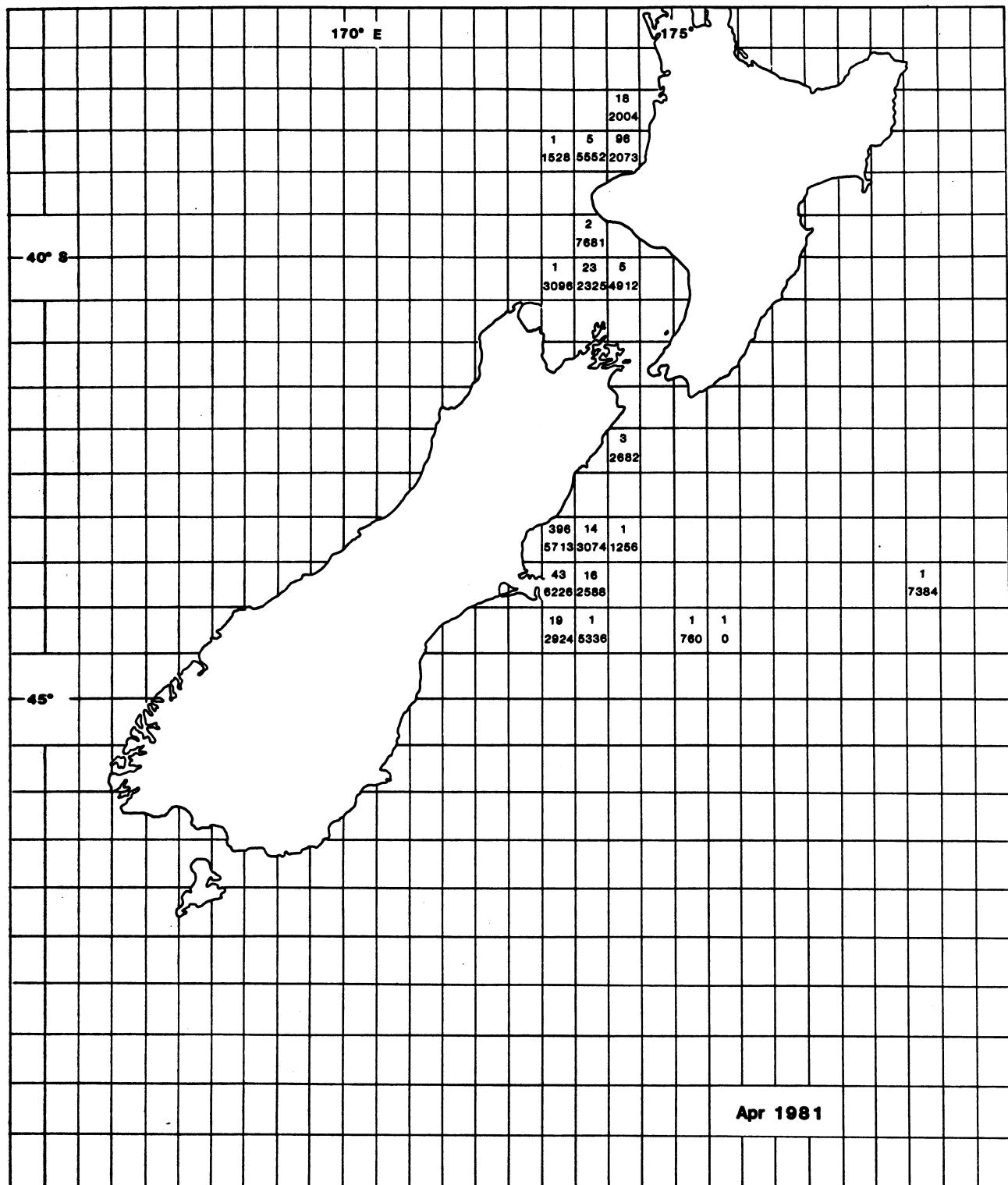


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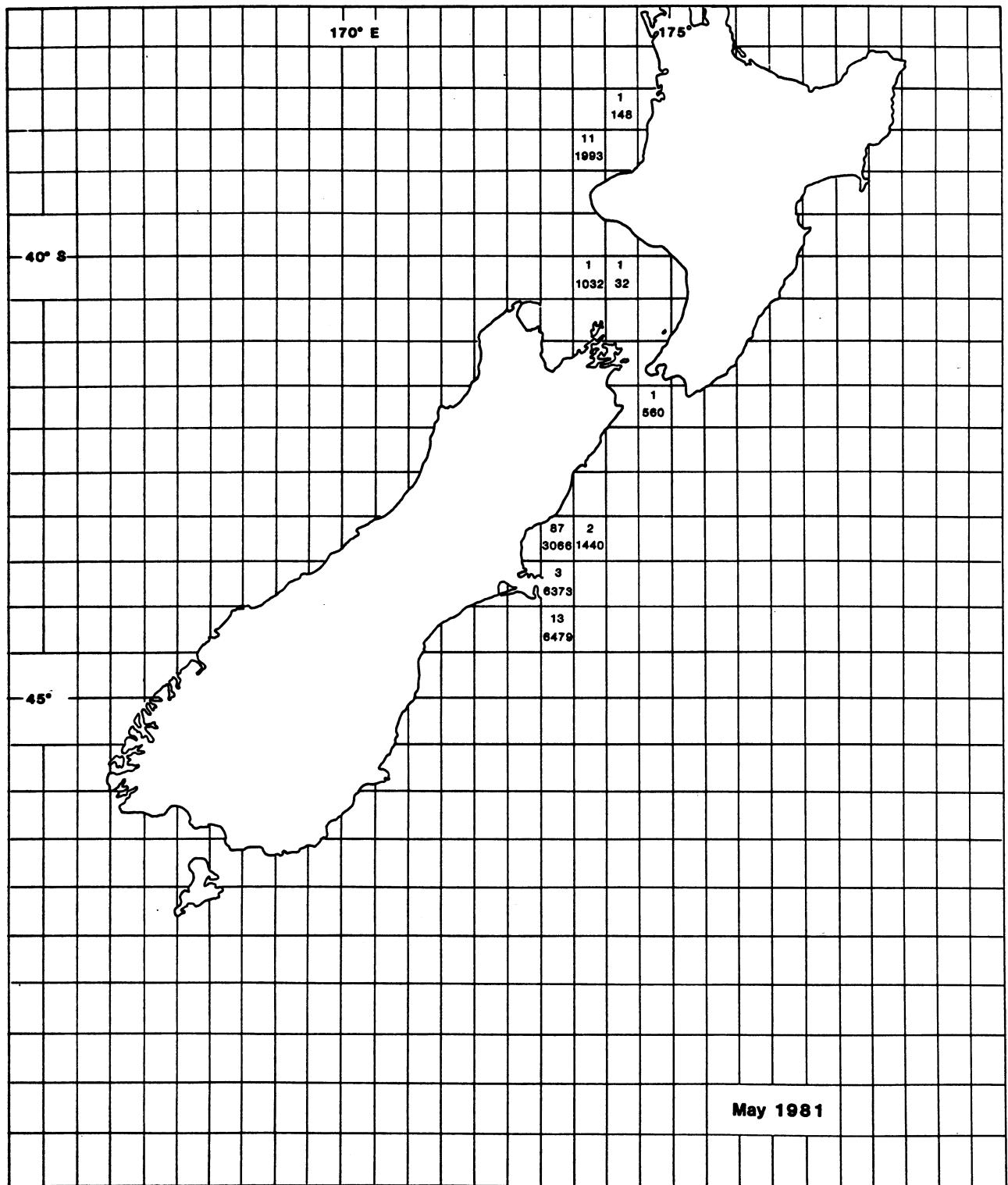


Fig. 4—*continued.*

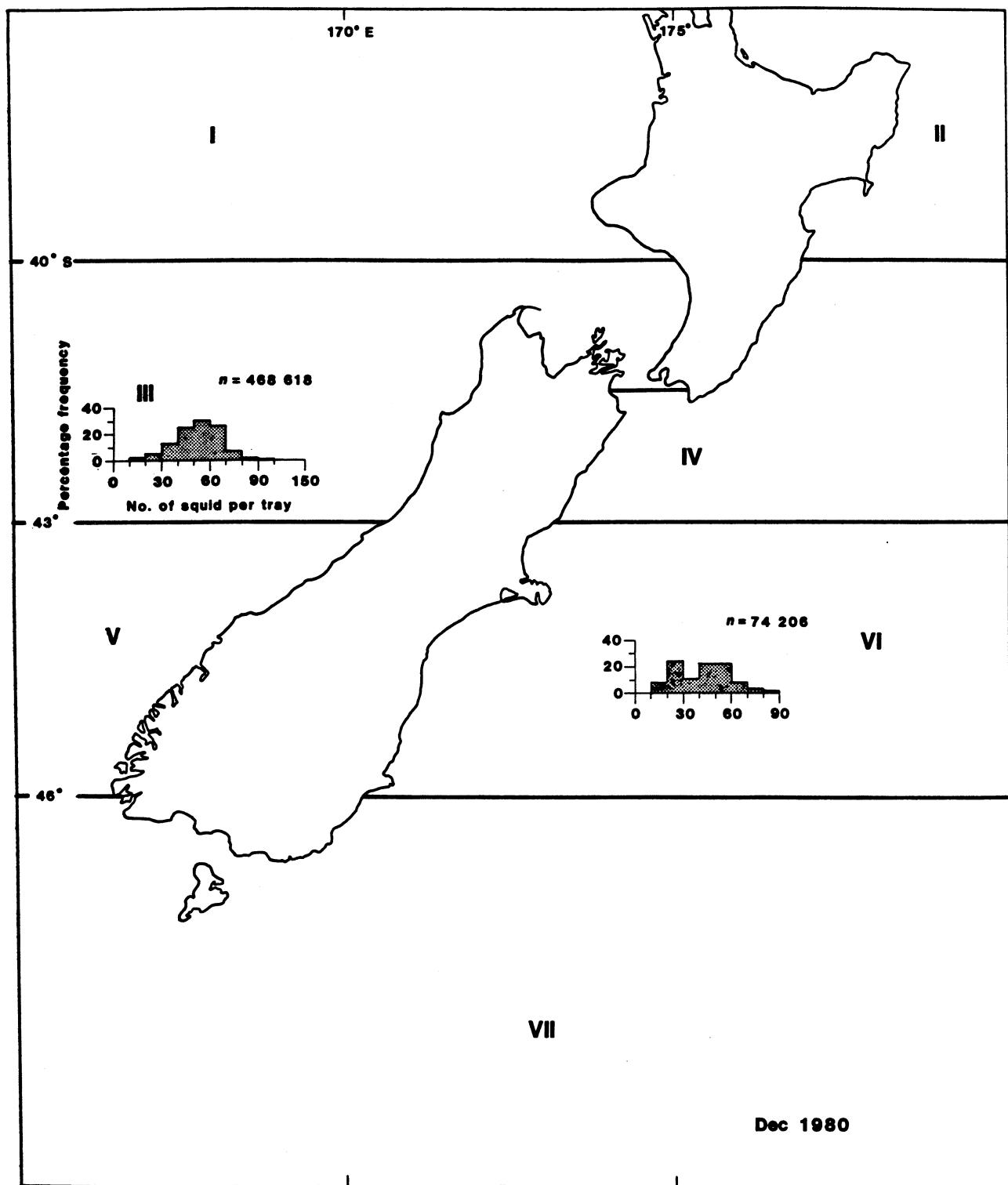


Fig. 5: Percentage frequency of the number of squid per tray by month for areas I-VII (n = total number of trays). (The 100- to 150-squid-per-tray classes have been pooled.)

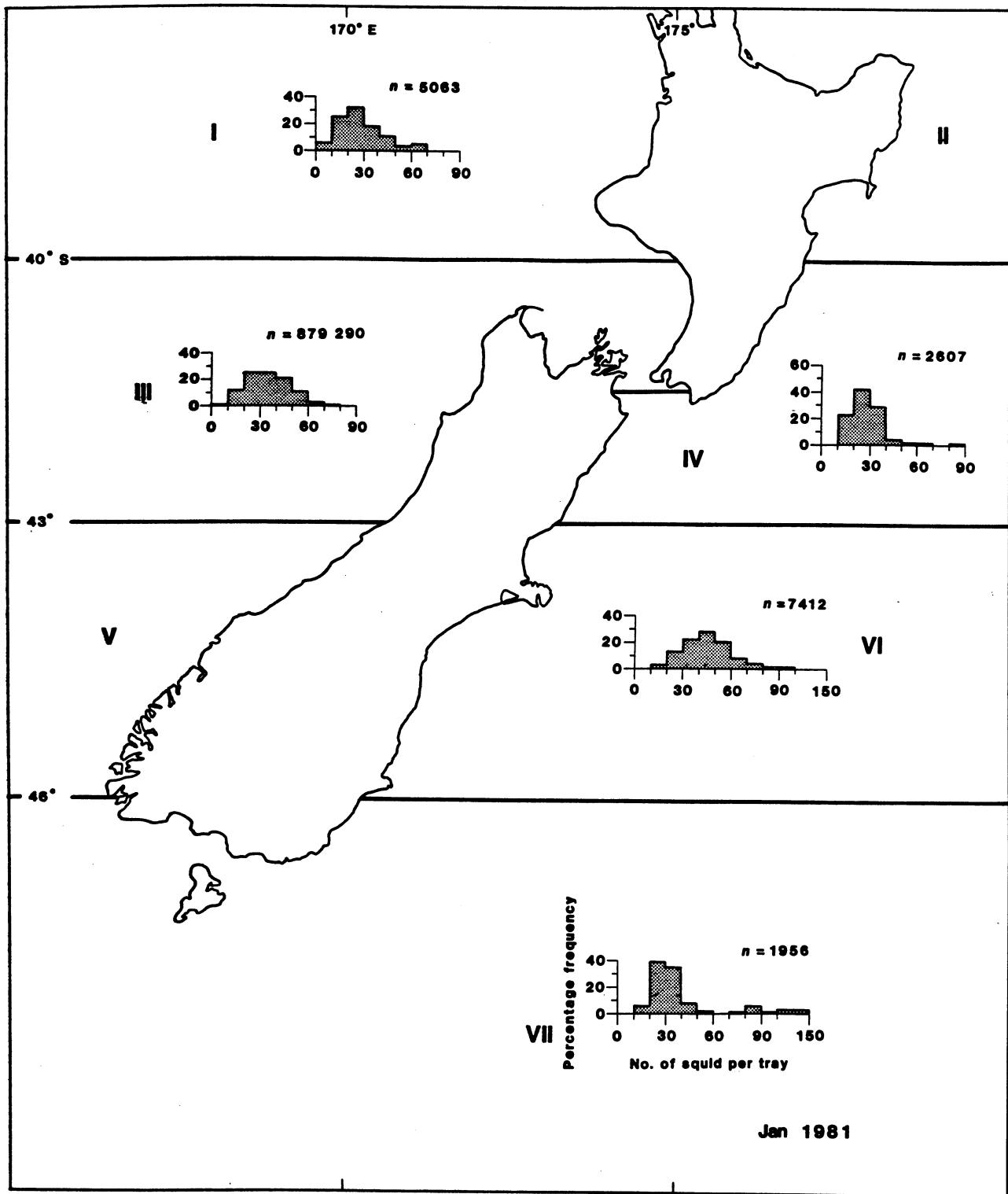


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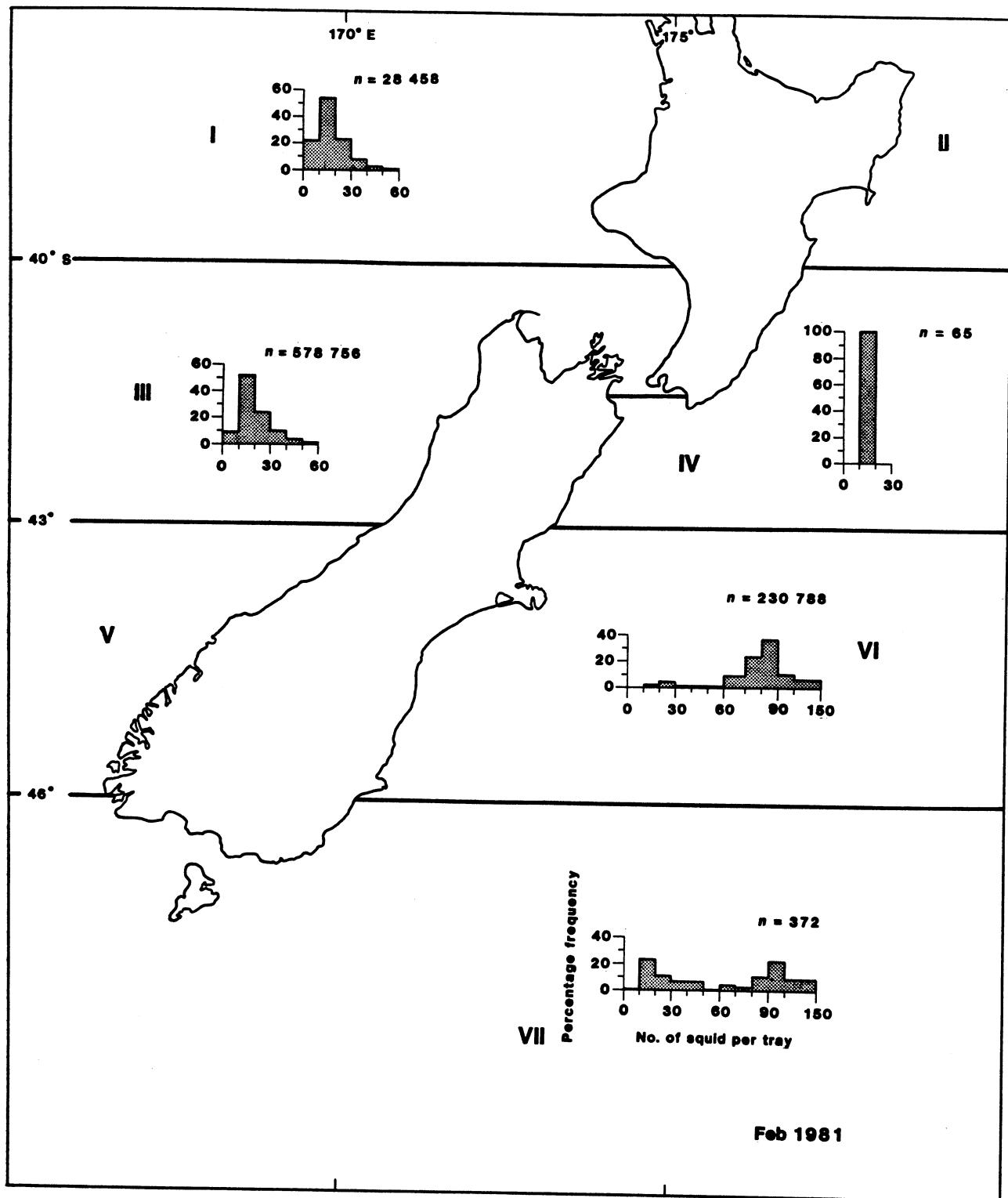


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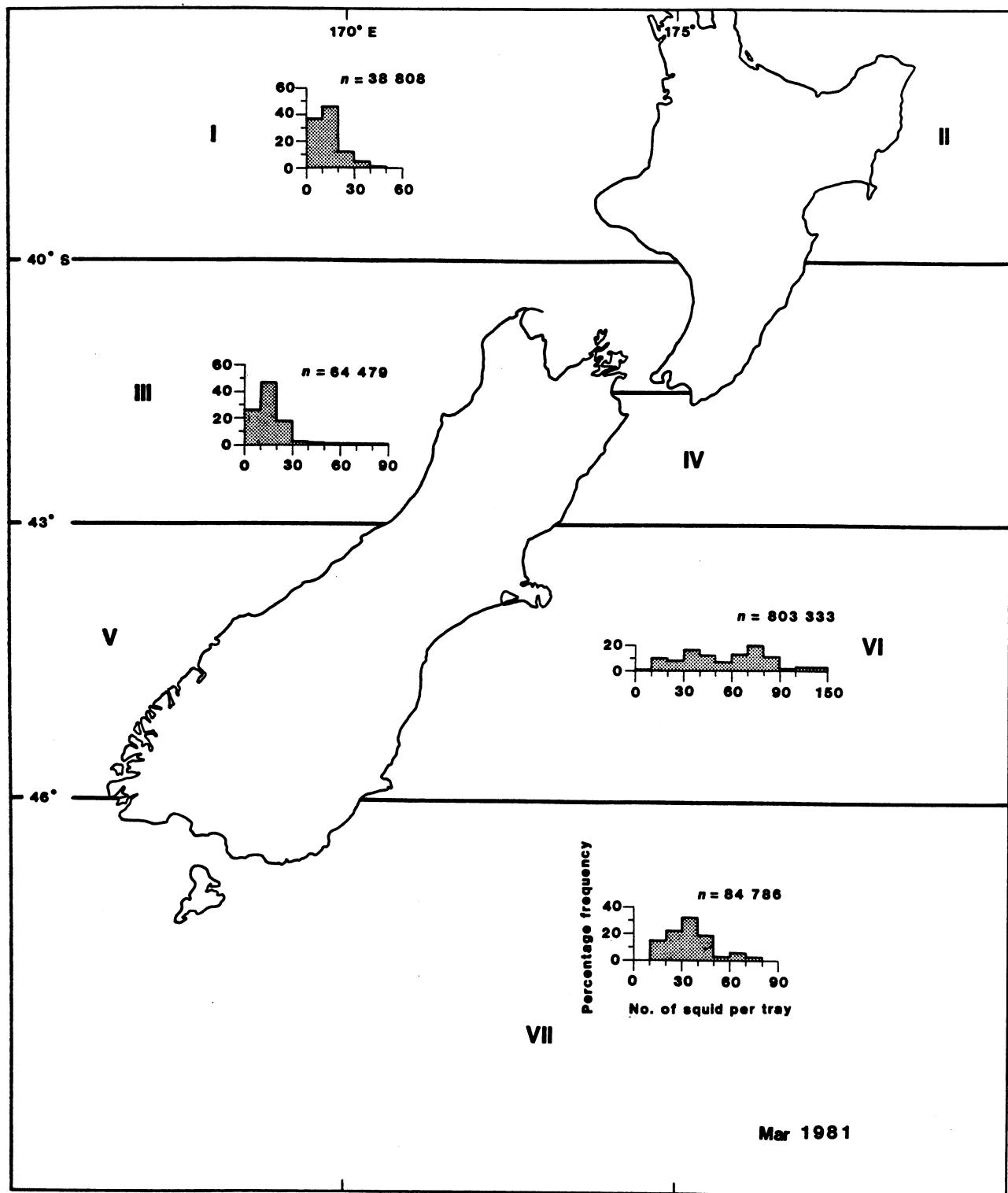


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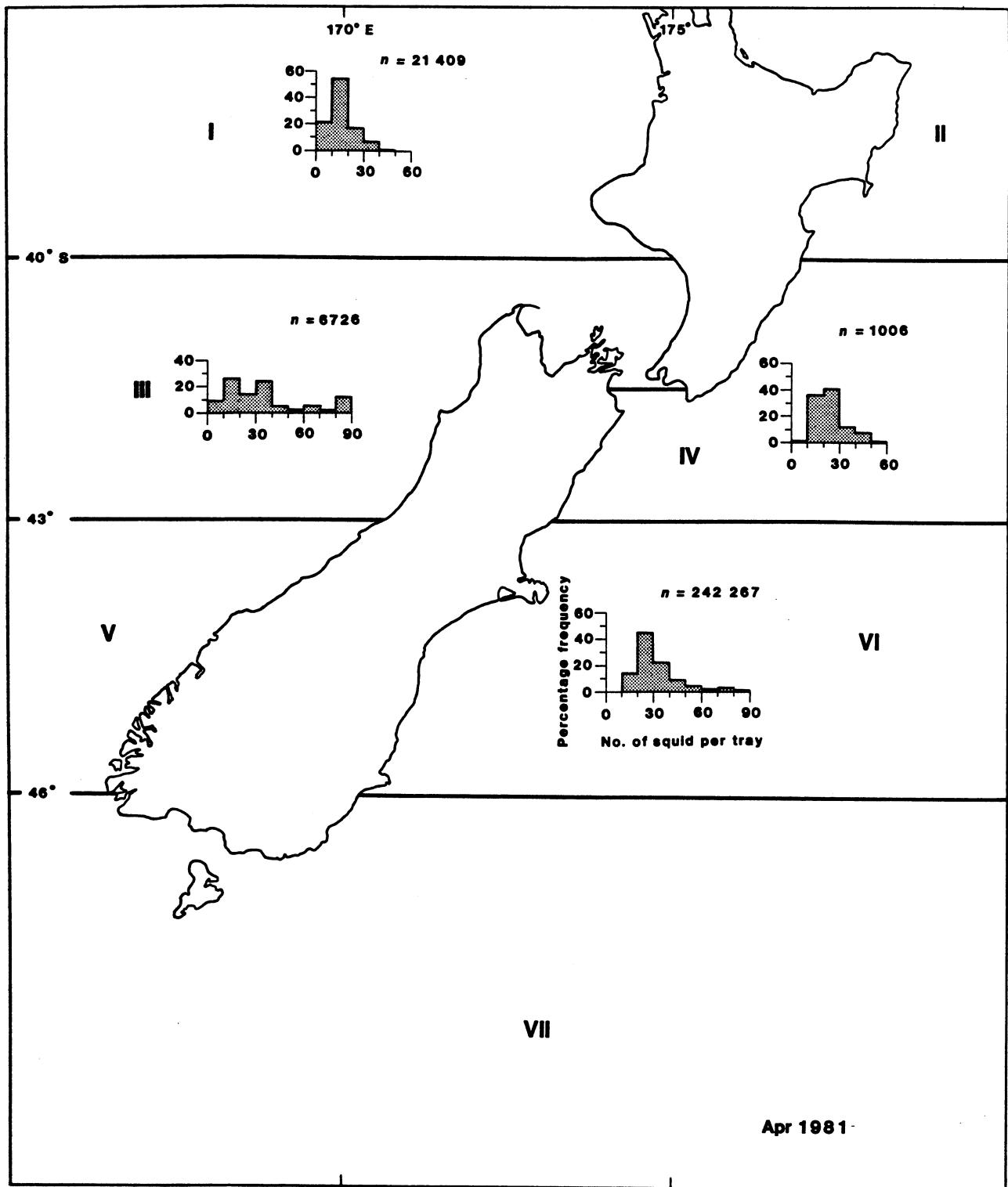


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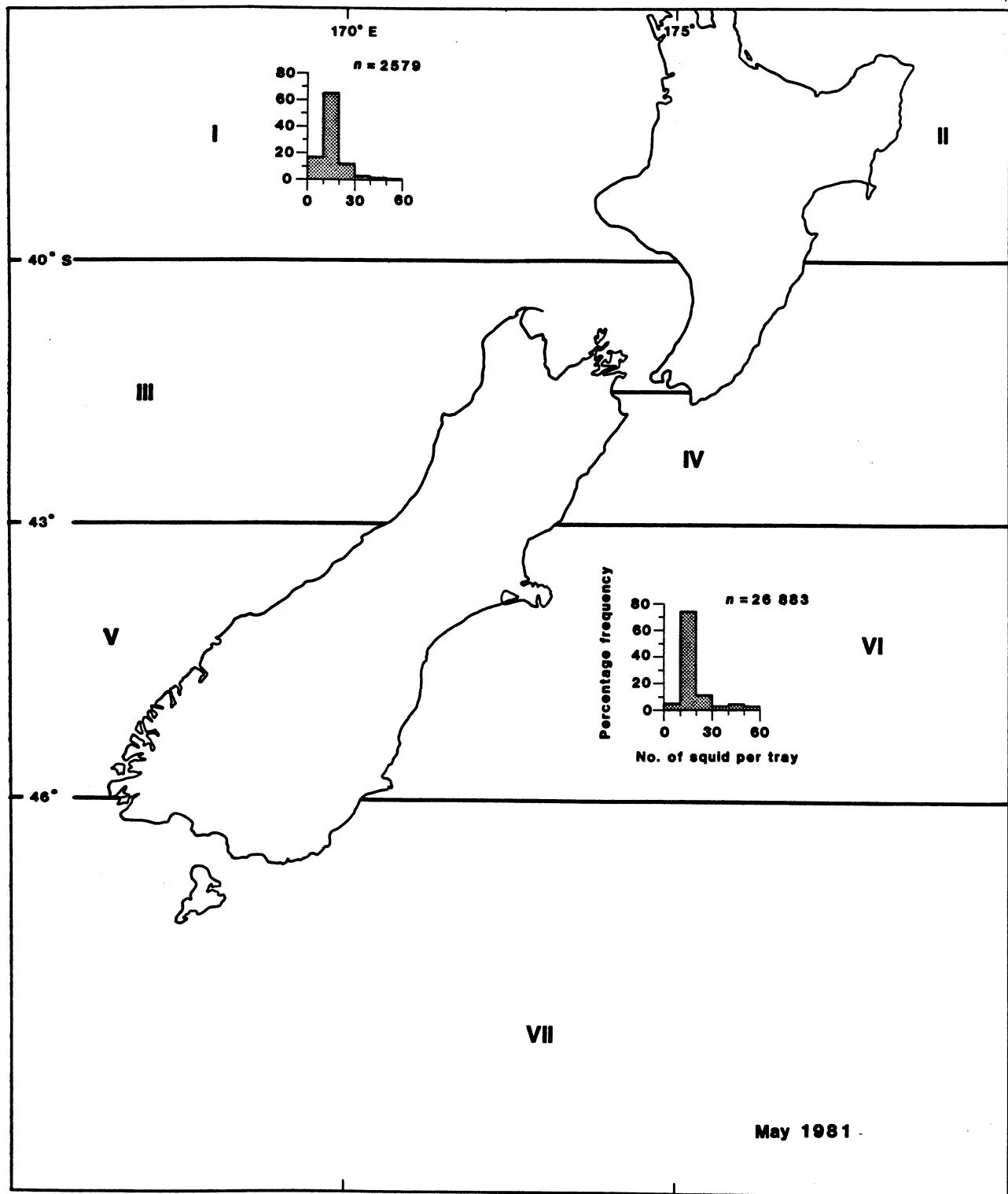


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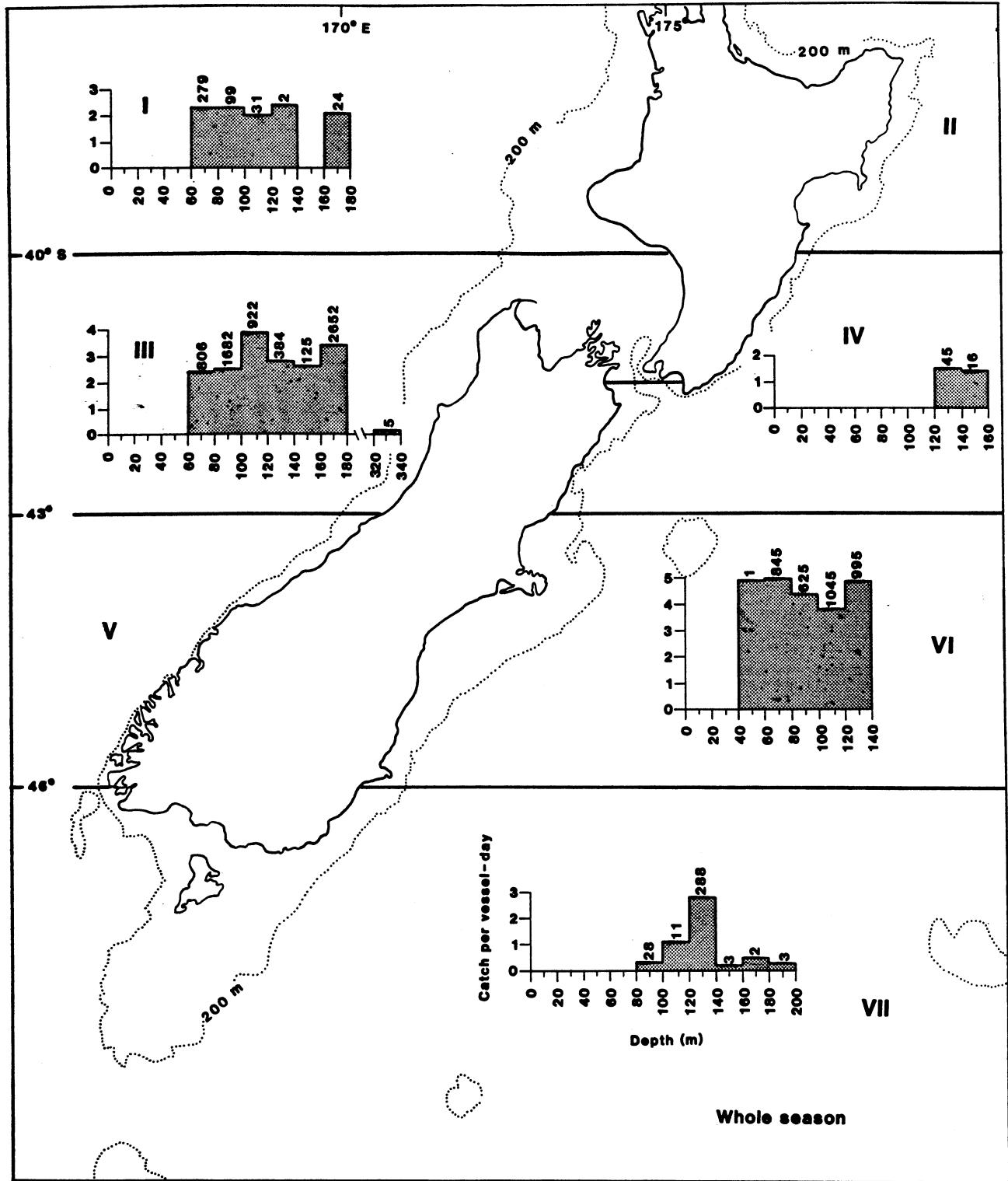


Fig. 6: Seasonal summary of catch (t) per vessel-day by mean bottom depth of fishing grounds in areas I-VII. (Individual figures above the histograms are the number of vessel-days fished in each depth range.)

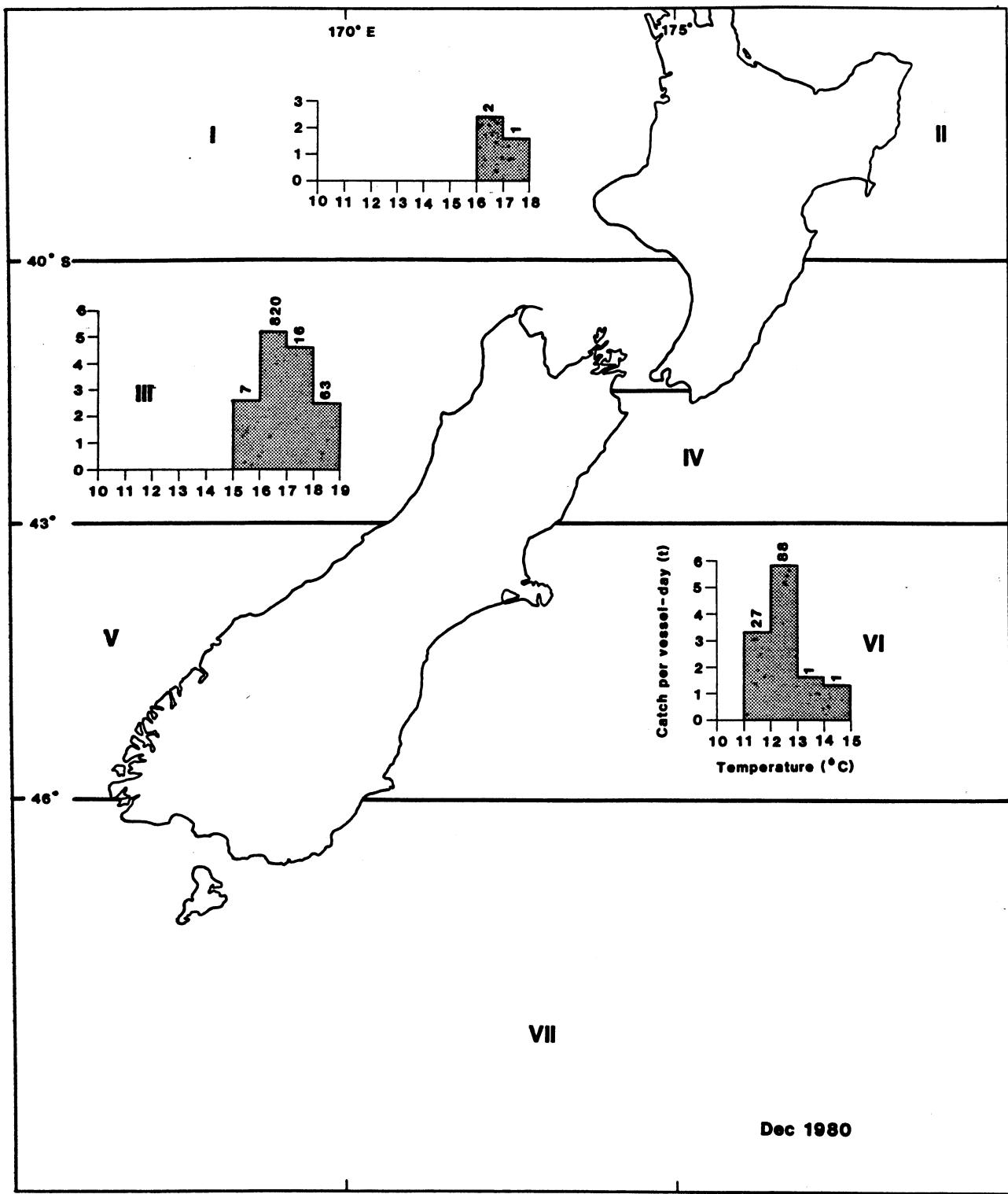


Fig. 7: Monthly summary of catch (t) per vessel-day by mean sea surface temperature (°C) of fishing grounds in areas I-VII.
(Individual figures above the histograms are the number of vessel-days fished in each temperature range.)

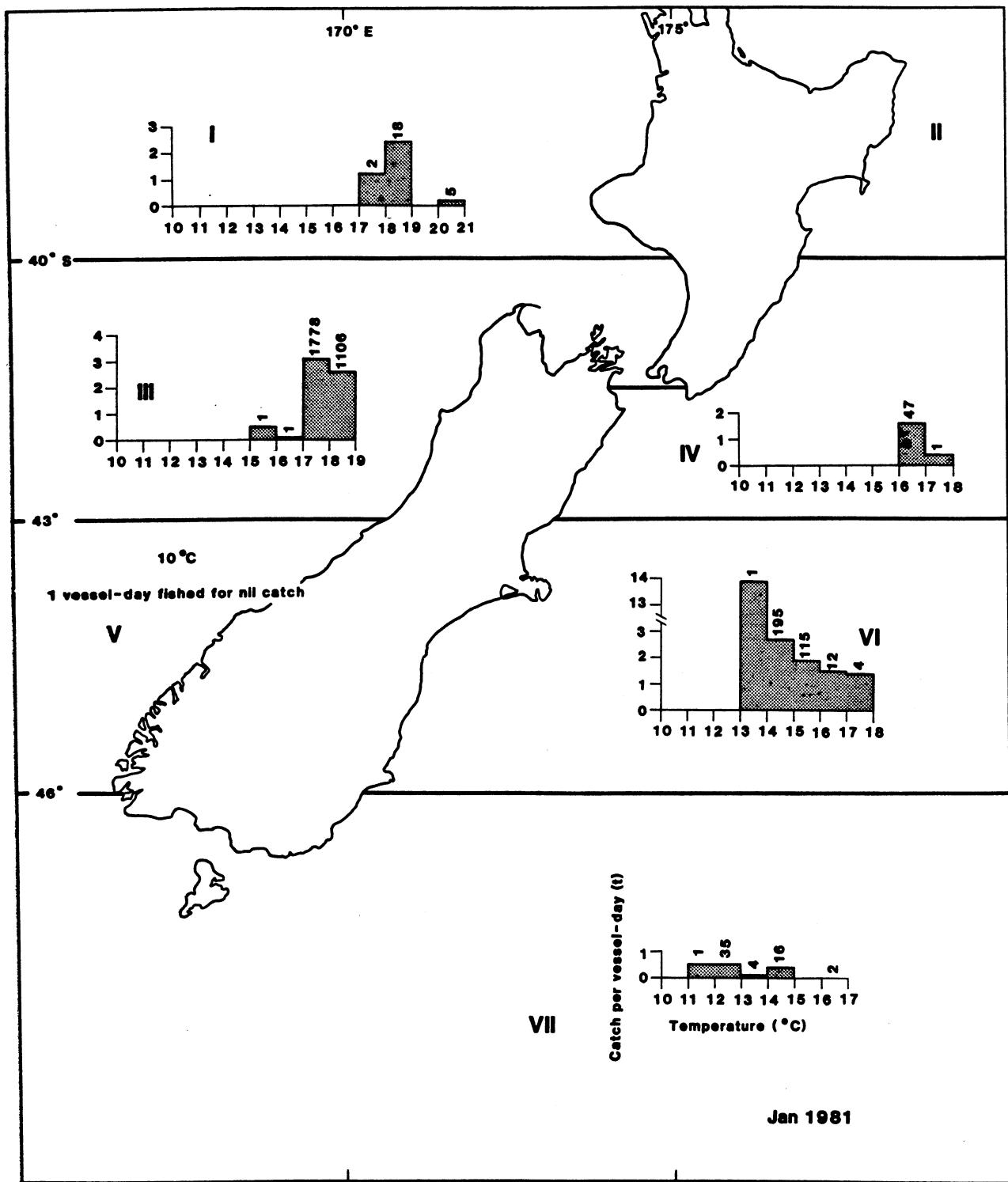


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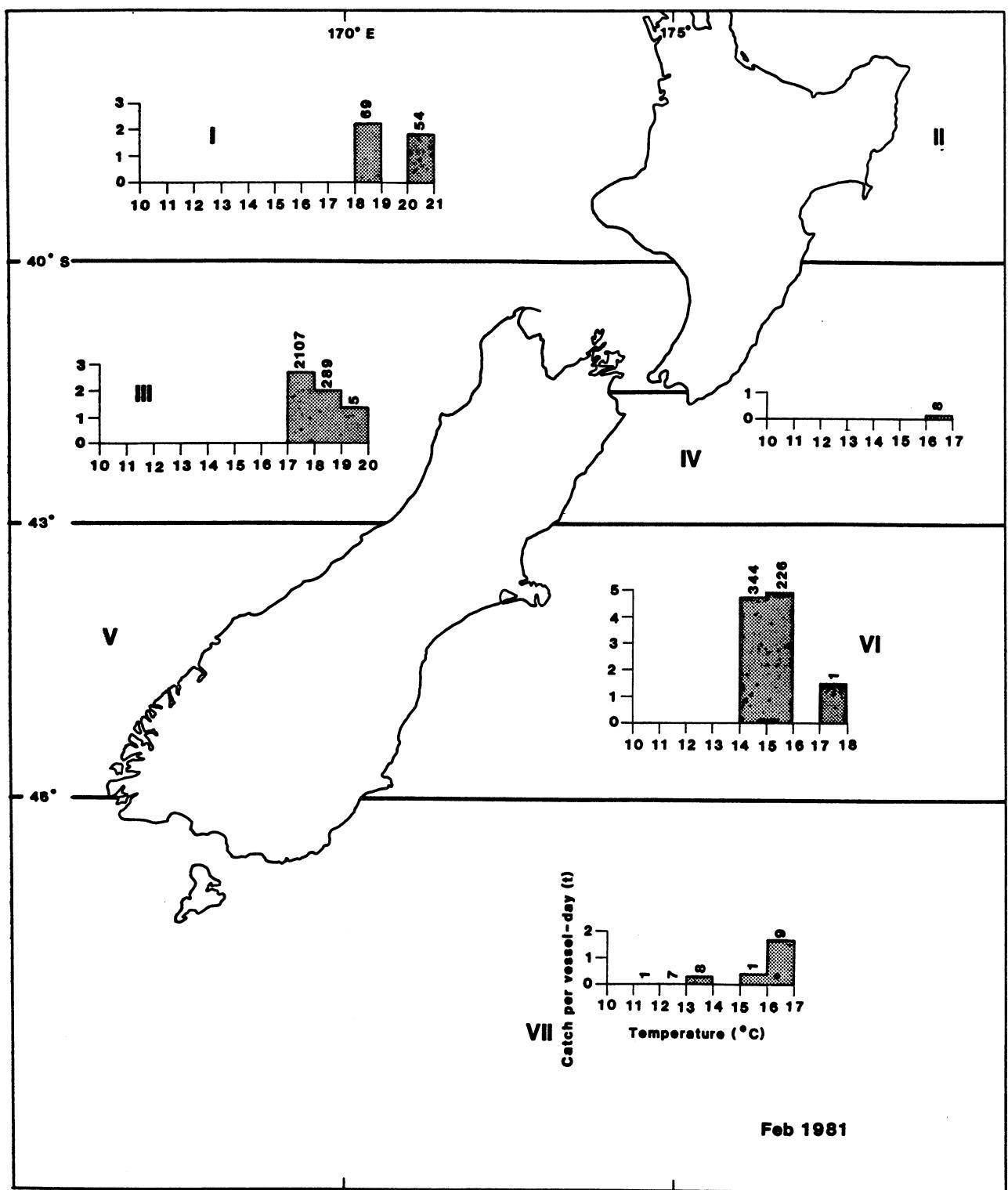


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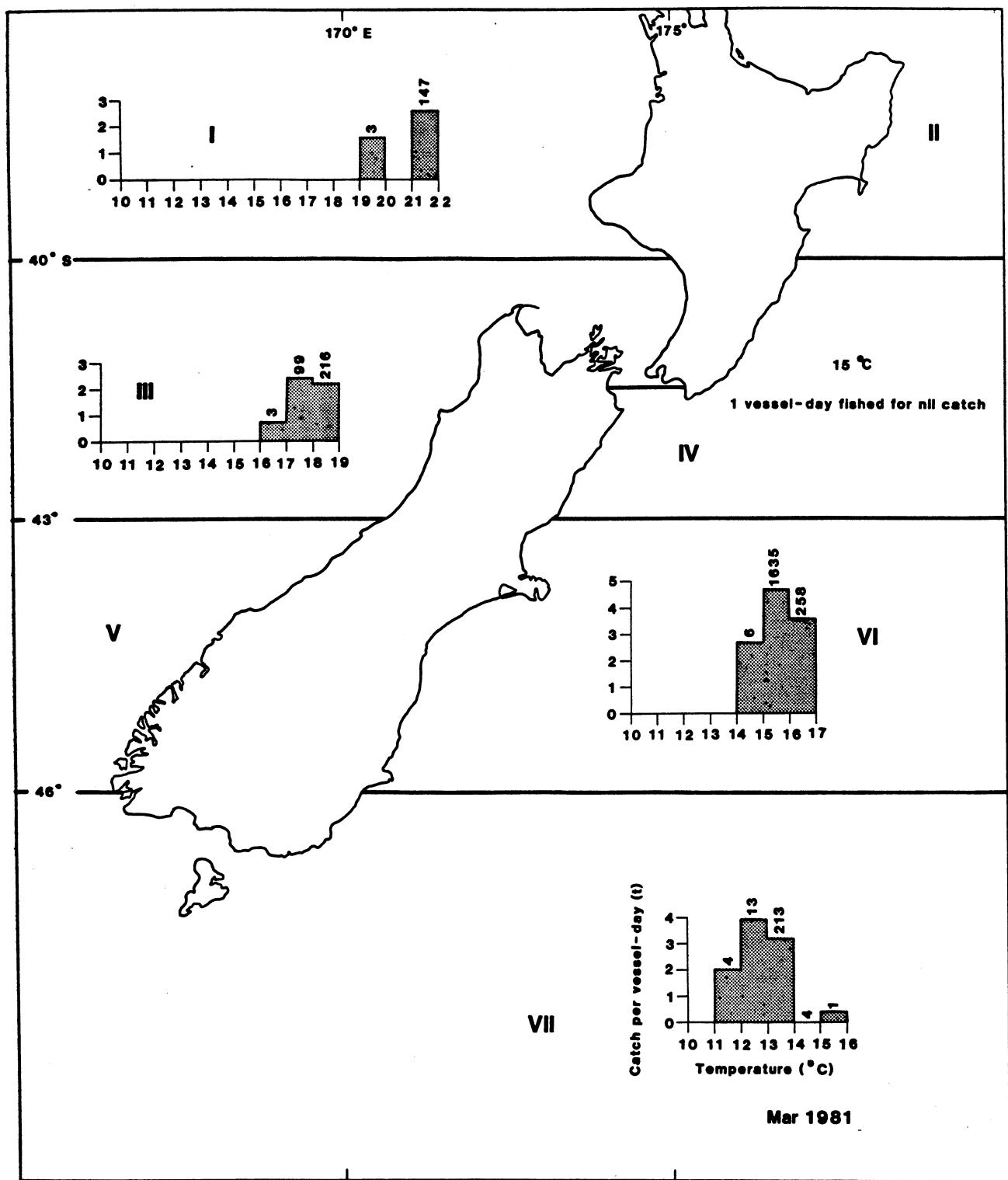


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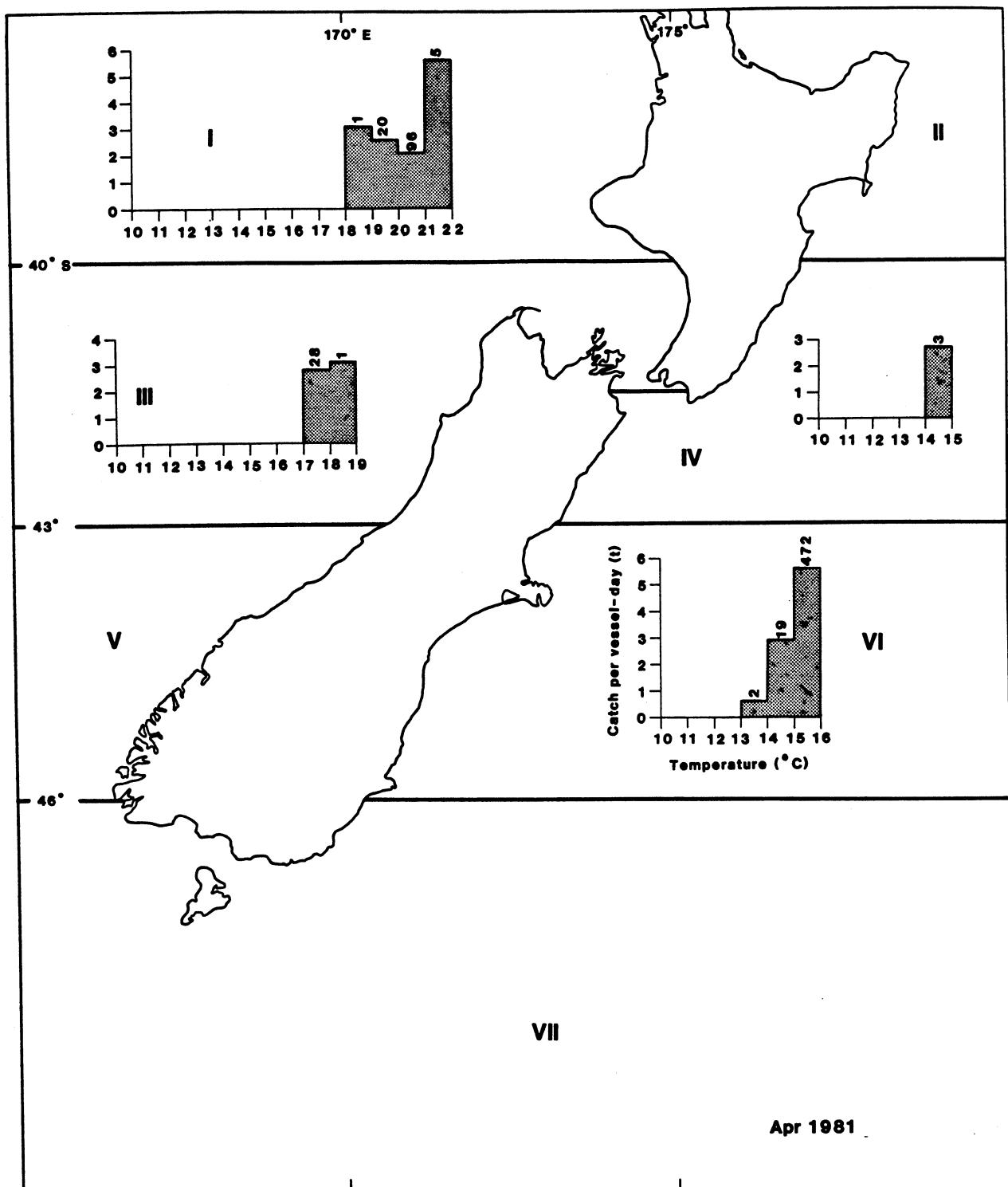


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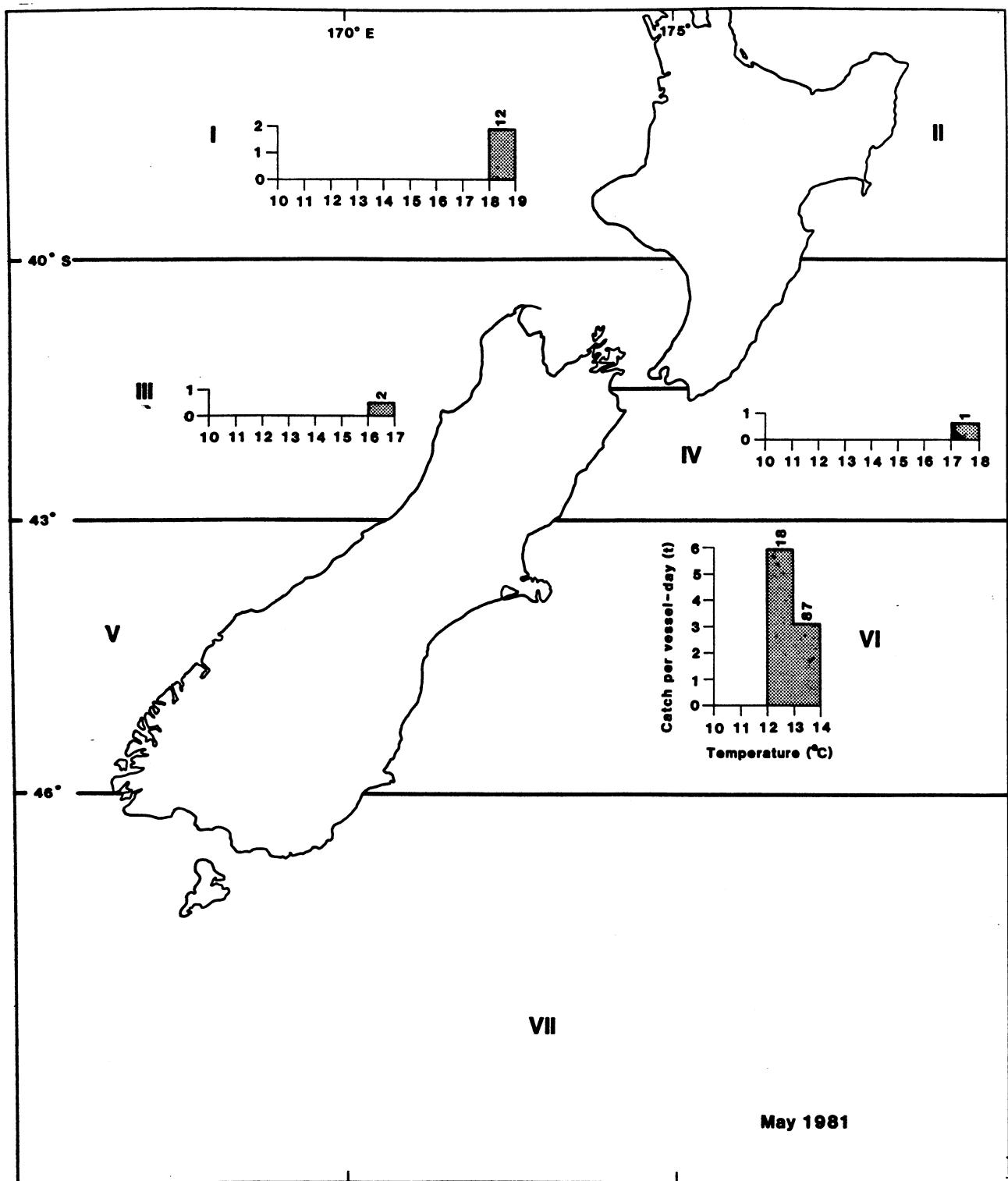


Fig. 7—continued.