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Cuban Research Report, 1977

by

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The Cuban fisheries in the ICNAF Convention Area (including the waters under the extended jurisdiction over fisheries by Canada and USA), shows a northward expansion in regard to fisheries carried out during previous years. Thus, Cuban fishing vessels entered the capelin, cod and redfish fisheries. The total catch by Cuba in 1977 was 18,280 tons (provisional figures), a decrease of 11,585 tons in comparison with the catch of 29,865 tons reported in 1977. This significant decrease was mainly due to the fact that Cuban vessels were not able to fish most of the year in Subarea 5 and Statistical Area 6. Also the fishery for silver hake in Subarea 4 dropped significantly because of squid (*Illex*) abundance and the impossibility by our vessels to avoid squid by-catches in the silver hake fishery. Besides the above mentioned situation, a decrease in the silver hake availability was noted in the areas fished by Cuban vessels in regard to previous years. The main species caught were: capelin (5,788.6 tons), short-finned squid (*Illex*) (4,674.9 tons), and silver hake (2,135.0 tons).

Total nominal catches in 1977 and in 1976 are given in Table 1.

Subarea 2

A. Status of the Fisheries

The Cuban fleet started operating for the first time in this Subarea during 1977. Capelin was the only directed fishery. Catches were made mainly from September to November.

The total catches by species for 1976 and 1977 are shown in Table 2.

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Subarea 3

A. Status of the Fisheries

The total catch by Cuban trawlers amounted to 8,066.8 tons. The main fishery carried out was the one for capelin and accounted for about 32.2% of the total catch in this Subarea. Squid (Illex) was found in the south-eastern tip of the Grand Bank, outside Canadian waters where 1,370 tons were caught during a few fishing days. Cuban vessels also started this year fishing for cod and redfish, yielding 1,448 and 2,341 tons respectively. The redfish fishery was conducted mainly with pelagic trawls and the cod fishery mostly with bottom trawls.

The total catches by species for the year 1977 in Subarea 3 by the Cuban fleet are shown in Table 3.

Subarea 4

A. Status of the Fisheries

The total catch in this Subarea decreased from 17,820.6 tons in 1976 to 5,426.8 tons in 1977. The main species caught by Cuban vessels were squid (Illex) (3,273.1 tons) and silver hake (1,846.2 tons). The total catches by species for 1976 and 1977 are shown in Table 4.

B. Special Research Studies

1. Environmental Studies

a) Hydrographic studies. An oceanographic survey of the area permitted the definition of its general hydrographic characteristics, especially in respect to bottom water temperatures. Nansen bottles with unprotected thermometers were used at standard depths from 150 meters downward.

The oceanographic survey comprised 45 Nansen bottle stations and 53 bathythermograph (BT) hauls (Fig. 1). Nine of the BTs corresponded to fishing operations and provided information on the distribution of the near bottom waters (Fig. 2).

Two higher fish densities are shown on the figure, one associated with the warm bottom water found in the central part of the Shelf from the LaHave trench to Emerald Bank and another between a cold and warm water boundary to the west of Sable Island.

2. Biological Studies by Species

a) Maturation. Two silver hake females were sampled from each length class of 1-cm width for study in the lab making a total of 38 females sampled.

b) Fecundity. A total of 5 silver hake females were selected by length class (1-cm width) for sizes between 28 and 47 cm, making a total of 144 females.

c) Ageing of silver hake. A total of 351 pairs of otoliths were collected in order to carry out a study on age later. Five individuals were sampled by sex in each 1-cm length class.

3. Selectivity Studies

Selectivity studies for 40, 60 and 90 mm codend mesh size (knot to knot) on silver hake were made in cooperation with Canadian scientists.

4. Acoustic Surveys

The R/V Isla de la Juventud carried out a survey on the Nova Scotia Shelf from 1 July to 25 August. The best demersal indications were located approximately in the area within LaHave Bank and the Emerald Bank (Fig. 3).

A bottom fish concentration of low density was observed to the west of Sable Island between 60°30' and 61°30'W and 43°38' and 44°00'N.

Subarea 5 and Statistical Area 6

A. Status of the Fisheries

Cuban vessels were only present in this Subarea during January and February (before the implementation of the Fisheries Management and Conservation Act by USA on 1 March), and during December.

In January and February, the fishing effort was devoted to catching mackerel, but the "window" system that prevented the fishing operations from being conducted within certain limits constituted a serious handicap as mackerel very often moved a short distance outside the mackerel "window" preventing the vessels from fishing on the more dense concentrations of mackerel.

On the other hand, Cuban vessels made an attempt to catch the remainder of the Cuban mackerel quota in December but the absence of mackerel schools in the mackerel "window" again resulted in no catches.

The total catches by species for 1976 and 1977 are shown in Table 5.

Table 1. Total catches by Subareas, 1976 and 1977.

Area	1977		1976	
	Tons	%	Tons	%
2	3,205.1	17.5	-	-
3	8,066.8	44.1	-	-
4	5,426.8	29.7	17,820.6	59.7
5+6	1,580.4	8.7	12,044.2	40.3
Total	18,279.1	100.0	29,864.8	100.0

Table 2. Catches in Subarea 2, 1977 (provisional).

Species	Catch (tons)
Capelin	3,191.7
Cod	13.4
Total	3,205.1

Table 3. Catches in Subarea 3, 1977.

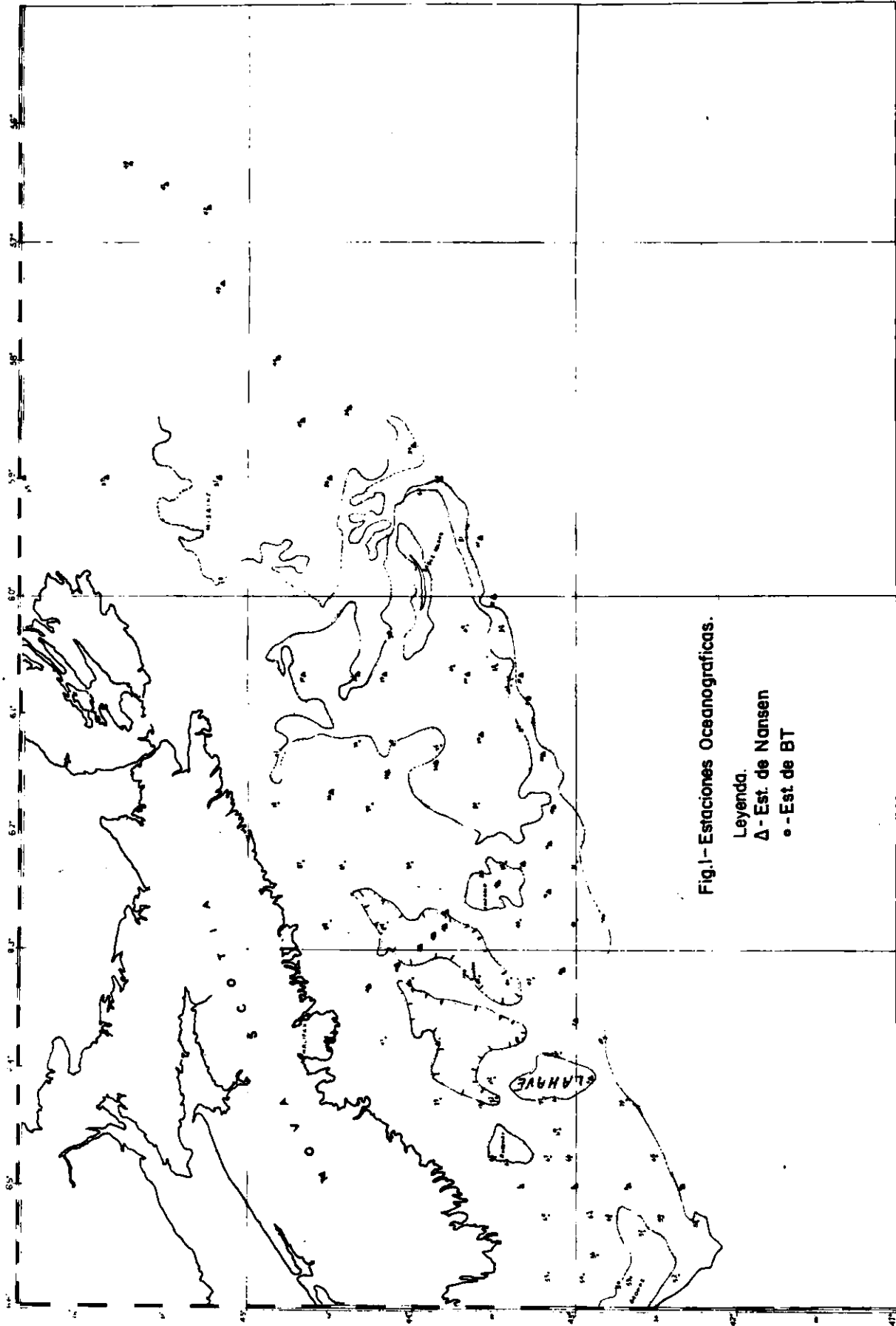
Species	Catch (tons)
Capelin	2,596.9
Redfish	2,341.6
Cod	1,448.7
Squid (<u>Illex</u>)	1,396.2
American plaice	187.5
Haddock	9.5
Red hake	19.8
Other flatfish	37.6
Other groundfish	26.4
Squid (<u>Loligo</u>)	2.3
Other pelagic fish	0.3
Total	8,066.8

Table 4. Catches in Subarea 4, 1976 and 1977.

Species	Catch (tons)	
	1976	1977
Squid (<u>Illex</u>)	3,248.1	3,273.1
Silver hake	12,570.7	1,846.2
Cod	587.5	18.7
Haddock	-	18.0
Mackerel	407.5	180.1
Redfish	37.6	1.0
Herring	30.6	18.7
Flounders	485.0	10.9
Argentine	111.7	15.3
Pollock	341.9	21.8
Squid (<u>Loligo</u>)	-	13.6
Other groundfish	-	9.4
Other flatfish	485.0	-
Total	17,820.6	5,426.8

Table 5. Catches in Subarea 5 + Statistical Area 6, 1976 and 1977.

Species	Catch (tons)	
	1976	1977
Mackerel	6,557.7	736.5
Silver hake	3,750.6	269.0
Red hake	328.3	37.6
Squid (<u>Loligo</u>)	257.8	27.6
Squid (<u>Illex</u>)	7.5	5.6
Herring	295.4	152.3
Haddock	9.0	-
Cod	10.3	0.4
Butterfish	-	110.7
Other flatfish	72.2	0.6
Finfishes (NS)	755.4	240.1
Total	12,044.2	1,580.4



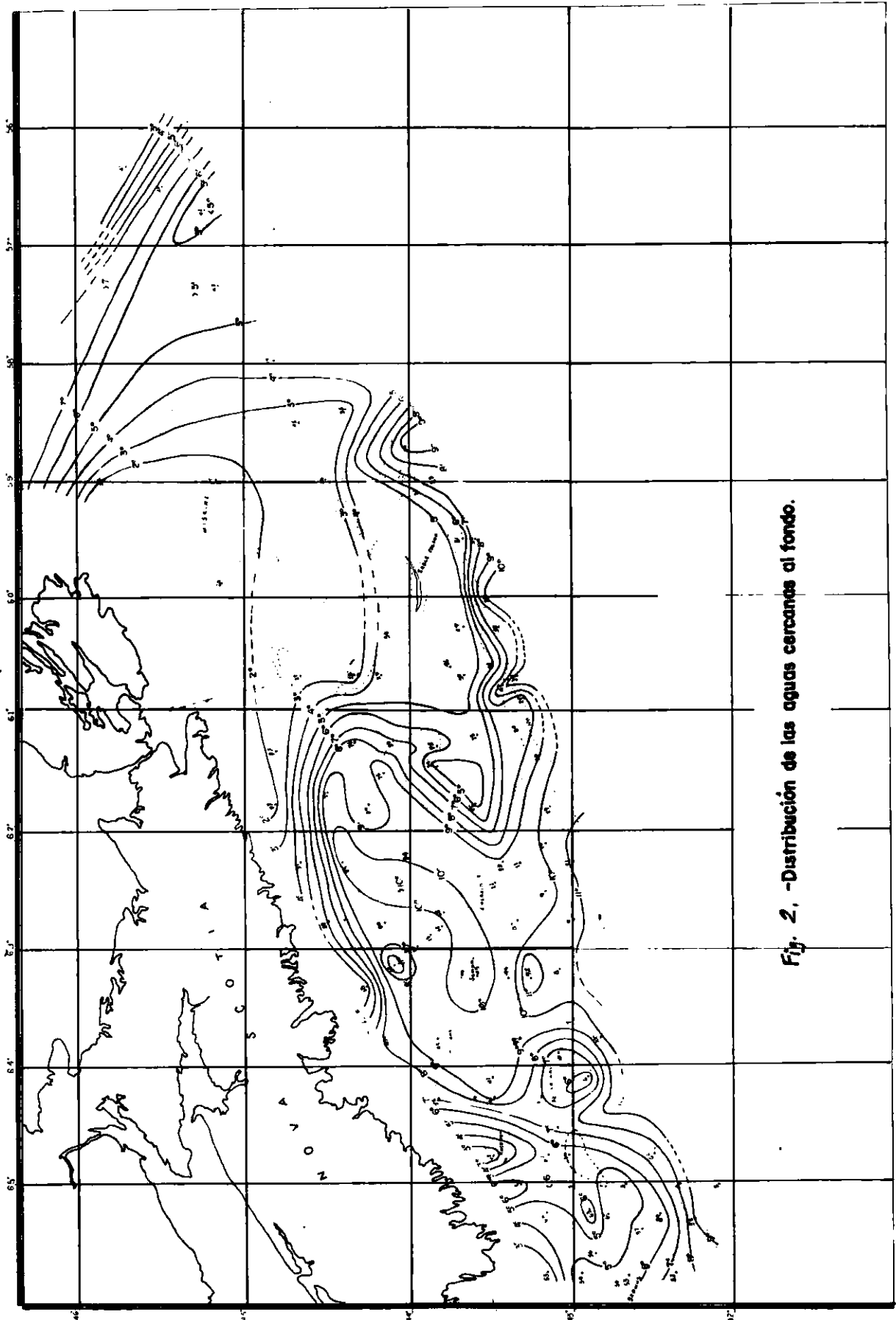


Fig. 2. -Distribución de las aguas cercanas al fondo.

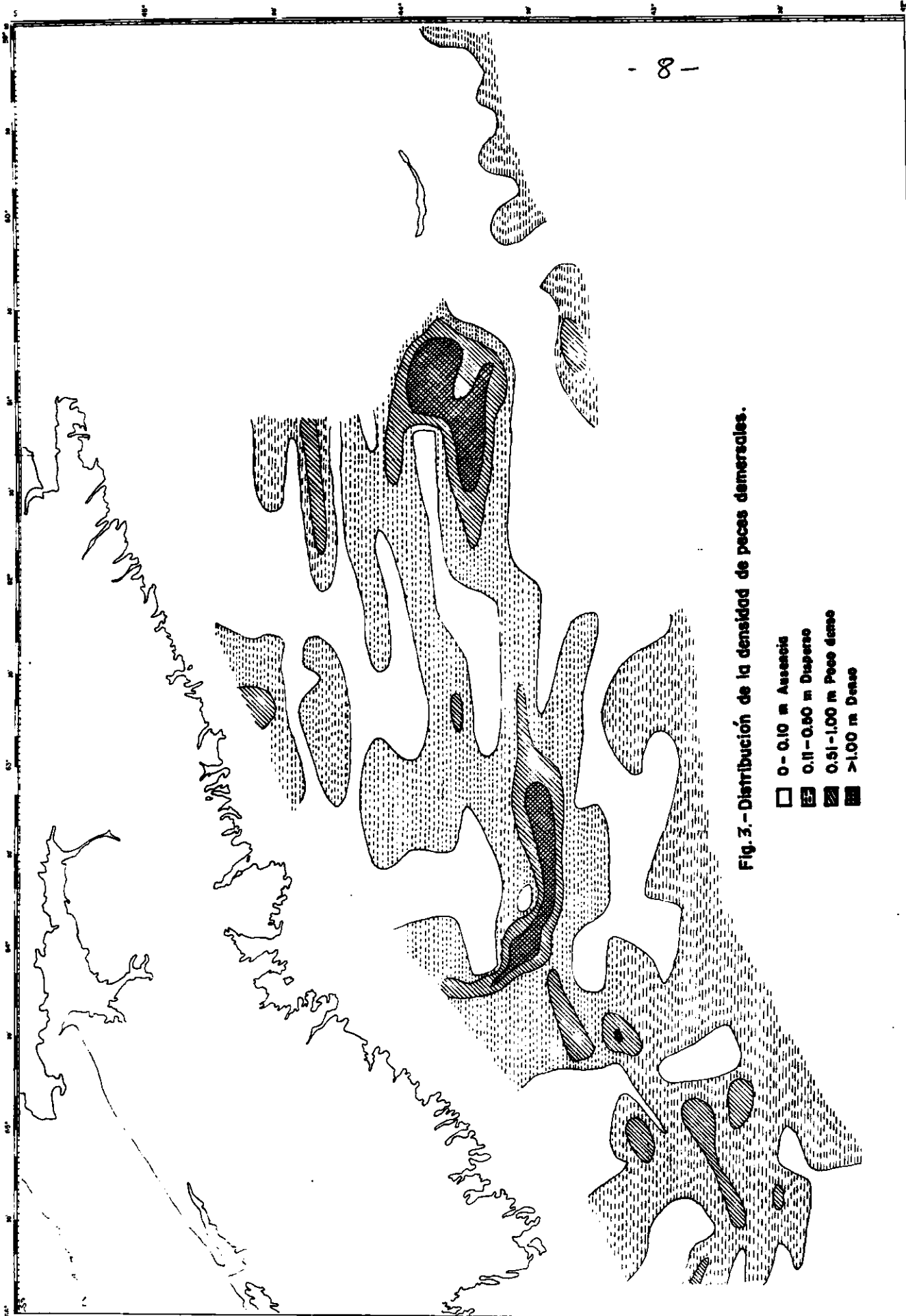


Fig. 3.- Distribución de la densidad de peces demersales.