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Cuban Research Report, 1976

by

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Total Cuban catches in the ICNAF Convention Area (Subareas 4, 5, and Statistical Area 6) increased from 7,490.1 tons in 1975 to 29,864.8 tons in 1976. This significant increase in the total catch is due to the fact that 1976 was the first year in which Cuba had quotas allocated to her after becoming a full Member of the Commission at the end of 1975.

Therefore, the structure of the Cuban fisheries in 1976 changed greatly in relation to those carried out previously, in respect to the areas where the greatest fishing effort was made, as well as the quantities caught per species. The main species caught were: silver hake (16,321 tons), mackerel (6,965 tons), and short-finned squid (3,266 tons). These constituted the only directed fisheries made by Cuban vessels during 1976.

Total nominal catches in 1976, in comparison with those carried out in 1975, are given in Table 1 below.

Table 1. Total catches by Subarea, 1975-1976.

1976*			1975		
Subarea	Tons	%	Subarea	Tons	%
4	17,820.6	59.7	4	3,437.6	45.9
5	10,555.4	35.3	5	4,052.5	54.1
6	1,488.8	5.0			
Total	29,864.8	100.0		7,490.1	100.0

* Preliminary

Subarea 4

A. Status of the Fisheries

The total catch by Cuban trawlers greatly increased from 3,437.6 tons in 1975 to 17,820 tons in 1976. The main fishery carried out was that for silver hake and accounted for about 70% of the total catch in this Subarea. Another significant fishery was the one of squid *Illex* which was obtained partially as a by-catch in the silver hake fishery. The squid *Illex* was widely distributed on the Nova Scotia Shelf from May to August forming dense concentrations mixed, to some extent, with the silver hake schools. It is not clear for us if this unusual occurrence of squid *Illex* is due to an increased population size or to some

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changes occurring in the abiotic conditions on the Nova Scotia Shelf. The total effort and catches by species for the years 1975 and 1976 in Subarea 4 by the Cuban fleet are shown in Table 2 below.

Table 2. Catch in Subarea 4, 1975-1976.

	1975	1976*
Days fished	147	749
Total catch (in tons)	3,437.6	17,820.6
Cod	480.7	587.5
Haddock	56.8	-
Redfish	21.6	37.6
Silver hake	1,723.5	12,570.7
Pollock	53.0	341.9
Herring	147.6	30.6
Mackerel	199.7	407.5
Argentine	-	111.7
Flatfishes n.e.i.	276.5	485.0
Finfishes n.e.i.	478.6	-
Squid (<i>Illex</i>)		3,248.1

* Preliminary

B. Special Research Studies

1. Hydrographic studies

Oceanographic studies were carried out by the R/V *Isla de la Juventud* in July-August on the Nova Scotia Shelf. Hydrographic observations by R/V *Isla de la Juventud* included temperature, salinity, and oxygen determinations at standard depths at each station. Furthermore, a number of bathythermographic stations were carried out.

The analysis of the hydrographic information obtained during the cruise, particularly that concerning the waters near the bottom, showed that an extremely dynamic picture exists in these waters.

Figures 1, 2, and 3, respectively, show the bottom temperature, bottom oxygen, and salinity values found.

In a general way, it was found that silver hake was distributed over temperatures greater than 9°C, cod was encountered in waters with temperatures between 2°C and 3°C, while haddock was found in the water masses resulting from the mixing of warm waters and the ones of the Continental Shelf. Squid *Illex* was found practically on the entire Continental Shelf of Nova Scotia.

2. Biological studies

Length measurements of cod, haddock, American plaice, silver hake, argentine, and squid were carried out on board R/V *Isla de la Juventud* in Subdiv. 4Vs, Div. 4W and 4X.

3. Acoustic surveys

The R/V *Isla de la Juventud* carried out a hydroacoustic survey on the Nova Scotia Shelf from 7 July to 8 August. The cruise track is shown in Fig. 4.

The acoustic survey was conducted along the cruise route to obtain information on the abundance and density of pelagic, as well as demersal echographs. Several trawling stations using commercial-type bottom and pelagic trawls were also set up to identify the species being measured in the echo integrator. The values of echo integration expressed in mm of echo deflection referred to a gain of 200 dB of the echo integrator are shown in Fig. 4.

Subarea 5

A. Status of the Fisheries

The total catch increased from 4,052 tons in 1975 to 10,555 tons in 1976. The main species caught by Cuban vessels were mackerel (5,369 tons) and silver hake (3,741 tons), being the only two directed fisheries in this Subarea.

The total catches by species and effort for 1975 and 1976 are shown in Table 3 below.

Table 3. Catch in Subarea 5, 1975-1976.

	1975	1976*
Days fished	217	402
Total catch (in tons)	4,052.5	10,555.4
Cod	157.3	10.3
Haddock	0.1	9.0
Red hake	35.5	328.3
Silver hake	1,515.7	3,740.6
Pollock	0.5	
Herring	1,161.6	237.8
Mackerel	399.7	5,369.3
Flatfishes n.e.i.	160.7	72.2
Finfishes n.e.i.	470.6	524.7
Squid (<i>Loligo</i>)	150.8	255.7
Squid (<i>Illex</i>)	-	7.5

* Preliminary

B. Special Research Studies

1. Biological studies

Length measurements of mackerel were carried out on board the commercial trawlers in Subdiv. 5Ze.

Statistical Area 6

A. Status of the Fisheries

In 1976 Cuban fishing vessels initiated a fishery for mackerel in Statistical Area 6 which yielded 1,188 tons.

The total catch by species and effort for 1976 are shown in Table 4 below.

Table 4. Catch in Statistical Area 6, 1976.

	1976*
Days fished	72
Total catch (in tons)	1,488.8
Silver hake	10.0
Herring	57.6
Mackerel	1,188.4
Finfishes n.e.i.	230.7
Squid (<i>Loligo</i>)	2.1

* Preliminary

B. Special Research Studies

No special research studies were done in this Subarea during 1976.

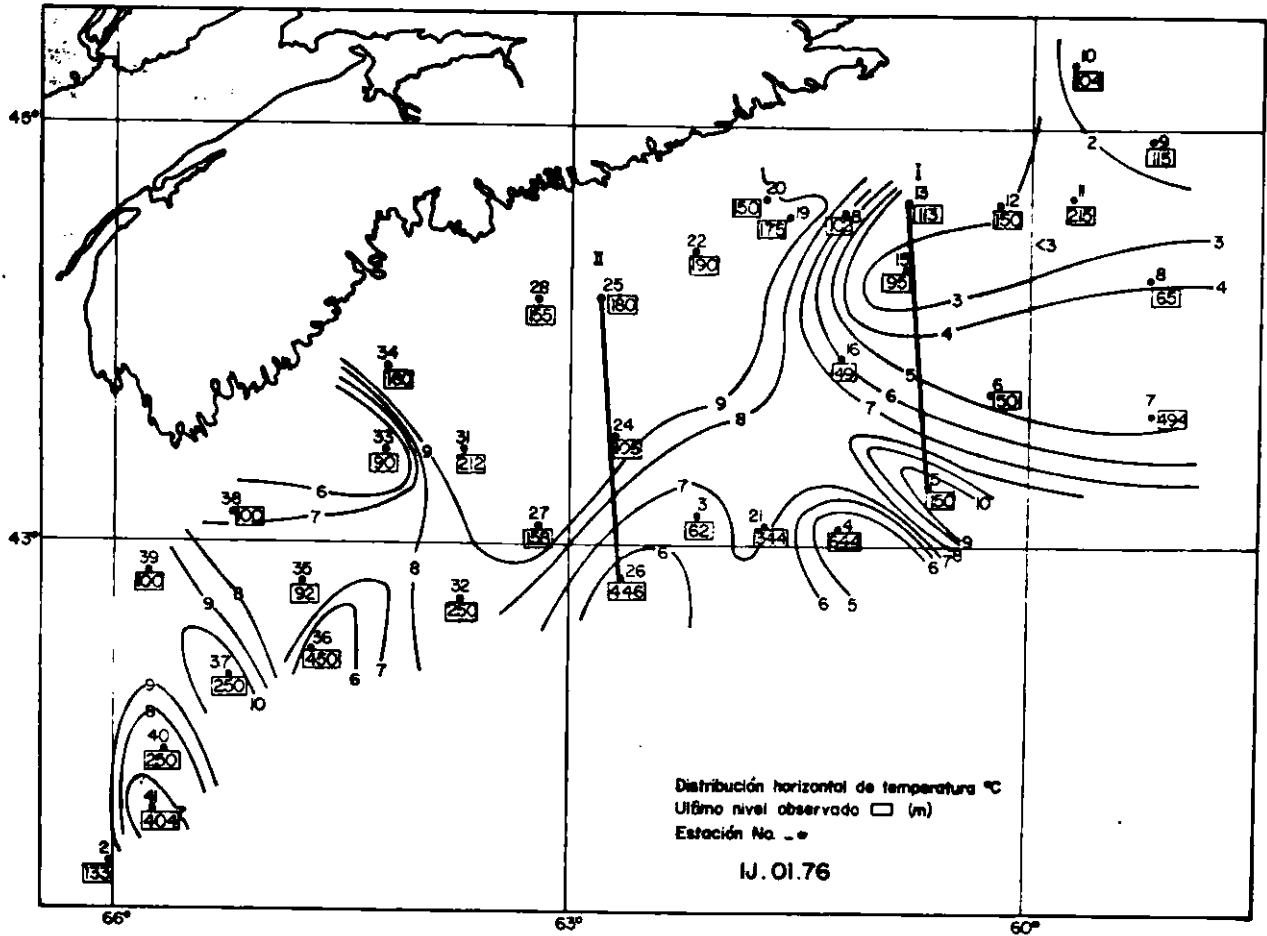


Fig. 1. Bottom temperature chart I and II transverse sections.

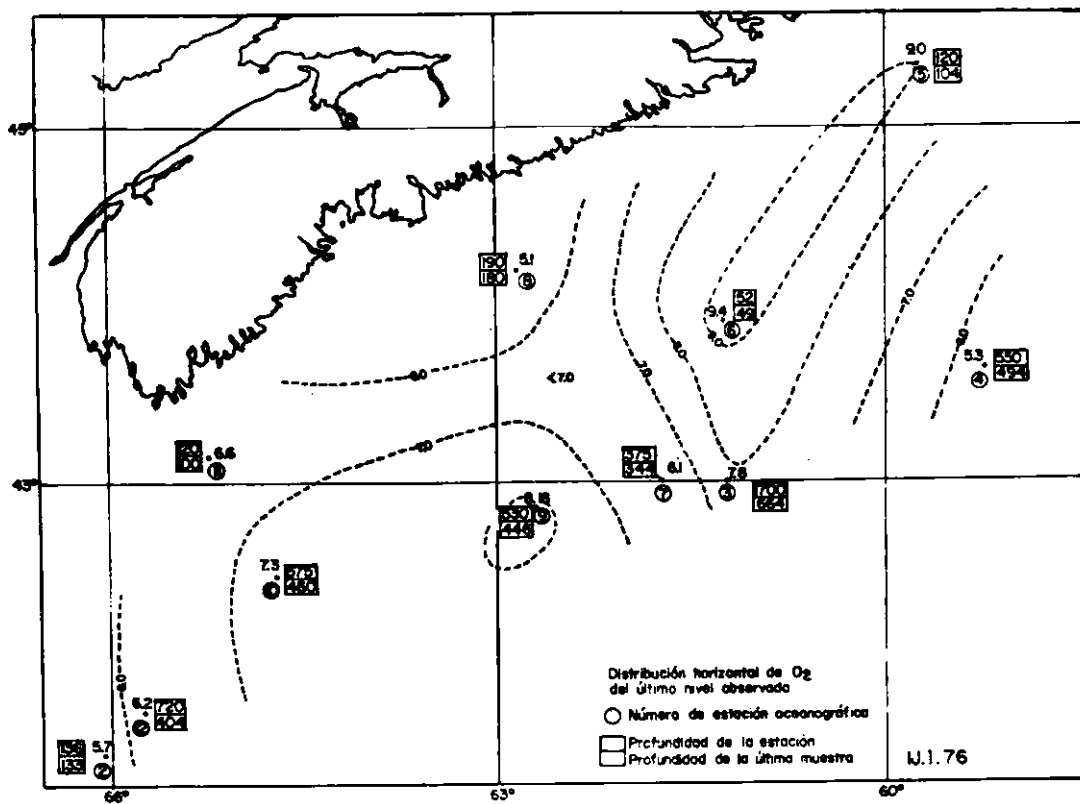


Fig. 2. Bottom oxygen content distribution chart.

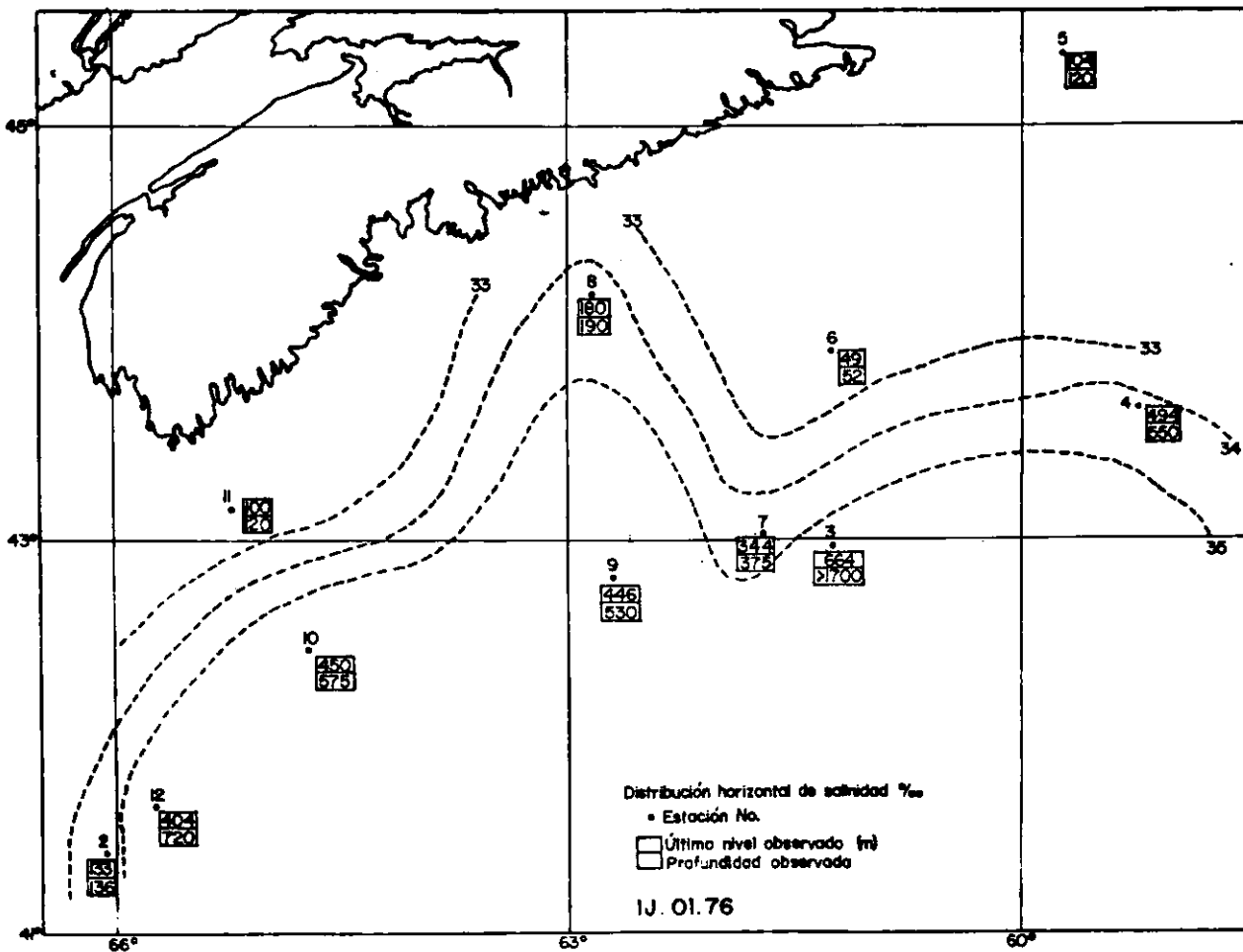


Fig. 3. Bottom salinity chart

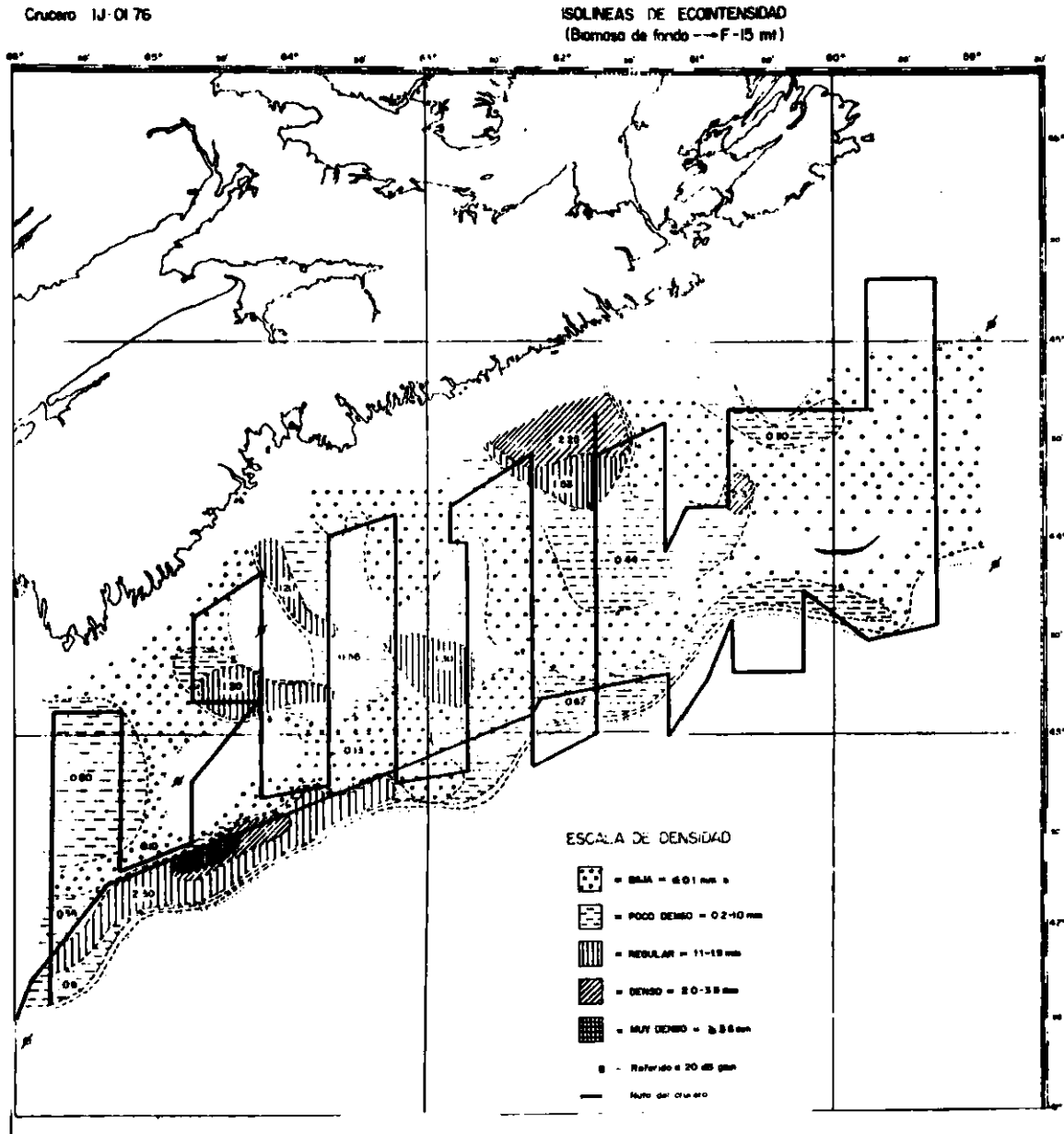


Fig. 4. Bottom fish distribution. Isolines of echodensity in mm of integrations referred to 20 dB gain.