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Cuban Research Report, 1978

by

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STATUS OF THE FISHERIES

During 1978, Cuban fisheries were carried out in Subareas 2, 3 and 4, attaining a total amount of 13 123.6 MT, which represents a decrease of 515.6 MT in relation to 1977 (18 280 MT), table 1.

The results of our fisheries were influenced by three main factors:

- 1.- Poor abundance of capelin in Subareas 2 and 3.
- 2.- It was not possible to carry out the fisheries in Subareas 5 and 6.
- 3.- Low yieldings and instability of the Silver Hake fisheries in Subarea 4.

The greater amount of catches were obtained in Subarea 4, while engaged in the Silver Hake fishery (3 436.5 MT), and in the Squid fishery (2 784.3 MT).

SUBAREA 2

The fisheries in this Subarea pursued two main objectives: Capelin and Cod. The first of the two species did not appear this year, and it was only located in Division 3K. The Cod fishery began on December and only a catch of 27.6 MT was reached. Table 2.

SUBAREA 3

The operation in this Subarea began on May with the Redfish fishery and the pre-spawning Capelin from Divisions 3LNO, which was not as abundant as in previous years.

The fisheries lasted until November and were basically made up of Redfish and Squid in Divisions 3M, 3N and 3O, and Capelin from Division 3K.

The total catch amounted to 6 475.8 MT, out of which a 36.7% corresponds to Redfish, a 20.4% to Squid and a 21.8% to Capelin. Table 3.

SUBAREA 4

In this Subarea, the fishing activity began on May and lasted until November. It was mainly directed to two species, Squid and Silver Hake, for it was impossible to direct the fishery to the Argentina due to the negotiations existing between the USA and Canada concerning the boundaries of the area, main area of concentration of this species.(Div. 4X).

Squid appeared a little later in the fishing season in relation to previous years and good yields were obtained, but with unstable concentration, which was reflected in variations in the yields obtained. It began to be consistently caught from July on.

The yields obtained by Flota Cubana were good, although instability in the concentration of this species was observed. The Squid catch amounted to 2 784.3 MT (42.1%).

Concerning the Silver Hake fisheries, 3 436 MT of this species were caught, which represents a 51.9% of the total catch in this Subarea. Although this catch was higher than the one obtained in 1977 (1 846.2MT), it only represented a 33.4% of the allocation, which expresses an index of the low yields attained in this fishery due to the poor abundance of this species.

RESEARCH STUDIES

1. Environmental studies.

An oceanographic survey was conducted to the Grand Bank and Nova Scotia area to establish the hydrological conditions of both regions.

In the Grand Bank (3-14 July), the survey comprised 32 Nansen bottle stations with protected thermometers at standard levels. Stations were located in previously selected positions along the acoustic tracks. Also, at the end of each fishing operation bathythermograph (BT) hauls were conducted. Thus, temperature distribution in the surveyed area could be determined (Fig. 1). It should be noted that bottom temperatures on the Southeast Shoal (2 to 4.5°C) were within the range considered good for Capelin spawning.

In Nova Scotia (16-23, July), the survey comprised 40 Nansen bottle stations which provided information on the distribution of bottom and surface temperatures and salinities (Figs. 2-3). In general, the thermic picture shows that mean temperatures of the whole water layer were slightly lower in 1978 (8.49°C) than in 1977 (8.63°C).

A study of the water masses on the Scotian Shelf was also made.

2. Acoustic survey.

An acoustic survey to the Grand Bank (3-14, July) on board the research vessel Isla de la Juventud was carried out to estimate the biomass of the spawning Capelin stock from Divs. 3LNO. The biomass of this species was estimated to be 4 500 tons - a very low figure in comparison with former years. Distribution of Capelin concentrations (Fig. 4) shows the best density values being obtained at the beginning of the acoustic track (46°50' north latitude and 52°15' west longitude approximately) and in two small areas located at northeast and northwest of the Southeast Shoal.

3. Biological studies by species.

3.1) Capelin

- a) Contraction factors: A sample of 287 individuals was taken to calculate a conversion factor to convert thawed length to fresh length.

- b) Length-weight relationship: A total of 622 specimens were sampled in order to establish the length-weight relationship for the species.
- c) Ageing studies: Otoliths were removed to conduct a further ageing study at the laboratory.

3.2) Squid

- a) Biological parameters measurements: A sample of 229 individuals was taken to conduct different types of measurements which were subsequently related, thus obtaining the different biological parameters relationships. Individuals were obtained on the Scotian Shelf during the fishing power experiments.

4. Relative fishing power.

Paralells trawlings on the Scotian Shelf (1-11, August) between the research vessel Isla de la Juventud and a commercial vessel (Playa Varadero) from the Cuban Fishing Fleet were carried out to determine the relative fishing power of both vessels. Due to the low commercial fishes concentrations in the area where the experiment took place, no results permitting to establish comparisons between both vessels were obtained.

Table 1. Nominal catches by Subareas, 1977 and 1978.

Subarea	1977		1978	
	MT	%	MT	%
2	3 205.1	17.5	27.6	0.2
3	8 066.8	44.1	6620.2	50.4
4	5 426.8	29.7	6475.8	49.4
5+6	1 580.4	8.7	-	-
Total	18 279.1	100.0	13123.6	100.0

Table 2. Catches in Subarea 2, 1978.

Species	Catch (M.T.)	%
Cod	27.6	100%

Table 3. Catches in Subarea 3, 1978.

Species	Catch (M.T.)	%
Cod	587.3	9.1
Redfish	2380.1	36.7
Flatfish	320.9	5.0
Red hake	17.0	0.3
Silver hake	150.6	2.3
Capelin	1413.9	21.8
Squid	1320.7	20.4
Haddock	49.4	0.8
Other groundfish	235.9	3.6
Total	6475.8	100.0

Table 4. Catches in Subarea 4, 1978

Species	Catch (M.T.)	%
Silver hake	3436.5	51.9
Redfish	50.9	0.8
Argentine	21.4	0.3
Red hake	59.8	0.9
Cod	20.7	0.3
Haddock	92.6	1.4
Mackerel	18.5	0.3
Squid	2784.3	42.1
Flatfish	4.0	0.1
Pollock	129.9	1.9
Other groundfish	1.6	-
Total	6620.2	100

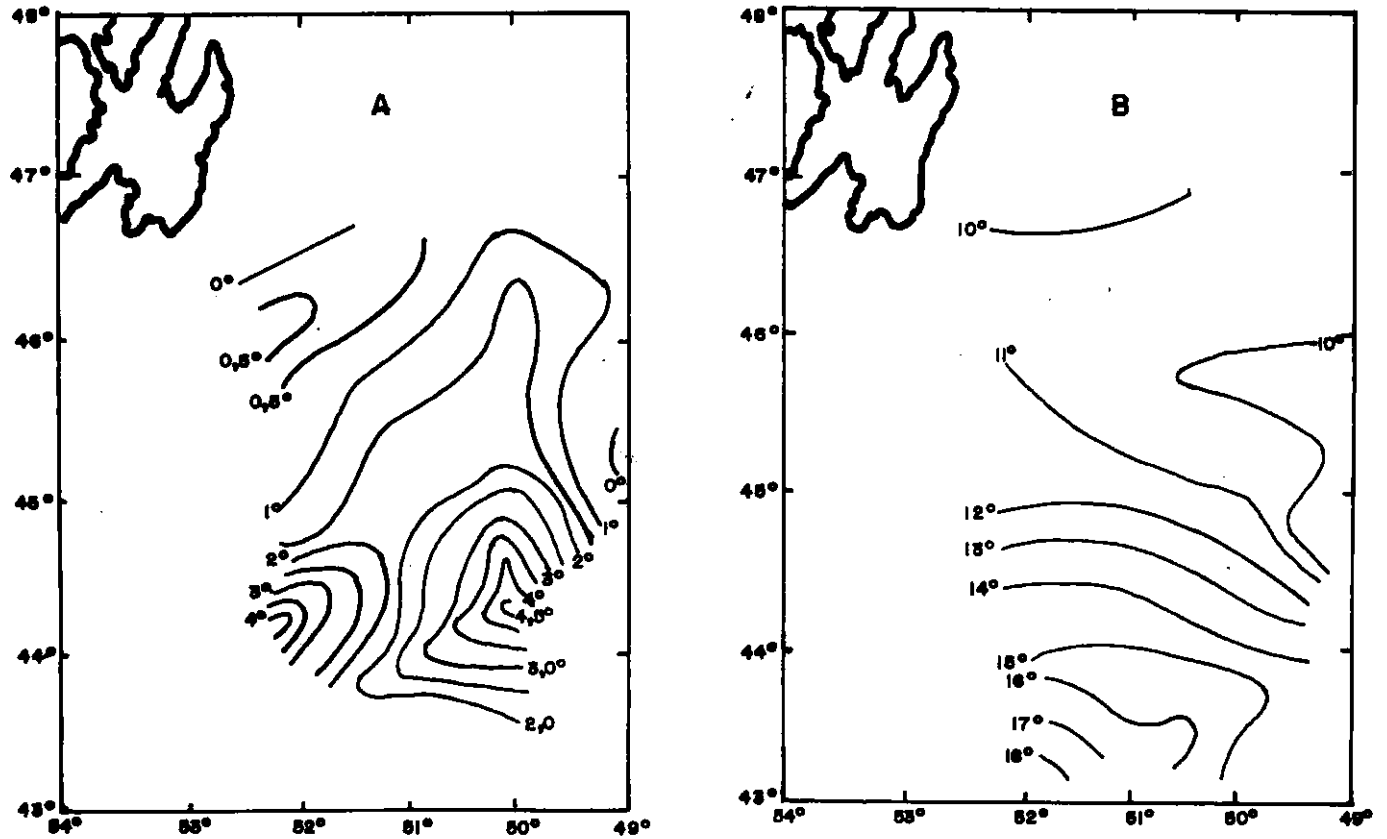


Fig.1A - Near bottom water temperatures B - Surface layer temperatures

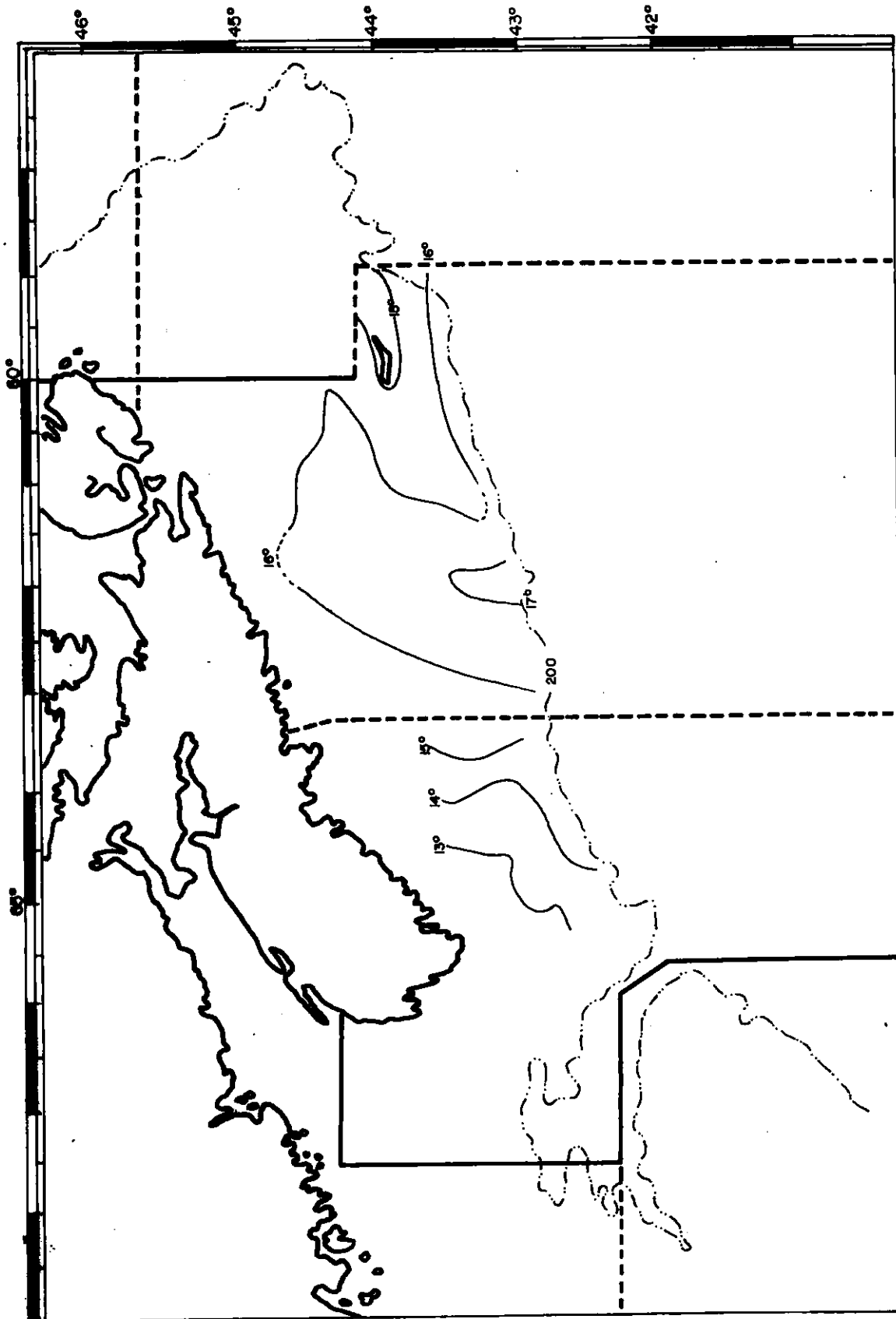


Fig. 2. Distribution of surface layer temperatures

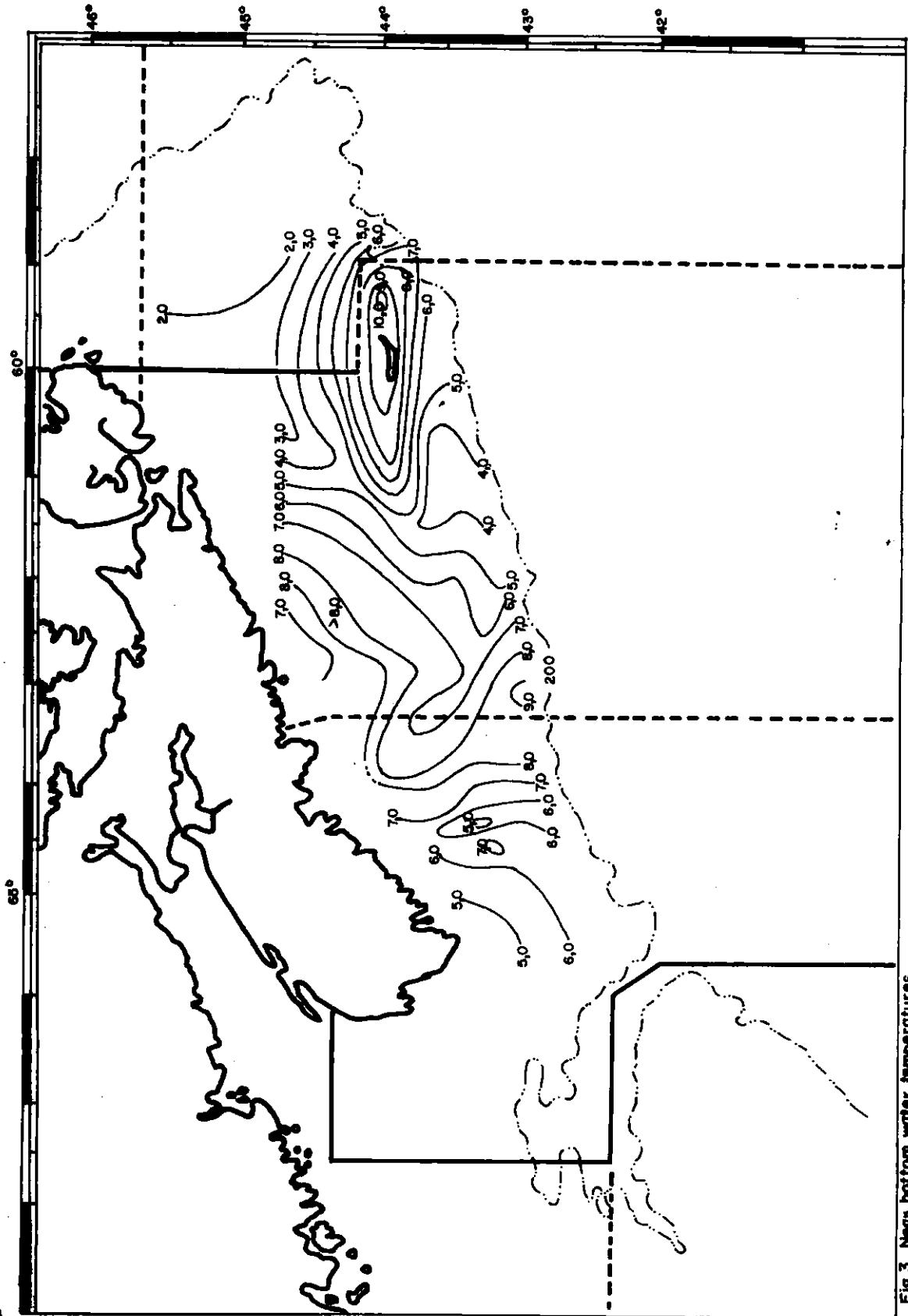


Fig.3 - Near bottom water temperatures

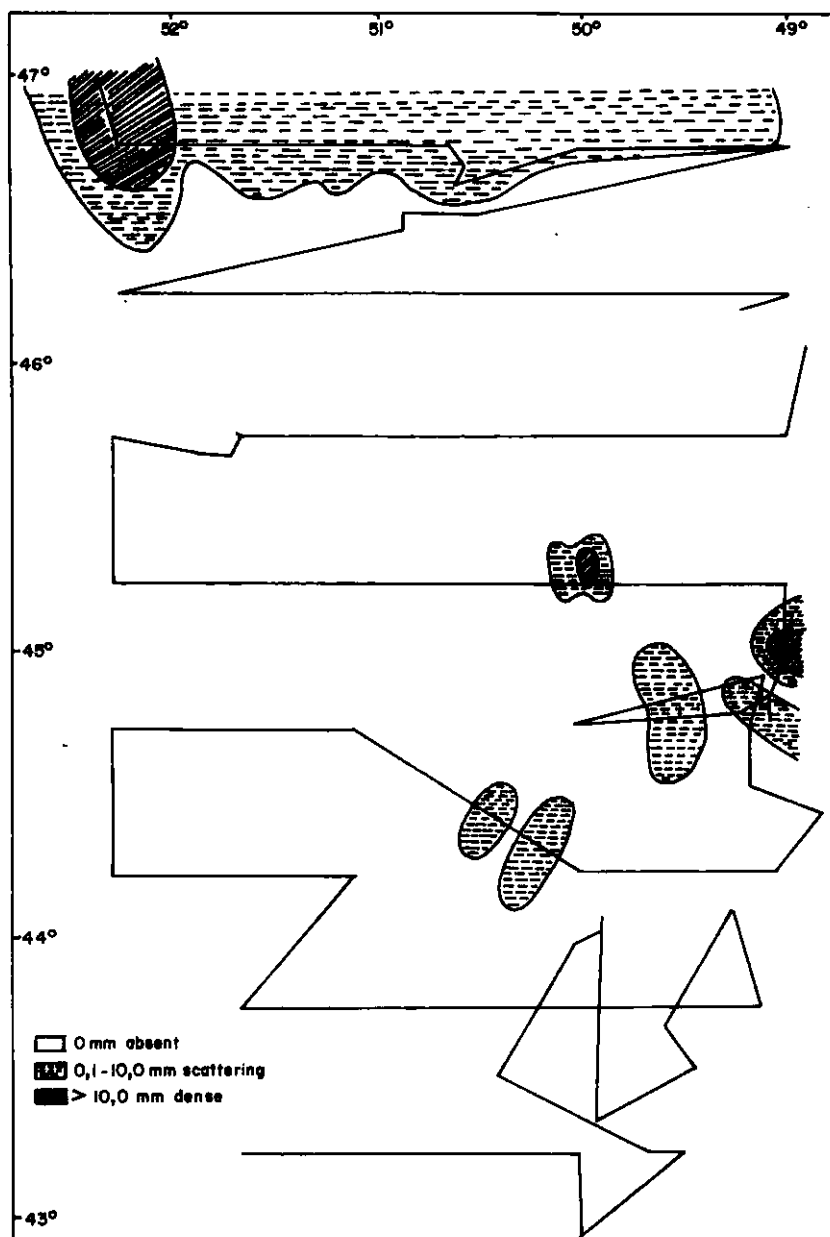


Fig. 4. Distribution of capelin concentrations in the Grand Bank area.