

The 1983–84 foreign and joint venture squid jig fishery around New Zealand

by
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START A NEW SHEET EACH DAY

DATE: Day Month Year
Day Month Year

RADIO CALL SIGN:
J-N-71-2

NOT FISHING

FISHING OPERATION:

LATITUDE <input type="text"/>	LONGITUDE <input type="text"/>	DEPTH <input type="text"/>	SEA SURFACE TEMPERATURE <input type="text"/>	WIND SPEED m/s <input type="text"/>	WIND DIRECTION <input type="text"/>	TIME FISHING <input type="text"/>
° <input type="text"/>	' <input type="text"/>	Bottom <input type="text"/>	Top <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
° <input type="text"/>	' <input type="text"/>	Lure <input type="text"/>	Bottom <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
° <input type="text"/>	' <input type="text"/>	E/W <input type="text"/>	N/S <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
S <input type="text"/>						

CATCH:

	TOTAL CATCH (KG) <input type="text"/>
Arrow Squid <input type="text"/>	<input type="text"/>
Other Squid <input type="text"/>	<input type="text"/>
Other (Specify) <input type="text"/>	<input type="text"/>

	NUMBER CAUGHT <input type="text"/>
Octopus <input type="text"/>	<input type="text"/>
Shark <input type="text"/>	<input type="text"/>
Other (Specify) <input type="text"/>	<input type="text"/>

TRAY TALLY:

Number of squid per tray <input type="text"/>	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-150	151+ <input type="text"/>	TOTAL <input type="text"/>
Number of trays c/s <input type="text"/>													
WITHOUT LEGS <input type="text"/>													

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. It is the single most valuable New Zealand fishery, with export earnings for the 1983-84 season of \$90 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 usually 40 000-50 000 t. However, for the 1983-84 season, 177 vessels from Japan, Korea, and Taiwan caught 69 500 t.

Data presented here are from squid logbook returns (Fig. 1). The 1983-84 report is part of a series of annual reports which will eventually be extended to include data from previous seasons.

For the purpose 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. This year an eighth zone was added to show fishing effort from Great Barrier Island to Cape Brett. This area was fished only in February.

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 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 $1/2^\circ$ squares. The square marked by an asterisk is totally within the 12-mile limit. Positions in this square were used as they appeared in the logbooks; however, it is possible that they were a result of recording errors.

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-five vessel-days fished (by 15 vessels), for which positions were not recorded in the logbooks, resulted in a total catch of 57.1 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 licensed 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 177, 110 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	East coast	West coast	Catch (t)	Catch (t)	Total catch (t)	Catch (t) per vessel-day
			with position not given	with position not given	(t)	vessel-day
1978-79	19 134 79%*	4 954 21%	0	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	
			Area			
	I	II	III	IV	V	VI
1981-82	5 601 13%	0	16 495 37%	16 <1%	0	21 283 48%
1982-83	9 961 19%	0	28 749 56%	10 <1%	0	8 210 16%
1983-84	1 637 2%	0	4 427 6%	2 <1%	4 <1%	16 335 24%
			VII	VIII		
					39‡	
					44 649	3.3
					51 315	2.8
					69 508	3.3
					57 <1%	

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

† Provisional figures.

‡ This figure was incorrectly given in the 1981-82 report as 32 t.

TABLE 2: Squid jigging catch and effort data by nation, 1983-84

	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	92	11 257	173 097	69	379	2 655	9	39 198.0	3.4
Korea	6	705	8 032	137	18	176	5	2 177.5	3.0
Joint venture	79	8 789	131 526	586	144	1 187	1	28 133.2	3.1
Total	177	20 751	312 655	792	541	4 018	15	69 508.7	3.3

* Included in total A.

† Included in total B.

TABLE 3: Squid jigging catch and effort data from Japanese vessels, 1983-84

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†	Total catch (+)	Catch (+) per vessel-day
Dec	2 039	29 008	22	109	763	2	3 057.1	1.4	
Jan	2 391	37 595	21	106	926	5	7 291.1	2.9	
Feb	2 246	36 241	9	25	156	0	9 500.5	4.1	
Mar	2 158	31 455	11	36	219	1	14 382.4	6.5	
Apr	1 564	24 096	3	80	466	1	3 209.4	1.9	
May	855	14 662	3	23	125	0	1 757.2	2.0	
Jun	4	40	0	0	0	0	1.0		

* Included in total A.

† Included in total B.

TABLE 4: Squid jigging catch and effort data from Korean vessels, 1983-84

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	No. of vessel-days with nil catch, but no † hours given	Catch (t) per vessel-day
Dec	59	650	9	2	6	1	35.4	5.8
Jan	157	1 387	53	2	0	2	361.6	2.2
Feb	142	1 602	28	3	3	2	345.8	2.3
Mar	152	1 753	24	24	0	0	1 148.8	7.4
Apr	118	1 539	12	1	12	0	222.5	1.8
May	77	1 101	11	140	8	0	63.0	0.7

* Included in total A.
† Included in total B.

TABLE 5: Squid jigging catch and effort data from joint-venture vessels, 1983-84

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	No. of vessel-days with nil catch, but no † hours given	Catch (t) per vessel-day
Dec	1 199	16 742	73	35	258	0	1 225.8	0.9
Jan	2 026	30 687	127	33	255	0	4 997.2	2.4
Feb	1 879	28 657	126	30	231	1	6 170.6	3.2
Mar	1 874	27 269	143	16	163	0	11 561.8	6.1
Apr	1 520	23 338	115	20	162	0	3 620.2	2.3
May	291	4 833	2	10	118	0	557.4	1.8

* Included in total A.
† Included in total B.

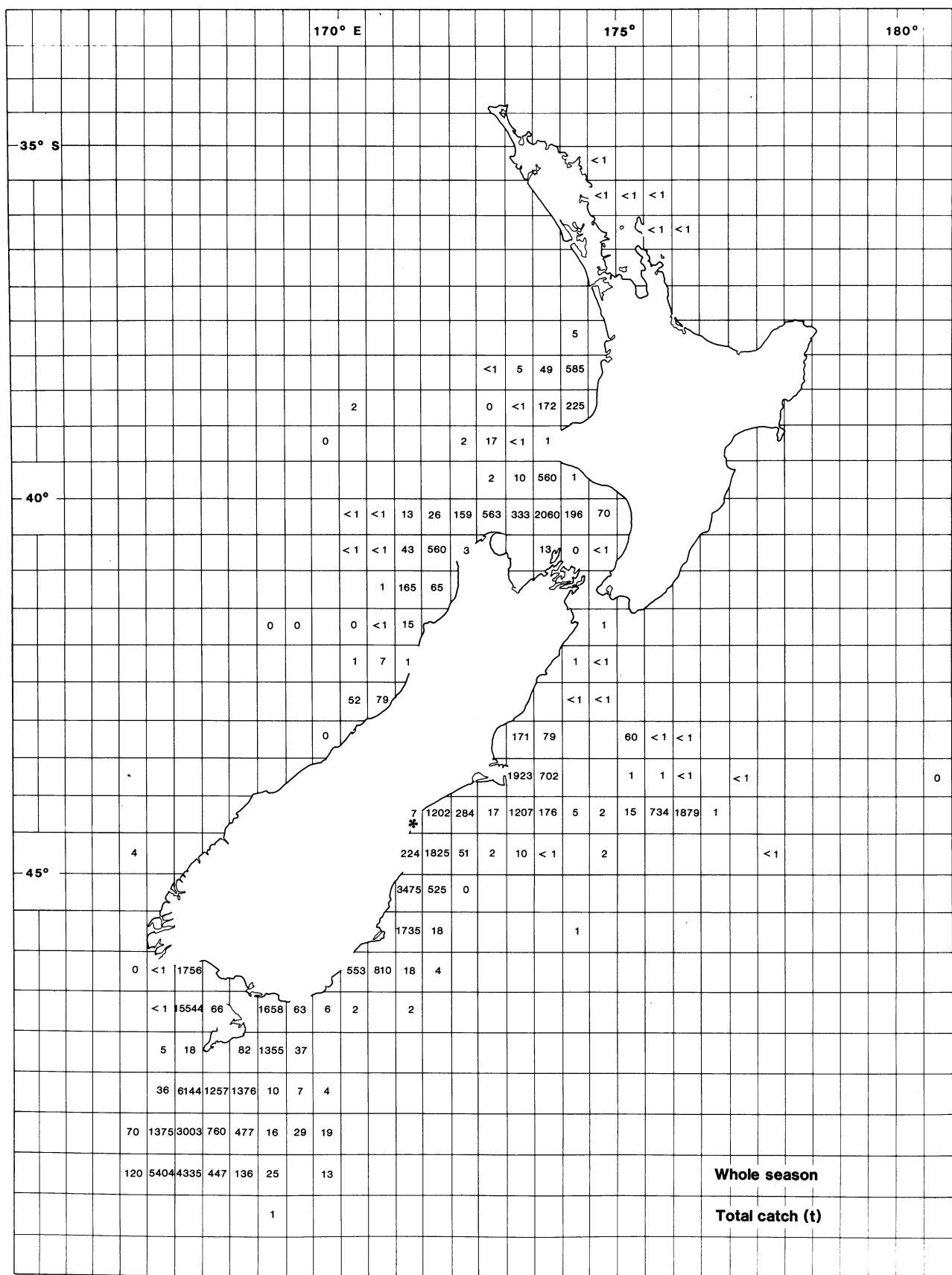


Fig. 2: Total catch (t) for the whole season by $1/2^\circ$ squares.

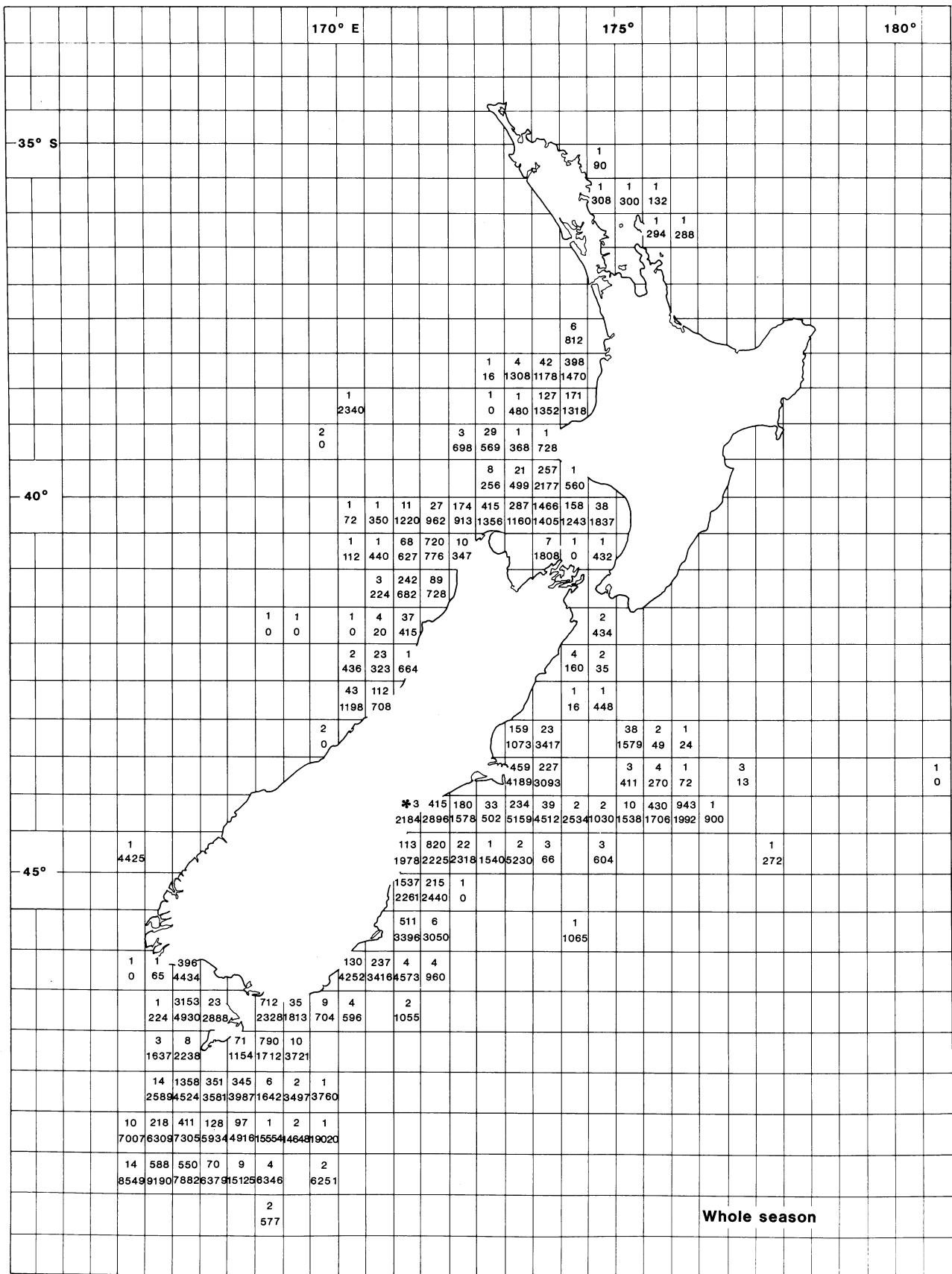


Fig. 3: Seasonal summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $\frac{1}{2}^{\circ}$ squares.

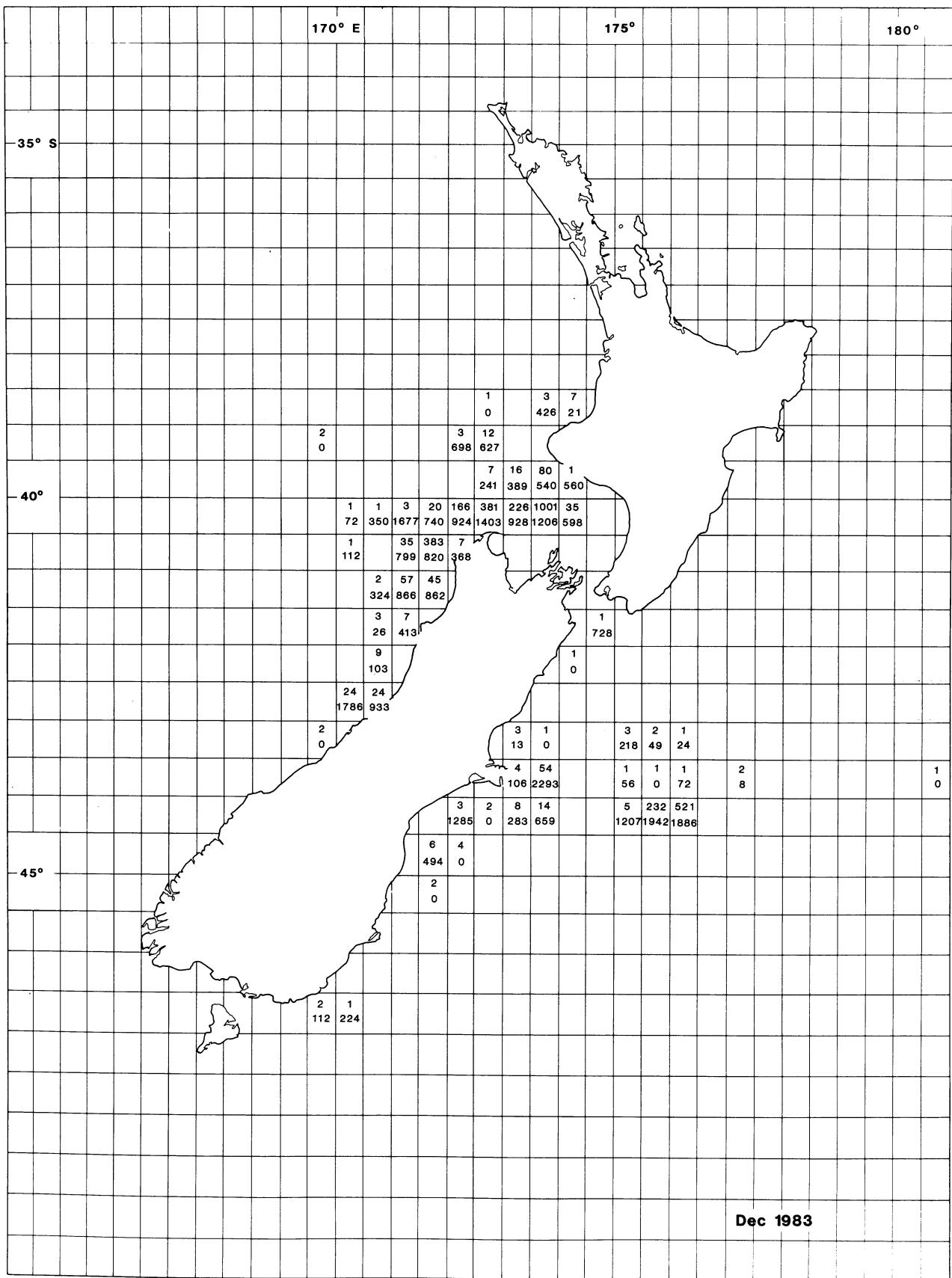


Fig. 4: Monthly summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $1/2^\circ$ squares.

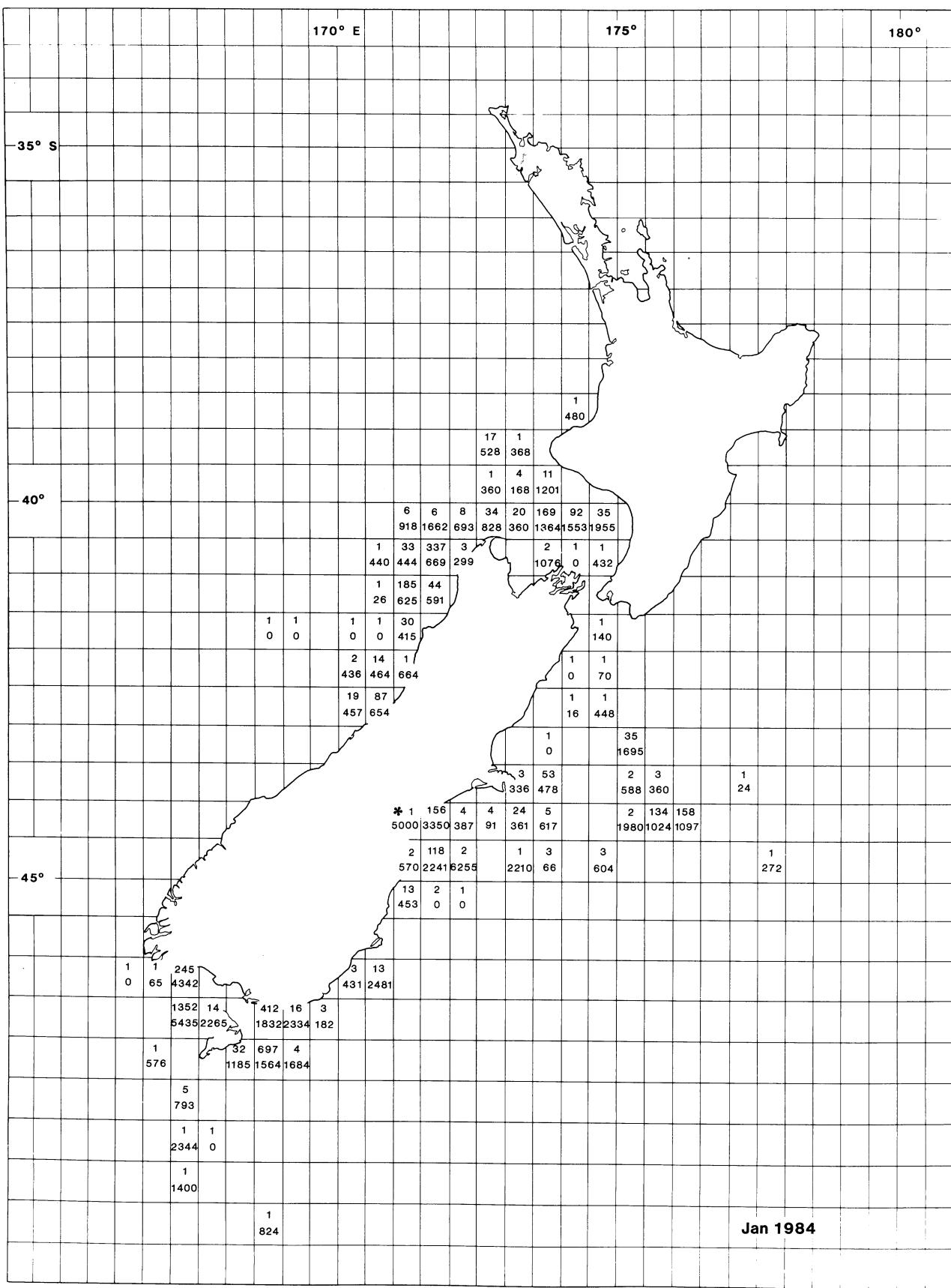


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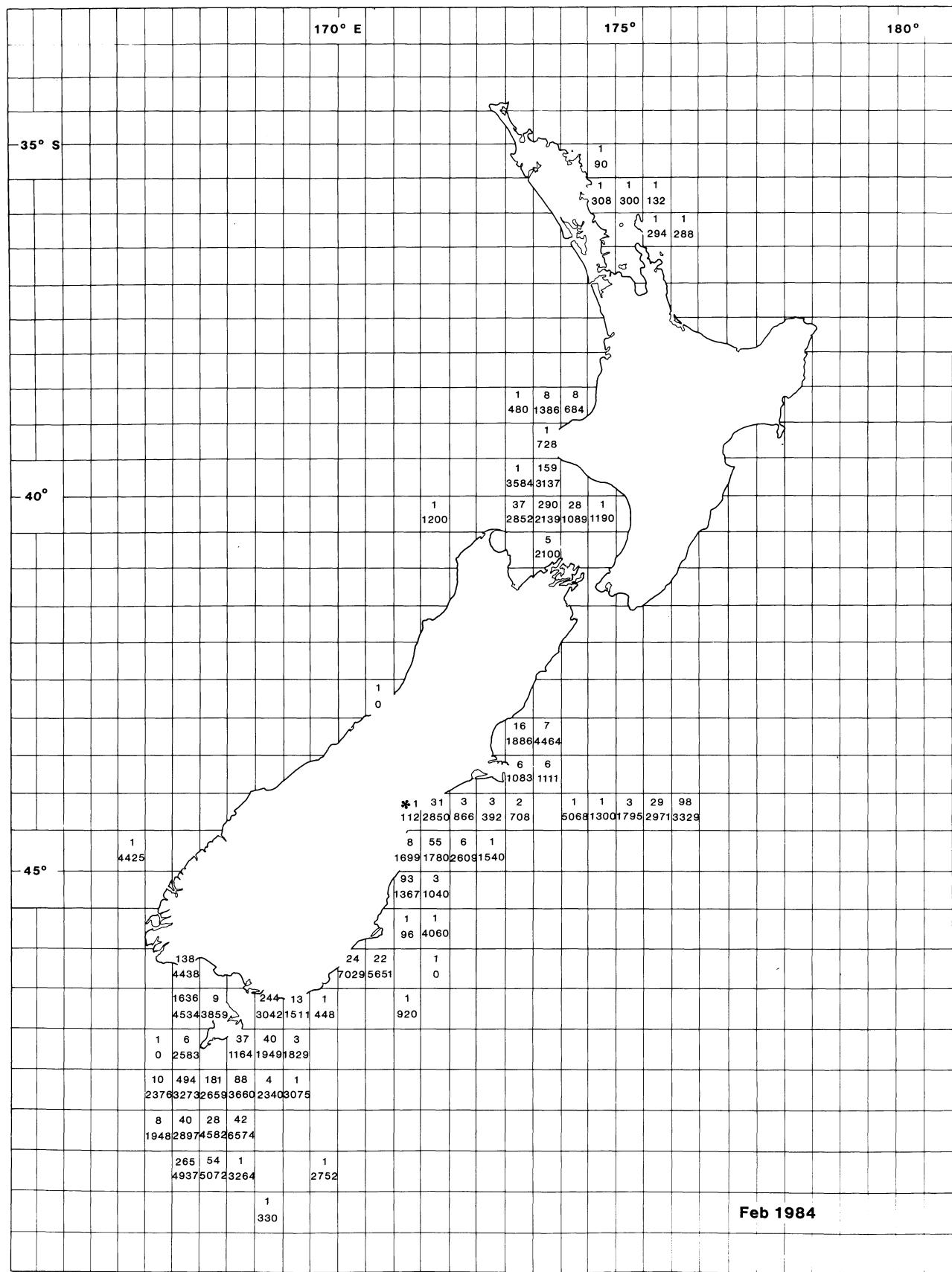


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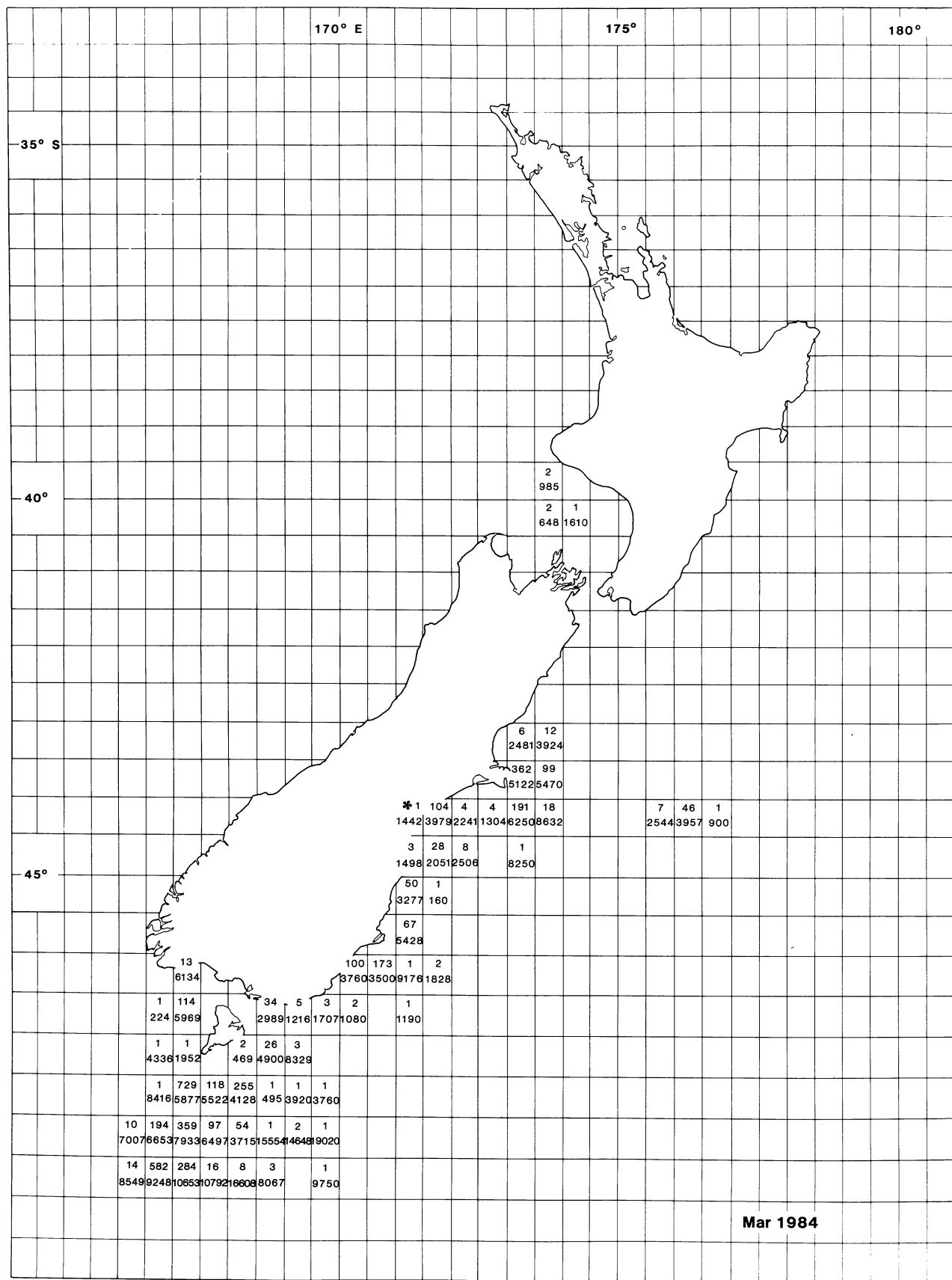


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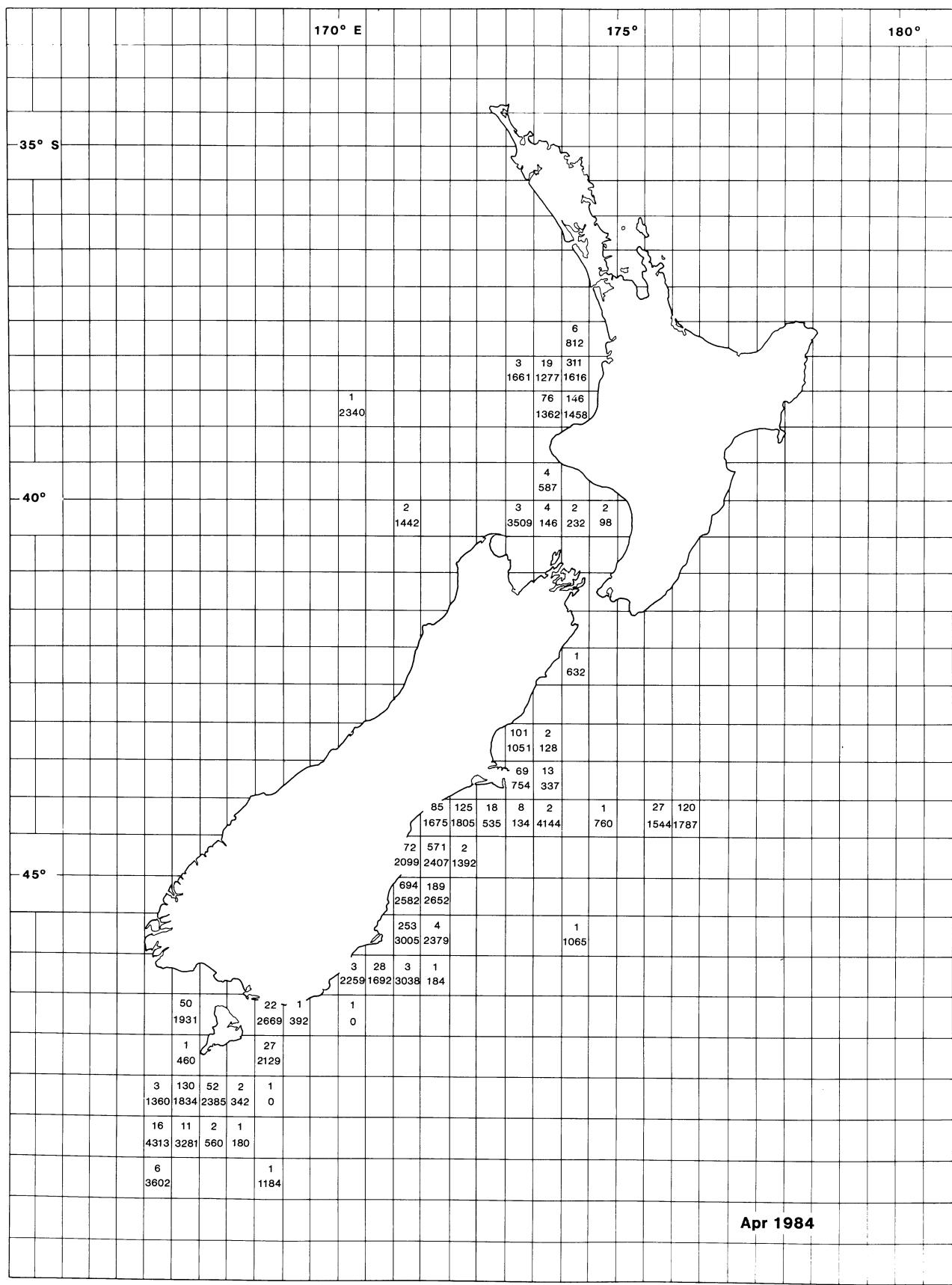


Fig. 4—*continued.*

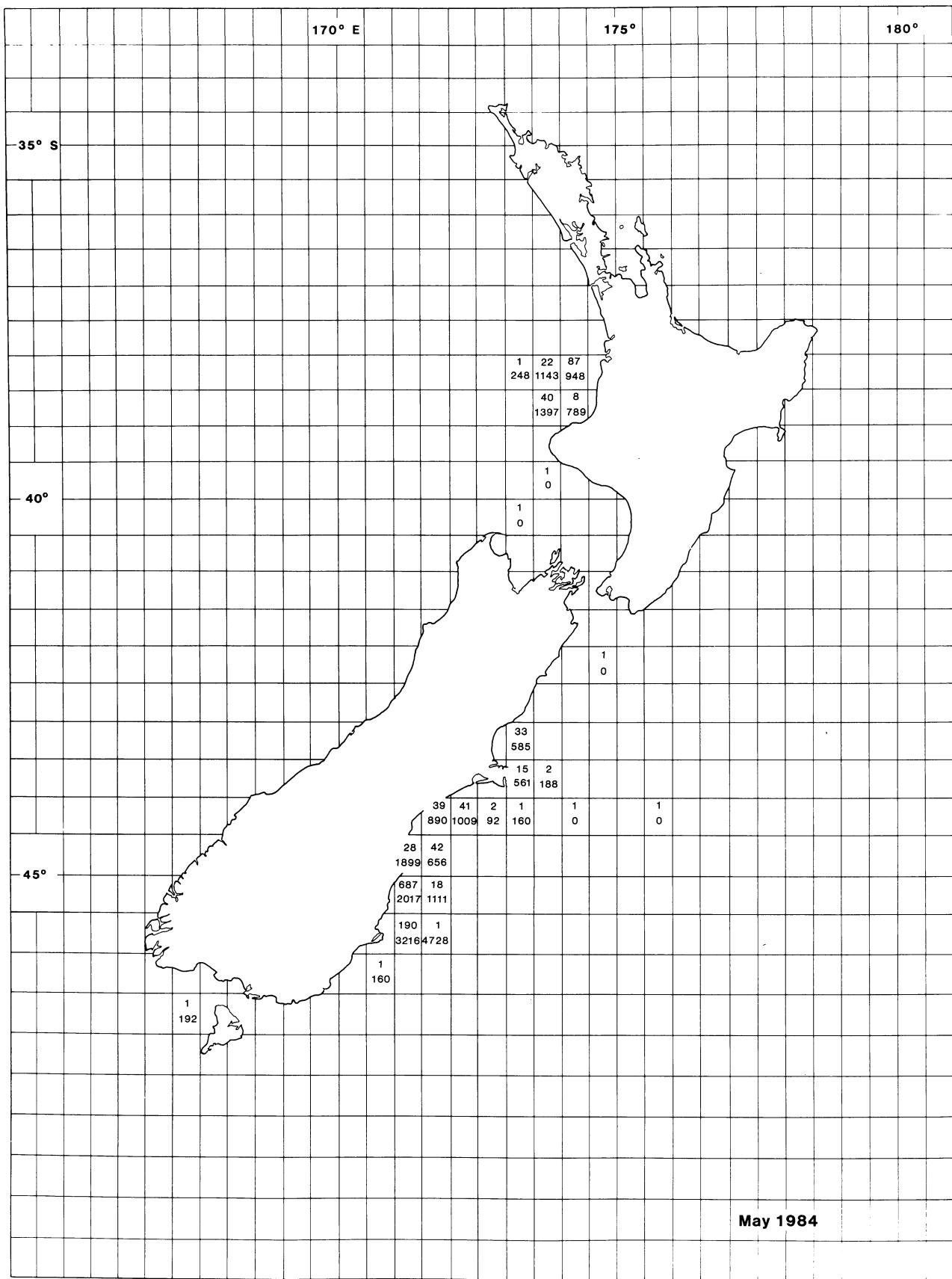


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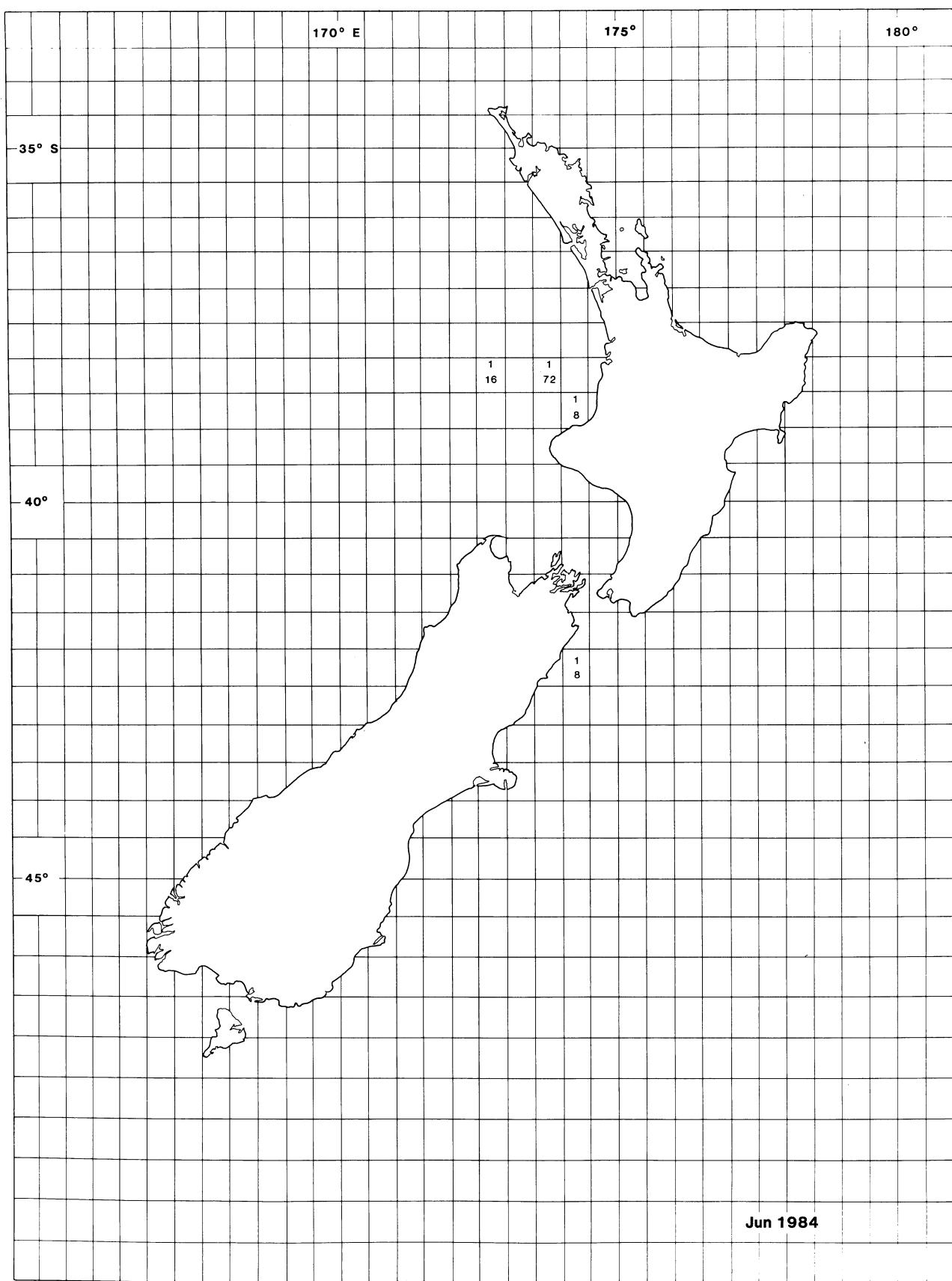


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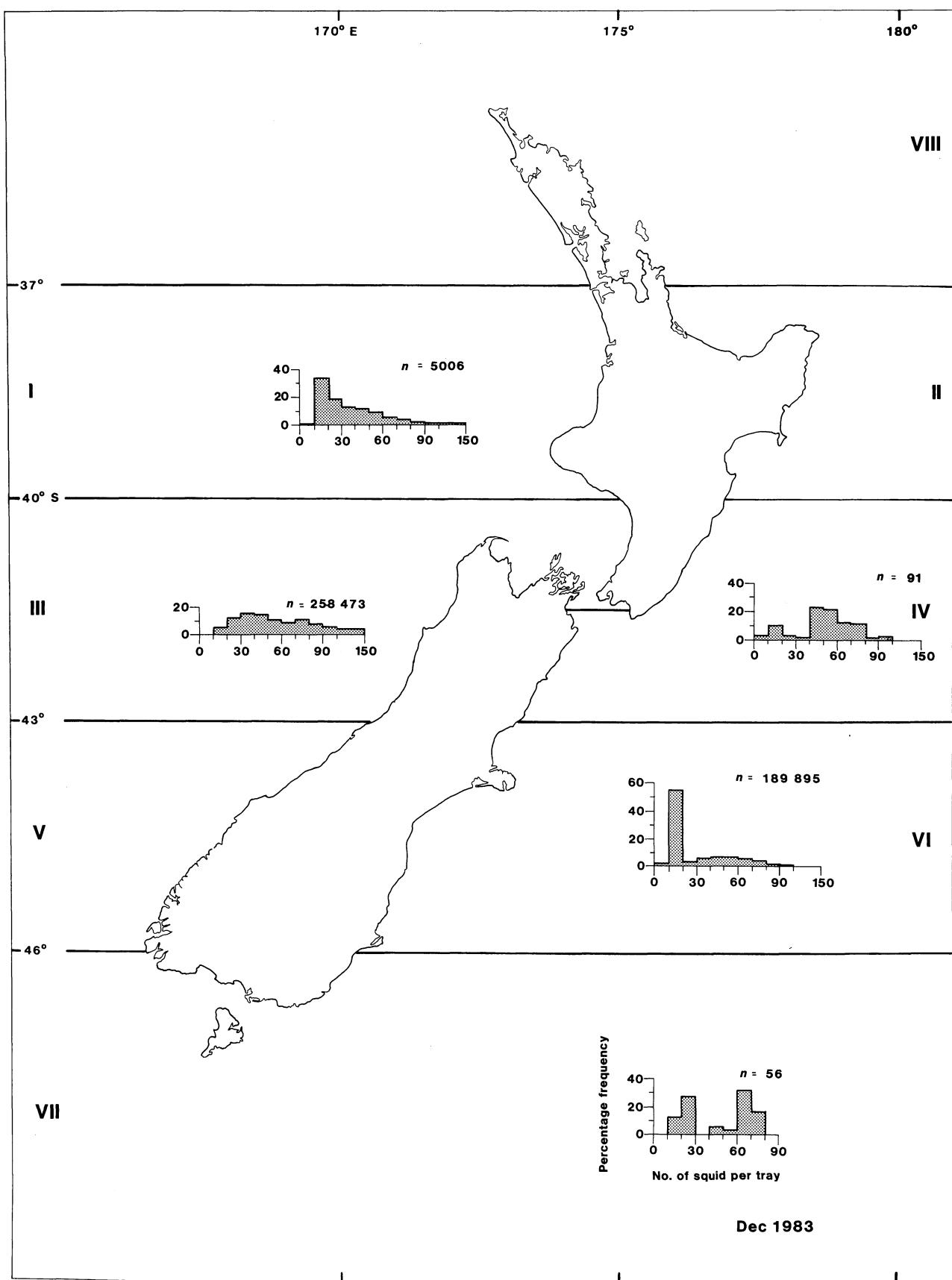


Fig. 5: Percentage frequency of the number of squid per tray by month for areas I-VIII (n = total number of trays). (The 100- to 150-squid-per-tray classes have been pooled.)

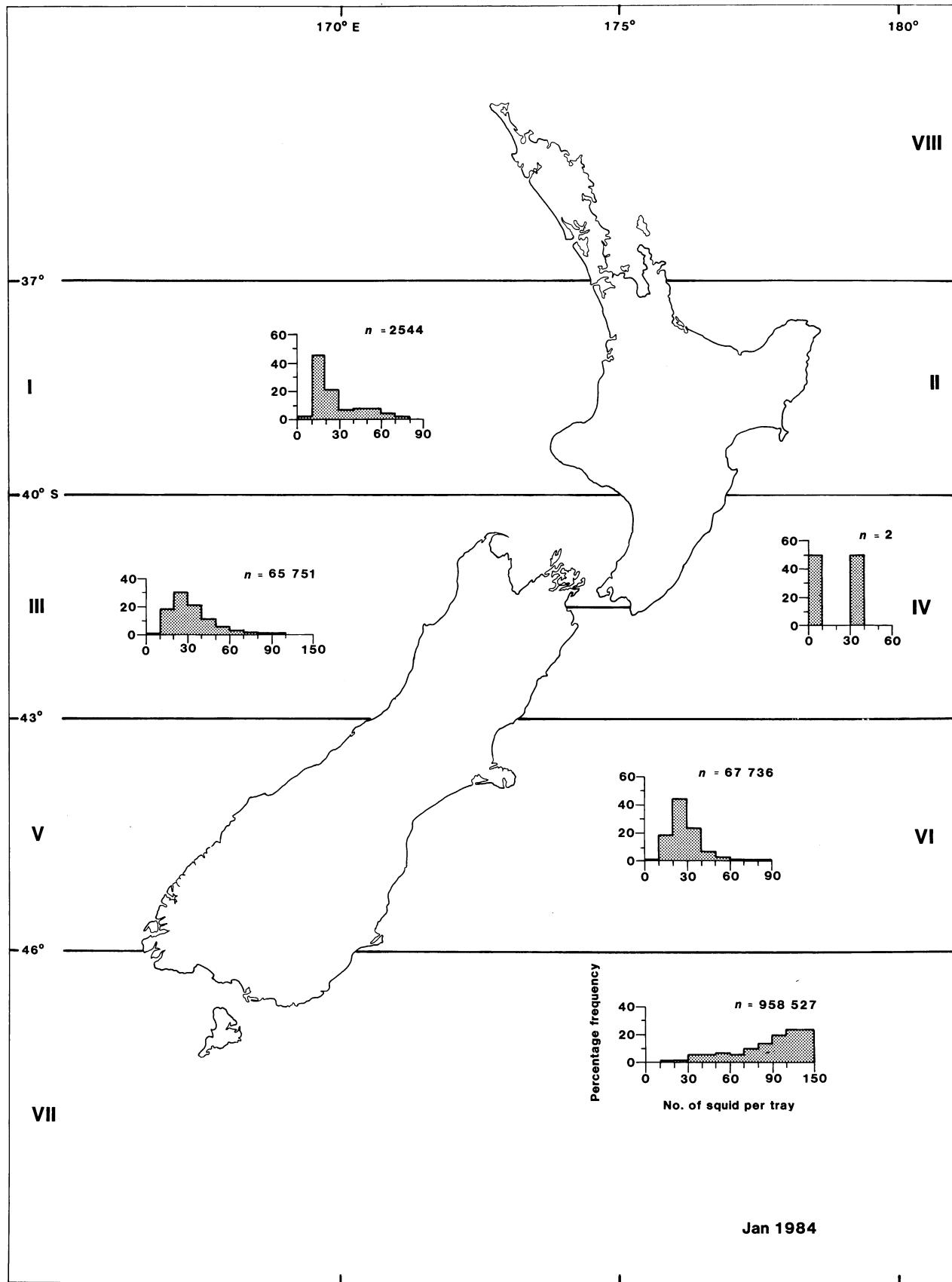


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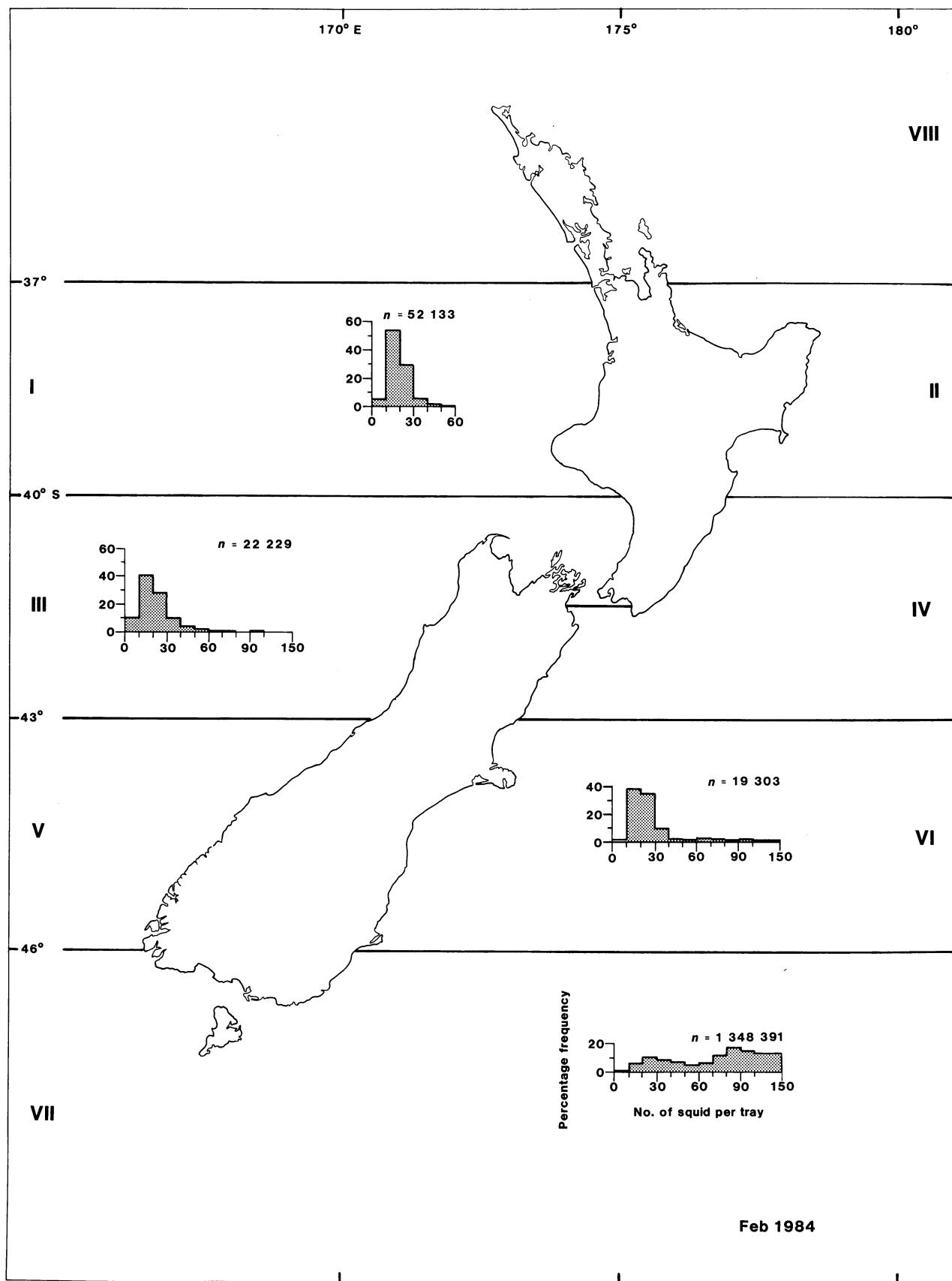


Fig. 5—*continued.*

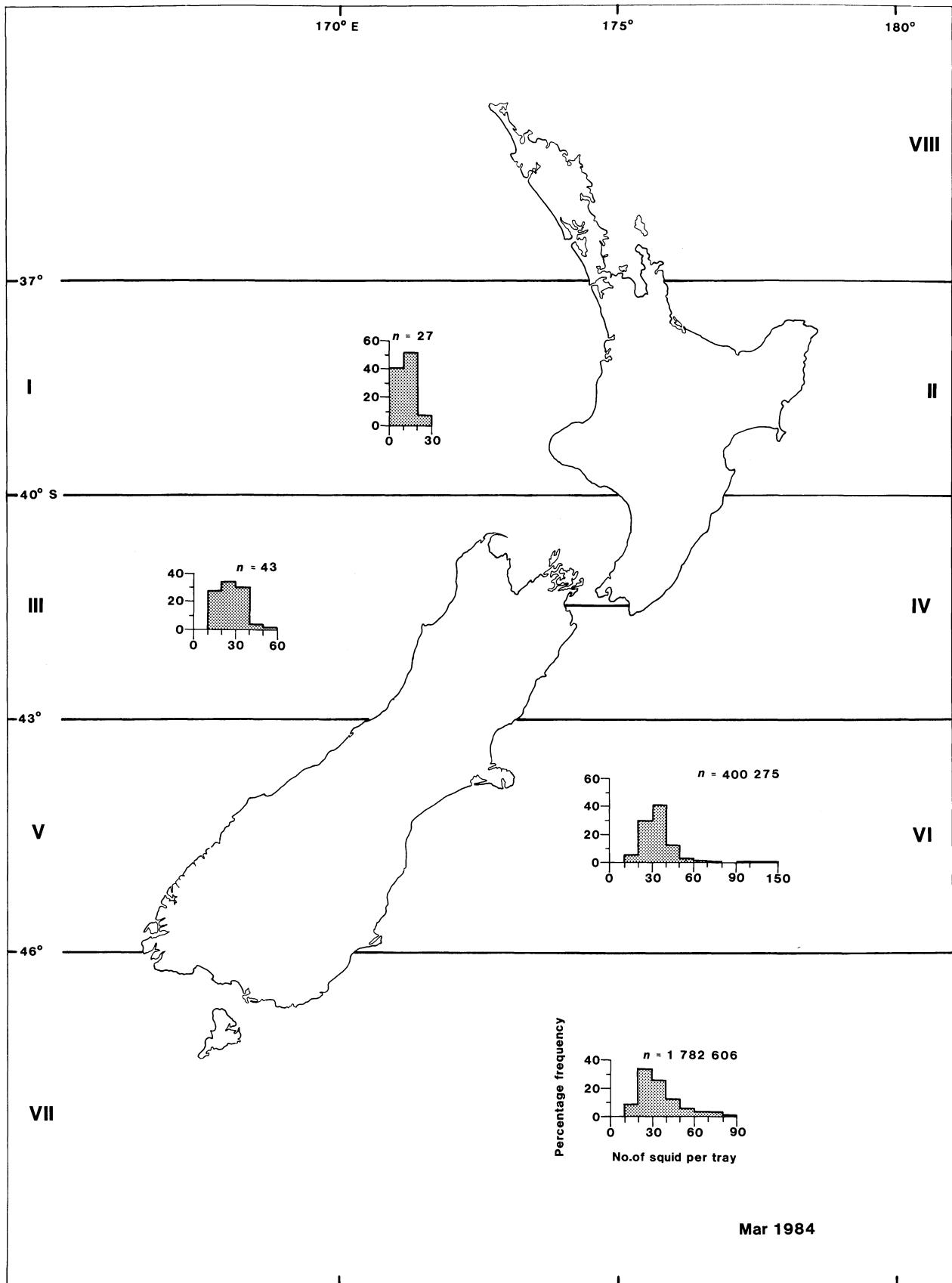


Fig. 5—*continued.*

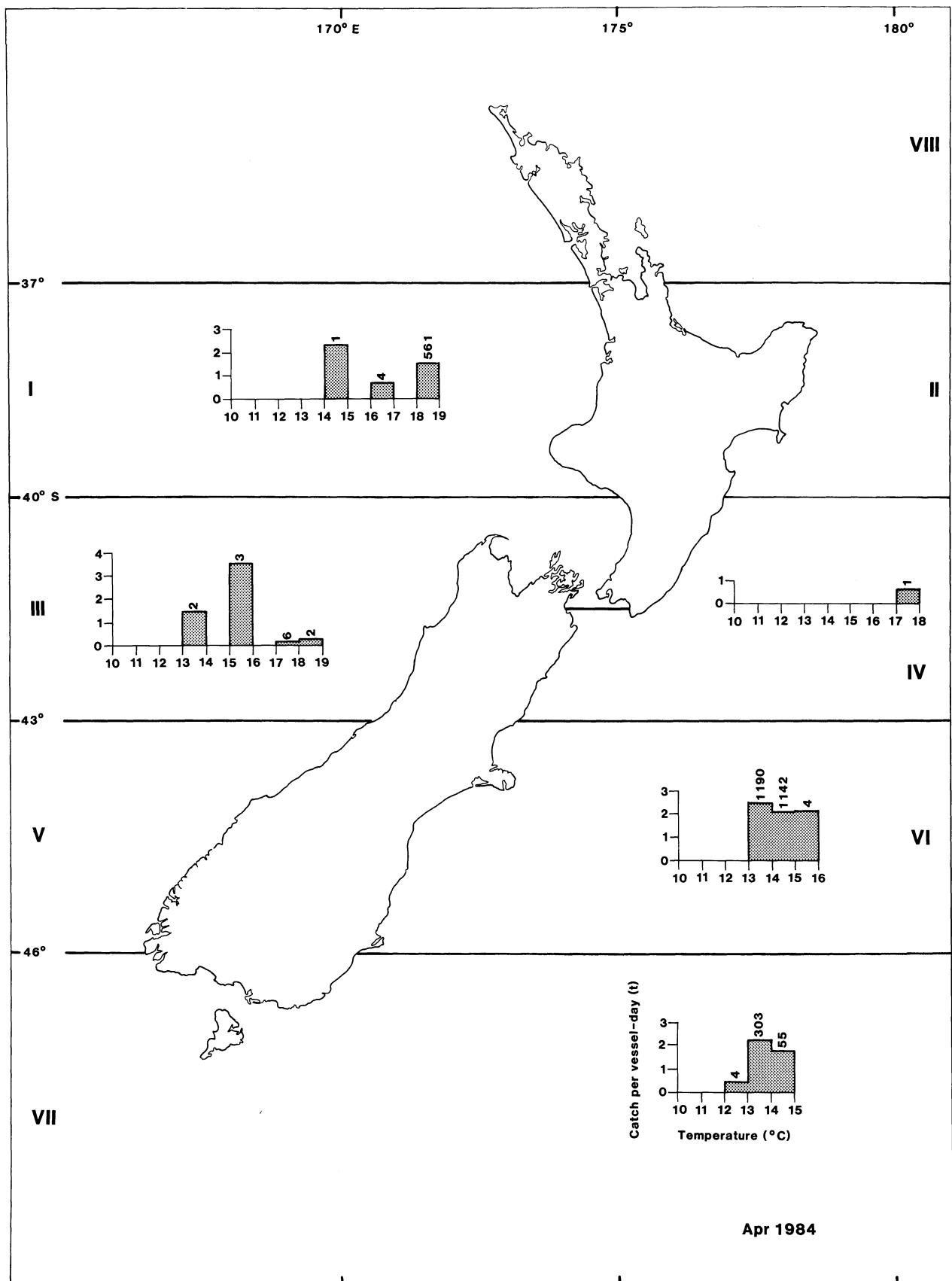


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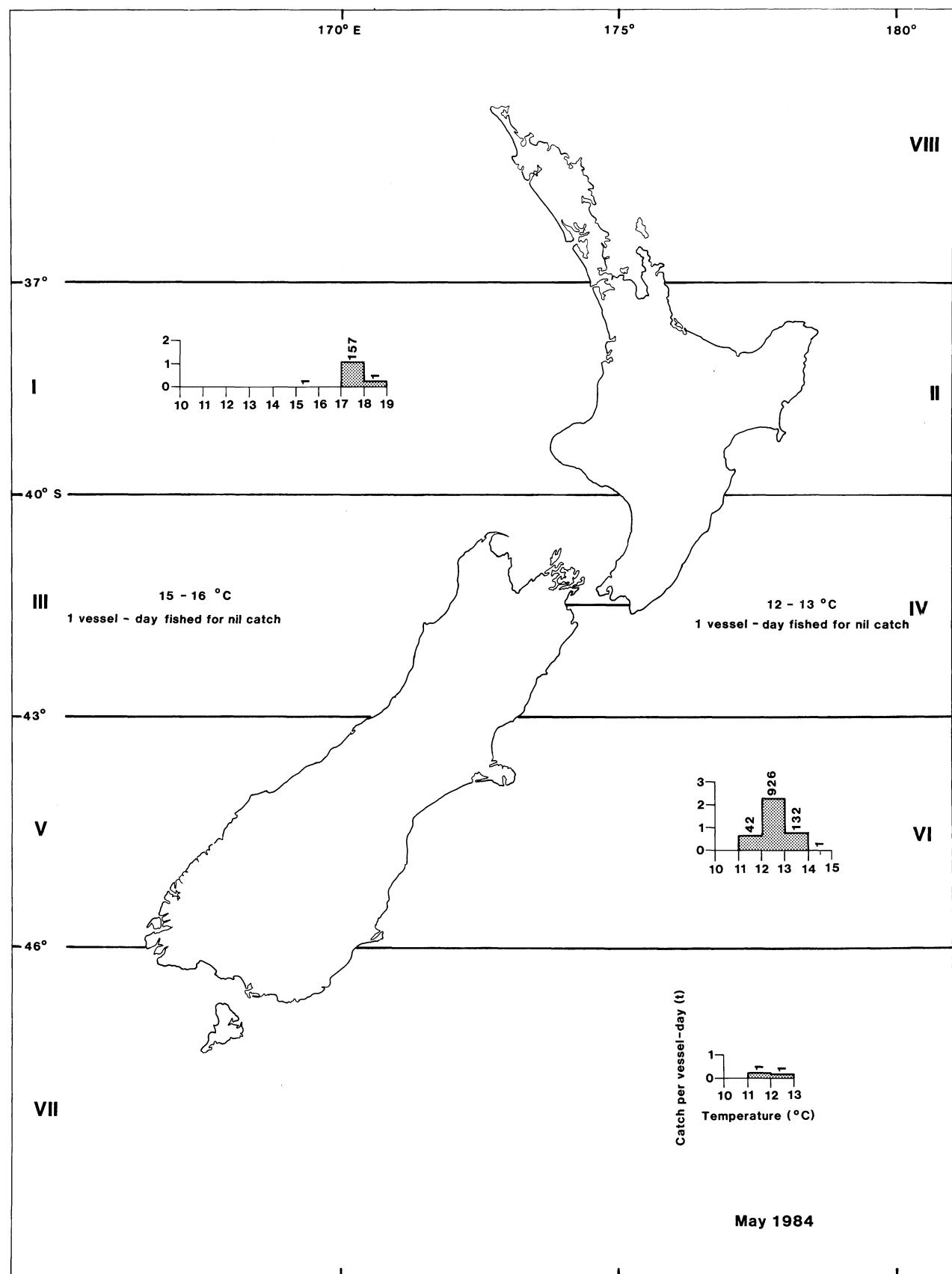


Fig. 7—continued.

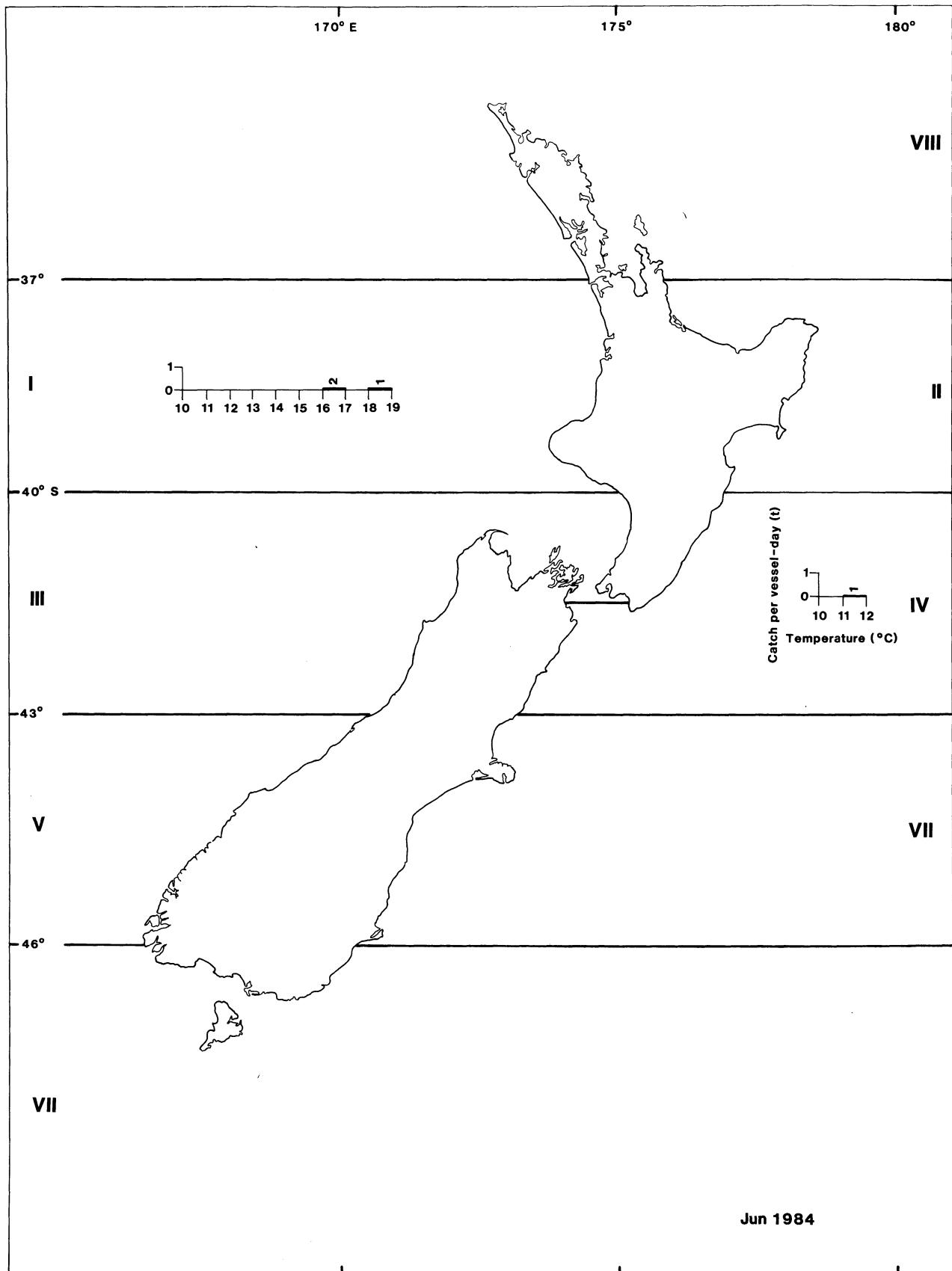


Fig. 7—continued.