

The 1982–83 foreign and joint venture squid jig fishery

by
P. J. Tyson,
S. D. Canning,
and C. A. Carey

Fisheries Research Division
Occasional Publication: Data Series No. 17

The 1982–83 foreign and joint venture squid jig fishery

by
P. J. Tyson,
S. D. Canning,
and C. A. Carey

Fisheries Research Division
Occasional Publication: Data Series No. 17
1984

**Published by the New Zealand Ministry
of Agriculture and Fisheries
1984**

ISSN 0112-2762

Contents

	<i>Page</i>
Fig. 1 - Squid logbook return form	4
Introduction	5
Table 1 - Catch by area and season and catch per vessel-day	7
Table 2 - Catch and effort data by nation, 1982-83 ...	8
Table 3 - Catch and effort data from Japanese vessels, 1982-83	8
Table 4 - Catch and effort data from Korean vessels, 1982-83	9
Table 5 - Catch and effort data from joint venture vessels, 1982-83	9
Fig. 2 - Total catch for the whole season	10
Fig. 3 - Seasonal summary of vessel-days fished and catch per vessel-day	11
Fig. 4 - Monthly summary of vessel-days fished and catch per vessel-day	12
Fig. 5 - Percentage frequency of the number of squid per tray by month by area	19
Fig. 6 - Seasonal summary of catch per vessel-day by mean bottom depth by area	26
Fig. 7 - Monthly summary of catch per vessel-day by mean sea surface temperature by area ...	27

START A NEW SHEET EACH DAY

DATE: Month Year

Day NOT FISHING
無漁業

FISHING OPERATION:

LATITUDE 度	LONGITUDE 度	DEPTH 深さ	SEA SURFACE 水温	WIND SPEED m/s	WIND DIRECTION θ_T	TIME FISHING 夜
°	°	m	°C			Day Hours
0	0	0	0	0	0	夜
	S					

CATCH:

	TOTAL CATCH (KG) kg	NUMBER CAUGHT 頭数
Arrow Squid 箭状イカ	2.11	9
Other Squid その他イカ	1.1	1
Other (Specify) その他(記入欄)		

	NUMBER CAUGHT 頭数
Octopus アオク	9
Shark サメ	1
Other (Specify) その他(記入欄)	

TRAY TALLY:
トレー総括:

Number of trays per tray トレーあたりのトレイ数	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 トレーあたりのトレイ数													
7-2	WHOLE 全頭												
	WITHOUT 足なし												
	WITH LEGS 足あり												

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 1982-83 season of \$69 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 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 1982-83 season, 156 vessels from Japan, Korea, and Taiwan caught 51 315 t.

Data presented here are from squid logbook returns (Fig. 1). The 1982-83 report is the second in 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 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 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.

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. Five vessel-days fished (by four vessels), for which positions were not recorded in the logbooks, resulted in a total catch of 5 590 kg.

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 vessels were used as only these vessels consistently use standard 8.0- to 8.5-kg trays. (Of the total fleet of 156, 89 vessels were Japanese.)

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) with position not given	Total catch (t)	Catch (t) per vessel-day				
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				
		Area	I	II	III	IV	V	VI	VII	
1981-82	5 601 13%		16 495 37%	16 <1%	0	21 48%	283	1 3%	261	39‡
1982-83	9 961 19%		28 749 56%	10 <1%	0	8 16%	210	4 9%	374	6
										44 649
										3.3
										51 315
										2.8

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

† 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, 1982-83

	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, but no hours given†	No. of vessel-days with nil catch, but no hours given†	Catch (t) per vessel-day
Japan	89	10 125	154 808	161	210	1 384	9	31 003.0	3.0
Korea	5	610	6 994	51	5	29		1 091.2	1.8
Joint venture	62	7 281	102 613	585	24	238		19 221.0	2.6
Total	156	18 016	264 415	797	237	1 651	9	51 315.2	2.8

* Included in total A.

† Included in total B.

TABLE 3: Squid jigging catch and effort data from Japanese vessels, 1982-83

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†	No. of vessel-days with nil catch, but no hours given†	Catch (t) per vessel-day
Dec	1 028	14 262	12	16	85	2			5 050.0 4.8
Jan	2 473	35 245	34	37	248				8 734.8 3.5
Feb	2 035	29 768	46	41	229	1			6 275.6 3.0
Mar	2 203	35 452	49	49	321	2			5 901.7 2.6
Apr	1 799	29 900	18	51	363	3			3 860.1 2.1
May	580	10 096	2	15	133	1			1 175.0 2.0
Jun	7	85		5					0.7 5.9

* Included in total A.

† Included in total B.

TABLE 4: Squid jigging catch and effort data from Korean vessels, 1982-83

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	No. of vessel-days with nil catch, but no † hours given†	Total catch (†)	Catch (†) per vessel-day
				No. of hours fishing with nil catch	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch				
Dec	44	375	12				106.0	2.4		
Jan	111	888	31	2.5	273.3	2.5				
Feb	118	422	8				246.5	2.1		
Mar	130	698	1	17			201.9	1.6		
Apr	129	646	2				148.8	1.1		
May	78	965		12			114.8	1.5		

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

TABLE 5: Squid jigging catch and effort data from joint venture vessels, 1982-83

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	No. of vessel-days with nil catch, but no † hours given†	Total catch (†)	Catch (†) per vessel-day
				No. of hours fishing with nil catch	Total vessel-days with nil catch (total B)	No. of hours fishing with nil catch				
Dec	1 022	13 417	59				4 219.1	4.1		
Jan	1 685	22 241	140	2	17				5 046.9	3.0
Feb	1 412	19 409	110	5	38				3 452.1	2.4
Mar	1 691	24 968	151	11	118				3 893.4	2.3
Apr	1 252	18 921	125	5	57				2 206.9	1.8
May	219	3 657		1					402.6	1.8

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

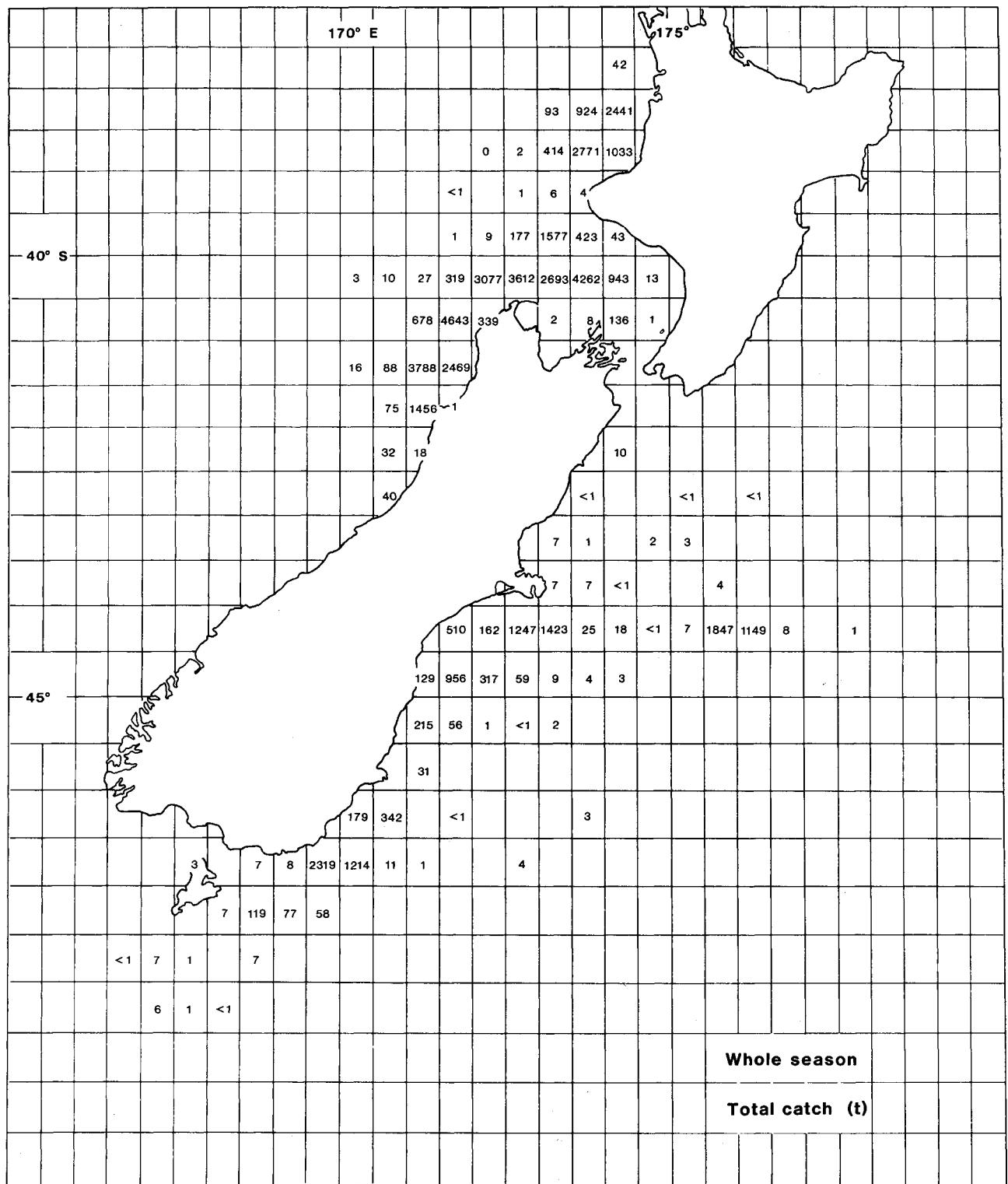


Fig. 2: Total catch (t) for the whole season by $\frac{1}{2}^\circ$ squares.

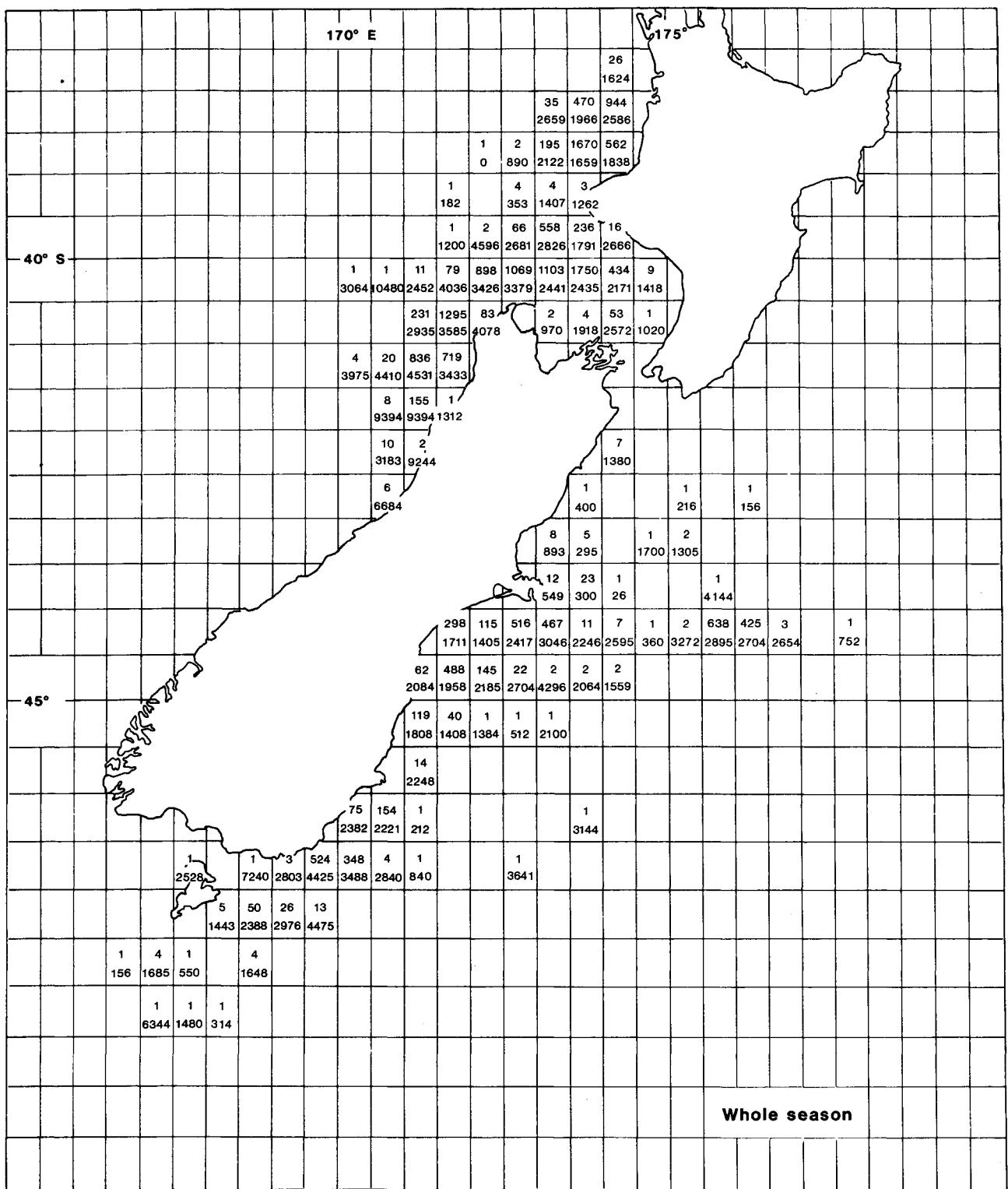


Fig. 3: Seasonal summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $\frac{1}{2}^\circ$ squares.

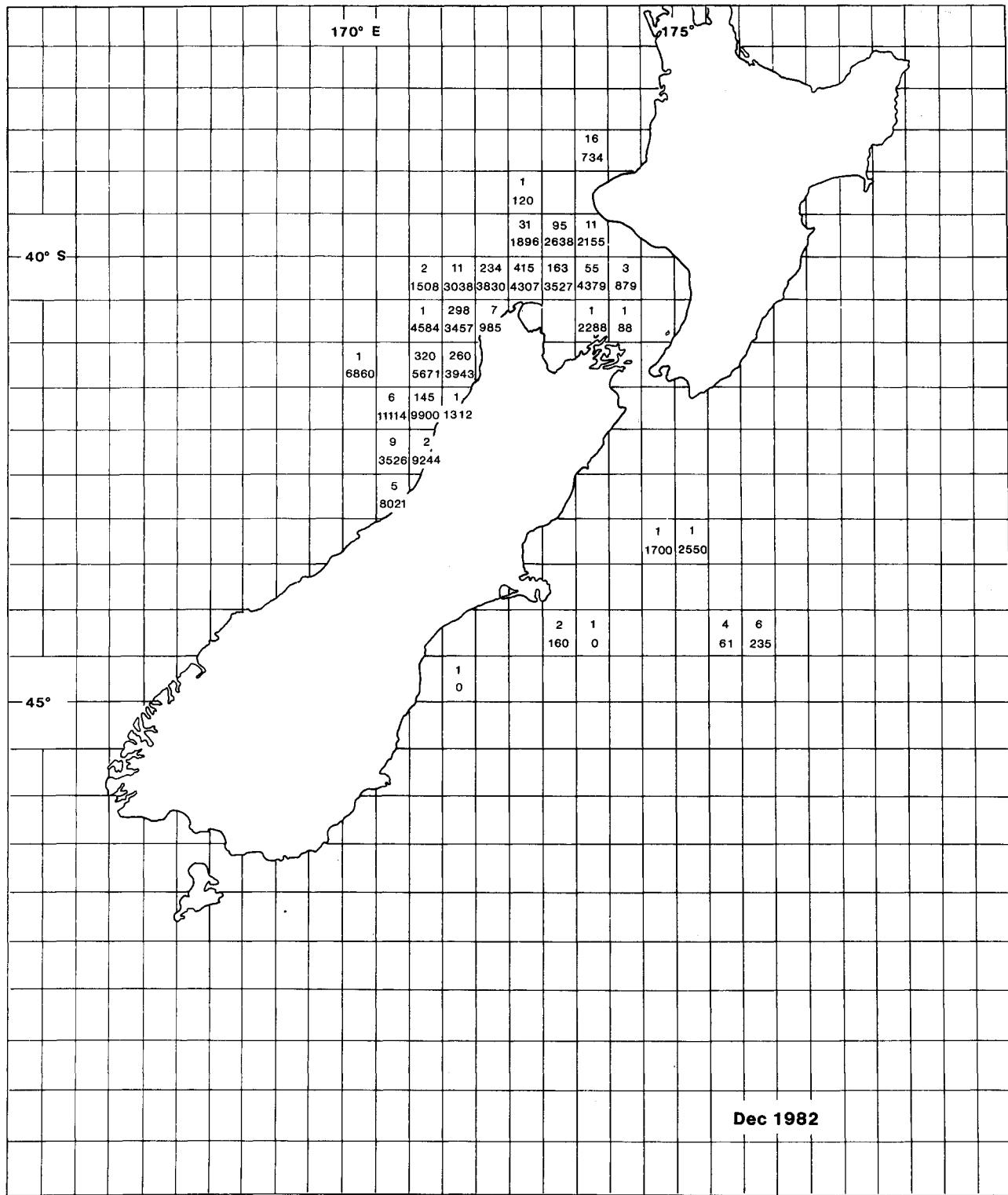


Fig. 4: Monthly summary of vessel-days fished (above) and catch (kg) per vessel-day (below) by $\frac{1}{2}^{\circ}$ squares.

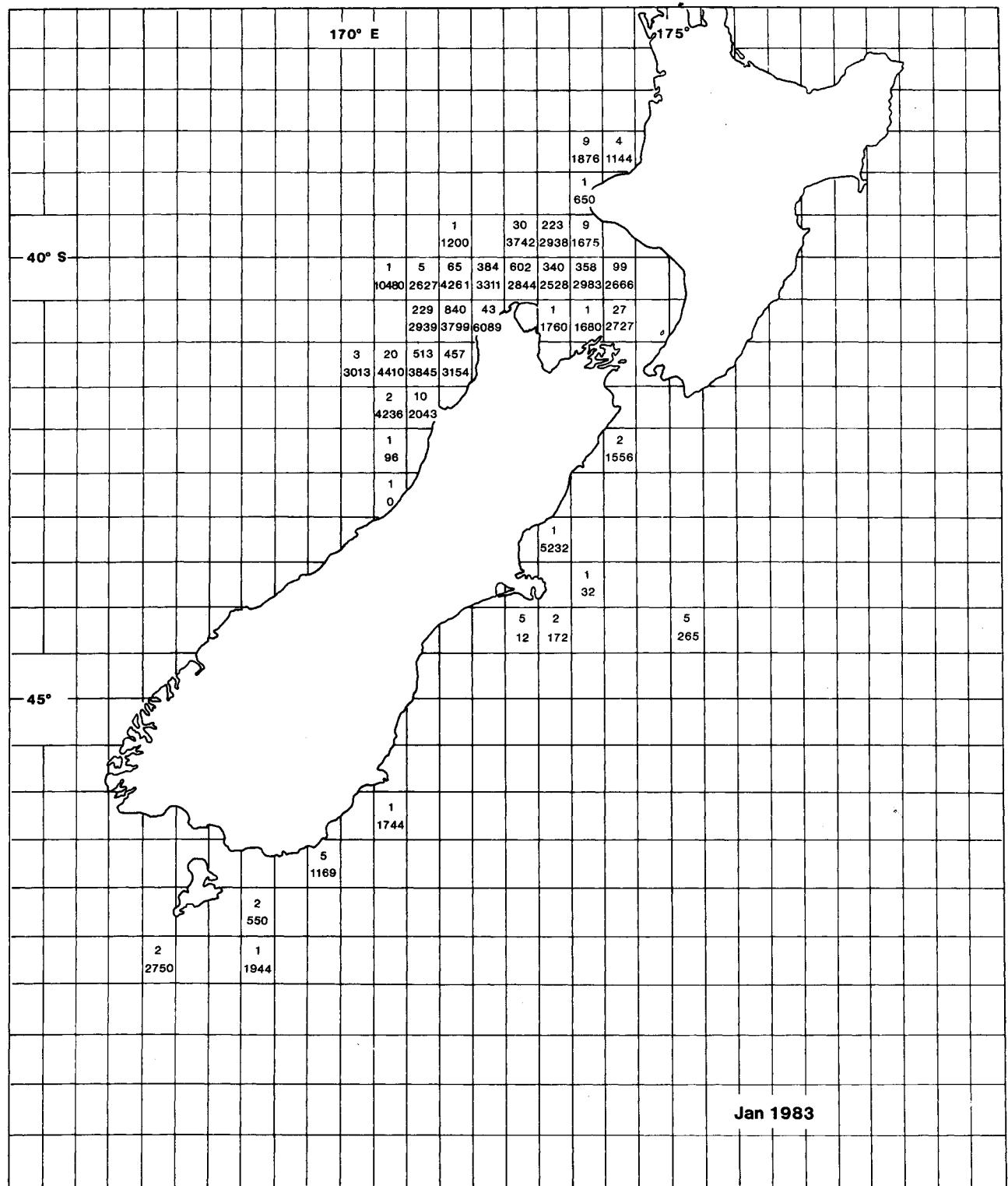


Fig. 4—continued.

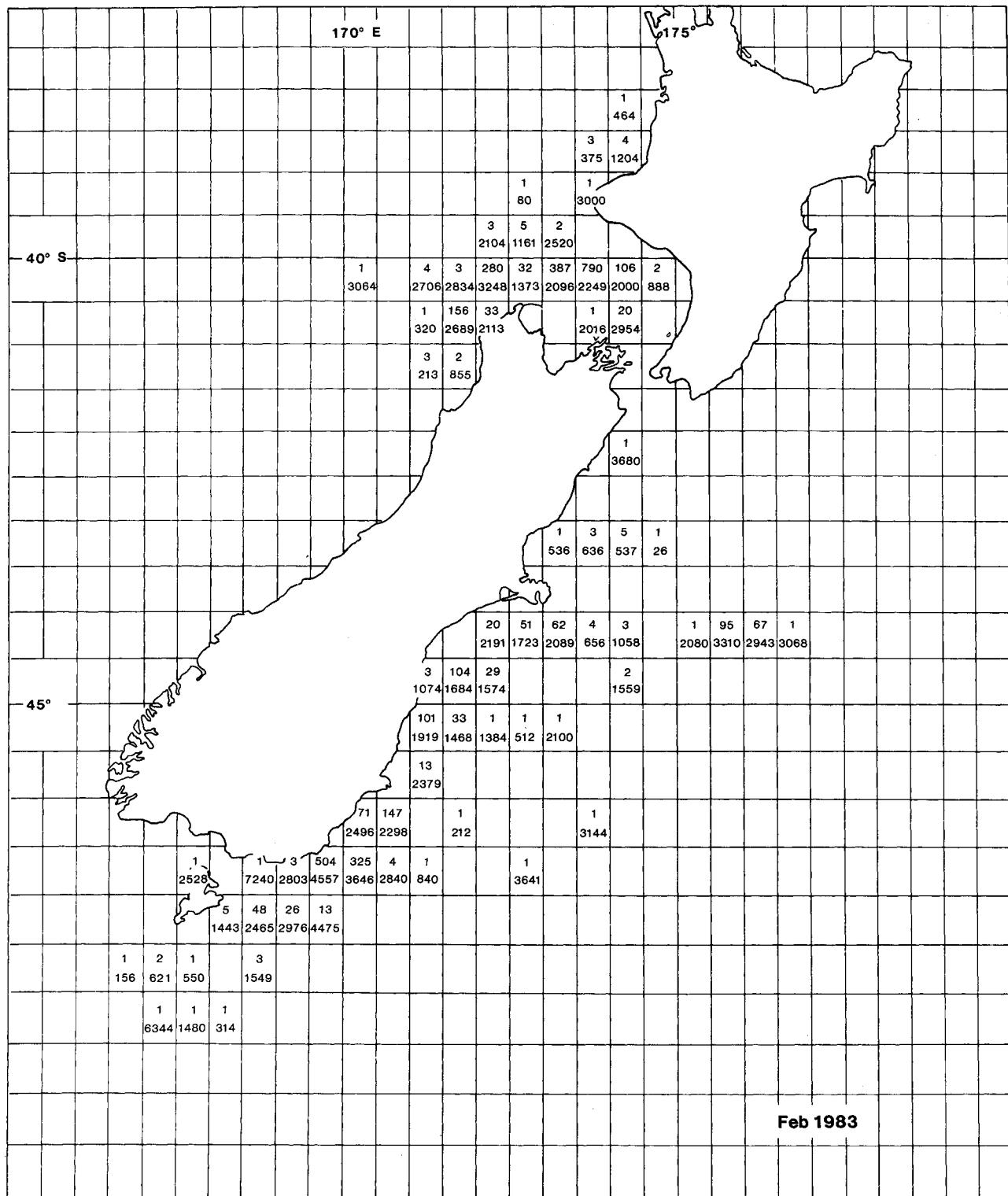


Fig. 4—continued.

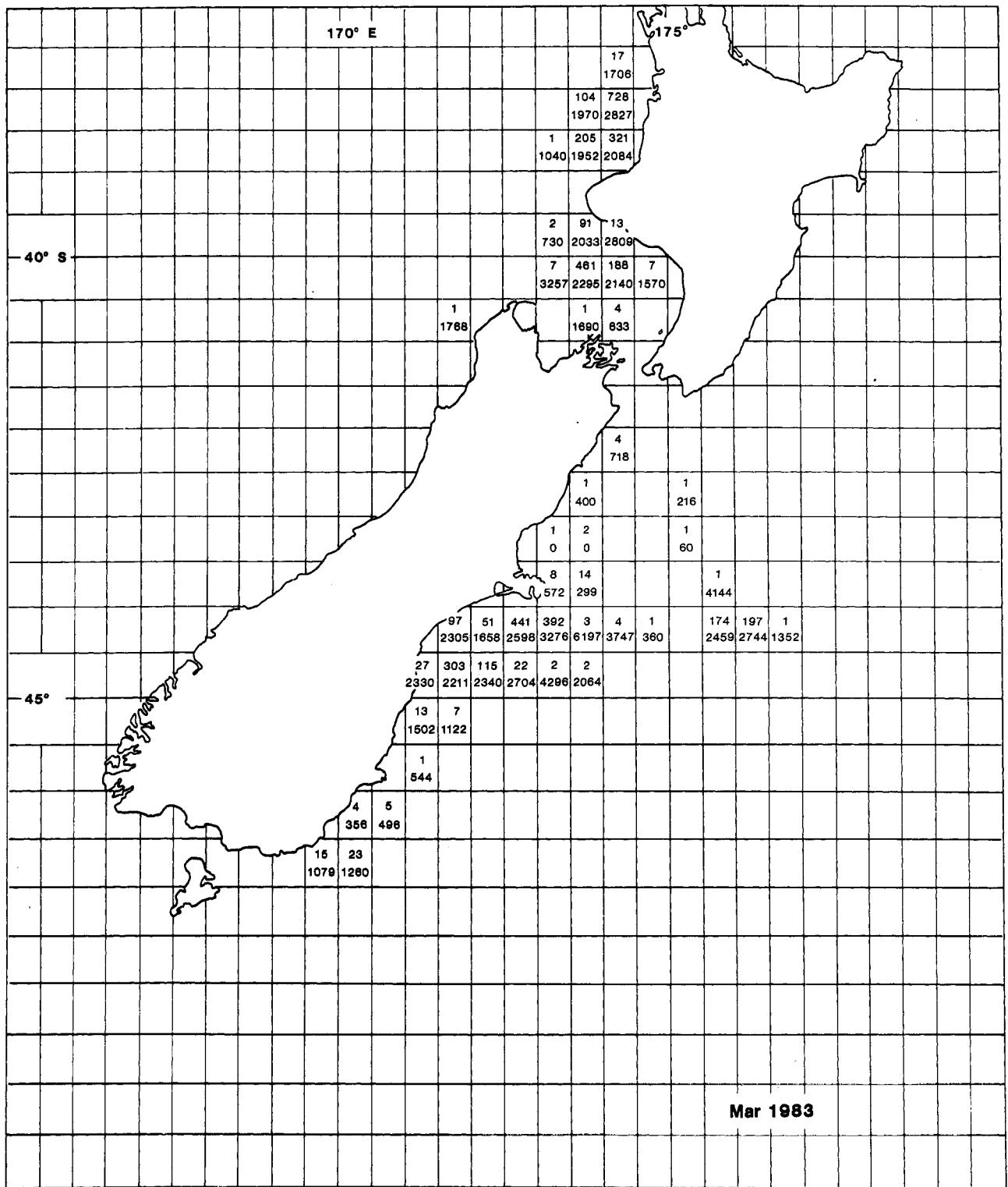


Fig. 4—continued.

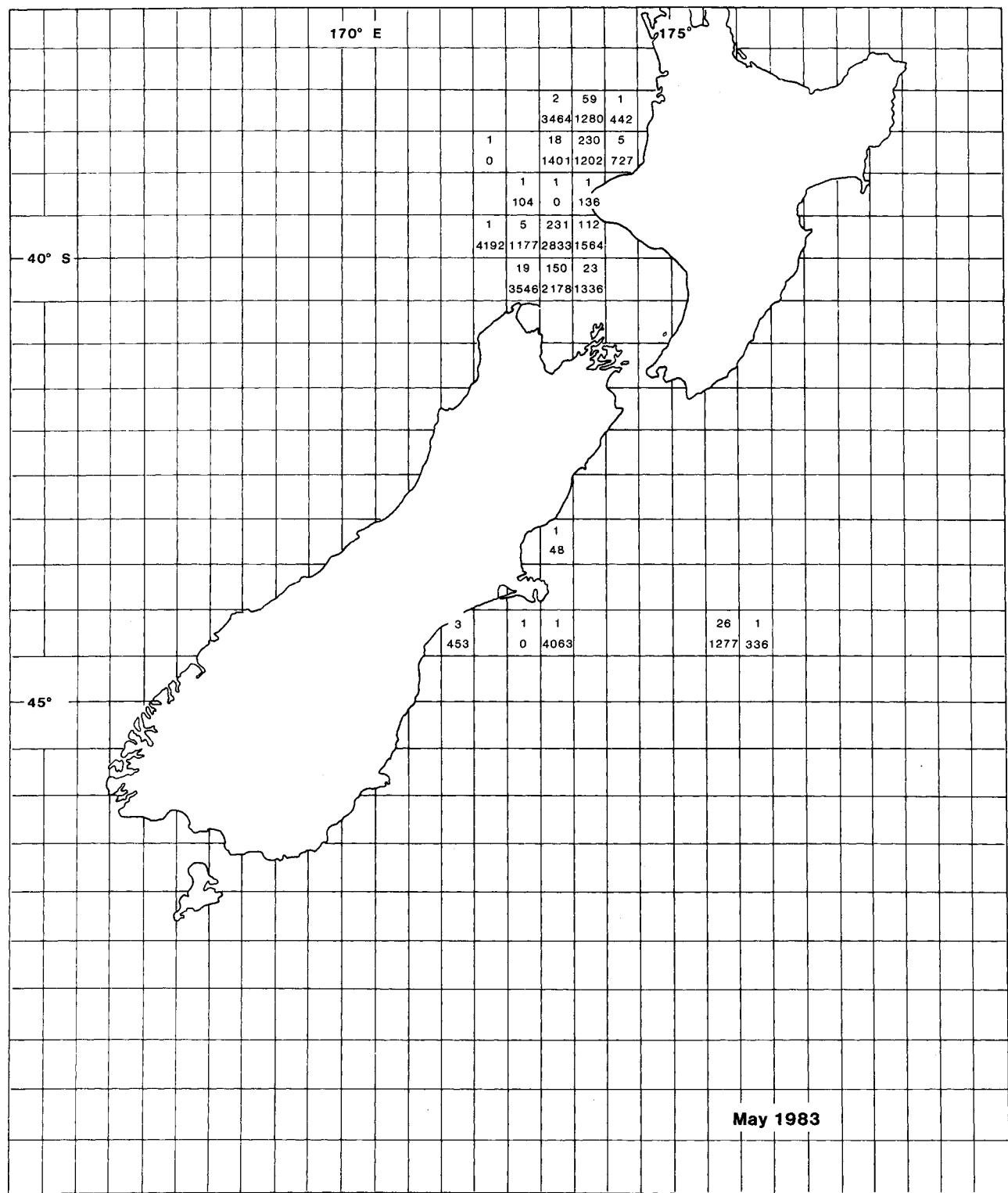


Fig. 4—continued.

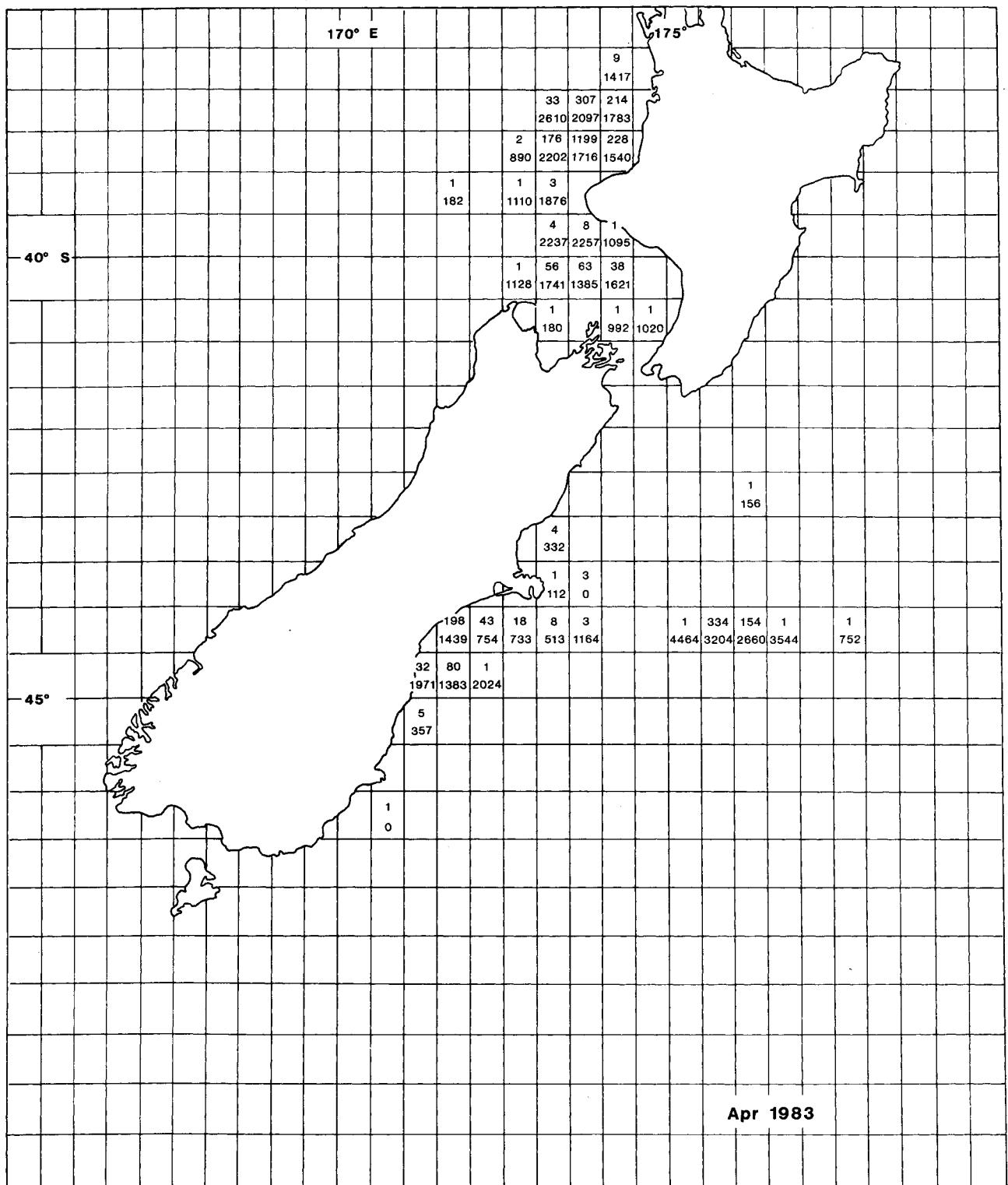


Fig. 4—continued.

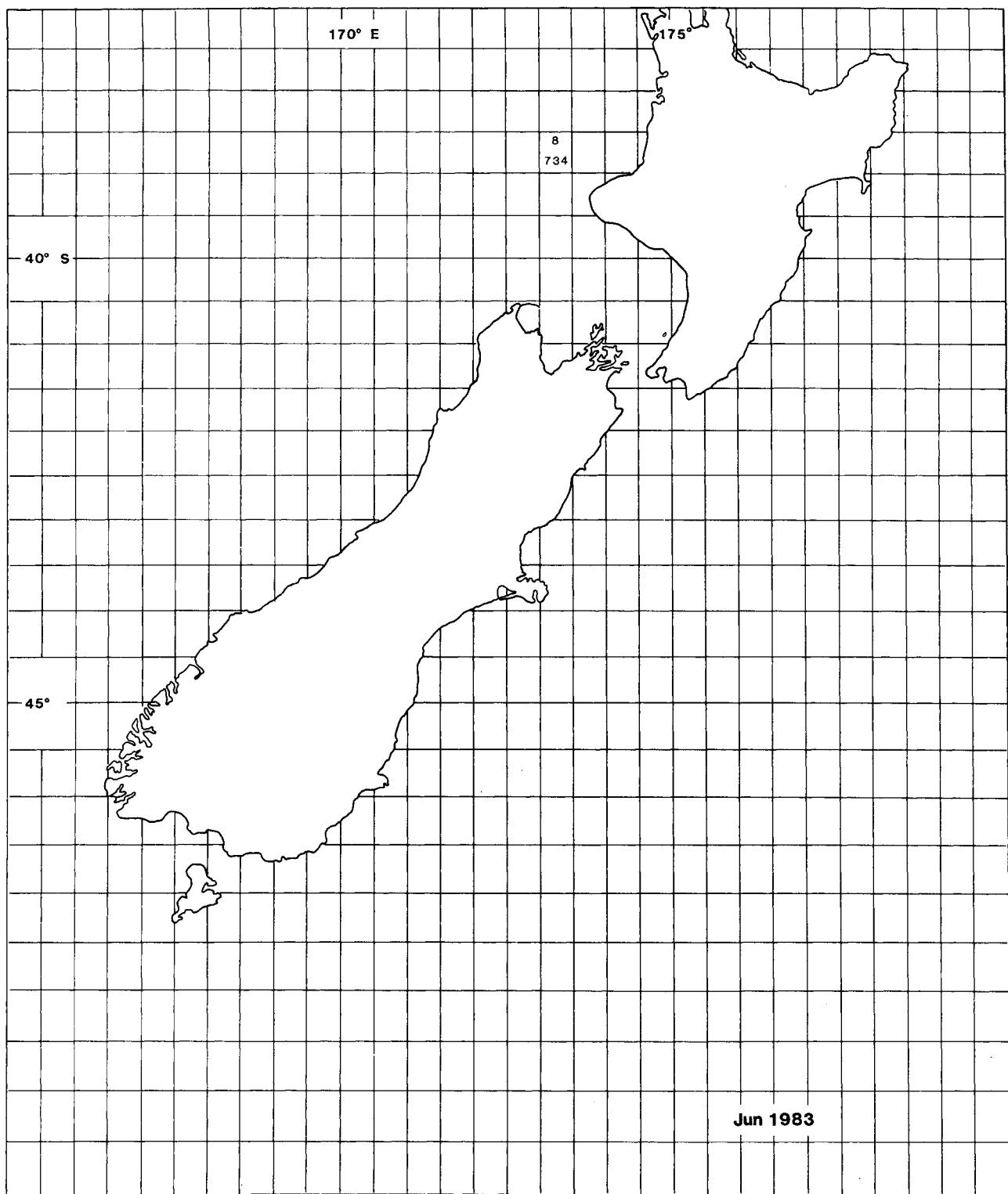


Fig. 4—continued.

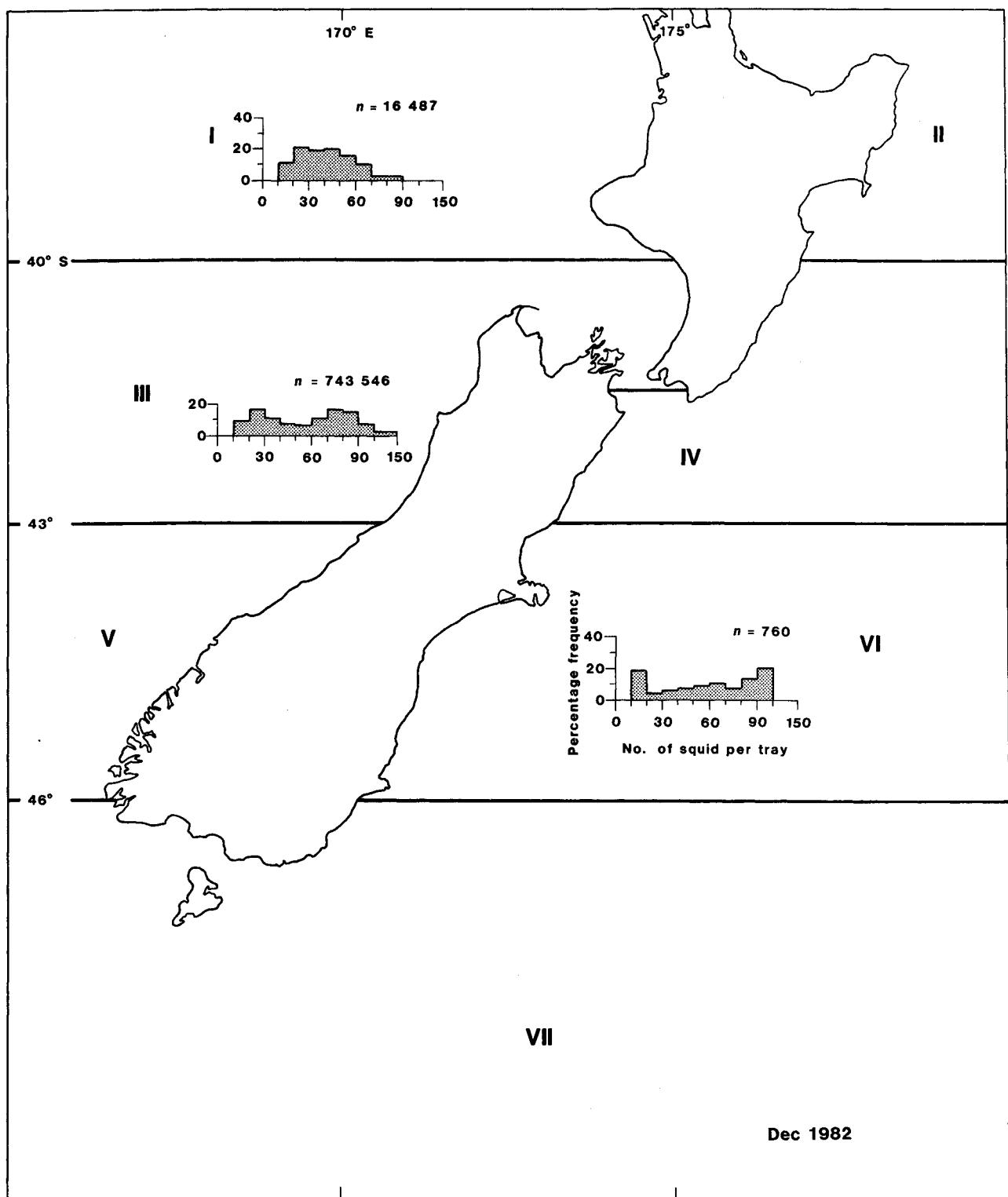


Fig. 5: Percentage frequency of the number of squid per tray by month for areas I-VII (n = total number of trays). (The 100- to 150-squid-per-tray classes have been pooled.)

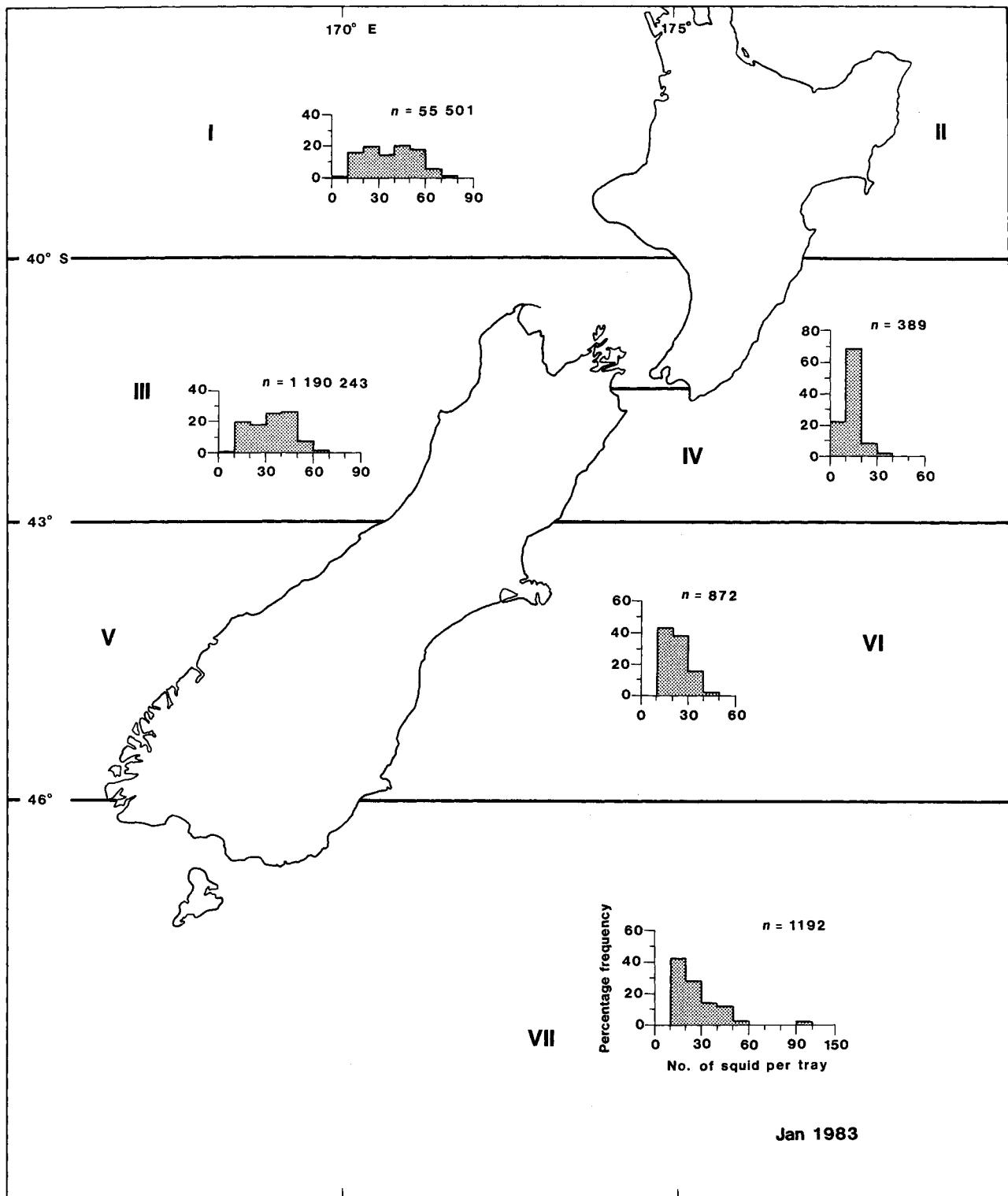


Fig. 5—continued.

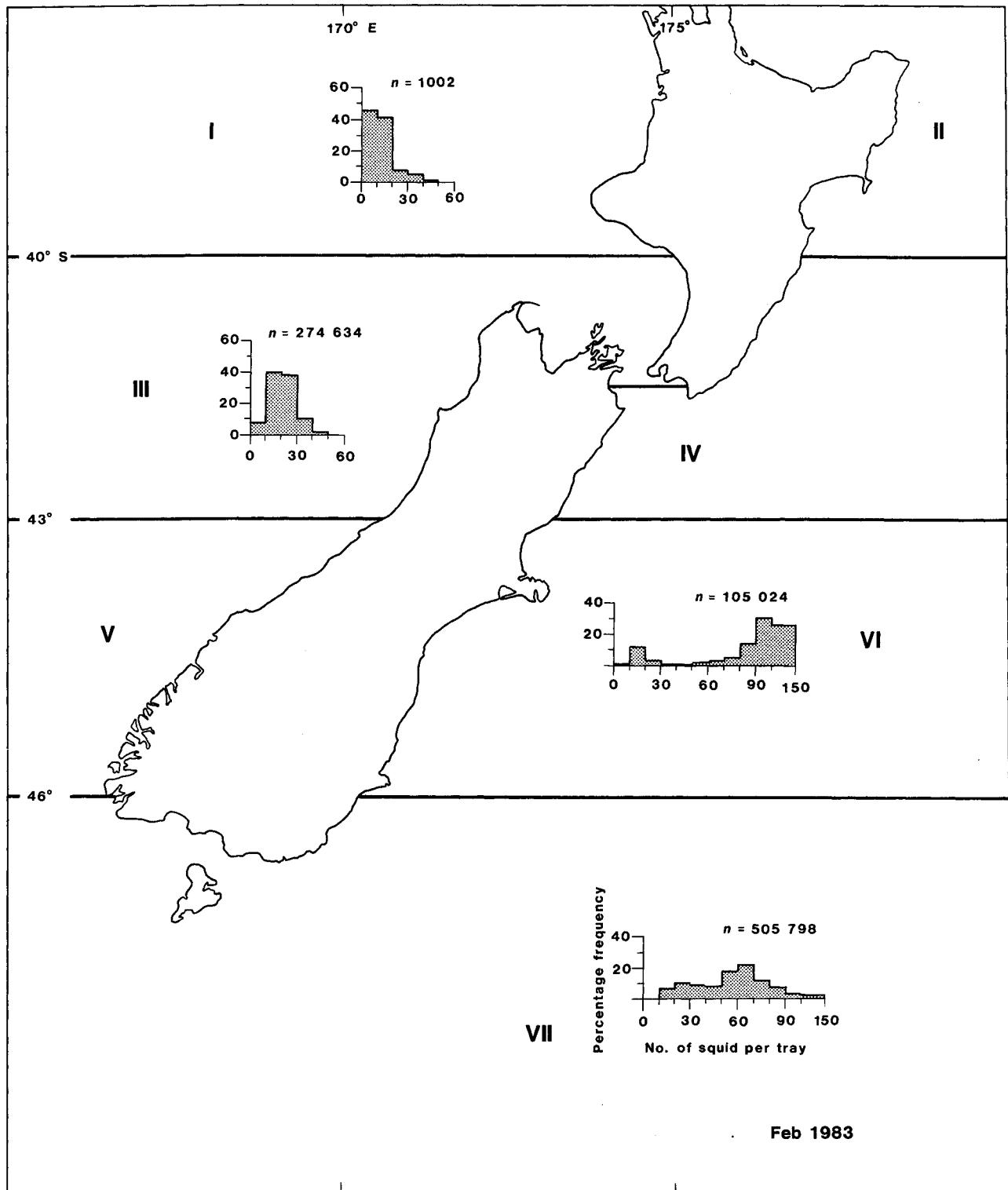


Fig. 5—continued.

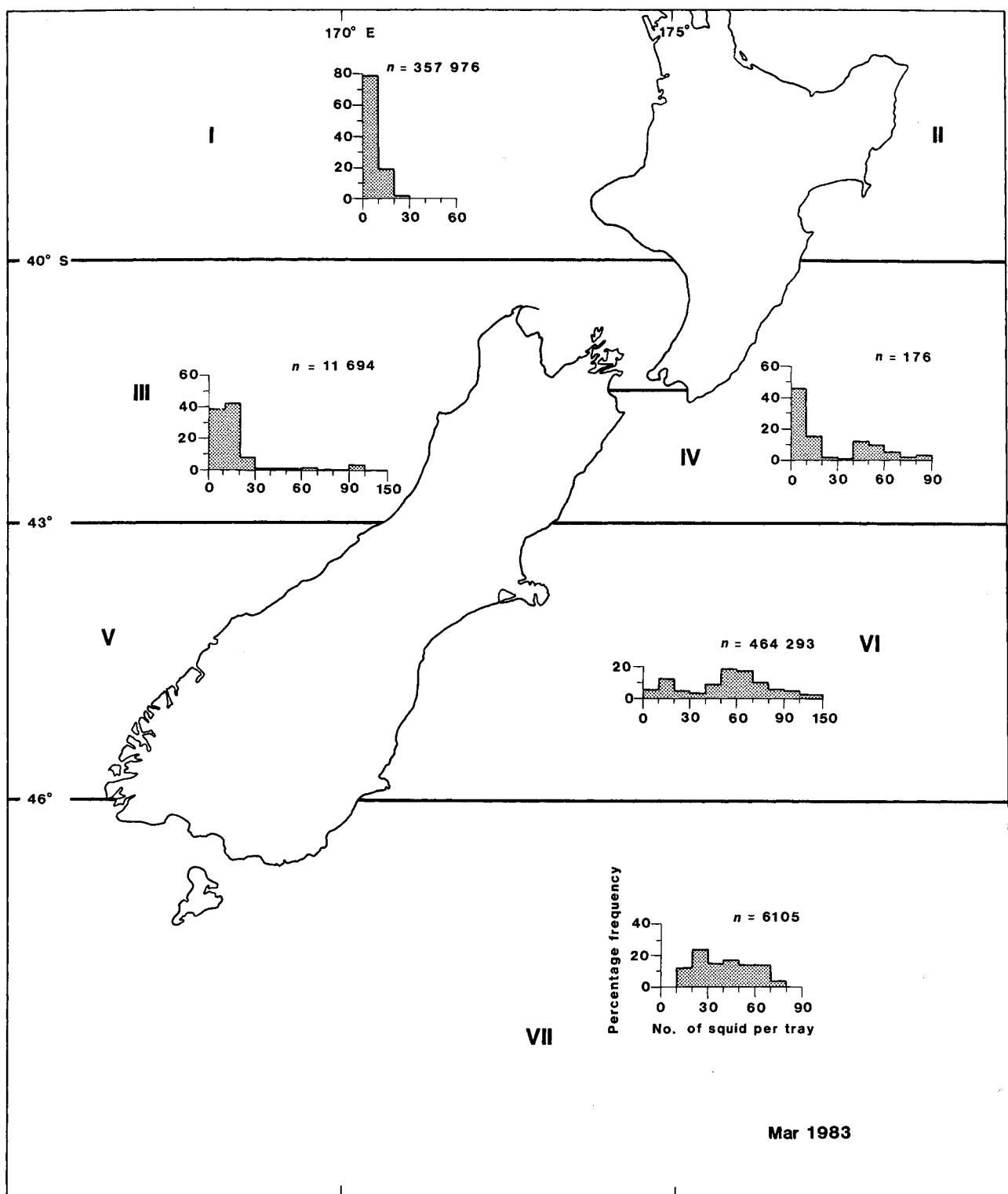


Fig. 5—continued.

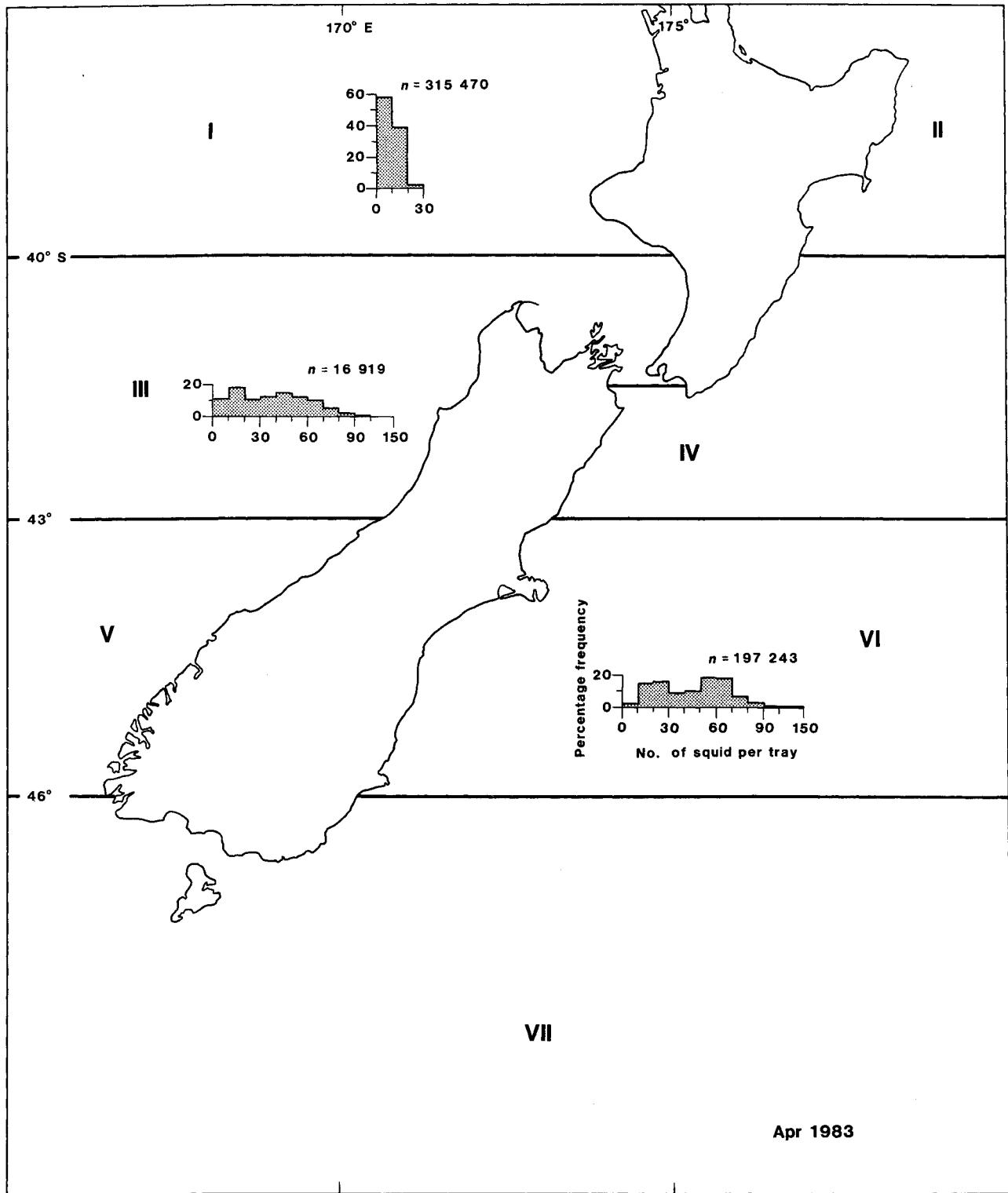


Fig. 5—continued.

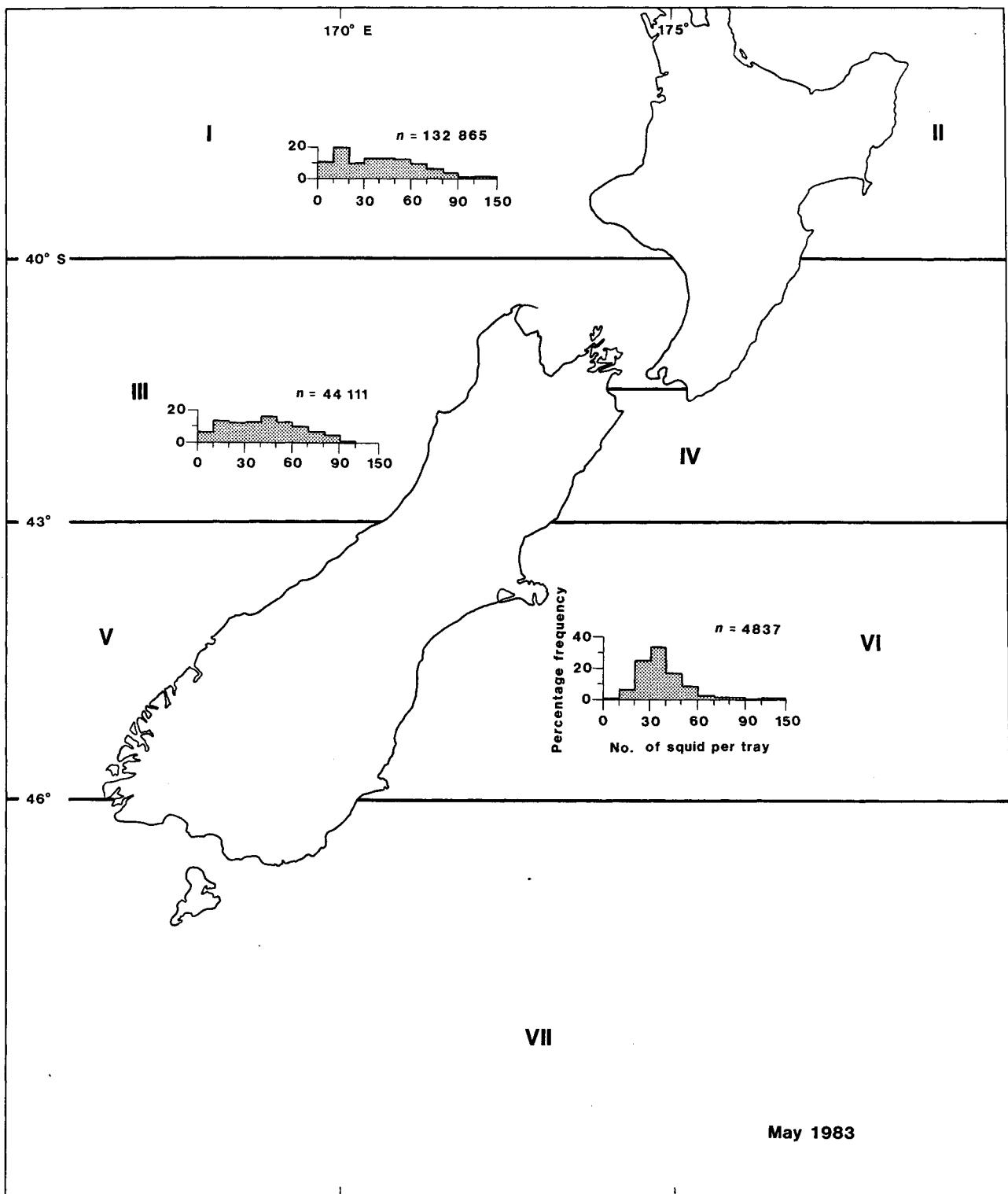


Fig. 5—continued.

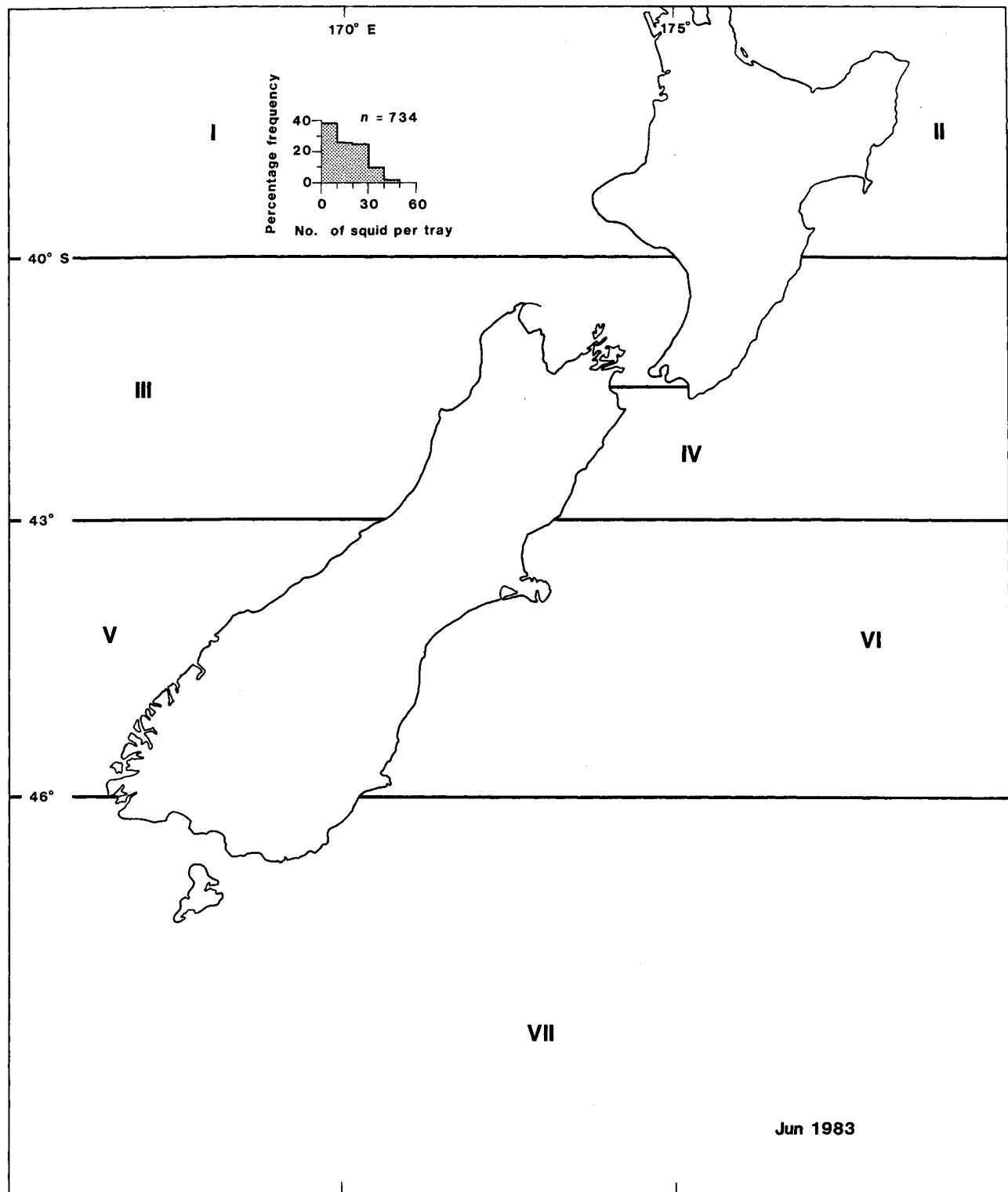


Fig. 5—continued.

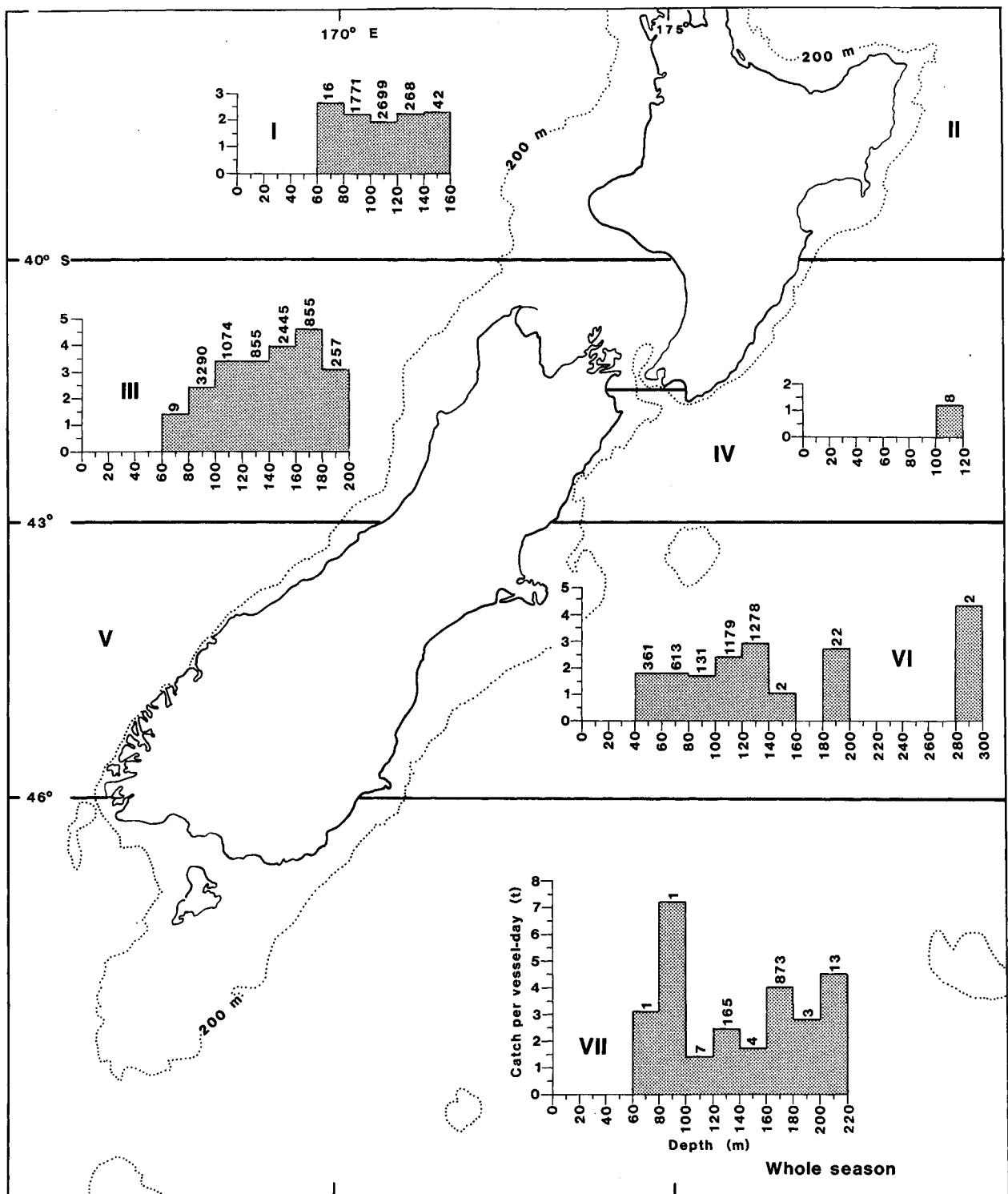


Fig. 6: Seasonal summary of catch (t) per vessel-day by mean bottom depth of fishing grounds in areas I–VII. (Individual figures above the histograms are the number of vessel-days fished in each depth range.)

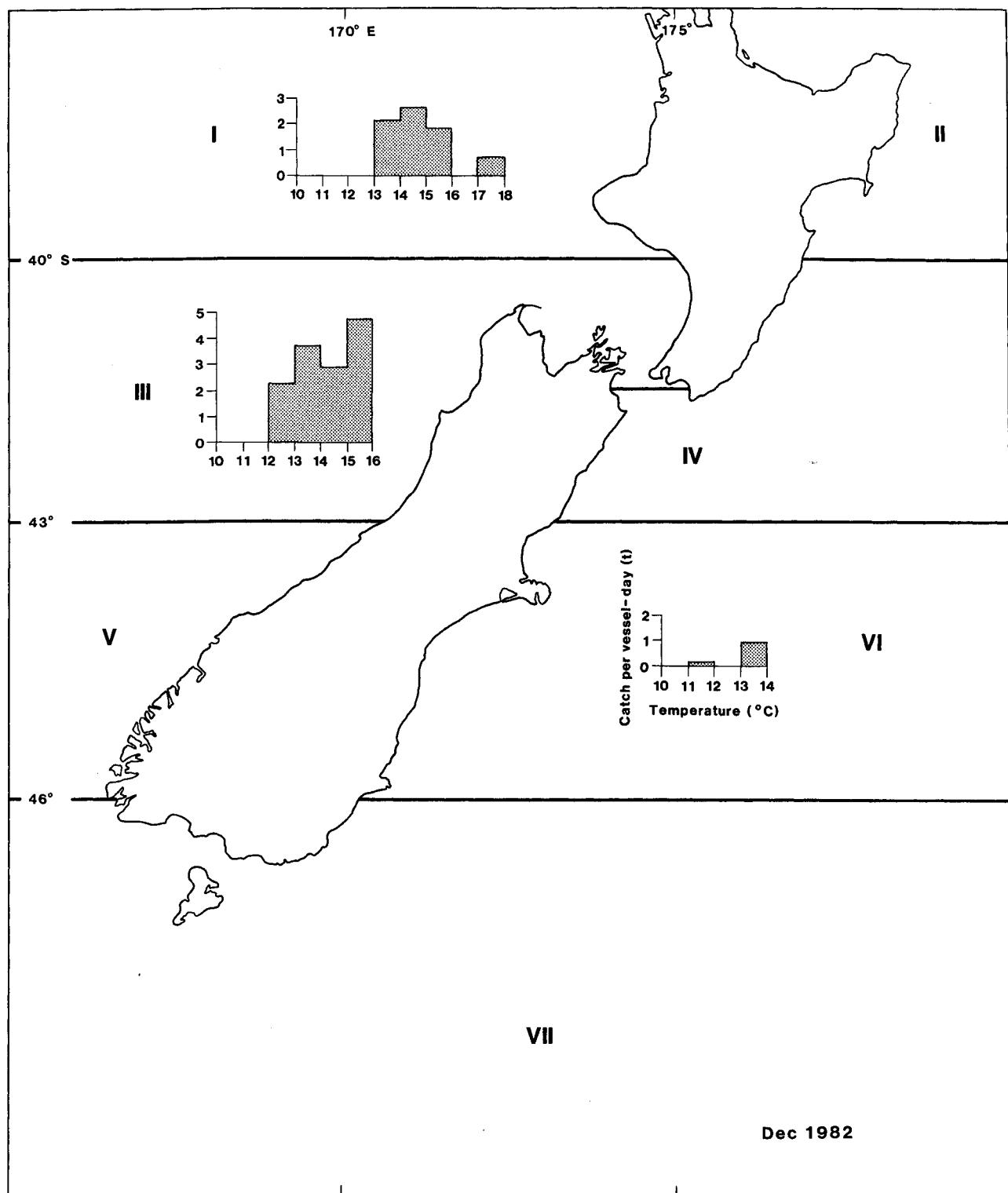


Fig. 7: Monthly summary of catch (t) per vessel-day by mean sea surface temperature (°C) of fishing grounds in areas I-VII.

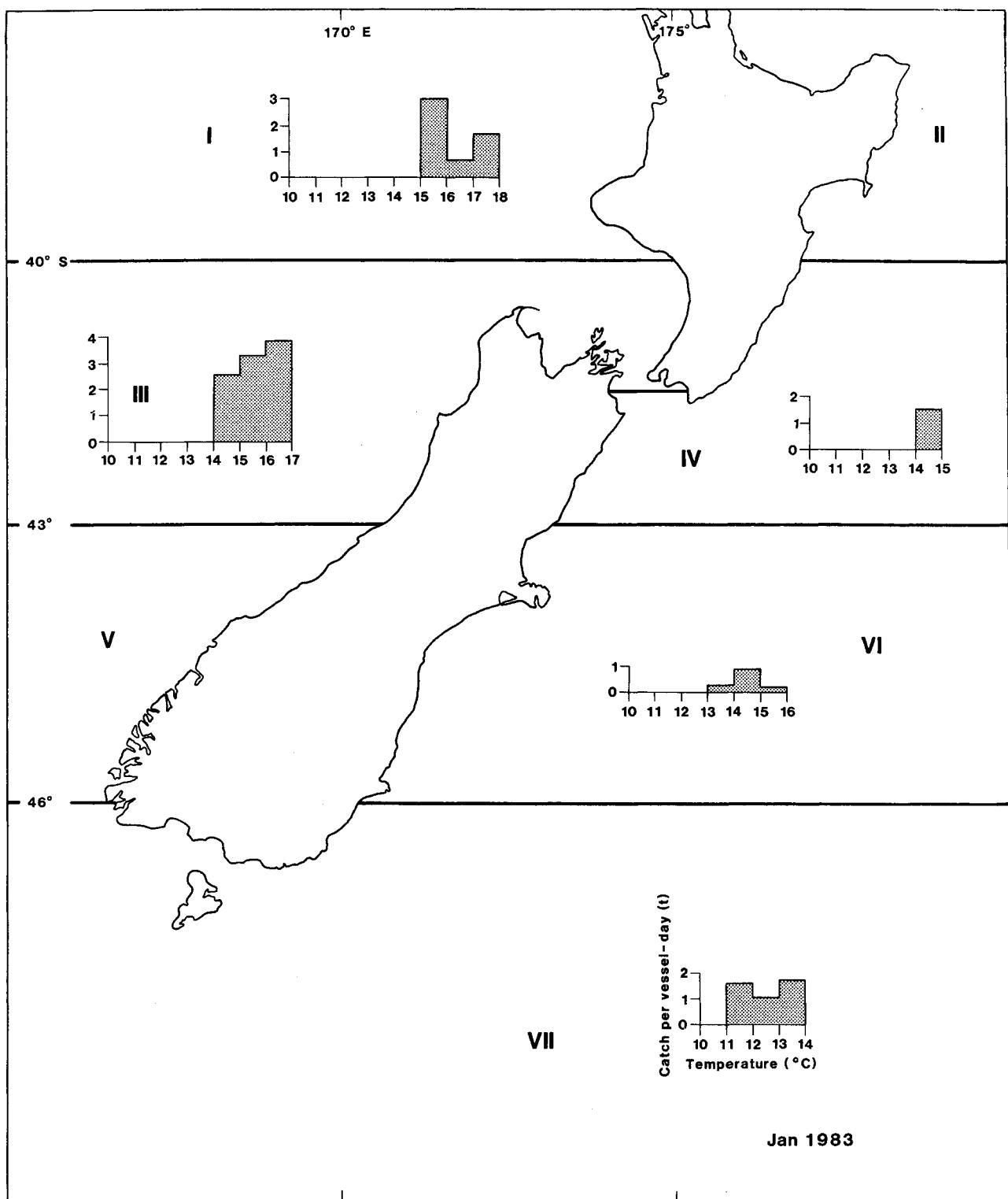


Fig. 7—*continued.*

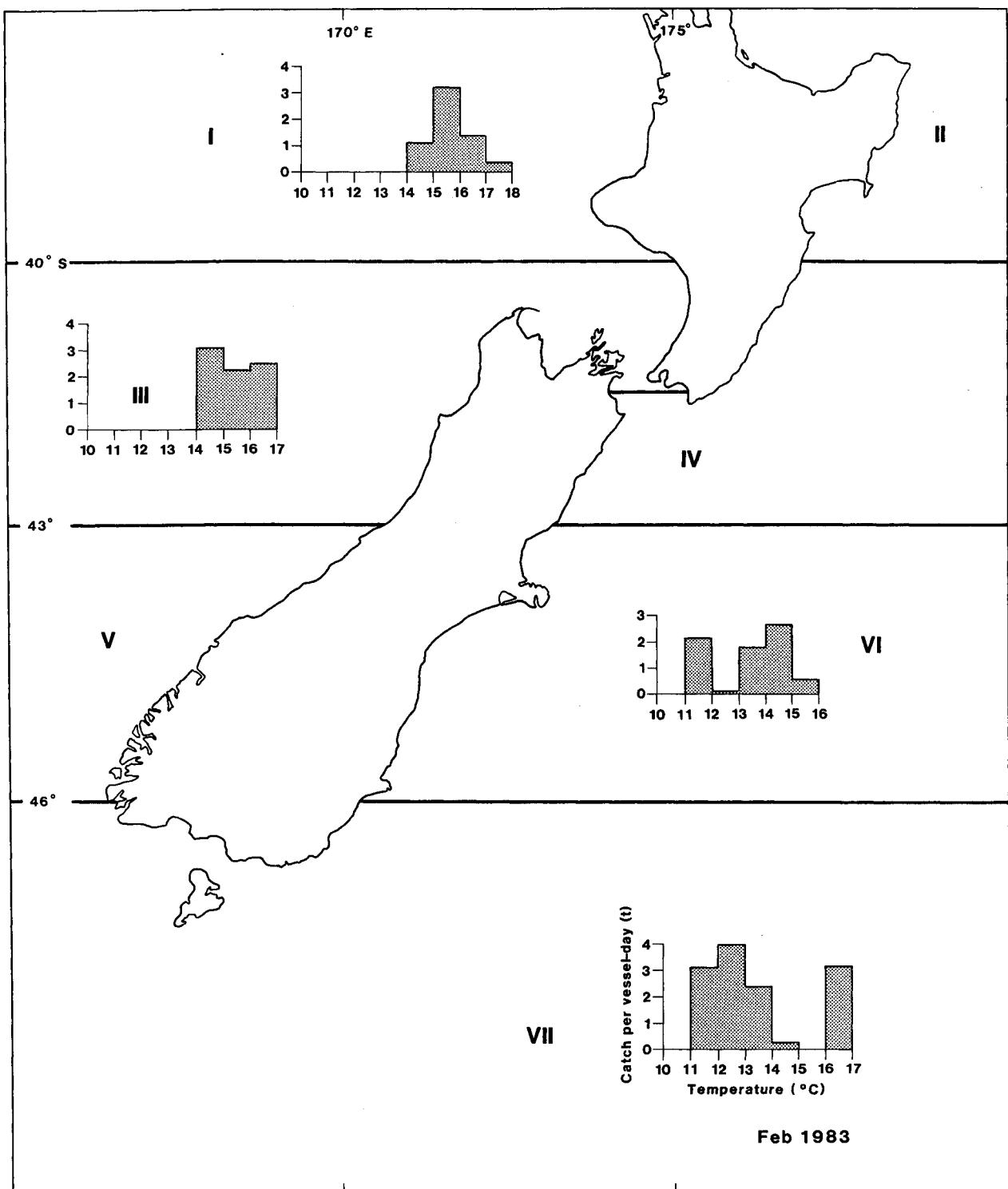


Fig. 7—continued.

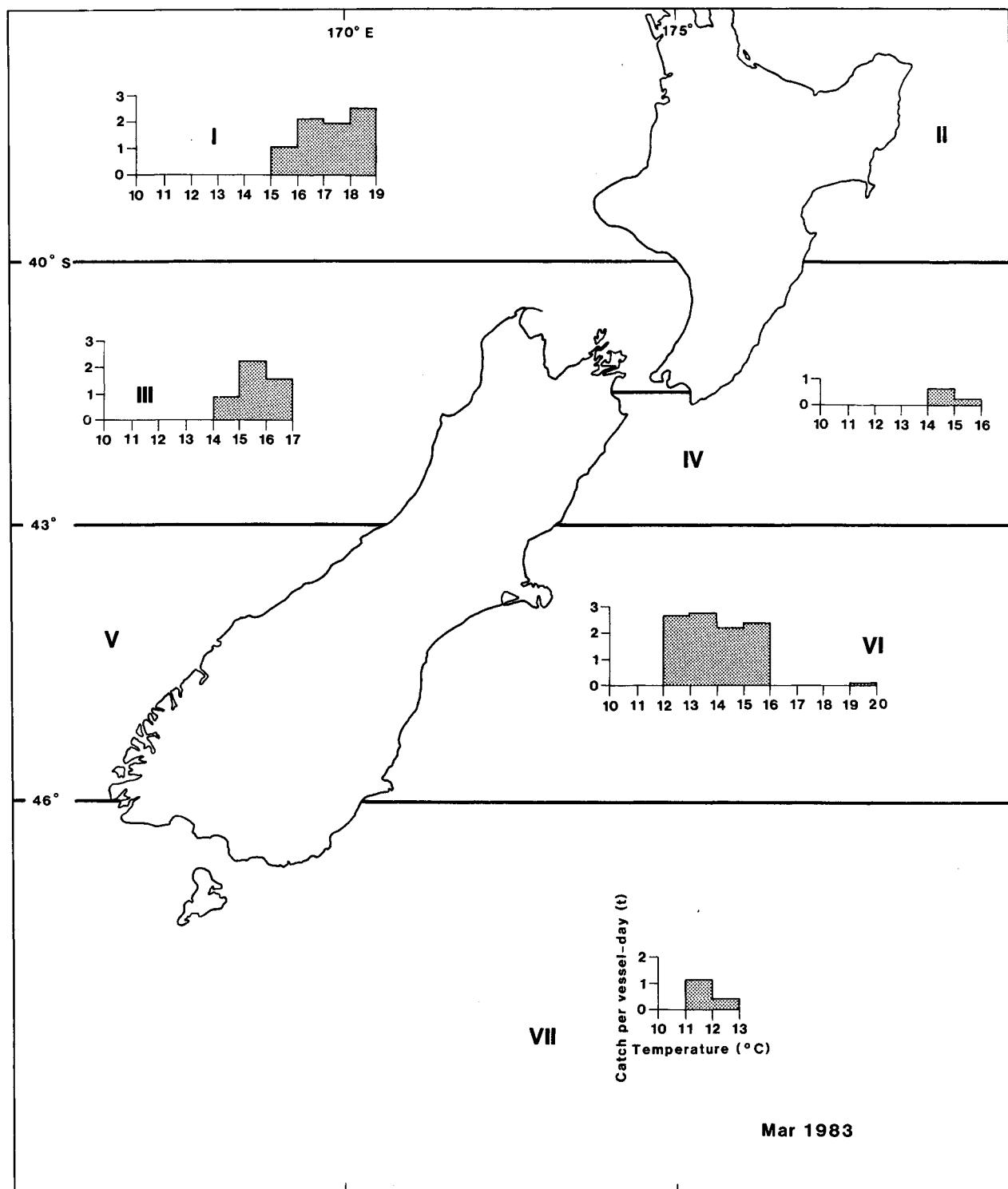


Fig. 7—continued.

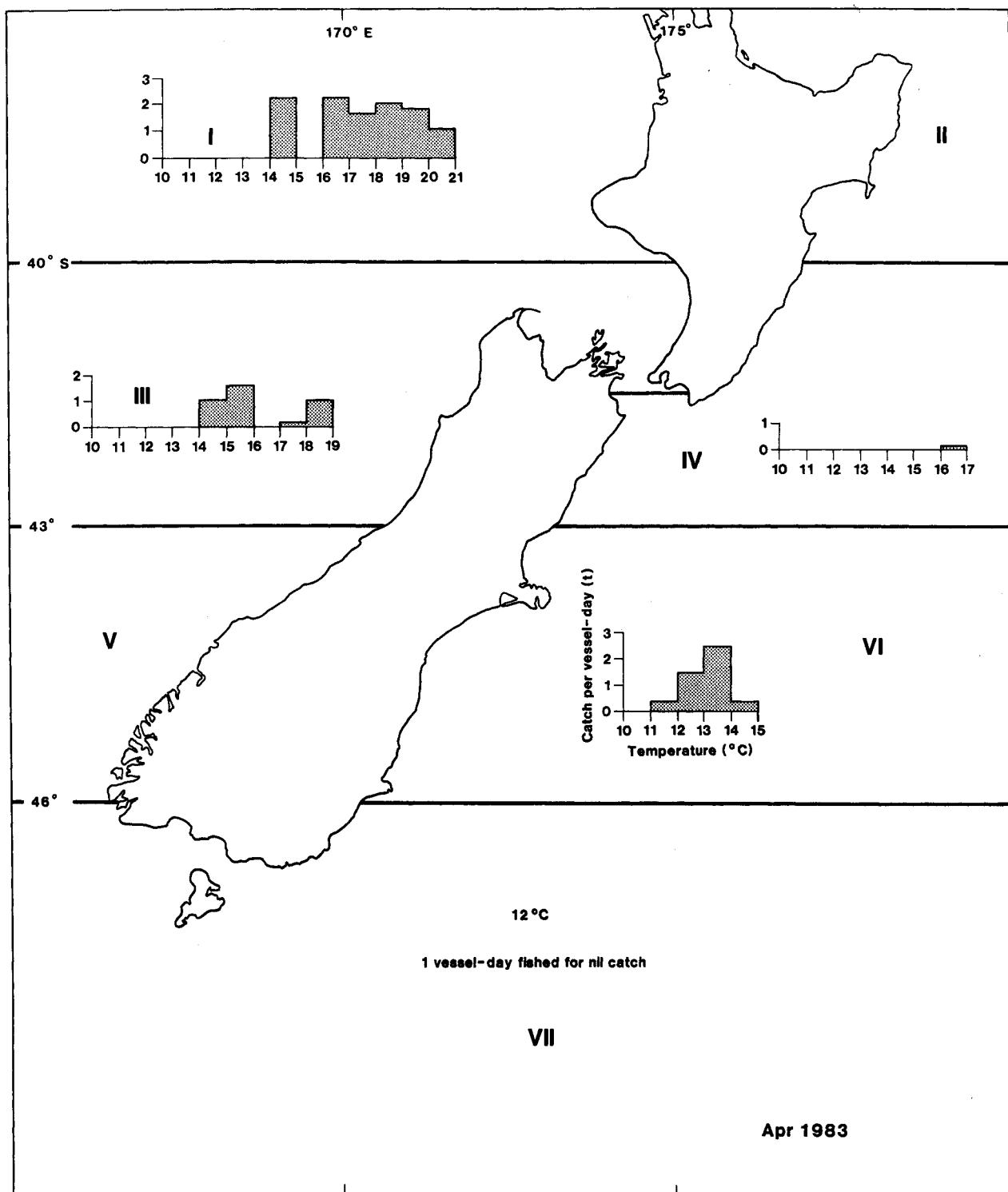


Fig. 7—continued.

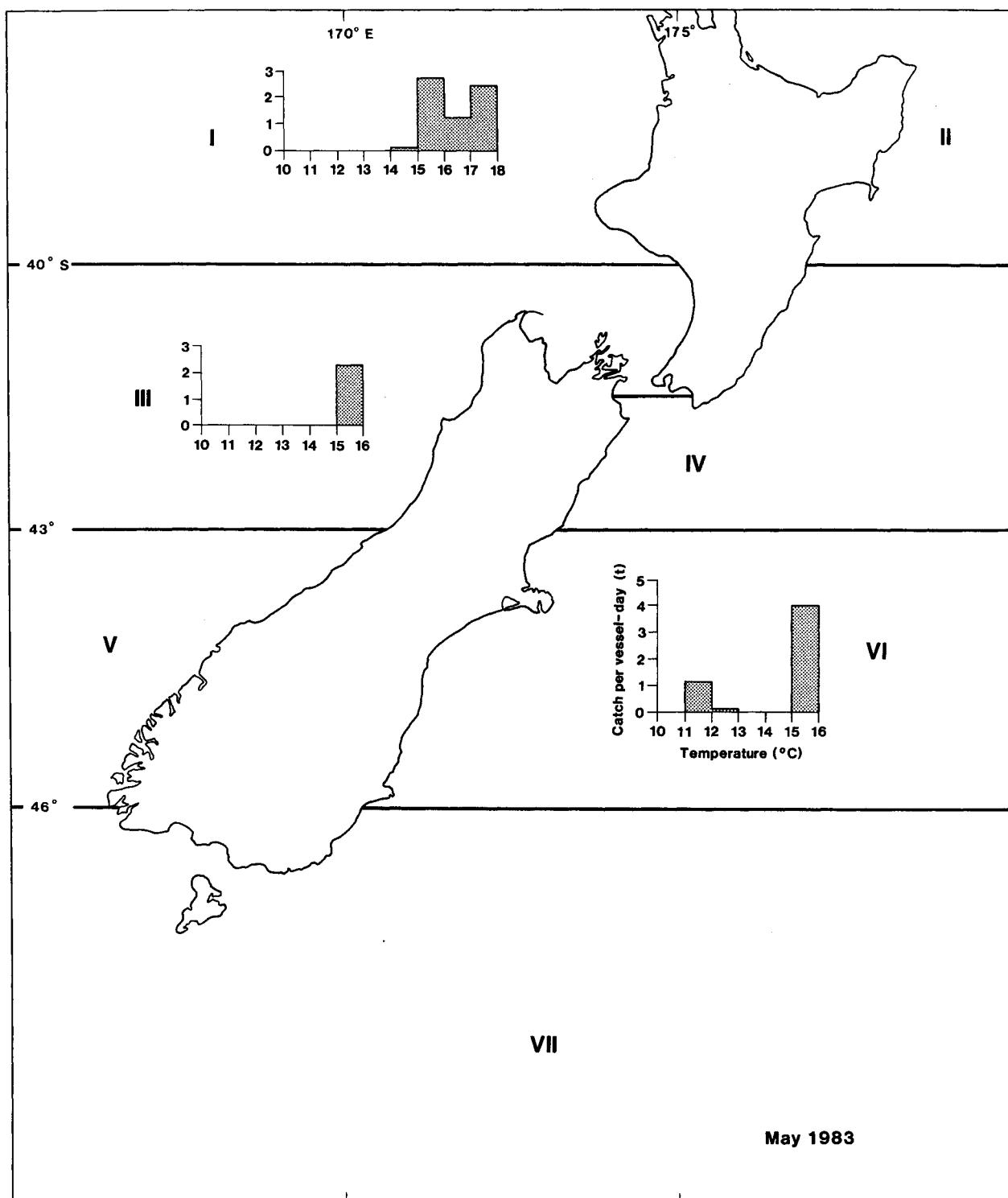


Fig. 7—continued.

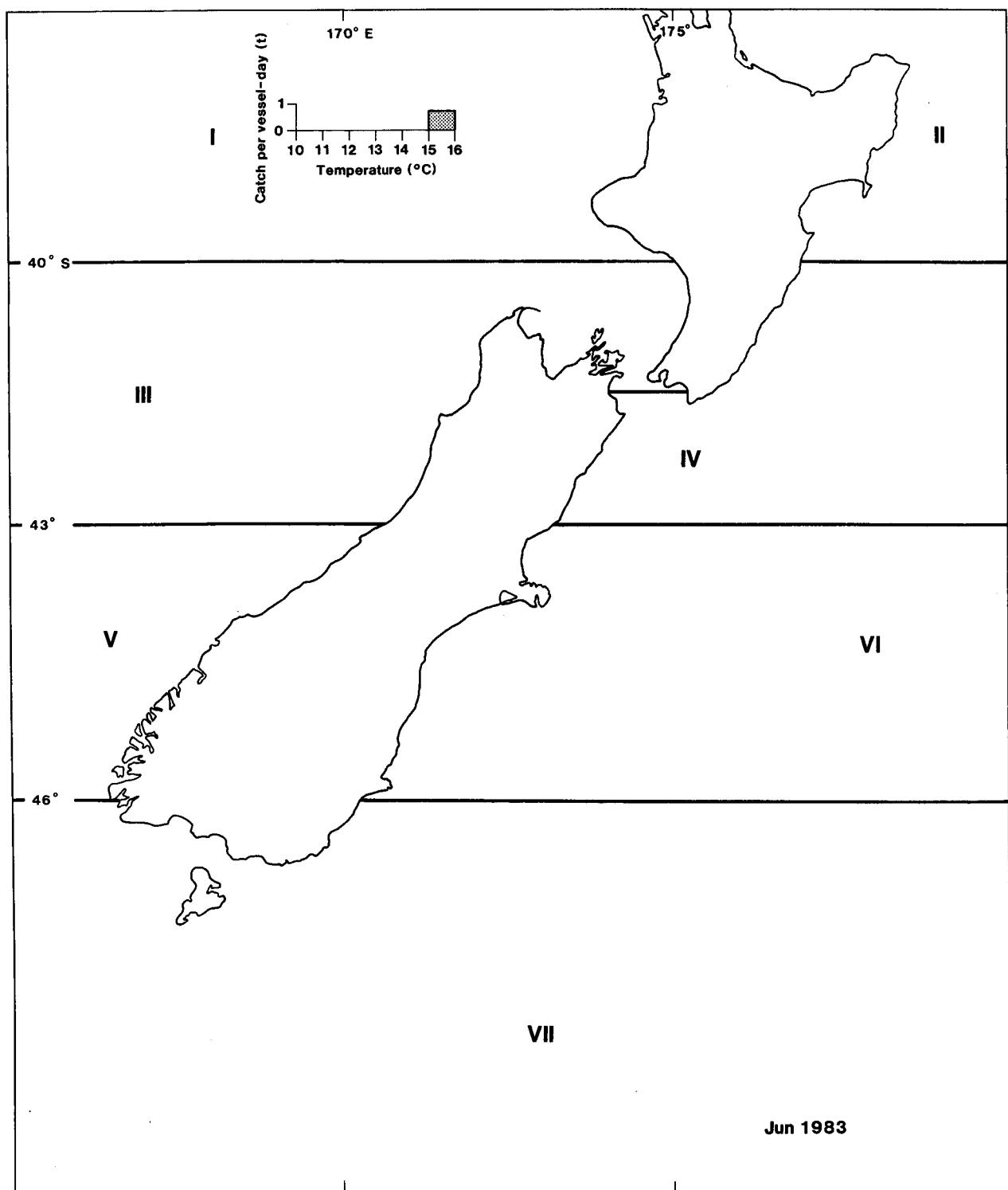


Fig. 7—continued.