

The 1984–85 foreign and joint venture squid jig fishery around New Zealand

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START A NEW SHEET EACH DAY

DATE: Day Month Year
A B

NOT FISHING
無漁業

FISHING OPERATION:

LATITUDE 緯度	LONGITUDE 經度	DEPTH 深度	SEA SURFACE TEMPERATURE 水溫	WIND SPEED m/s	WIND DIRECTION θ_T	TIME FISHING 19:00-00:00
°	°	m	°C		°	Night Hours
0	0	E/W				
	S					

RADIO CALL SIGN:
J-N-14-2

LATITUDE 緯度	LONGITUDE 經度	DEPTH 深度	SEA SURFACE TEMPERATURE 水溫	WIND SPEED m/s	WIND DIRECTION θ_T	TIME FISHING 19:00-00:00
°	°	m	°C		°	Night Hours
0	0	E/W				
	S					

CATCH:

	TOTAL CATCH (KG) 總捕量 (kg)	NUMBER CAUGHT 捕獲數
Arrow Squid 箭狀烏賊	2.14 kg	9
Other Squid 其他	1.1	7
Other (Specify) 其他 (請註明)		Other (Specify) 其他 (請註明)

	NUMBER CAUGHT 捕獲數
Octopus	1
Shark	1
Other (Specify) 其他 (請註明)	Other (Specify) 其他 (請註明)

TRAY TALLY:

Number of trays per tray 入盤數	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-150	151+	TOTAL 合計
Number of trays c/s 每盤入數													
Number of trays 入盤數	WHOLE												
	WITHOUT LEGS 無腳盤												

Fig. 1: Squid logbook return form.

Introduction

New Zealand's arrow squid, *Nototodarus* spp., are among the most abundant commercial species in the 200 n. 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 made in fishing or marketing operations. In 1984-85 it was the second most valuable New Zealand fishery, with export earnings for the year ended December 1985 of \$102 million f.o.b.

The trawl fishery is centred mainly around the Auckland Islands and accounts for about 45% of the total annual squid catch of 70 000-105 000 t. The jig fishery is over a much larger area, from the North Taranaki Bight to Greymouth on the west coast, from Cook Strait down the east coast to the Snares Islands, and as far south as the Auckland 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. There is now also increasing effort by New Zealand vessels. The fishing season is from December to June, and the annual catch varies between 35 000 and 70 000 t. During the 1984-85 season, 152 vessels from Japan, Korea, and Taiwan caught 38 237 t.

Data presented here are from squid jigging logbook returns (Fig. 1). The 1984-85 report is the fifth in a series of annual reports on the squid jig fishery.

Two vessel-days fished by two vessels for which positions were not recorded in the logbooks resulted in a catch of 8 t. A further 282 t were caught by one vessel for which the logbooks are not held. These data have not been included here. One vessel-day fished on Campbell Rise (at 52° 20' S 169° 44' E) returned a nil catch and is not shown here because the area is outside the boundaries of the maps used. One vessel fished experimentally in the pre-season period from 14 November to 9 December and caught 11 t. Summaries of these data have not been included here.

For the purposes of these reports, the New Zealand region has been divided into eight areas based on distribution of fishing effort, not on existing EEZ management zones, which are less applicable to the squid jig fishery. Data from fishing around the Chatham Islands are shown on an inset and have been included in area VI for the size, temperature, and depth analyses.

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 1981-82 have been divided into east and west coast values only, pending further analysis.

Figure 2 shows the total catch (to the nearest tonne) for the whole season by 1/2° squares.

Fishing effort has been measured as catch per vessel-day, where one vessel-day is a 24 hour period during which at least some fishing took place. Catch and effort data have been summarised in Tables 2-5 and Figs. 3 and 4.

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 licensed and joint-venture vessels have been used because only these vessels consistently use standard 8.0-8.5 kg trays. (Of the total fleet of 152 vessels, 92 were Japanese or Japanese 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)		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 <0.1%	40 499	2.5						
1980-81	16 656 44%	21 095 56%	52	37 803	3.5						
		Area									
	I	II	III	IV	V						
6	1980-81	983 2.6%	0 53.2%	20 110 0.2%	89 41.8%	0 2.1%	15 789 41.8%	780 2.1%	21 227 47.5%	1 261 2.8%	52 0.1%
	1981-82	5 608 12.6%	0 37.0%	16 498 <0.1%	16 0.1%	0 0.1%	21 227 47.5%	1 261 2.8%	39 0.1%	44 649	3.3
	1982-83	9 962 19.4%	0 56.0%	28 750 <0.1%	10 0.1%	0 0.1%	8 212 16.0%	4 376 8.5%	5 <0.1%	51 315	2.8
	1983-84	1 637 2.3%	0 6.4%	4 427 <0.1%	2 0.1%	4 <1%	16 335 23.5%	47 045 67.7%	1 <0.1%	57 0.1%	3.3
	1984-85	591 1.5%	0 13.3%	5 099 <0.1%	<1 0.1%	0 0.1%	14 412 37.7%	18 127 47.4%	0 8	38 237† <0.1%	2.5

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

Provisional figures.

Total does not include 281.5 t from one vessel for which logbooks are not held.

TABLE 2: Squid jigging catch and effort data by nation, 1984-85

	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	No. of vessel-days with nil catch	No. of vessel-days with nil catch, but no hours given†	Catch (+) per vessel-day
Japan	85	8 734	126 165	16	166	1 017	2	23 827.0	2.7
Korea	6	582	7 616	4	40	0	1 082.0	1.9	
Joint venture	61	6 067	90 707	375	71	629	1	13 527.6	2.2
Total	152	15 383	224 488	395	242	1 686	3	38 236.6†	2.5

* Included in total A.

† Included in total B.

‡ Total does not include 281.5 † from one vessel for which logbooks are not held.

TABLE 3: Squid jigging catch and effort data from Japanese vessels, 1984-85

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	No. of vessel-days with nil catch, but no hours given†	Catch (+) per vessel-day
Dec	1 166	16 478	1	5	23	0	3 752.9	3.2
Jan	2 321	32 220	4	26	207	0	7 106.9	3.0
Feb	1 617	21 501	4	63	413	1	4 185.0	2.6
Mar	1 811	27 318	3	20	98	1	5 391.9	3.0
Apr	1 411	21 433	2	25	129	0	2 717.7	1.9
May	408	7 215	2	27	147	0	672.6	1.6

* Included in total A.

† Included in total B.

TABLE 4: Squid jigging catch and effort data from Korean vessels, 1984-85

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 vessel-days with nil catch, but no † hours given	Total catch (†)	Catch (†) per vessel-day
				No. of vessel-days with nil catch	hours fishing with nil catch	nil catch			
Dec	28	321	0	0	0	0	0	30.9	1.1
Jan	158	2 089	0	0	0	0	0	325.0	2.1
Feb	149	1 854	2	3	24	0	0	235.4	1.6
Mar	161	2 250	2	0	0	0	0	367.2	2.3
Apr	86	1 102	0	2	16	0	0	123.5	1.4

* Included in total A.

† Included in total B.

TABLE 5: Squid jigging catch and effort data from joint-venture vessels, 1984-85

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 vessel-days with nil catch, but no † hours given	Total catch (†)	Catch (†) per vessel-day
				No. of vessel-days with nil catch	hours fishing with nil catch	nil catch			
Dec	419	6 213	7	1	7	0	0	1 027.7	2.5
Jan	1 493	21 616	84	10	63	1	1	3 385.0	2.3
Feb	1 290	18 627	91	29	235	0	0	2 469.6	1.9
Mar	1 490	22 810	99	11	146	0	0	3 789.9	2.5
Apr	1 210	18 761	77	16	132	0	0	2 422.6	2.0
May	165	2 680	4	4	46	0	0	232.8	1.4

* Included in total A.

† Included in total B.

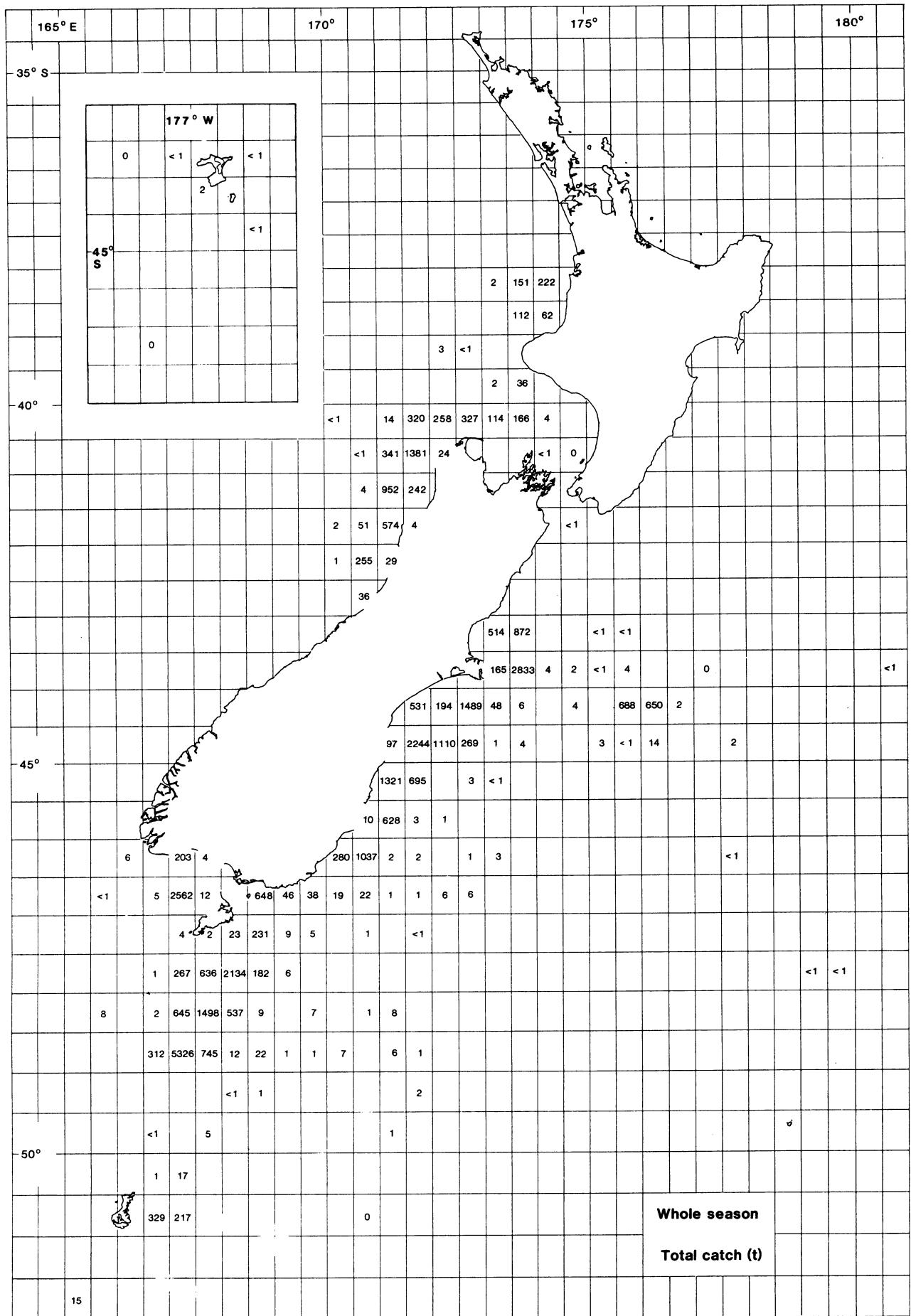


Fig. 2: Total catch (t) for the whole season by $\frac{1}{2}^\circ$ squares.

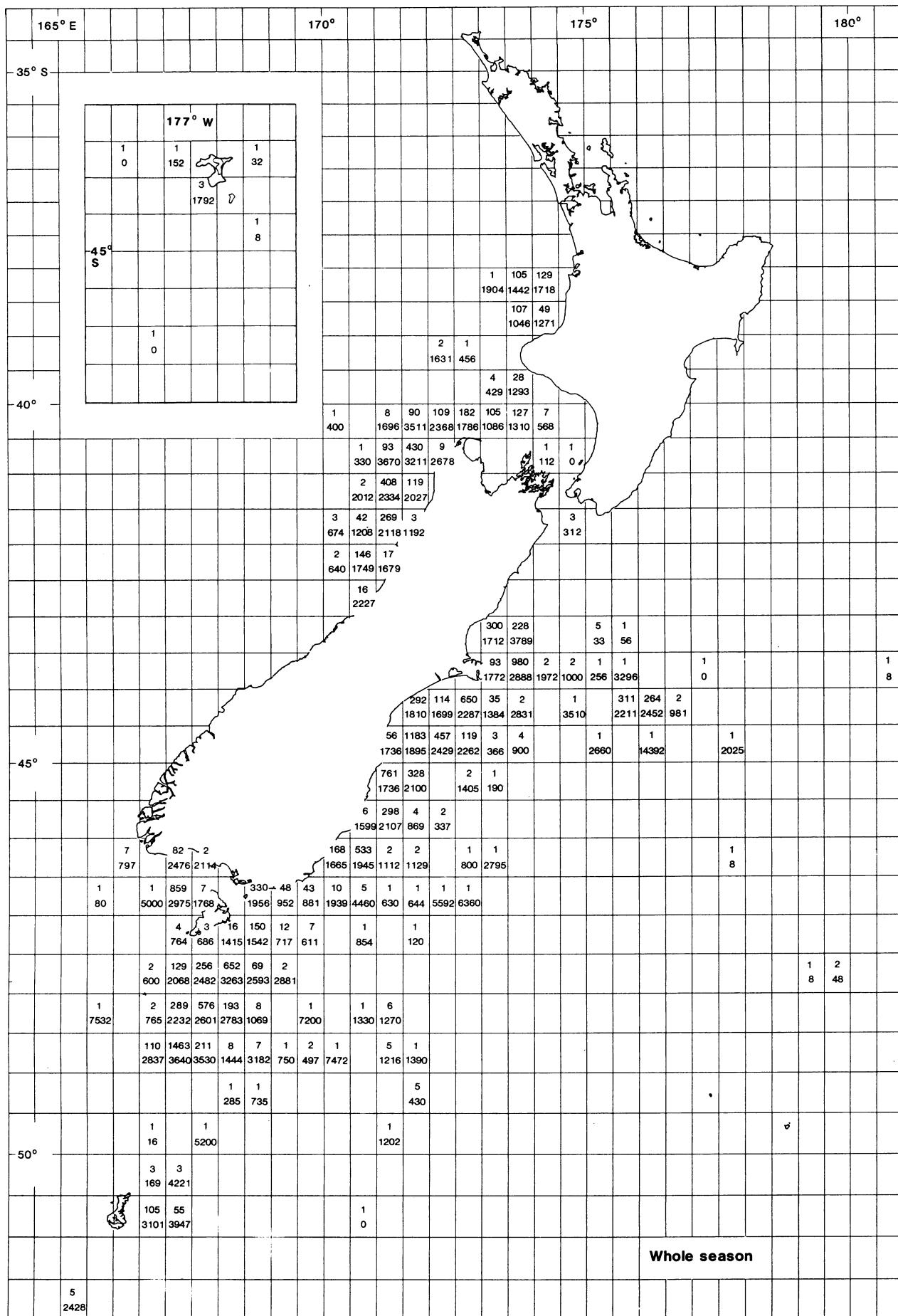


Fig. 3: Seasonal summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $\frac{1}{2}^{\circ}$ squares.

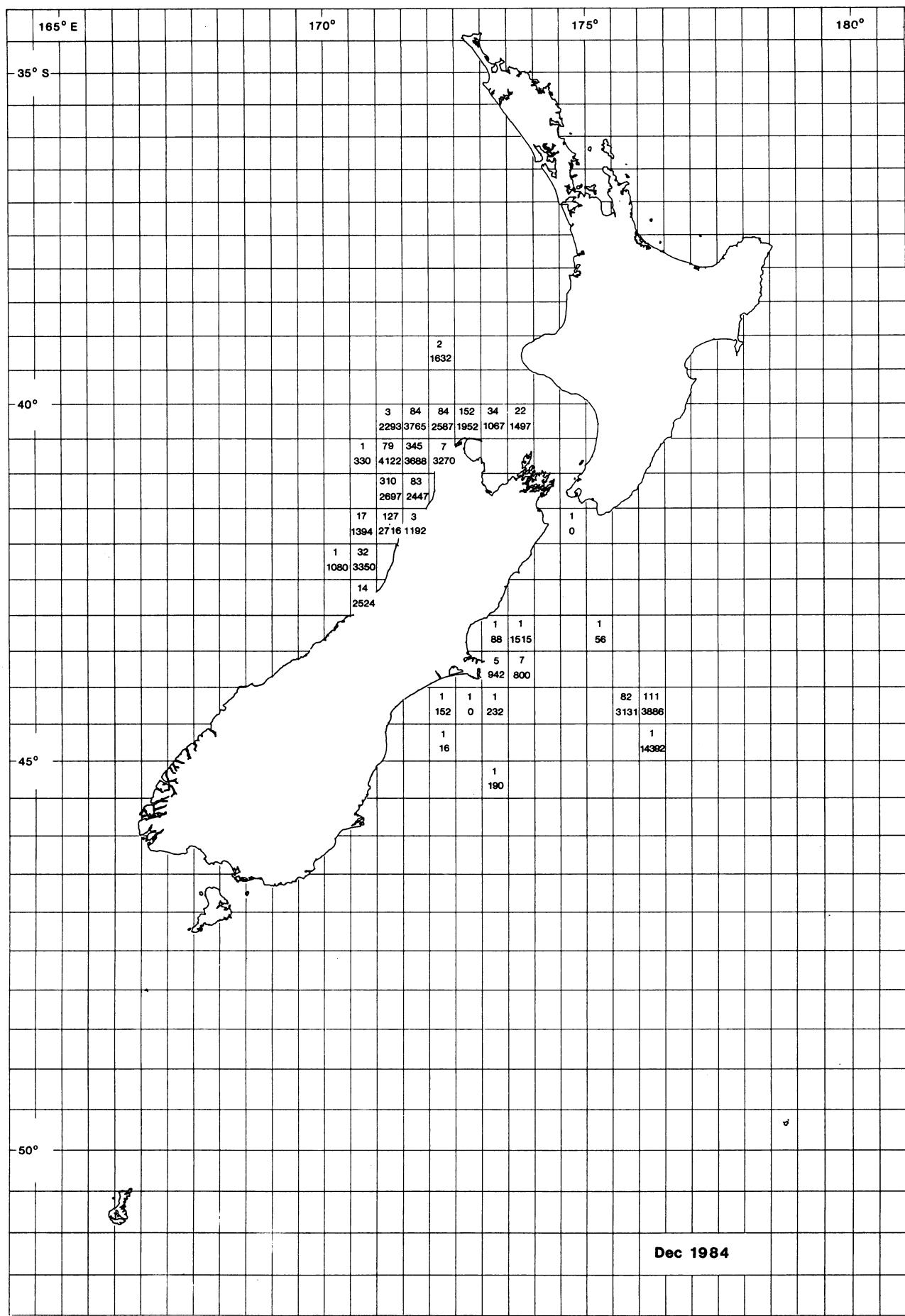


Fig. 4: Monthly summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by 1/2° squares.

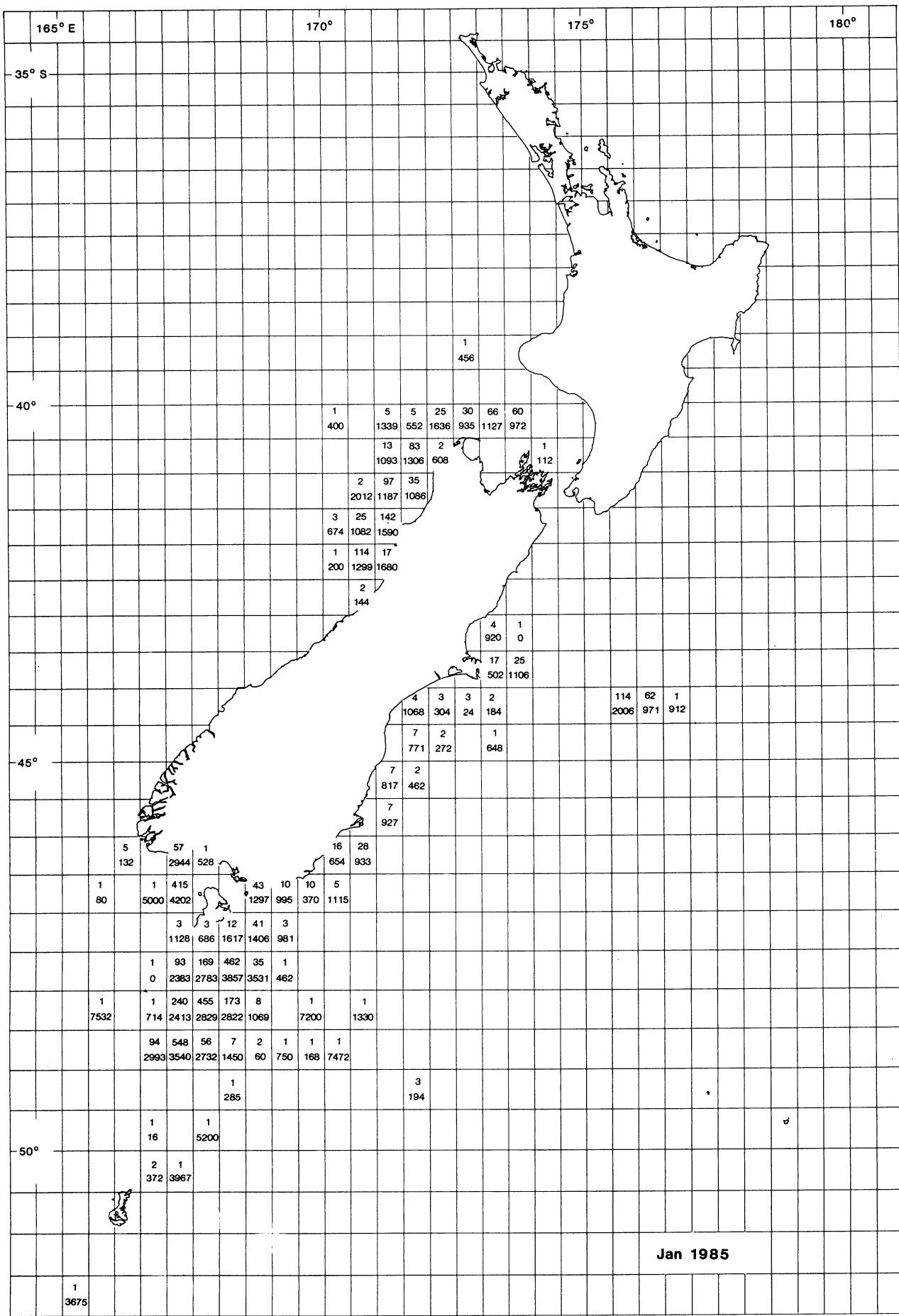


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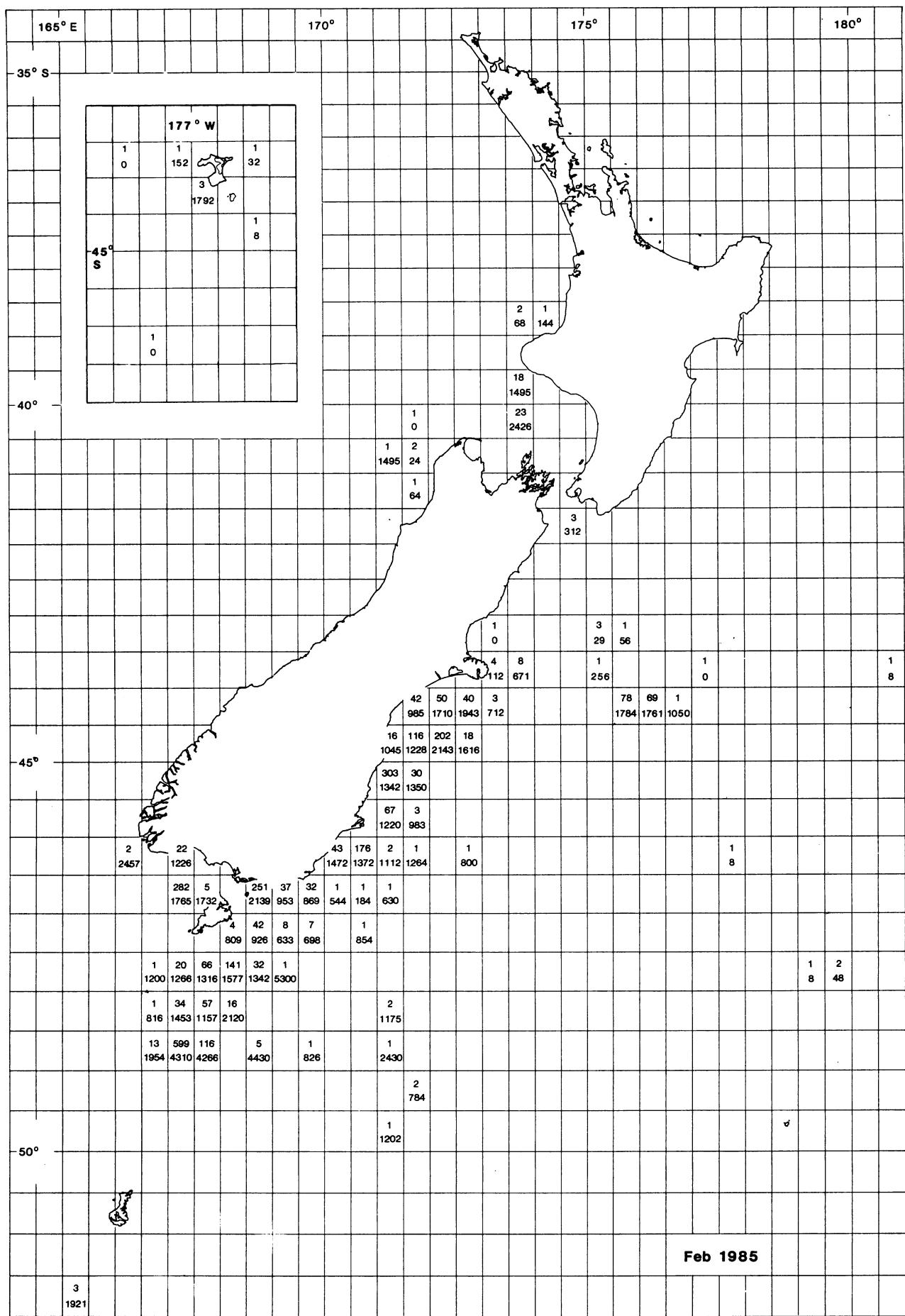


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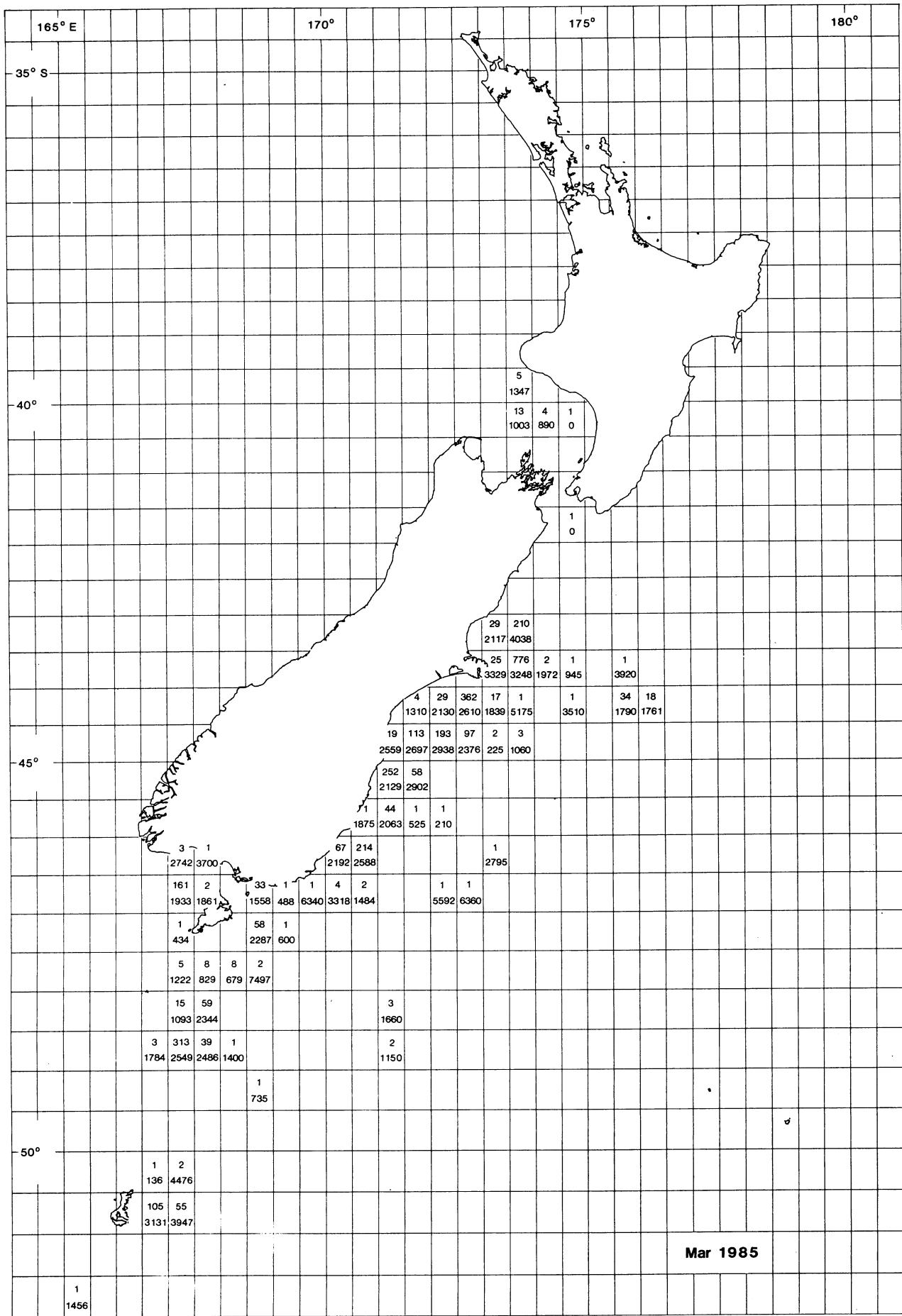


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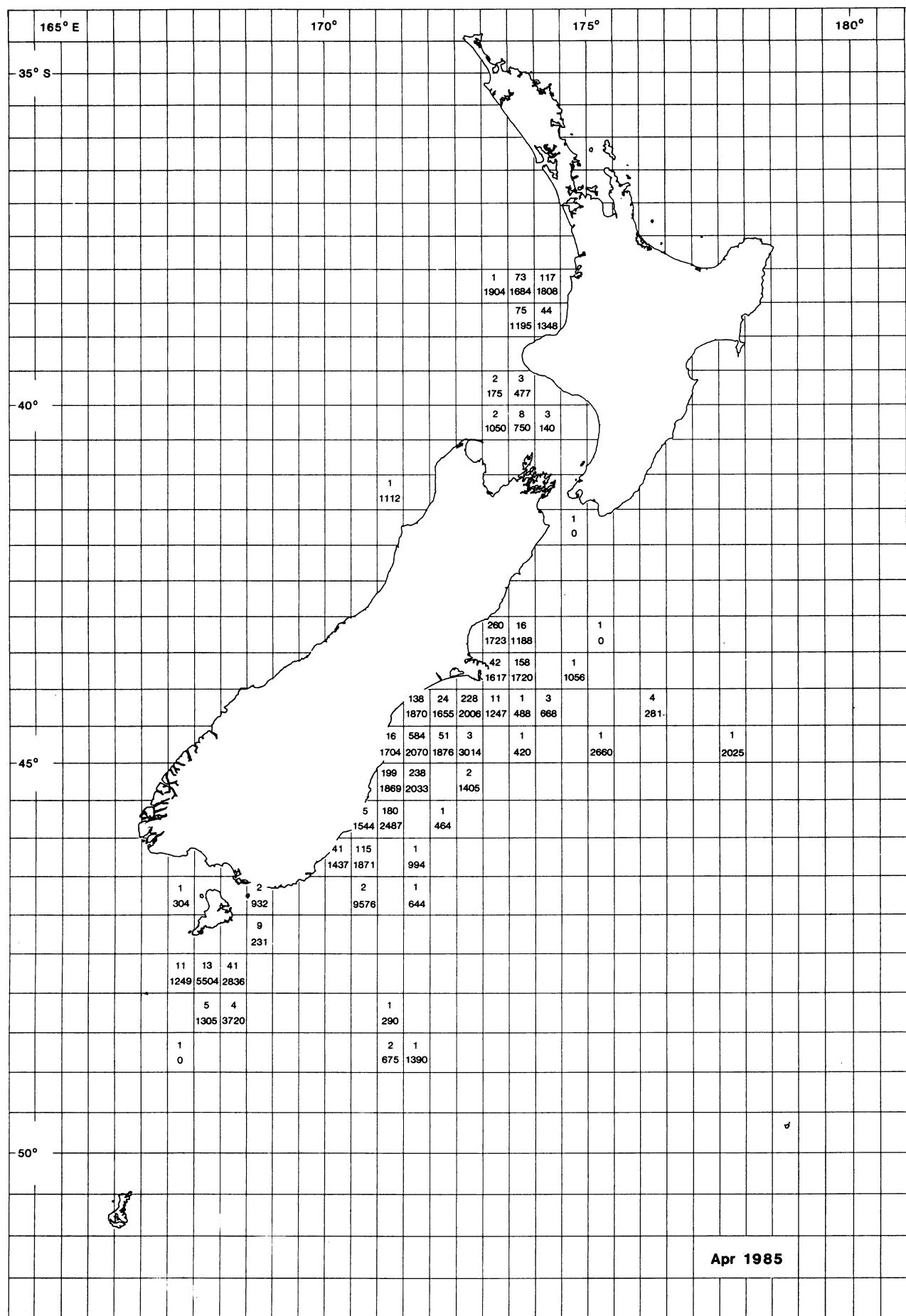


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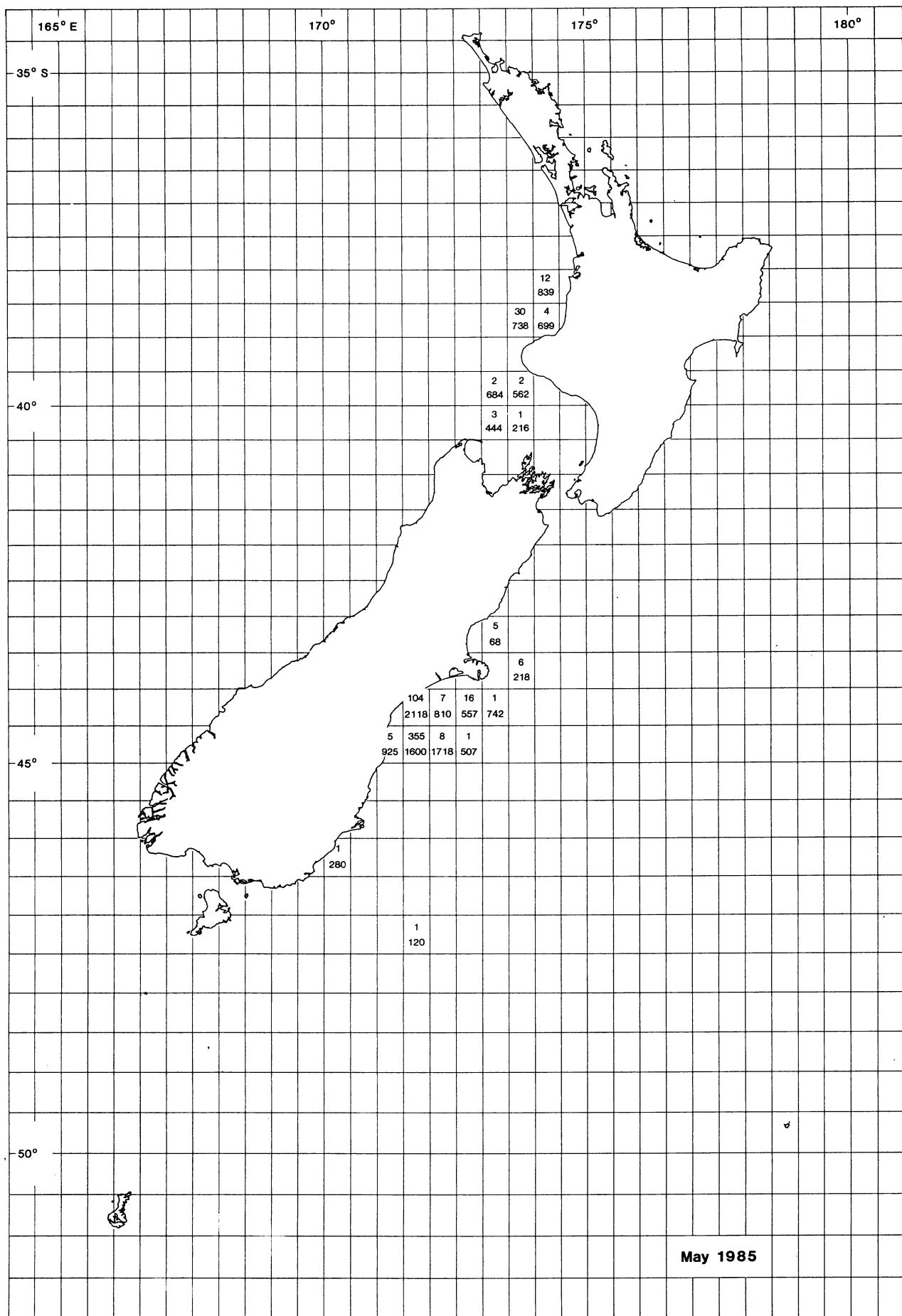


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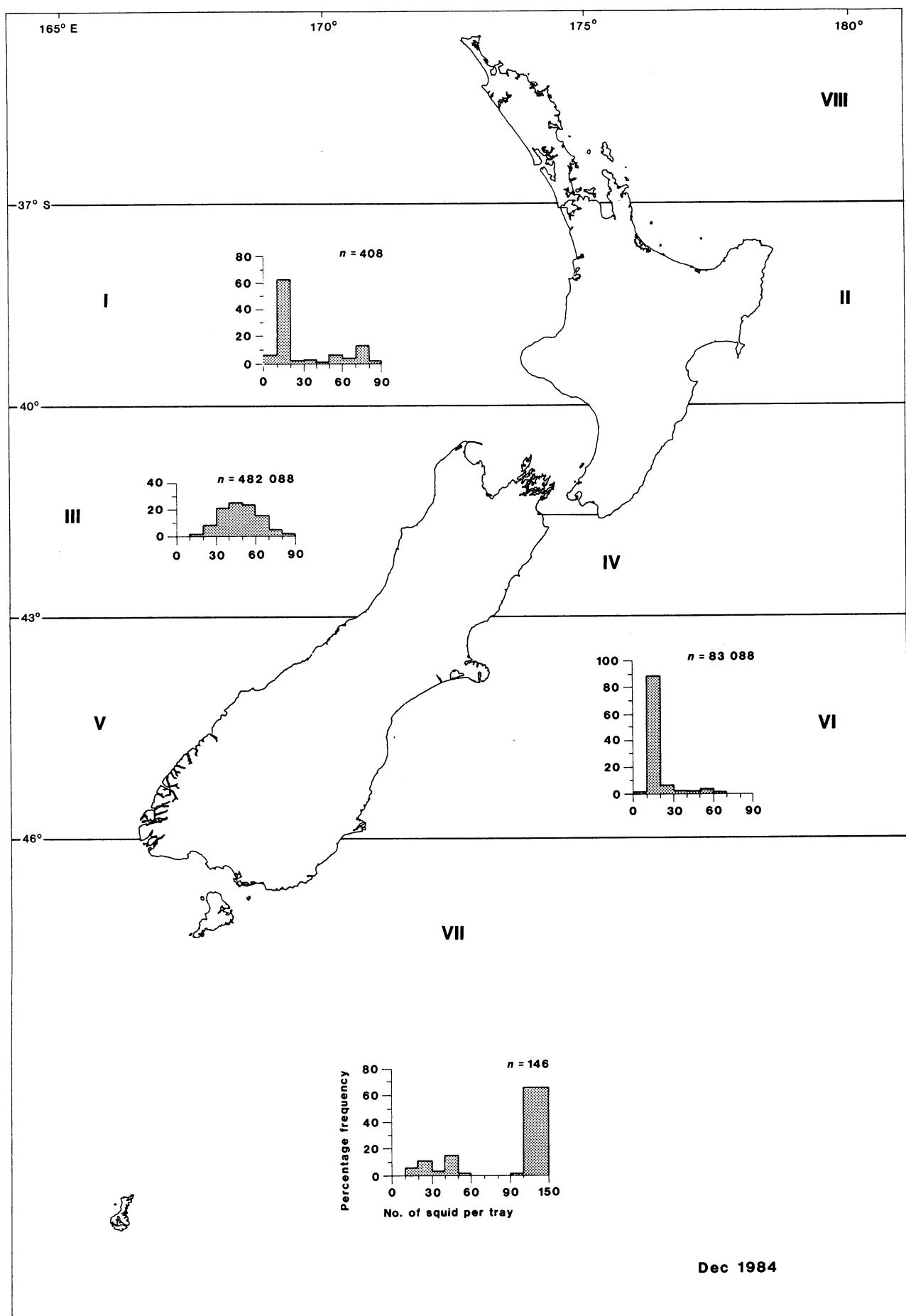


Fig. 5: Percentage frequency of the number of squid per tray by month for areas I-VII (n = total number of trays). (The 100- to 150-squid-per-tray classes have been pooled.)

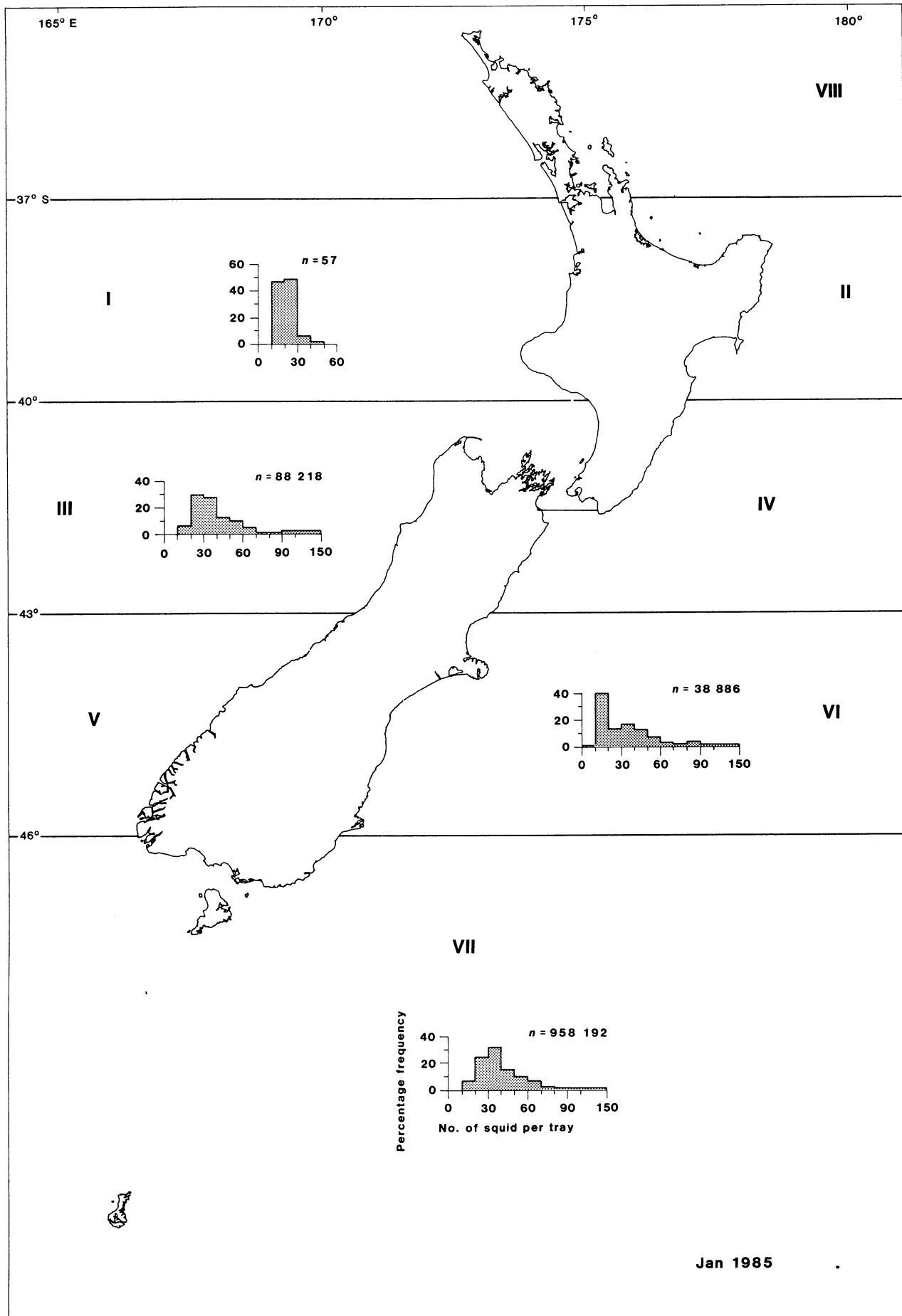


Fig. 5—continued.

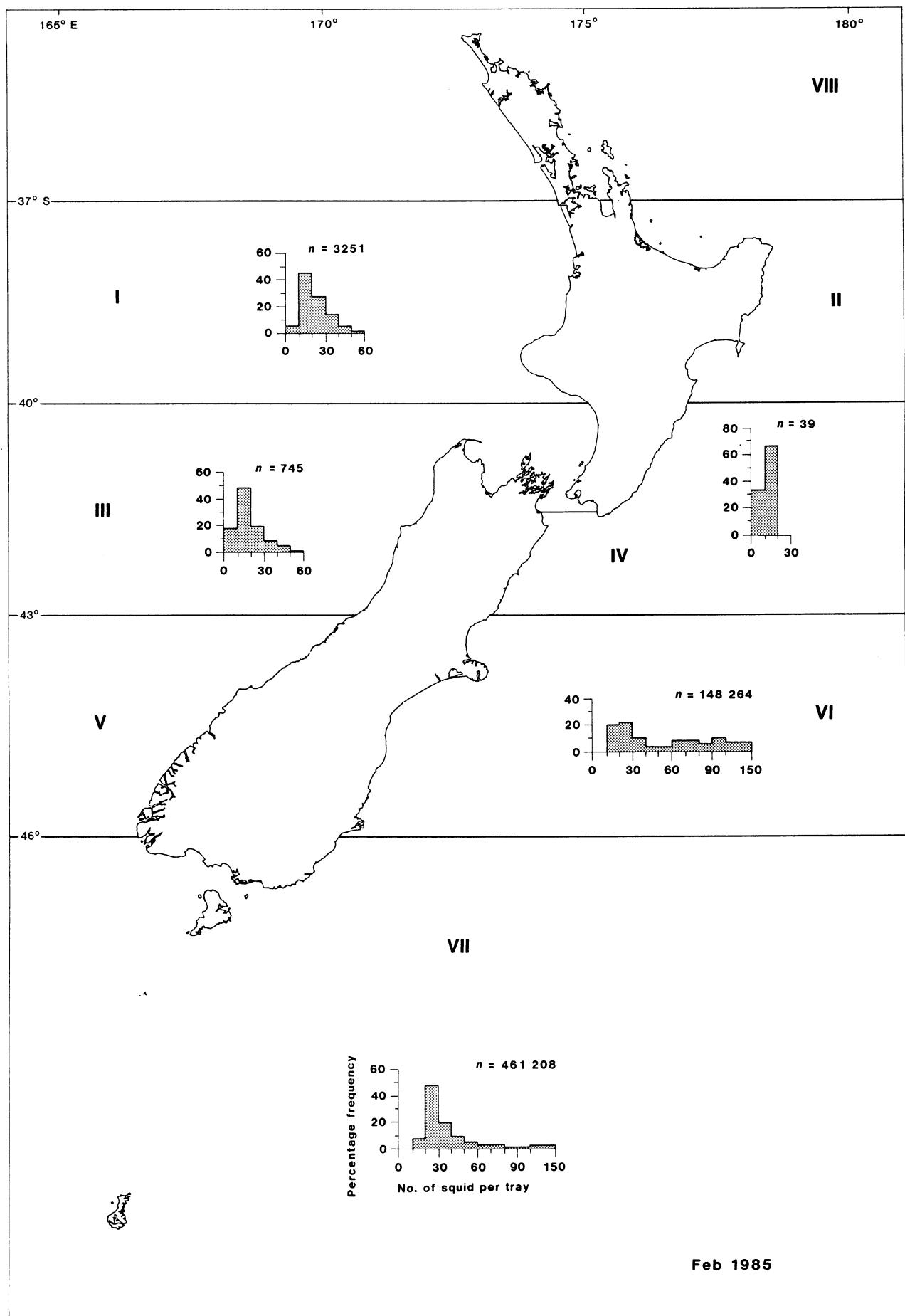


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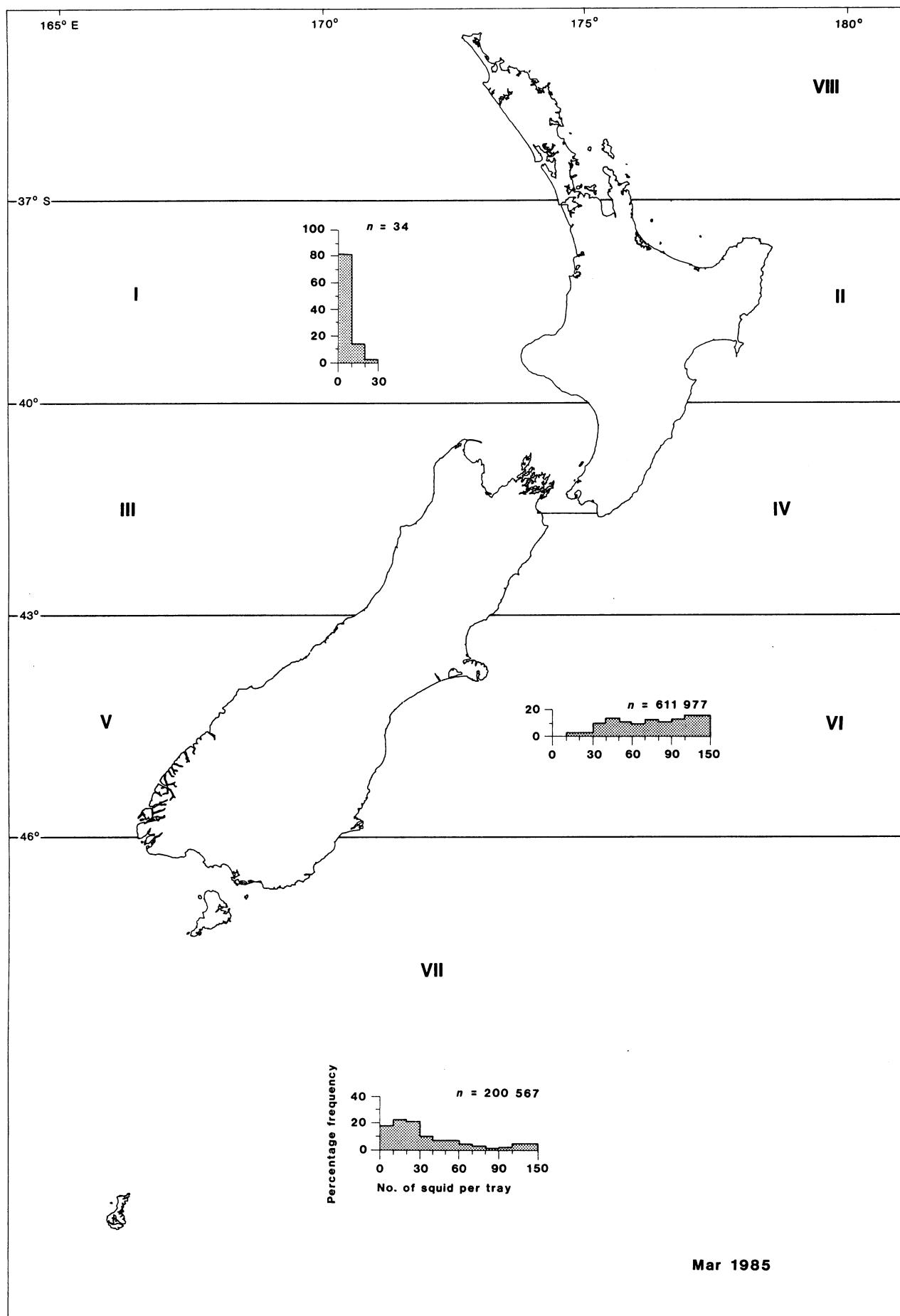


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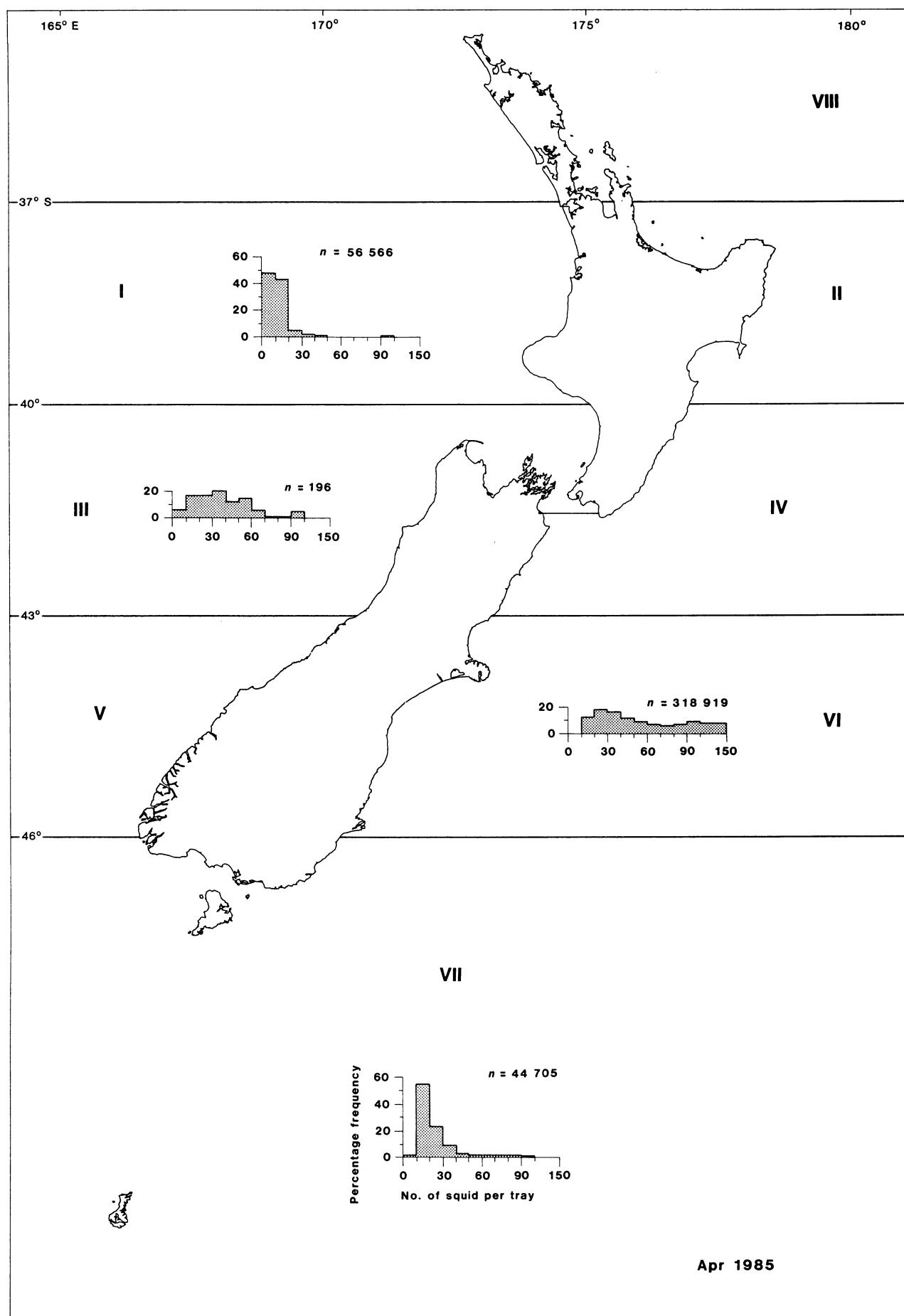


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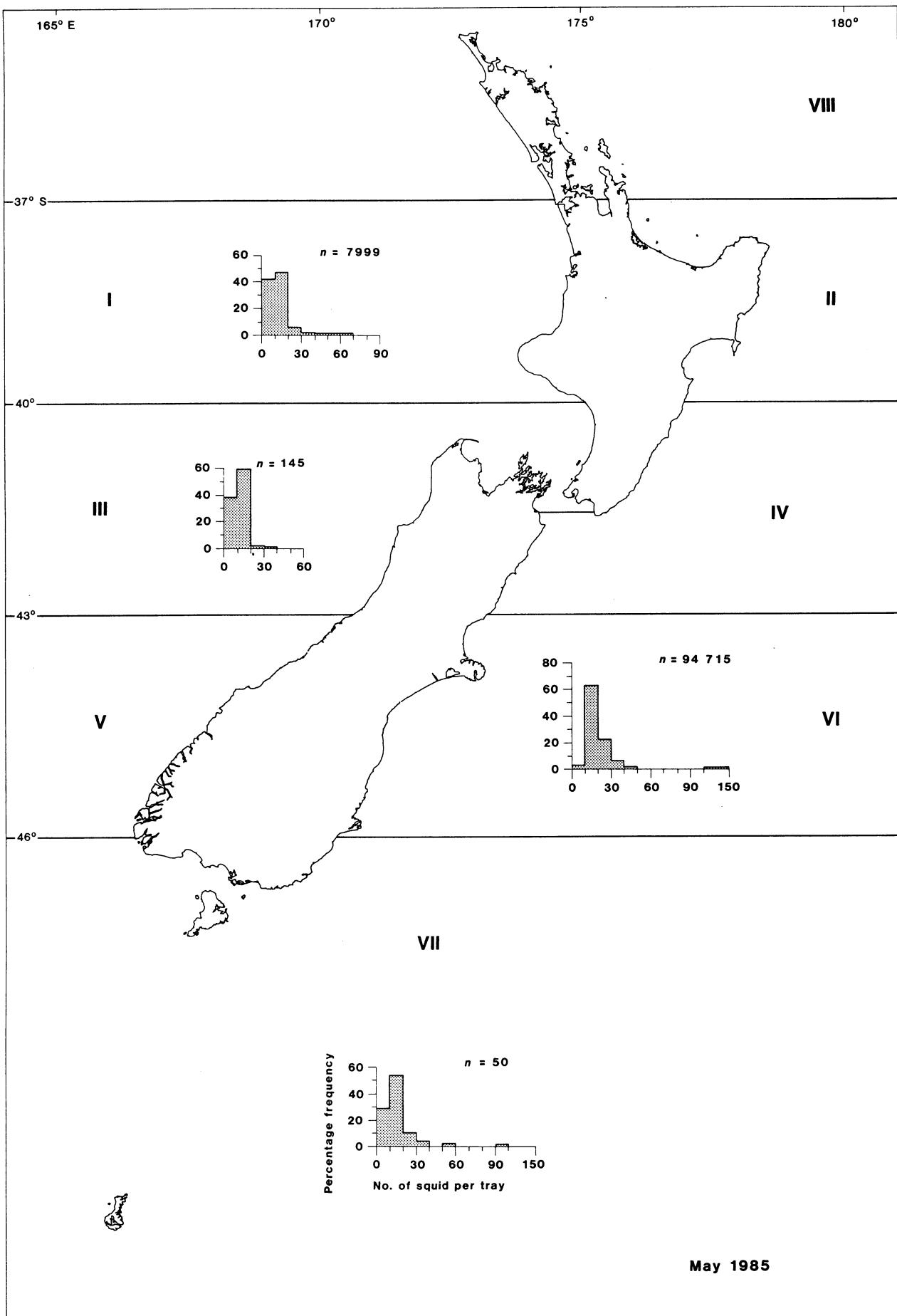


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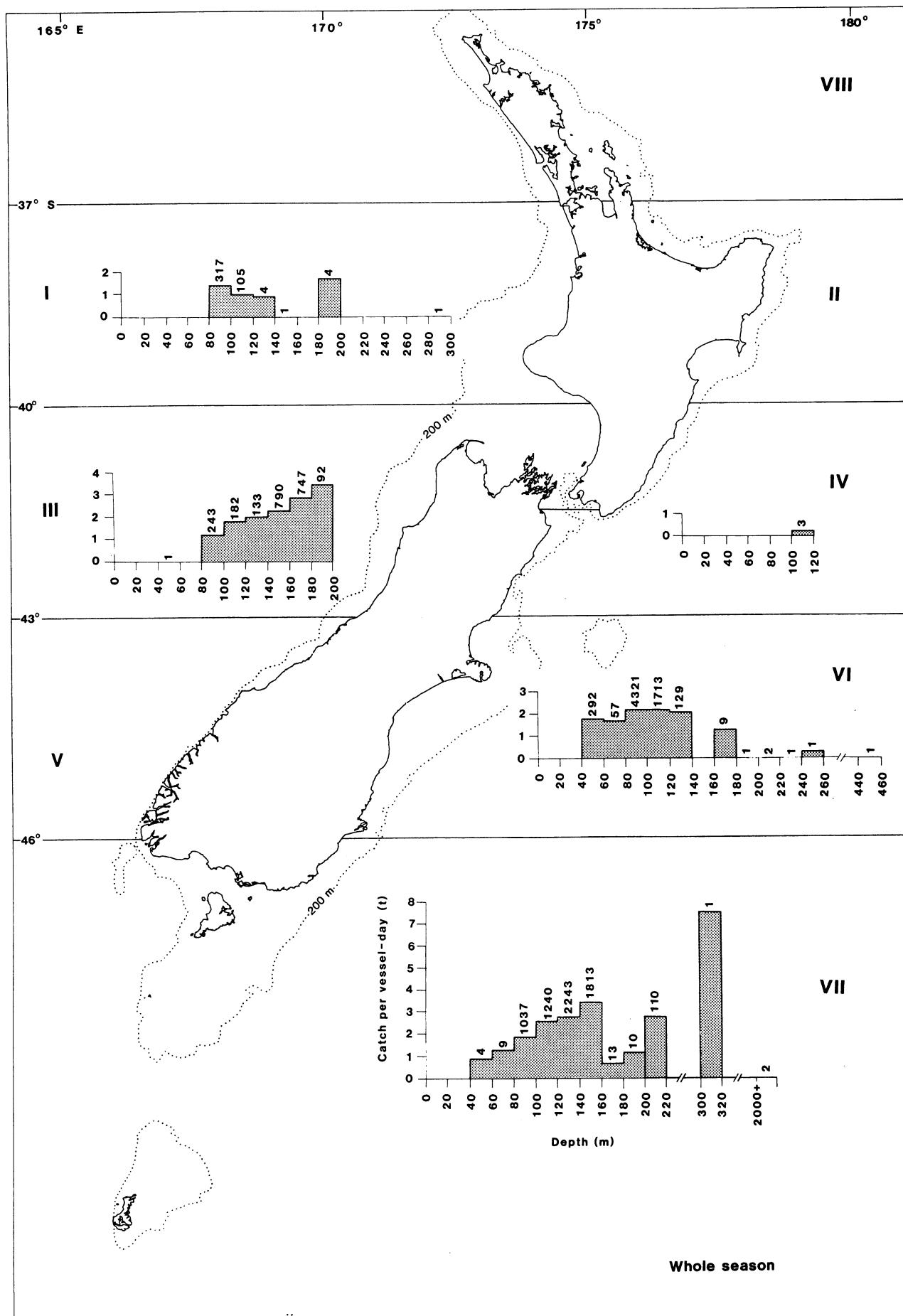


Fig. 6: Seasonal summary of catch (t) per vessel-day by mean bottom depth of fishing grounds in areas I-VIII. (Individual figures above the histograms are the number of vessel-days fished in each depth range; a number above a nil value indicates either a nil catch or a catch of less than 100 kg per vessel-day.)

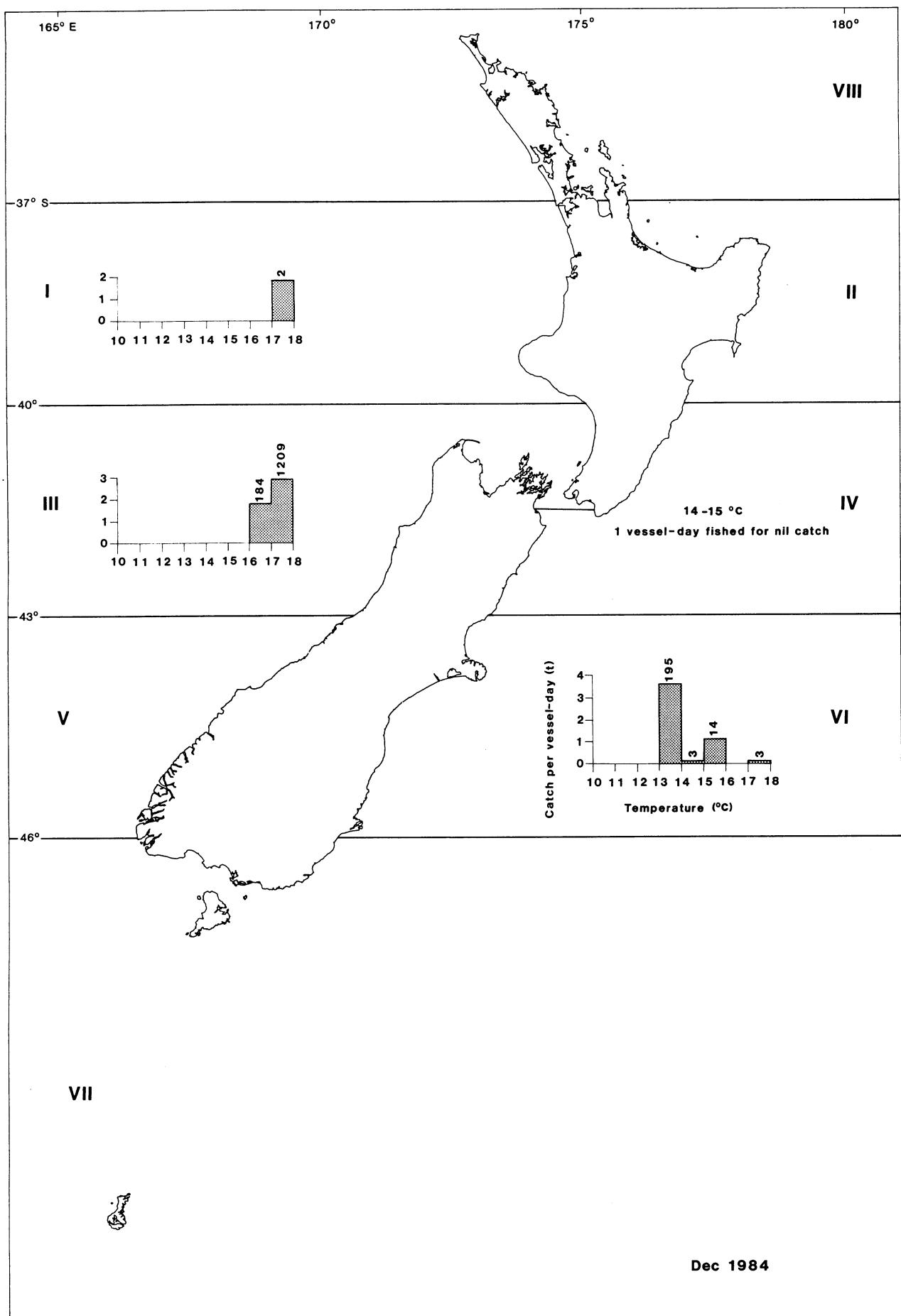


Fig. 7: Monthly summary of catch (t) per vessel-day by mean sea surface temperature (°C) of fishing grounds in areas I-VIII. (Individual figures above the histograms are the number of vessel-days fished in each temperature range; a number above a nil value indicates either a nil catch or a catch of less than 100 kg per vessel-day.)

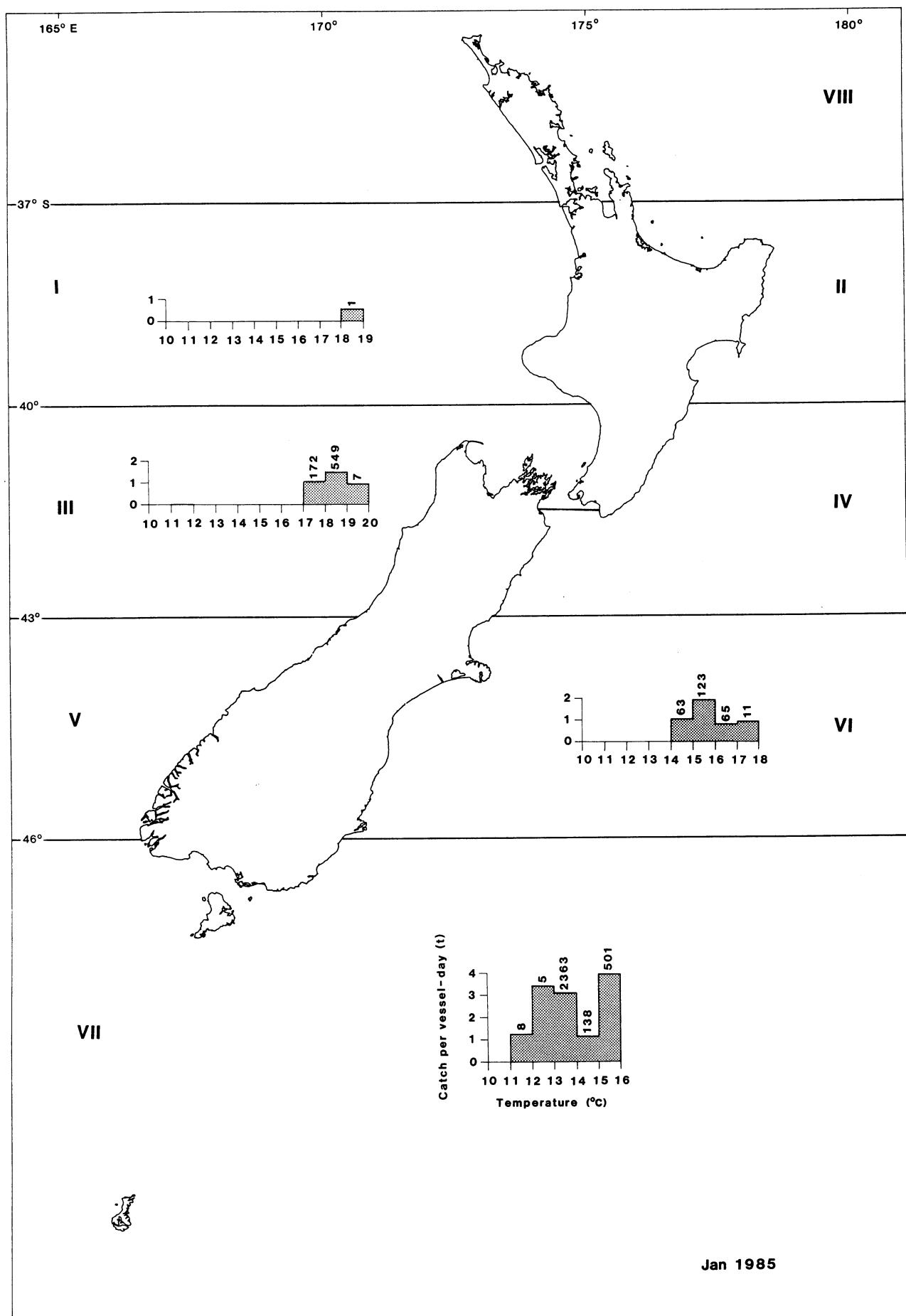


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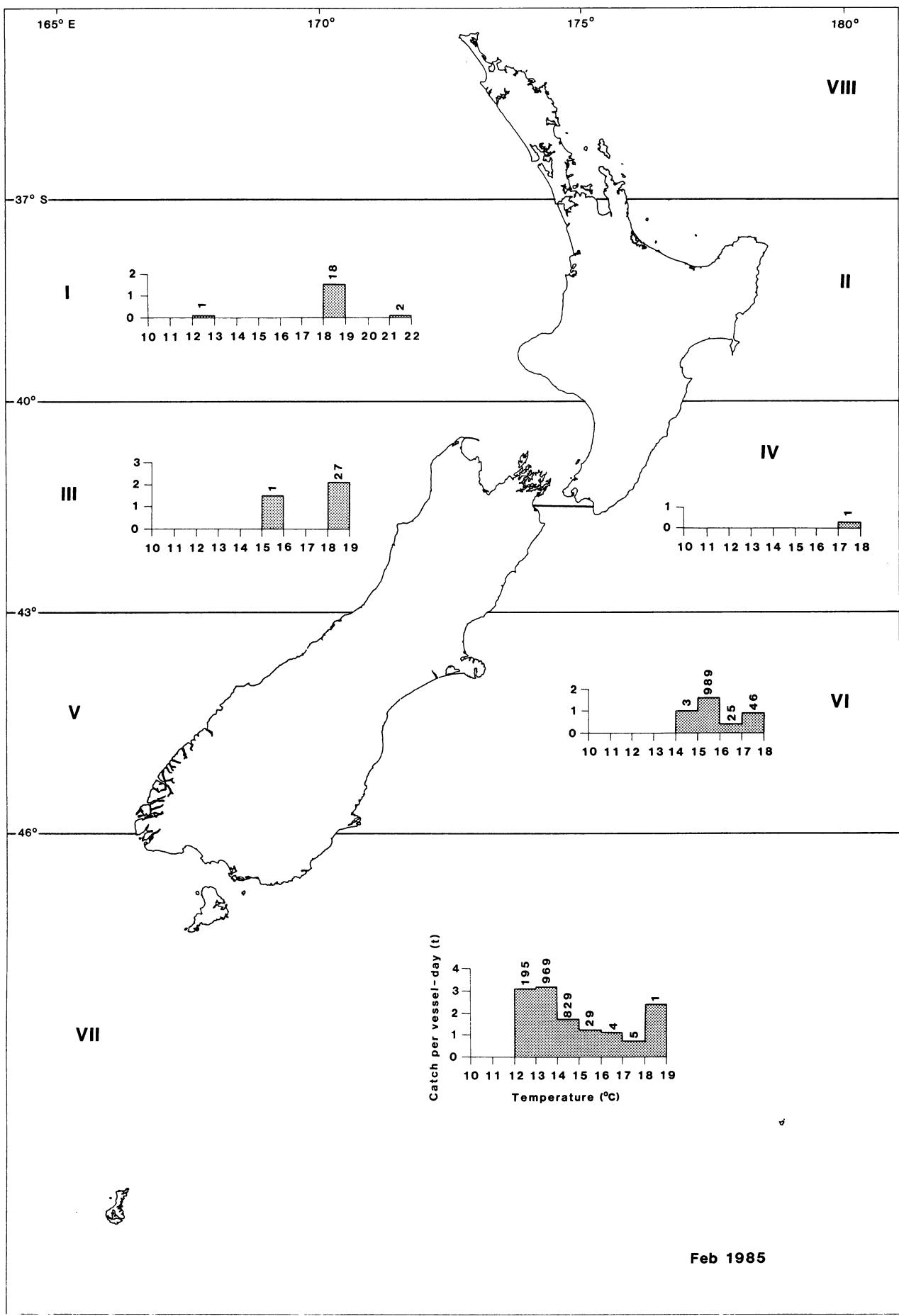


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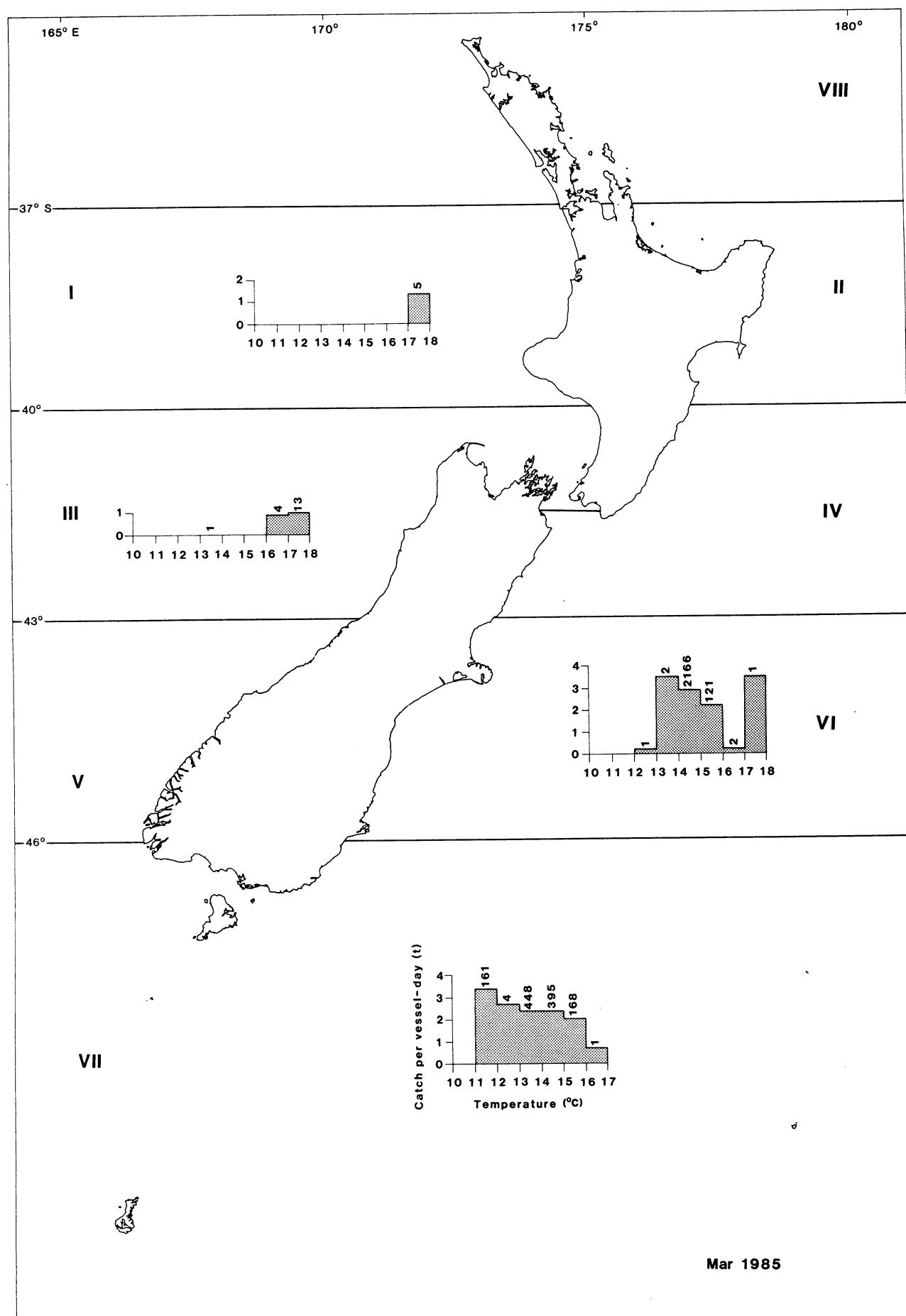


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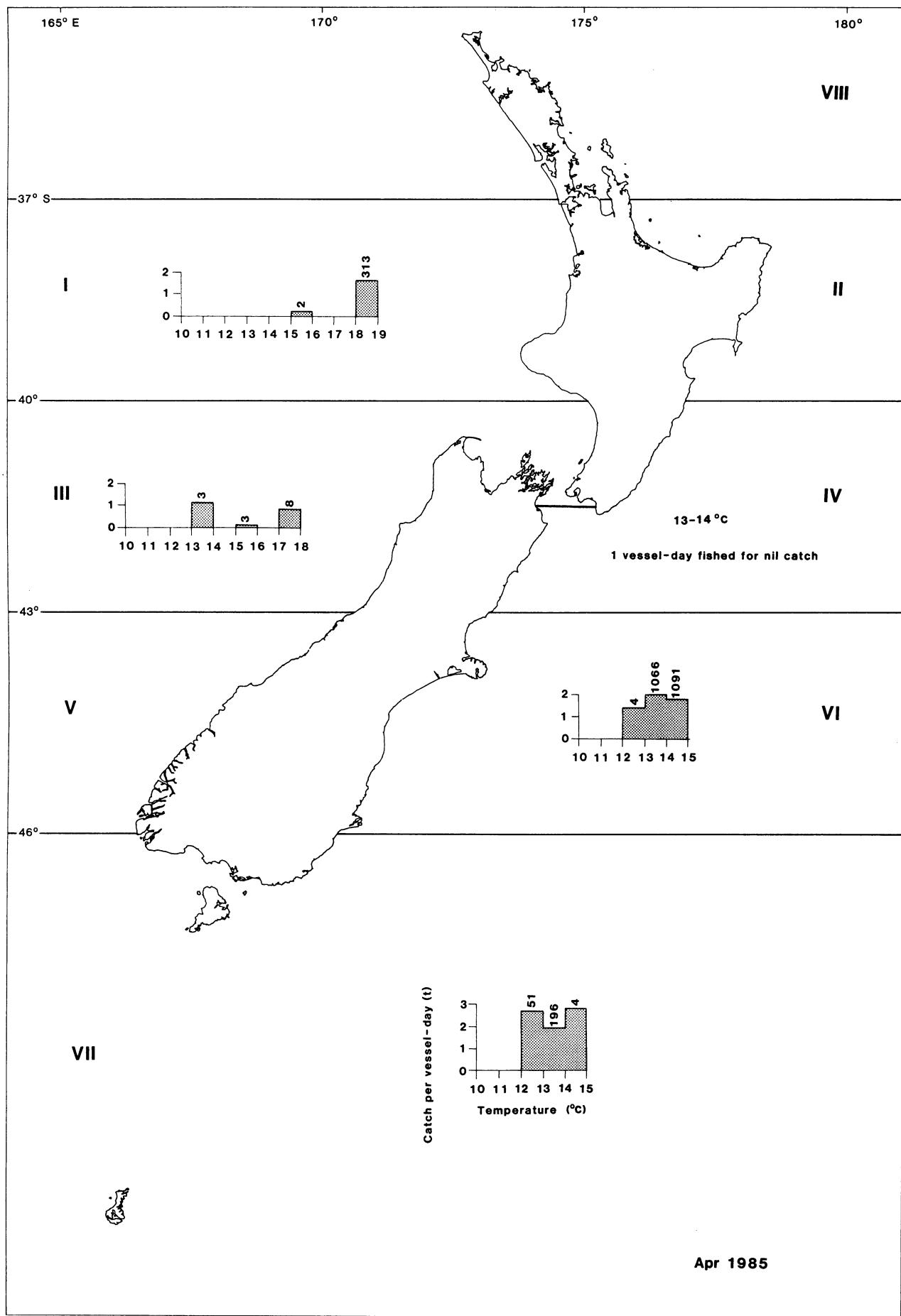


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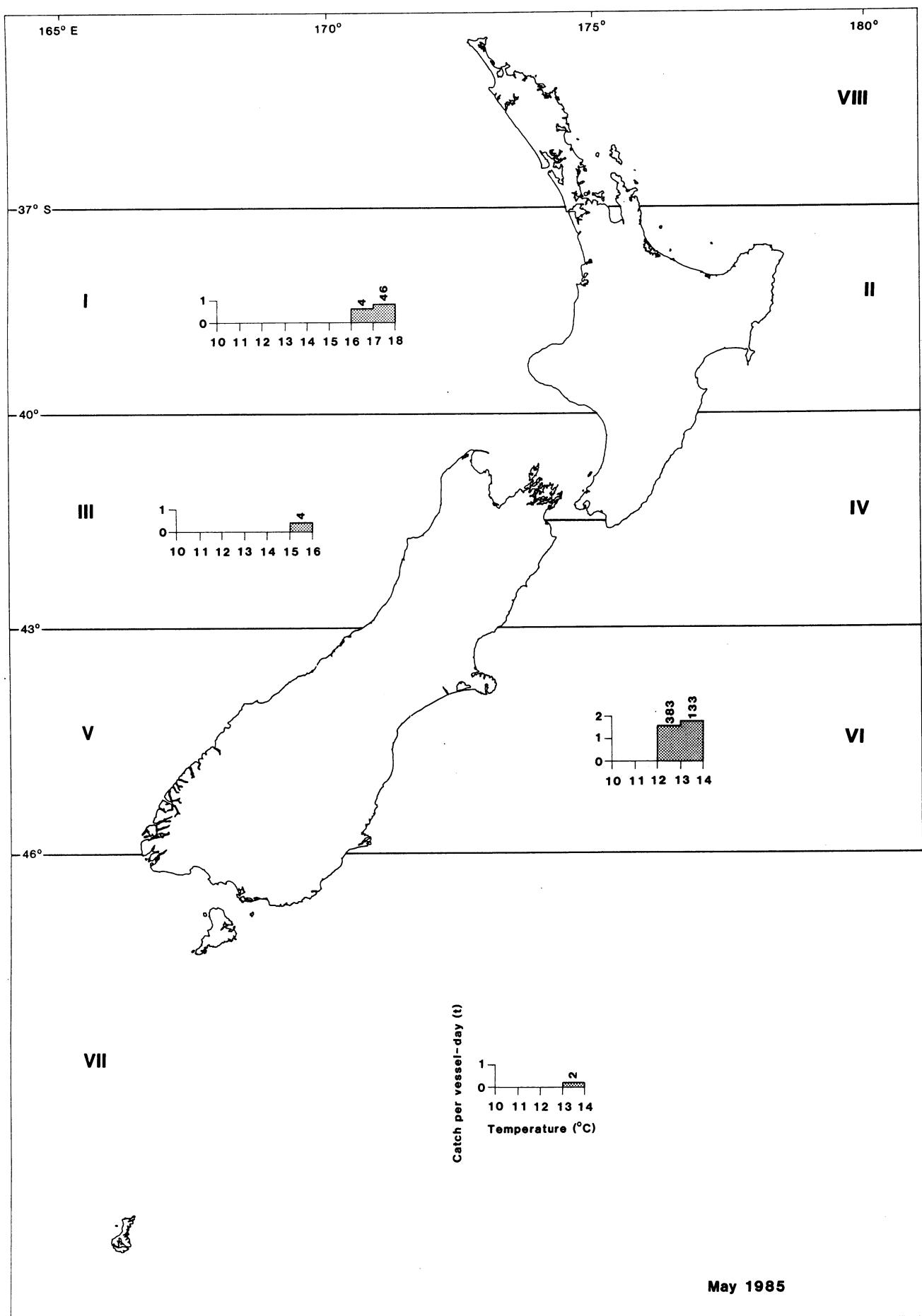


Fig. 7—continued.