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An Overview of Catch and Effort Trends of the
Shrimp Fishery in the Gulf of St. Lawrence and
Scotian Shelf, 1977-80

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ABSTRACT

An overview of landings, fishing effort trends and distribution of effort to the shrimp fishery in the Canadian Maritimes is presented.

Fishing effort shifted from Anticosti Channel to Esquiman Channel and the eastern Scotian Shelf. Therefore, landings for the Anticosti Channel decreased from 634.6MT in 1979 to 444.2MT during 1980.

No significant increase in total landings for the Gulf of St Lawrence and the eastern part of the Scotian Shelf was noted from 1979 (1905MT) to 1980 (1930MT) in comparison to previous years.

RESUME

Un aperçu général des prises, efforts de pêches et distribution de l'effort est présenté pour la flotte canadienne maritime qui pêche la crevette.

L'effort de pêche a diminué dans le chenal d'Anticosti pour se diriger vers le chenal d'Esquiman à l'est du plateau Scotien. Alors, une diminution des prises de 634.6 Tm en 1979 à 444.2 Tm en 1980 fut observée pour le chenal d'Anticosti.

Les prises totales du Golfe du St-Laurent et de l'est du plateau Scotien n'ont relativement pas augmenté de 1979 (1905 Tm) à 1980 (1930 Tm) en comparaison aux années précédentes.

INTRODUCTION

Canadian Maritime based vessels have been exploiting shrimp in the Gulf of St. Lawrence and the Scotian Shelf since the mid 1970's (Labonté, 1980). Having no restriction on fishing locations, fishermen have moved freely from one stock location to another (Fig. 1).

In this paper, an overview of landings, fishing effort trends and distribution of fishing effort are presented.

MATERIAL AND METHODS

All data were obtained from log books and sale slips documented by fishermen for each year mentioned.

To standardize catch per unit of effort (CPUE) to the fishing power of a Yankee 36 trawl, the effort of a Western 2A trawl was increased 1.5 times and the effort of a Yankee 41 trawl was increased 1.3 times (Labonté, 1980).

RESULT AND DISCUSSION

Standardized CPUE in the Esquiman Channel and on the eastern part of the Scotian Shelf was slightly lower during 1980 than 1979 (Table 1). Total standardized fishing effort for the Gulf of St. Lawrence and the eastern part of the Scotian Shelf only increased by approximately 17% from 1979 to 1980 compared to 20% and 25% during previous years. Therefore total landings (Table 1) did not increase significantly from 1979 (1905 MT) to 1980 (1930MT).

Although CPUE was lower in the Esquiman Channel, monthly CPUE during 1980 followed a similar pattern compared to 1979 (Fig. 3). Monthly CPUE in Anticosti Channel during 1980 peaked at the beginning of the season as in 1979. However, by the end of 1980 another peak is observed (Fig. 2) and might be

a late recruitment, a redistribution of shrimp or different fishing location. On the eastern part of the Scotian Shelf, a sharp decrease in monthly CPUE was observed during 1980 (Fig. 4) compared to previous years as a result of seasonal changes in the availability of shrimp to the fishery.

Fishing effort in the Anticosti Channel is distributed on the western part of the channel (Figs 5 & 6). Landings in this area dropped from 634.6 MT in 1979 to 444.2 MT during 1980 (Table 1) as a result of lower fishing effort. Fishing effort shifted towards the Esquiman Channel and the eastern part of the Scotian Shelf.

In the Esquiman Channel, fishing effort is mostly concentrated on the northern side of latitude 50°N (Figs 7 & 8). During 1980, only 109.6 MT was caught south of that line and 393.3 MT was caught on the Northern side, leaving the southern part of the Esquiman Channel underexploited.

In 1980, fishing effort on the Scotian Shelf fishery was mostly concentrated due east of Louisbourg (4VA & 4VB) and just south of Canso (4WD & 4WE) (Figs 9 & 10). During 1979, most of the shrimp landed was caught just south of Canso and in 1980 effort had increased in the area due east of Louisbourg with some activity in the Misaine area (4VC). Labonté (1980) calculated an MSY of 5021 MT for the eastern part of the Scotian Shelf (4VW). With landings of 983.8 MT for 1980, only 20% of the MSY would have been caught. However, this was subdivided (Labonté, 1980) between the different holes, giving an MSY of 1086 MT for the Canso hole (4WD & 4WE), 1553 MT for the Louisbourg hole (4VA & 4VB) and 2382 MT for the Misaine area (4VC). Therefore, the 534.6 MT caught in 1979 and 359.6 MT in 1980 for the Canso area, would represent approximately 49% and 33% of the estimated MSY. The 295.5 MT caught in 1979 and 491.5 MT in 1980 would represent 19% and 32% of the estimated MSY for the Louisbourg area. This leaves the Misaine area underexploited with only 8 MT caught in 1979 and 132.8 MT caught in 1980.

CONCLUSION

- 1- Distribution of fishing effort in the Esquiman Channel probably outlines the commercialy fishable biomass.
- 2- In the future, if effort in eastern part of the Scotian Shelf increases, it would be advisable to monitor each area of concentration separately to prevent localized overfishing.

REFERENCE

Labonté, S.S.M., 1980. An assessment of Shrimp Stocks Off Southeast Cape Breton, South Esquiman and North Anticosti, CAFSAC Res. Doc. 80/67.

Table 1: Catch and CPUE by Maritimes boats - 1977 to 1980.

Area	Year	Catch (MT)	Effort (Hrs)	Effort (Hrs Std)	CPUE Kg/h	CPUE Std Kg/h
Cape Breton	*1977	269.0	2093	2575	128.5	104.5
South Esquiman		50.0	535	661	93.5	75.6
North Anticosti		<u>633.5</u>	<u>9709</u>	<u>11219</u>	65.2	56.5
		952.5	12337	14455		
Cape Breton	*1978	306.4	2513	3149	121.9	97.3
South Esquiman		83.6	768	1106	108.9	75.6
North Anticosti		<u>843.1</u>	<u>11519</u>	<u>13298</u>	73.2	63.4
		1233.1	14800	17553		
Cape Breton	'1979	838.0	4800	6547	174.6	128.0
Esquiman Channel		432.6	3656	4828	118.3	89.6
Anticosti Channel		<u>634.9</u>	<u>9132</u>	<u>10625</u>	69.5	59.8
		1905.5	17588	22000		
Cape Breton	'1980	983.8	7514	10109	130.9	97.3
Esquiman Channel		502.9	5178	7252	97.1	69.3
Anticosti Channel		<u>444.2</u>	<u>6400</u>	<u>8402</u>	69.4	52.9
		1930.9	19092	25763		

*Labonté, 1980

'Log records

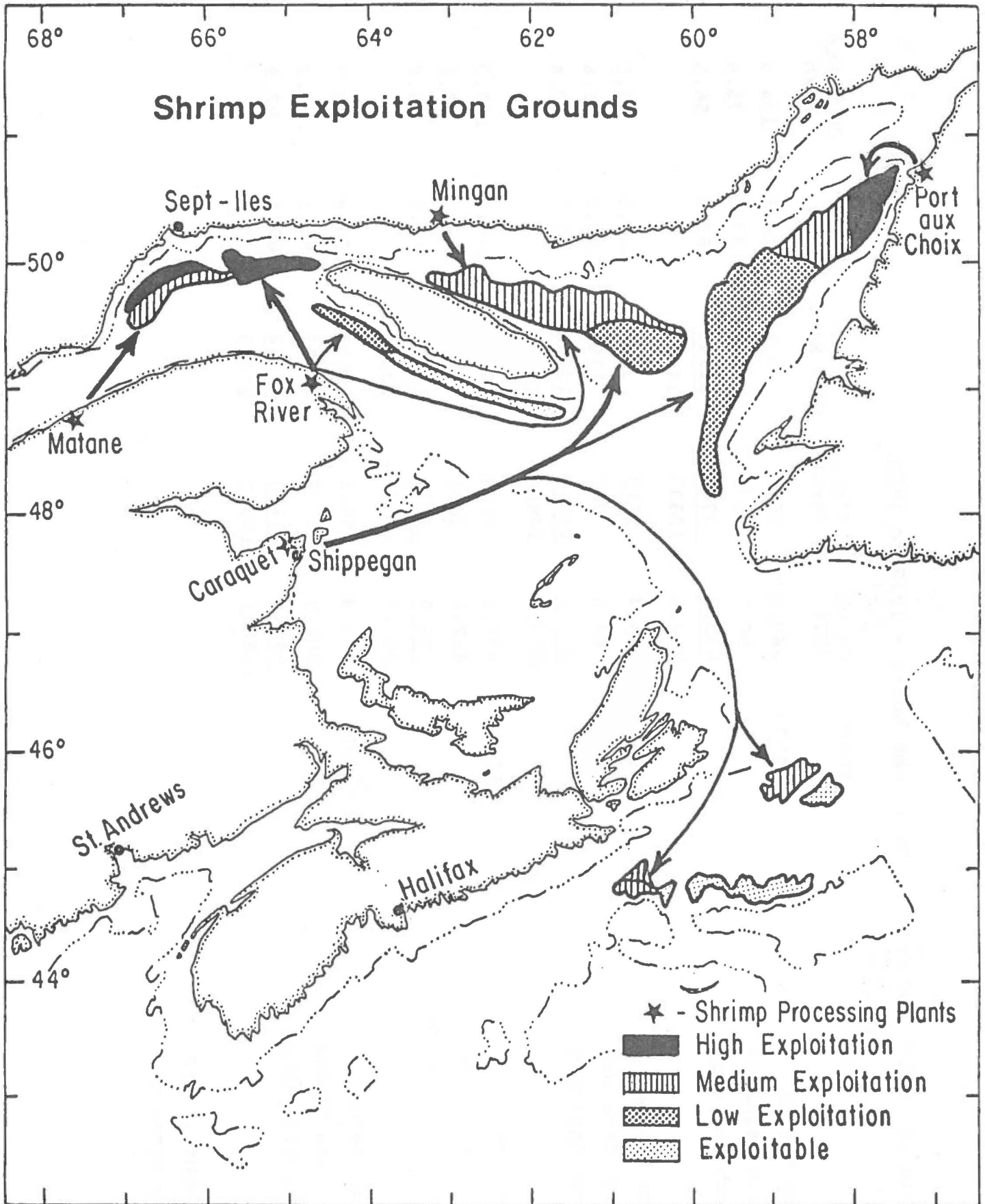


Figure 1: General shrimp exploitation grounds.

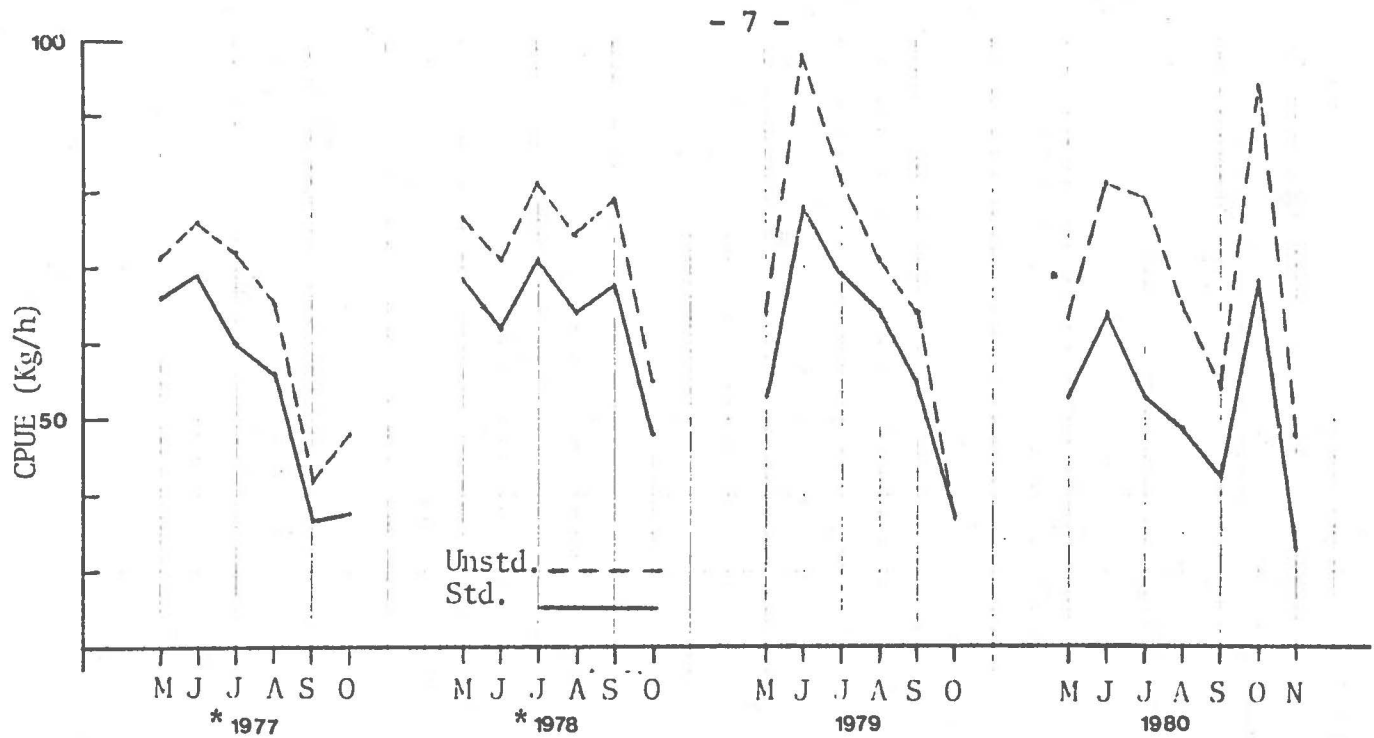


Figure 2: Monthly catch per unit of effort (Kg/h) for the past four years in the Anticosti Channel.

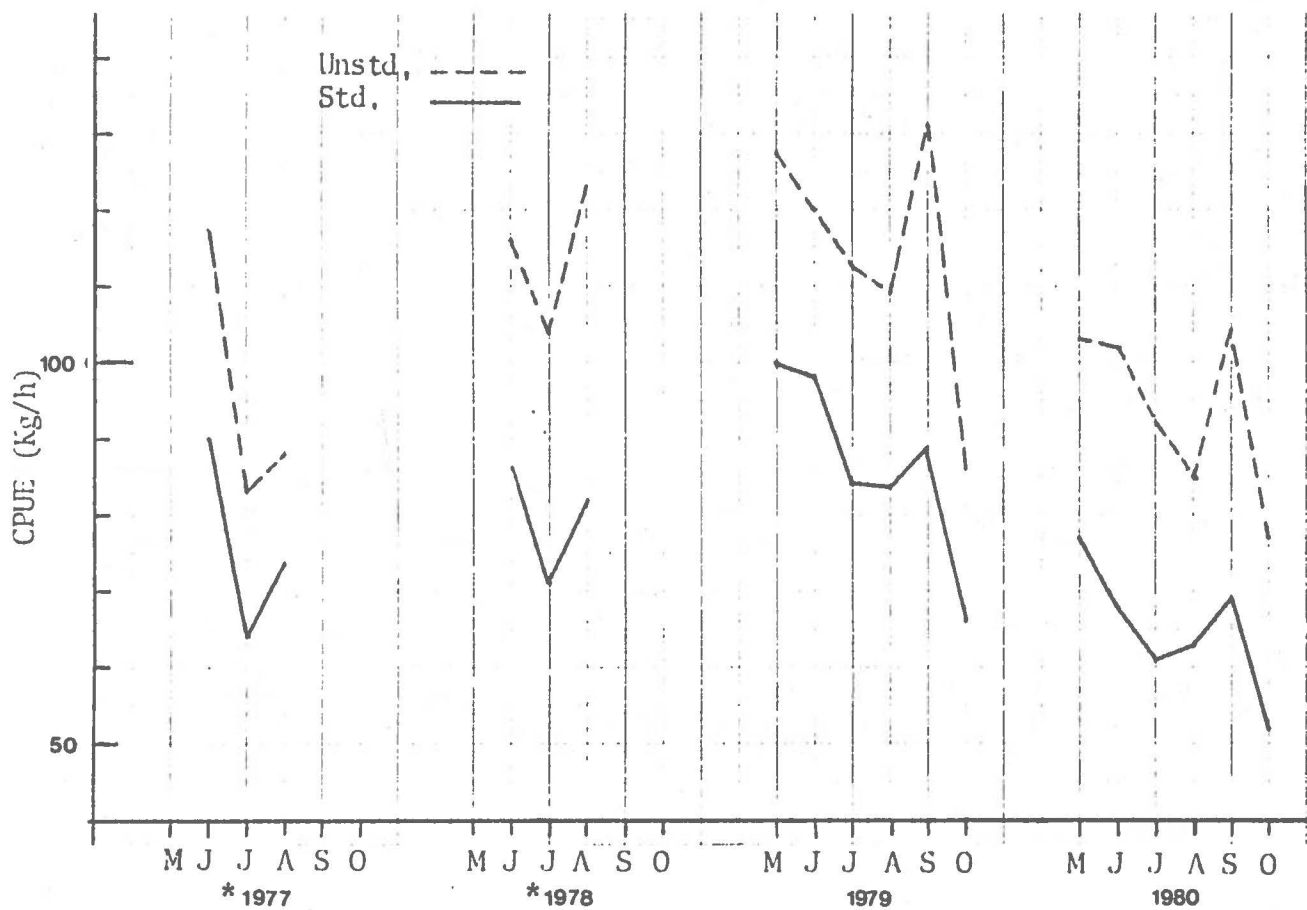


Figure 3: Monthly catch per unit of effort (Kg/h) for the past four years in the Esquiman Channel,

(*Labonte, 1980)

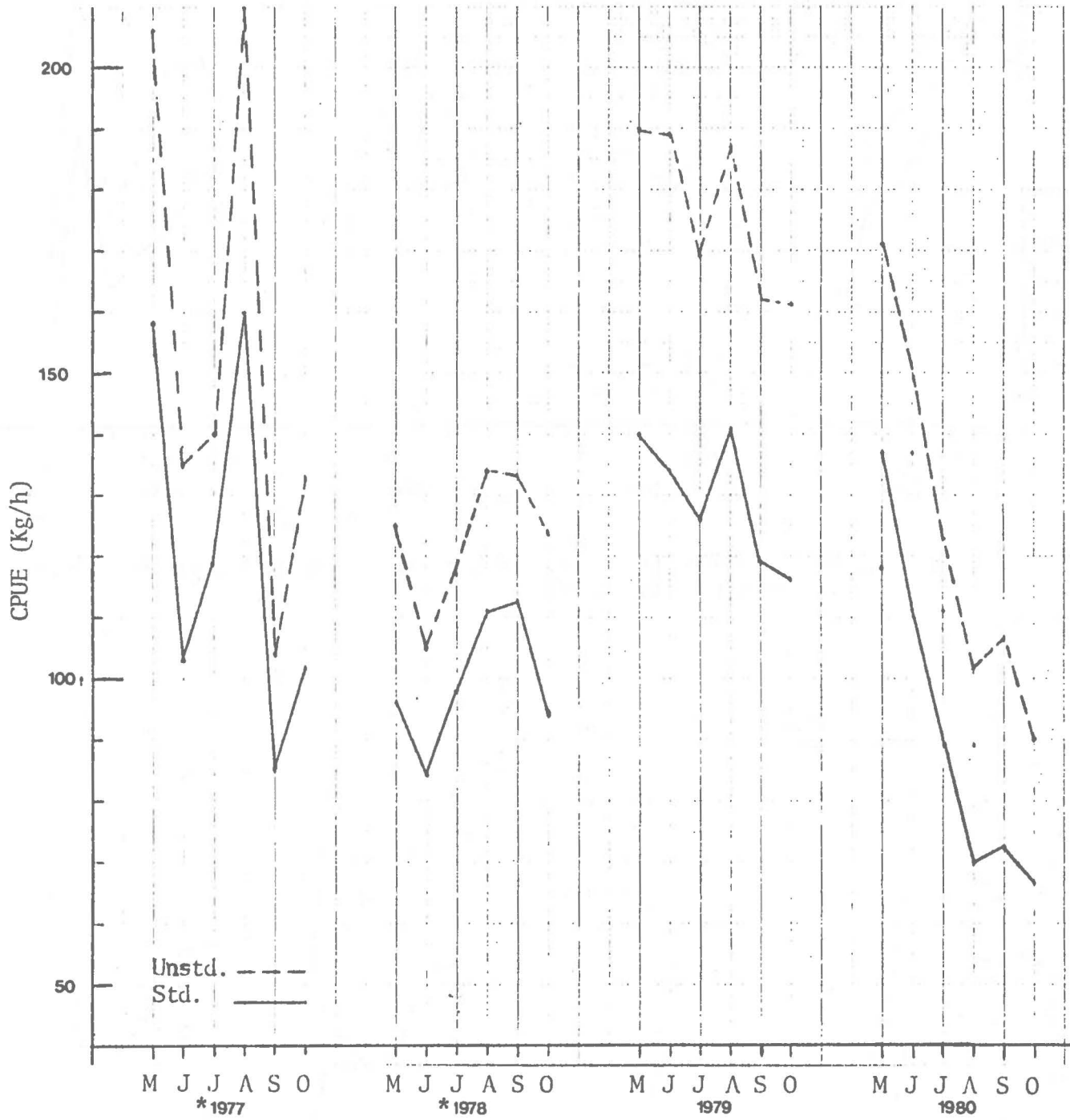


Figure 4 : Monthly catch per unit of effort (Kg/h) for the past four years in the southeast Cape Breton area.

(*Labonte, 1980)

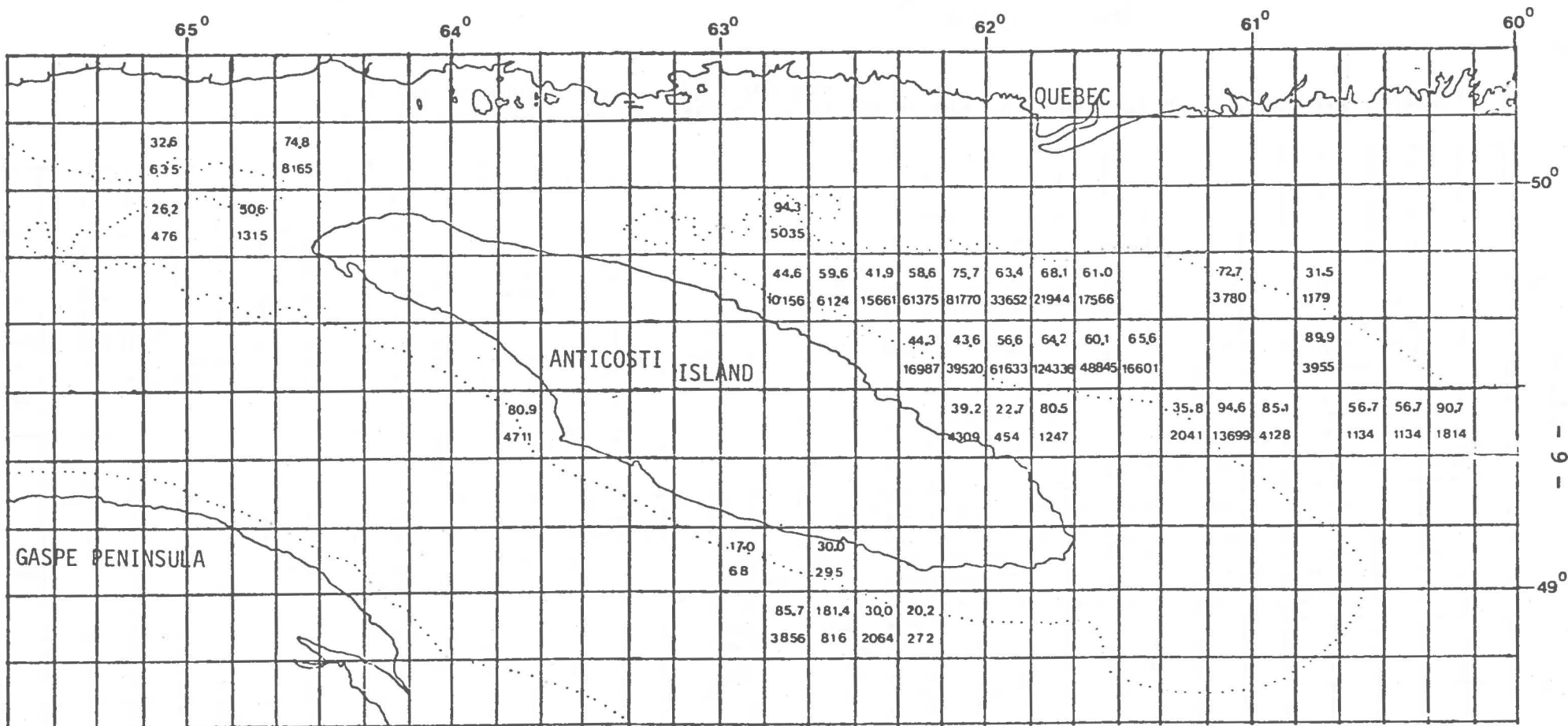




Figure 5 : Distribution of Standardized C.P.U.E. (Kg/h) and Landings (Kg) per ten minutes squares, in the Anticosti Channel (4S) for 1979.

CPUE (Kg/h) 
 Landings (Kg) 

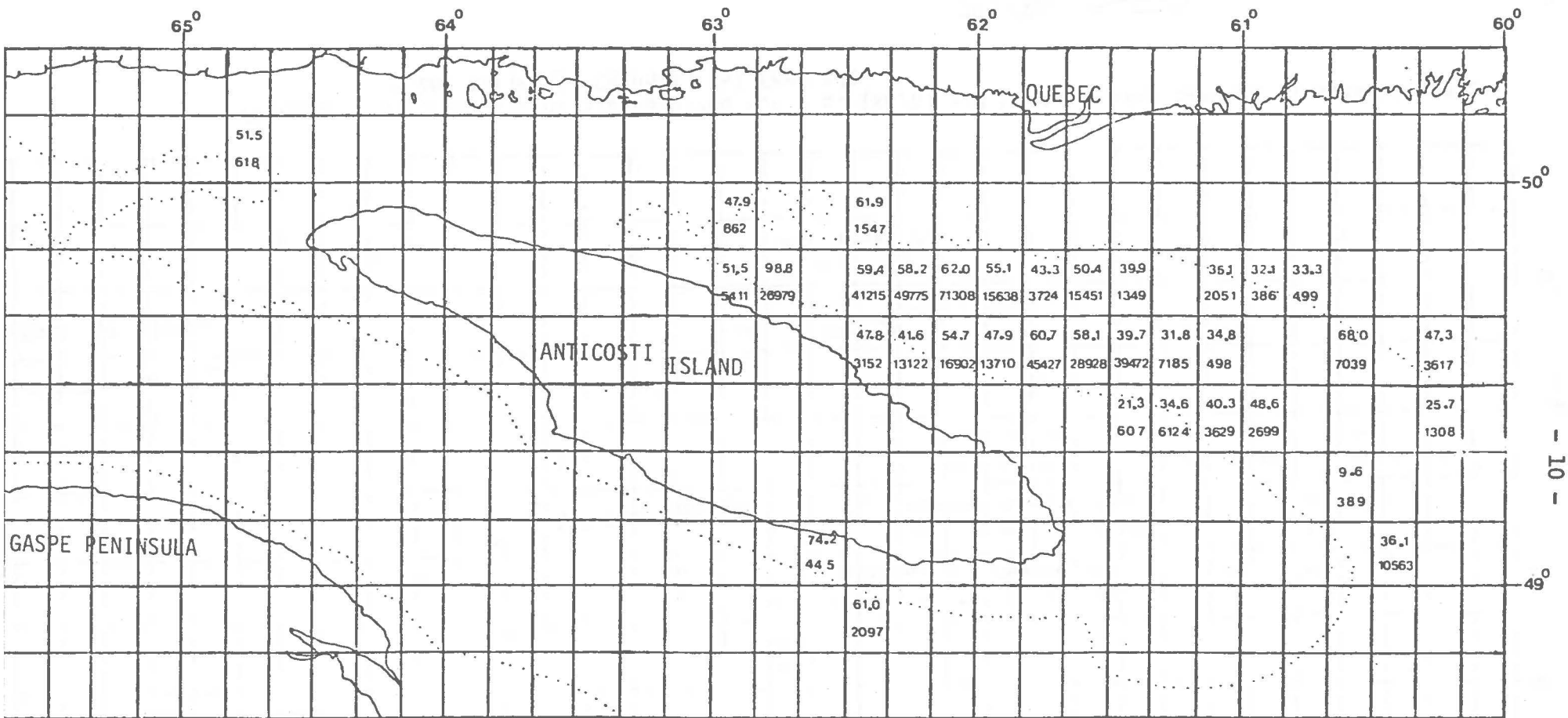




Figure 6 : Distribution of Standardized C.P.U.E. (Kg/h) and Landings (Kg) per ten minutes squares, in the Anticosti Channel (4S) for 1980.

CPUE (Kg/H) 
 Landings (Kg) 

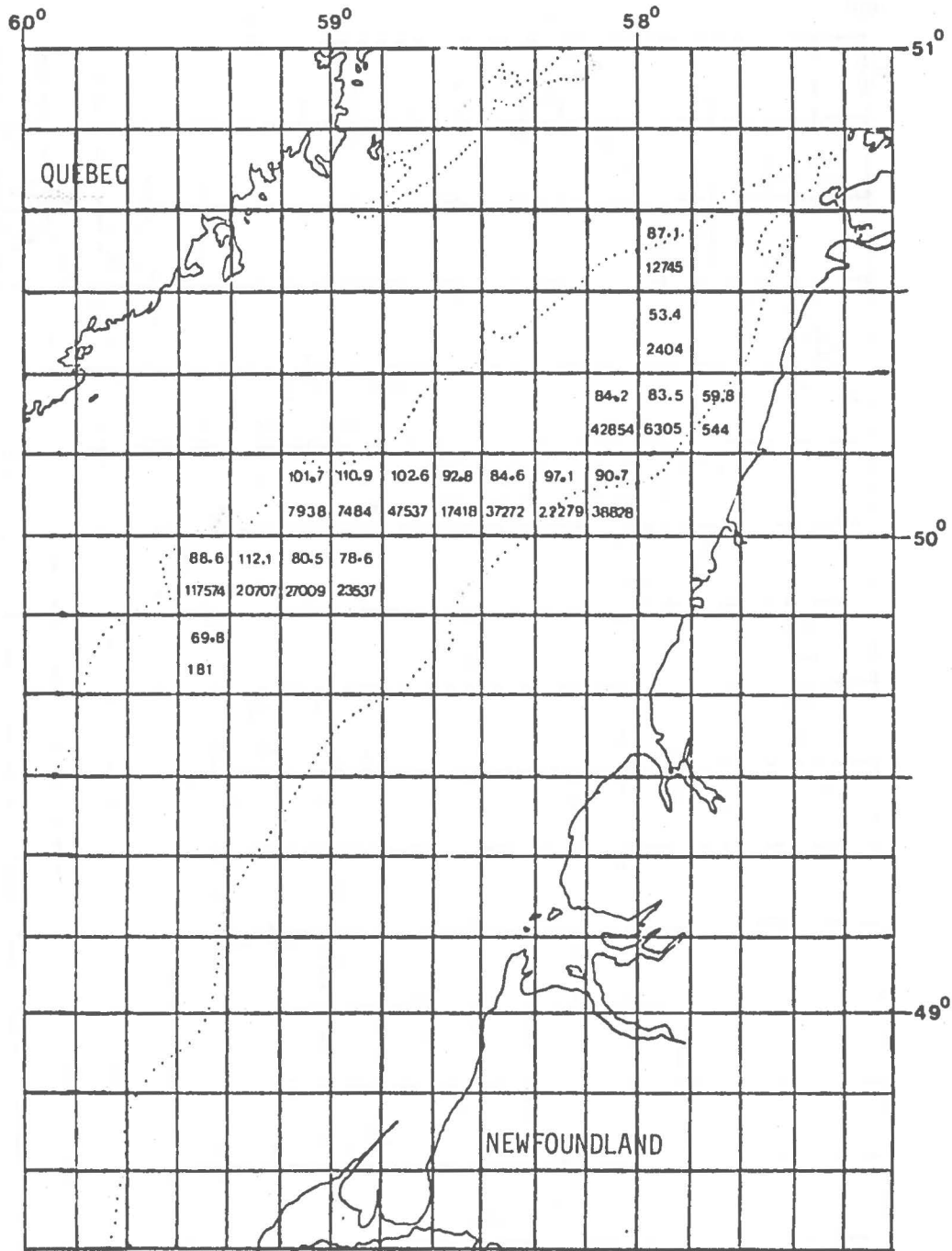




Figure 7 : Distribution of Standardized C.P.U.E. (Kg/h) and Landings (Kg) per ten minutes squares, in the Esquiman Channel (4R) for 1979.

CPUE: (Kg/h) → 
 Landings (Kg) → 

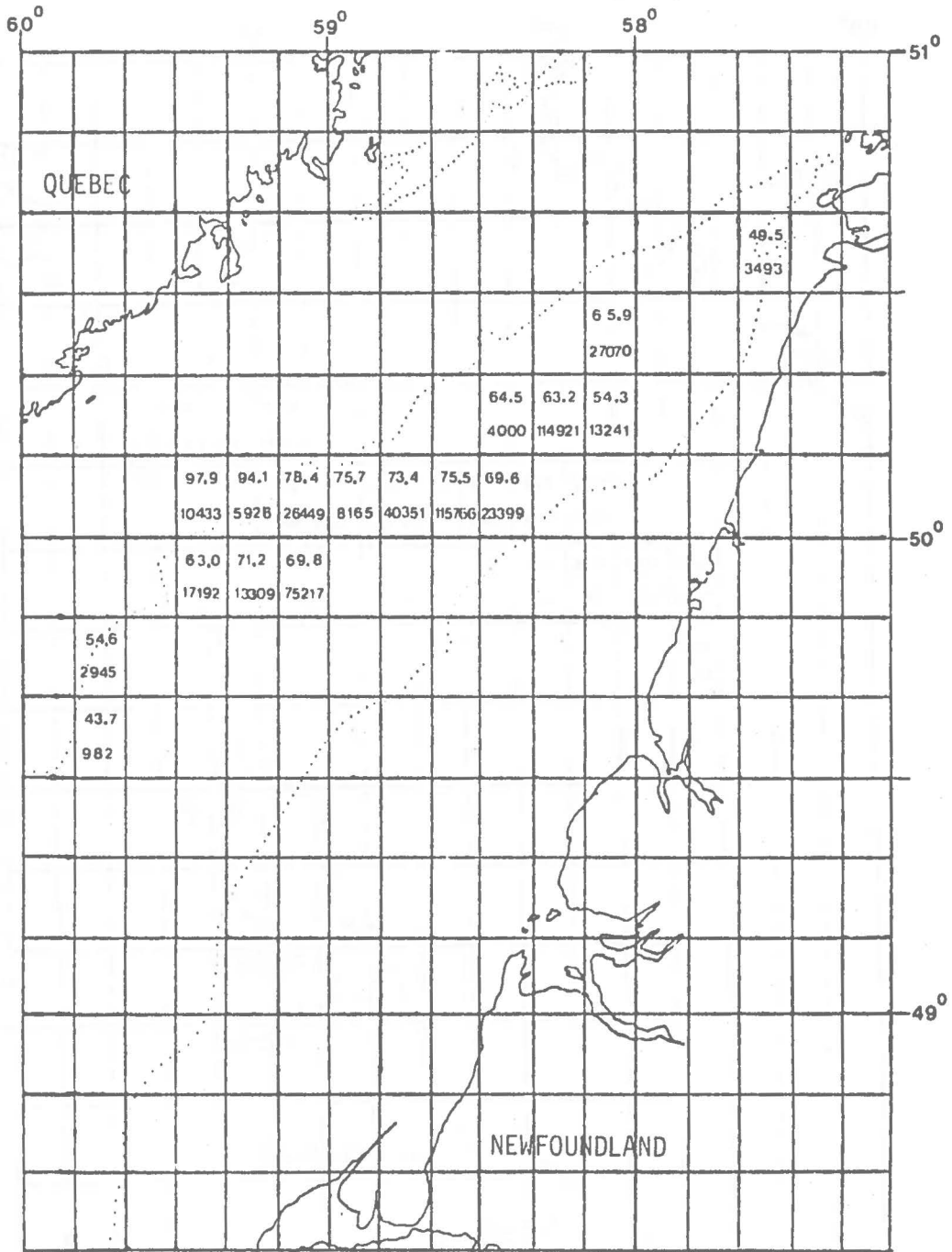




Figure 8 : Distribution of Standardized C.P.U.E. (Kg/h) and Landings (Kg) per ten minutes squares, in the Esquiman Channel (4R) for 1980.

CPUE (Kg/h) → 
 Landings (Kg) → 

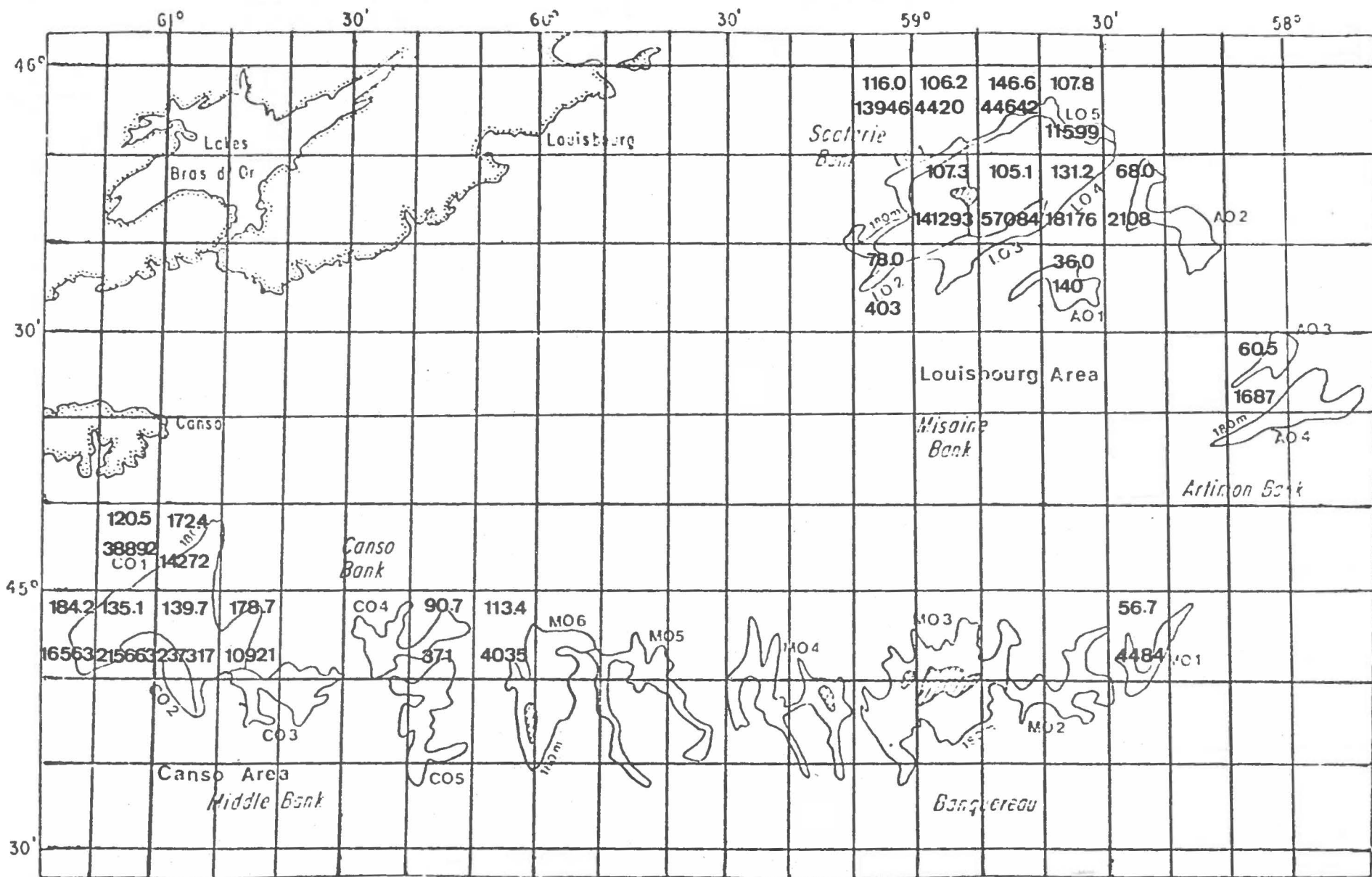


Figure 9: Distribution of Standardized C.P.U.E. (Kg/h) and landings (Kg) per ten minutes squares, in the southeast Cape Breton area (4W) for 1979.

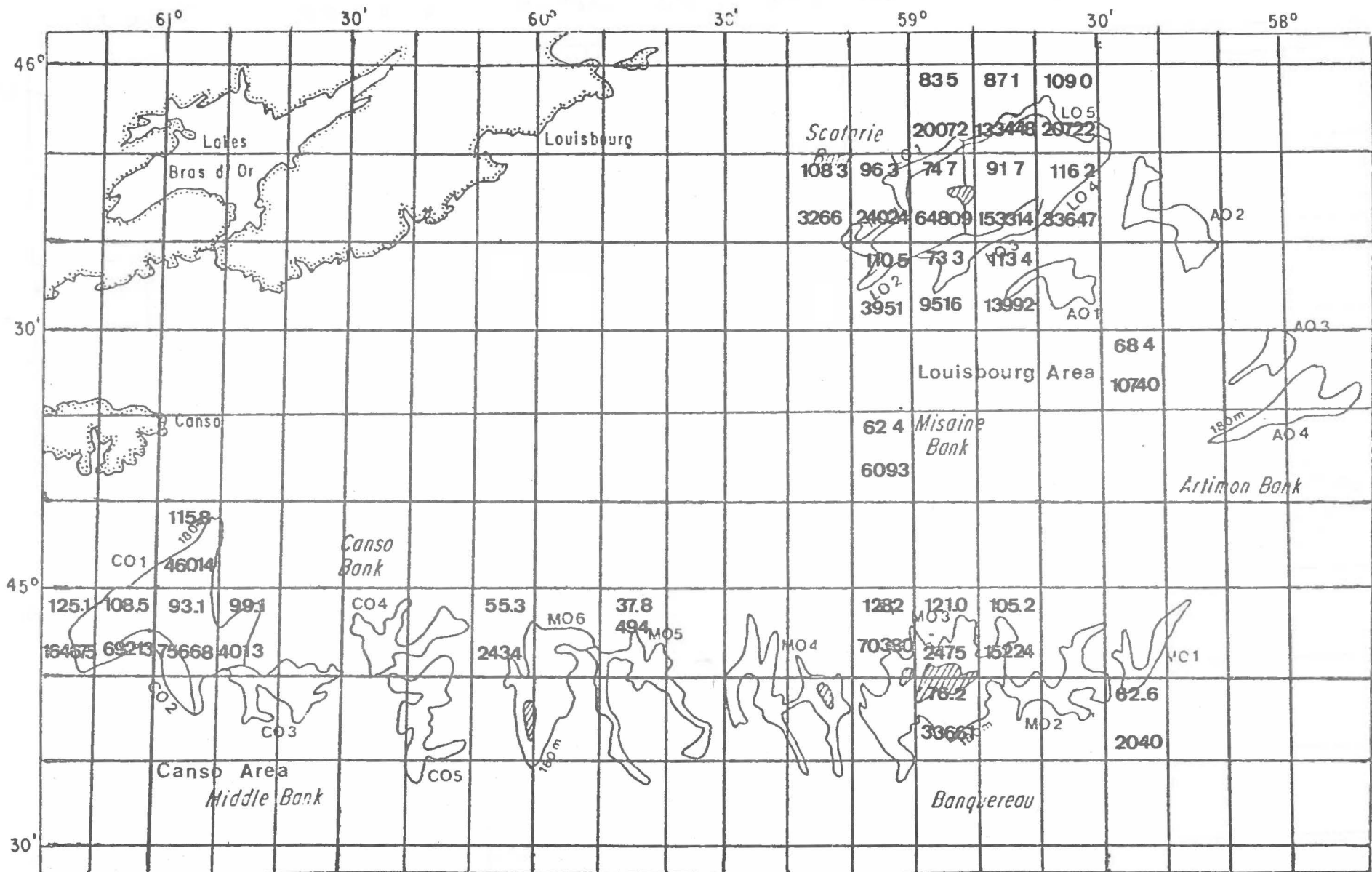


Figure 10: Distribution of Standardized C.P.U.E. (Kg/h) and landings (Kg) per ten minutes squares, in the southeast Cape Breton area (4W) for 1980.