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Portuguese Research Report, 1975

by

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0 - INTRODUCTION

The present paper summarizes some statistical data concerning the portuguese fisheries in ICNAF area as well as some biological studies carried out from samples obtained on board of a trawler during November and december 1975, in sub-area 3 (divisions 3L and 3m)

The first part concerns the statistical data referring the total catch and some information about cod fisheries.

The second one contains the special research carried out on cod samples obtained on board of a trawler.

I - STATISTICAL DATA

1 - TOTAL CATCH

Total Portuguese Catches in 1975 and in ICNAF área (Trawlers and Gill Nets) amounted to 99,789.0 tons, compared to 144,777 tons in 1974, which means a decrease of about 30%.

2 - TOTAL CATCHES BY SUBAREA

TABLE 1

1 9 7 5			1 9 7 4		
Suba	Tons	%	Suba	Tons	%
1	5,014.6	5.0	1	10,198.0	7.0
2	11,299.7	11.3	2	23,191.0	16.0
3	68,589.8	68,7	3	93,540.0	64.6
4	14,885.3	14.9	4	17,843.0	12.3

It can be observed that the largest catches took place, both in 1975 and 1974, in Division 3, but while in 1974, suba.3 is followed by suba.2 (16.0 %), in 1975, suba 4, is the second one, in amount of catches. Suba.1 is, in both years, the suba. with the smallest catch. (Table 1 , Map 1)

3 - TOTAL CATCHES BY SPECIES

Atlantic Cod is, undoubtably, the most important species caught. It represents, in 1975, 84.4% of all species, and it must be stressed that this species represented in 1974, 92.0% of total catch.

Redfish is, in both years, the second species; 7.6% in 1975 and 4.9% in 1974 , but although the percentage has decreased, the total catch was about the same in both years.

For what concerns the other species, it can be observed that they don't follow the same order, being the most important case, the catches of capelin, which occupy the 8th place in 1975, with 0.6%, while in 1974 it had the third place, 2.4%.

It can also be observed that, while in 1975, figures are available for 10 main species, in 1974, we have data for only 6 of them. Species like ray, catfish and american plaice didn,t appear in 1974 data.

Greenland halibut has, in both years, the smallest catches. (TABLE 2)

Nº.de Order	1975			1974		
	SPP	TONS	%	SPP	TONS	%
1	COD	84,279.7	84.4%	COD	133,117.0	92%
2	RED	7,638.0	7.6%	RED	7165.0	4.9%
3	WHITE HAKE	2,500.0	2.5%	CAPELIN	3500.0	2.4%
4	AM.PLAICE	1,568.4	1.6%	WITCH	525.0	0.4%
5	RAY	1,093.2	1.1%	YELLOWTAIL	248.0	0.2%
6	CAT	753.3	0.8%	GREEN. HALIBUT	222.0	0.1%
7	WITCH	715.5	0.7%			
8	CAPELIN	574.0	0.6%			
9	YELLOWTAIL	342.0	0.3%			
10	GREEN. HALIBUT	325.3	0.3%			

4. SPECIES BY DIVISION

4.1 - COD

Total cod catches reached, in 1975, only 84,279 tons, compared to 133,117 tons in 1974. Still, considering catches by subarea it can be seen that the biggest catch took place in subarea 3 - 55,575.7 tons, followed by subarea 4, with 13,989.1 tons and subarea 2 - 9,774.9 tons. Smallest catch in subarea 1, with 4,940.0 tons. Map 2 compares cod catches by subarea in 1975 and 1974.

TABLE - 3

SUBA.	1975		1974	
	TONS	%	TONS	%
1	4,940.0	5.9	10,166.0	7.6
2	9,774.9	11.6	21,071.0	15.8
3	55,575.7	65.9	84,782.0	63.7
4	13,989.1	16.6	17.098.0	12.8

4.2 - RED FISH

Total redfish catch in 1975 (7,638.0 tons) is about the same than in 1974 (7,165.0 tons).

Also for this species, the largest amount was caught in subarea 3 (5,925.4 tons), follow ed by subarea 2 (10,52.5 tons) and subarea 4 (627.4 tons). Also in this case, subarea 1 had the smallest catch (32.7 tons)

TABLE - 4

SUBA.	1975		1974	
	TONS	%	TONS	%
1	32.7	0.4	-	0.0%
2	1,052.5	13.8	2,020,0	28.2
3	5,925.4	77.6	4,395.0	61.3
4	627.4	8.2	750.0	10.5

4.3. - OTHER SPECIES

Considering the catches by subarea, all the other species show the highest catch also in subarea 3. (Some of these species have , on the other hand; 100% of their catch in subarea 3 -- that is the case of the white hake, capelin and yellowtail.)

II - BIOLOGICAL DATA

The studies about biological data concern length compositions, stages of maturity and age readings from otoliths samples.

The table bellow presents the samples obtained on board, from trawl catches, between 16 of November and 20 of December.

DIV.	SAMPLE	DATE	DEPTHS (m)	No. of LENGTHS	No. AGED
3M	1	16-23 Nov.	180-200	609	111
	2	1-20 Dec.	180-228	400	0
	1+2			1,009	111
3L	3	25-29 Nov.	225-228	201	132
	4	5-13 Dec.	180-200	518	0
	3+4			719	132
3M+3L	1+2+3+4			1,728	243

DIVISION 3M

a) LENGTHS (Fig. 1)

Length compositions were ranged from 19 cm to 70 cm classes in November, and from 25 cm to 79 cm classes in December.

Mean length was, for November, 36.8 cm and for December 40.8 cm.

b) AGES (fig. 1)

Concerning the quarter of the year, when we carried out the sampling, the 4th one, (November and December), we must point out that the most important age group observed was the IV, followed by the V and III, 1971, 1970 and 1972 year classes respectively. The mean-age was 4.2 years and 4.4 years for November and December respectively.

c) GROWTH

Growth is shown in the following table of average lengths (figures in brackets concern the number of fishes observed).

DIV.3M

AGE GROUP	YEAR CLASS	4 th QUARTER NOVEMBER	DECEMBER
III	1972	30.6	31.0(19)
IV	1971	35.8	36.6(38)
V	1970	40.0	44.0(39)
VI	1969	59.1	57.9(13)
VII	1968	62.1	58.5(2)

d) STAGES OF MATURITY (fig.2)

The observations on stage of maturity, both on males and females, showed only two phases of development, which were developing and resting or recovering ones. In males, the first one (developing) occurred with a percentage of 16% and the second one (resting), with a higher value 84%; in the females we observed the same proportion between the two stages, which were 5% for developing stage and 95% for the resting or recovering one.

e) AGE AT FIRST MATURITY

During the age readings we tried to recognize marks or rings of first maturity; due mainly to the high percentage of imature fish, it was impossible to observe it. For this reason the whole sample didn't show any otolith with maturity rings on it.

DIV. 3L

a) LENGTHS (fig. 3)

The lenghts were ranged from 28 cm to 82 cm classes in November and from 31 cm to 82 cm classes in December.

The mean lenghts were for November and December 53.5 cm and 52.8 cm respectively.

b) AGES (fig. 3)

The age lenght key for the 4th quarter of the year was elaborated with ages only from November and lenght compositions from observations made during the last two months of the same quarter. The values obtained for the main age groups in November and December, were VII, VI and V relatively to November and V, VI and VII concerning December. The mean ages were 5.9 (November) and 5.8 (December).

c) GROWTH

Growth is presented in the following table of average lengths (figures in brackets are the number of fishes observed for the whole quarter of the year).

DIV. 3L

		4 th QUARTER	
AGE GROUP	YEAR CLASS	NOVEMBER	DECEMBER
III	1972	28.0	- (1)
IV	1971	39.3	40.5(25)
V	1970	45.4	45.6(29)
VI	1969	55.9	55.2(25)
VII	1968	62.0	60.7(32)
VIII	1967	69.3	69.2(17)
IX	1966	75.0	70.6(3)

d) STAGES OF MATURITY (fig. 4)

The observations on stage of maturity, both on males and females, showed only the stages of developing and the second one the resting or recovering. For males, the resting stage occurred with 34% and the developing one with 66%. In the females we observed 35% of the fishes in the developing phase and 65% in the resting or recovering stage.

e) AGE AT FIRST MATURITY

Some of the otoliths observed allowed us to identify some marks of maturity; nevertheless the highest percentage of the oto-

liths observed from males, as well as from females, were either imature or didn;t present any marks concerning spawning season.

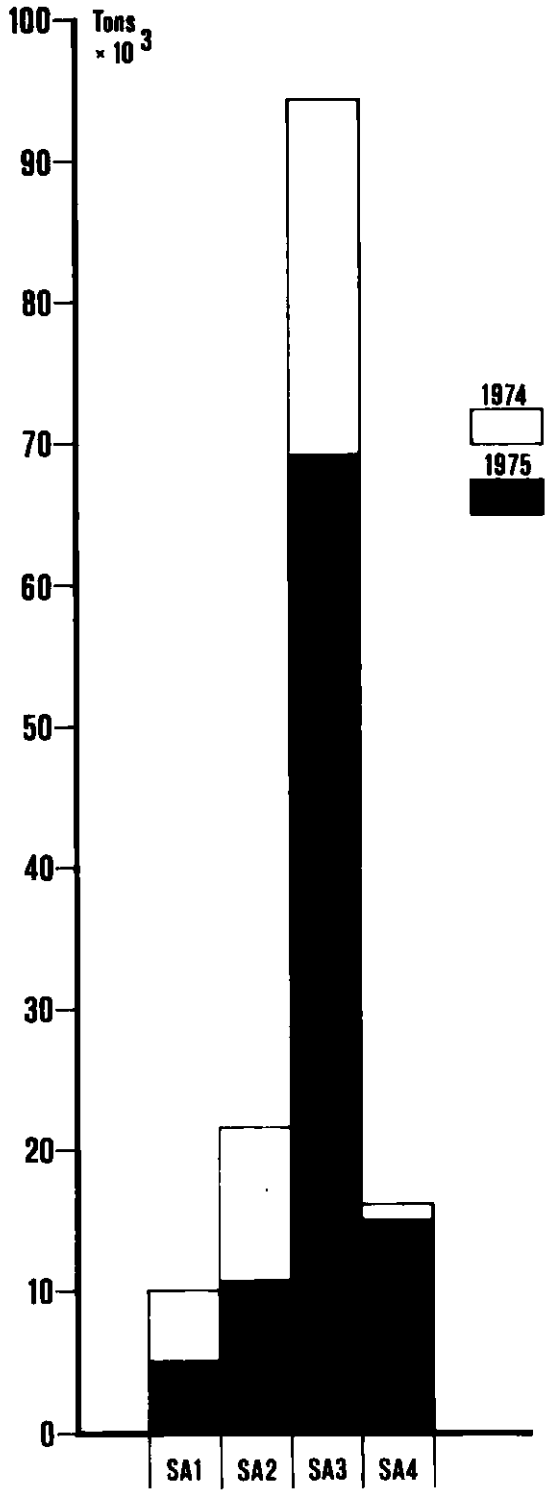
The table bellow shows the results and, from it, we can see that only in few fishes it was possible to identify some spawning structure at VI and VII years old.

DIVISION 3L - NOVEMBER

AGE GROUP	SPAWN MARKS	♂♂ VI	♂♂ VII	♂♂ Θ	♂♂ T	♀♀ VI	♀♀ VII	♀♀ Θ	♀♀ T
III		.			0			1	1
IV		,		12	12			13	13
V		.		15	15			14	14
VI		.		13	13			12	12
VII		.		17	17	1		14	15
VIII		1	1	5	7	3		7	10
IX					0	2	1		3
		1	1	62	64	6	1	61	68

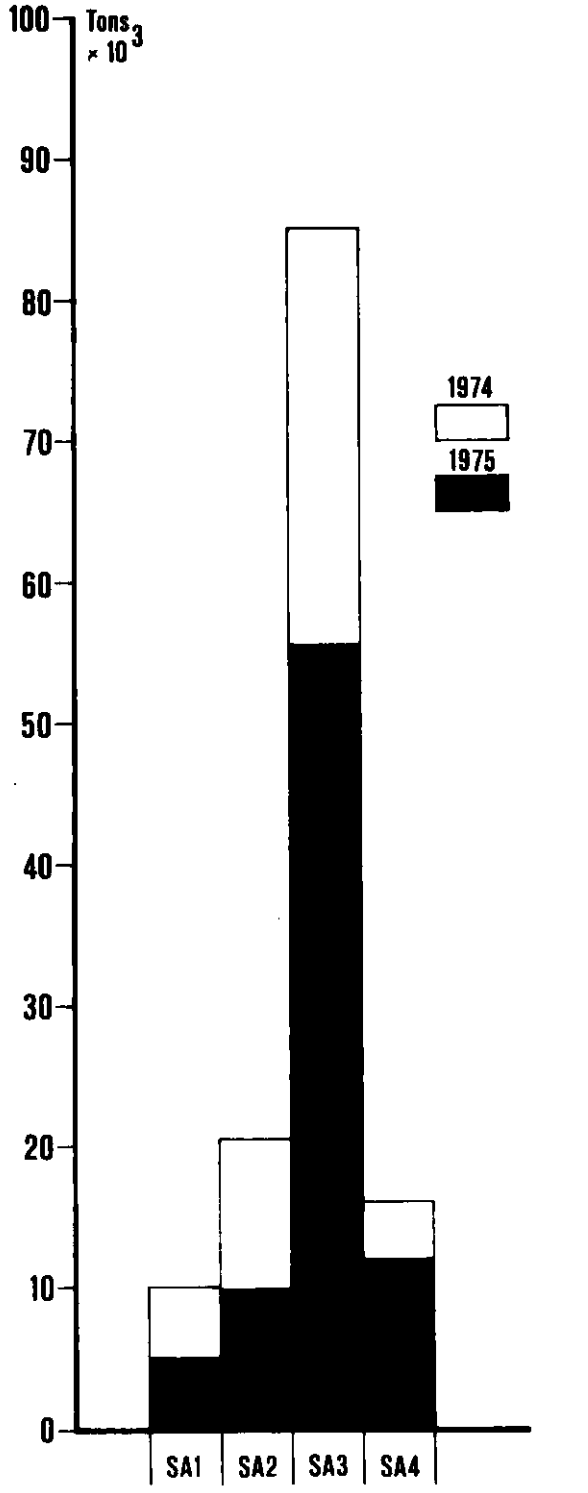
Θ - unknown including imature fish

TOTAL PORTUGUESE , FISHERY
IN ICNAF ÁREA
(ALL SPÉCIES , BY SUB—ÁREAS)
1974 - 1975

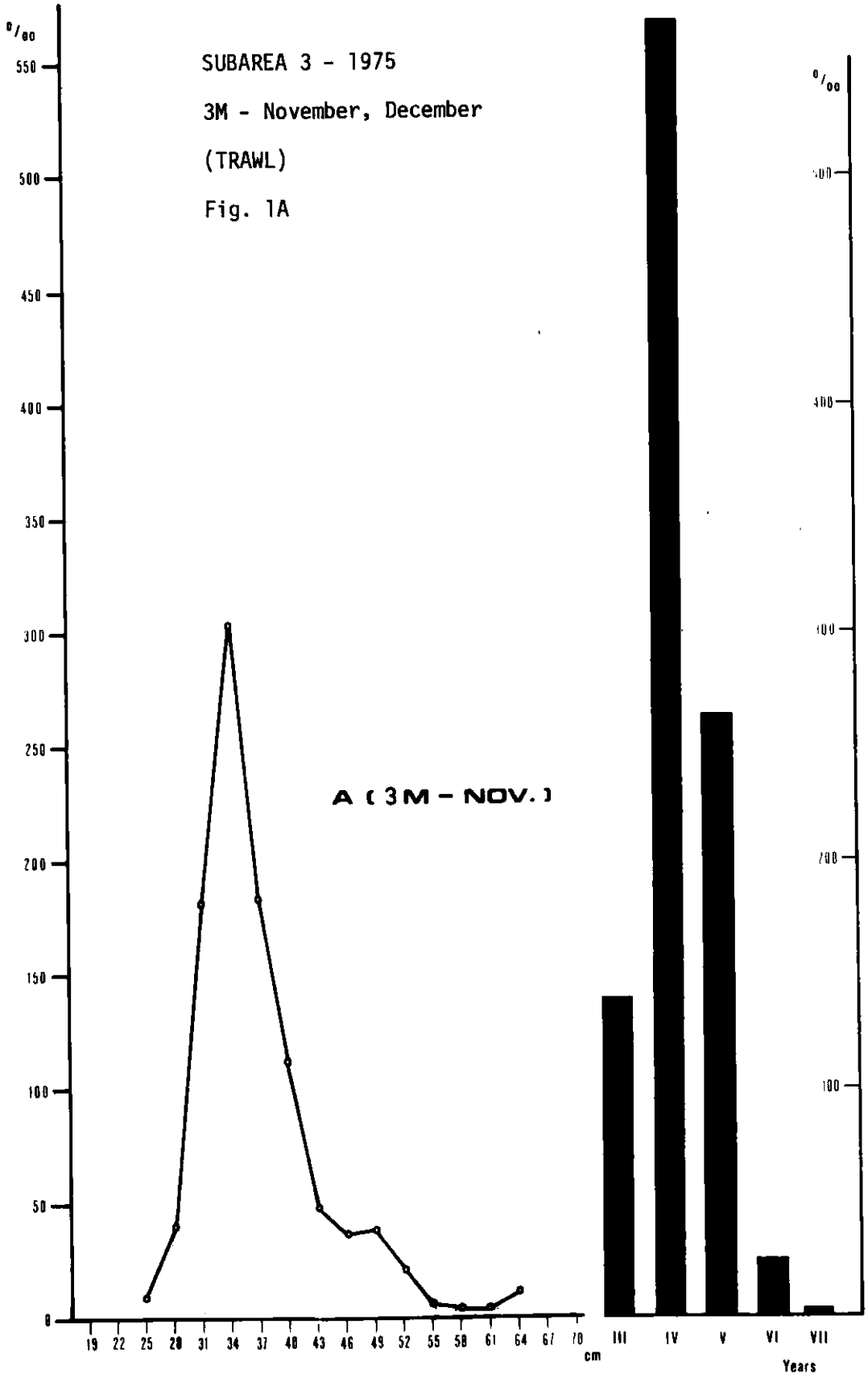


MAP : 1

PORTUGUESE COD CATCHES IN
ICNAF ÁREA BY SUB—ÁREAS
1974 - 1975



MAP : 2

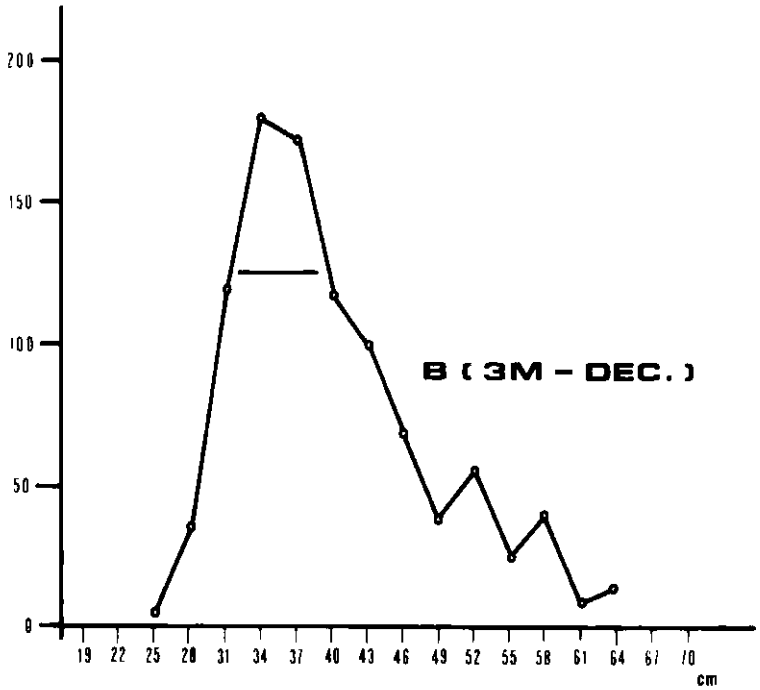

SUBAREA 3 - 1975
3M - November, December
(TRAWL)
Fig. 1A
A (3M - NOV.)
‰
550
500
450
400
350
300
250
200
150
100
50
0
19 22 25 28 31 34 37 40 43 46 49 52 55 58 61 64 67 70
cm
III IV V VI VII
Years

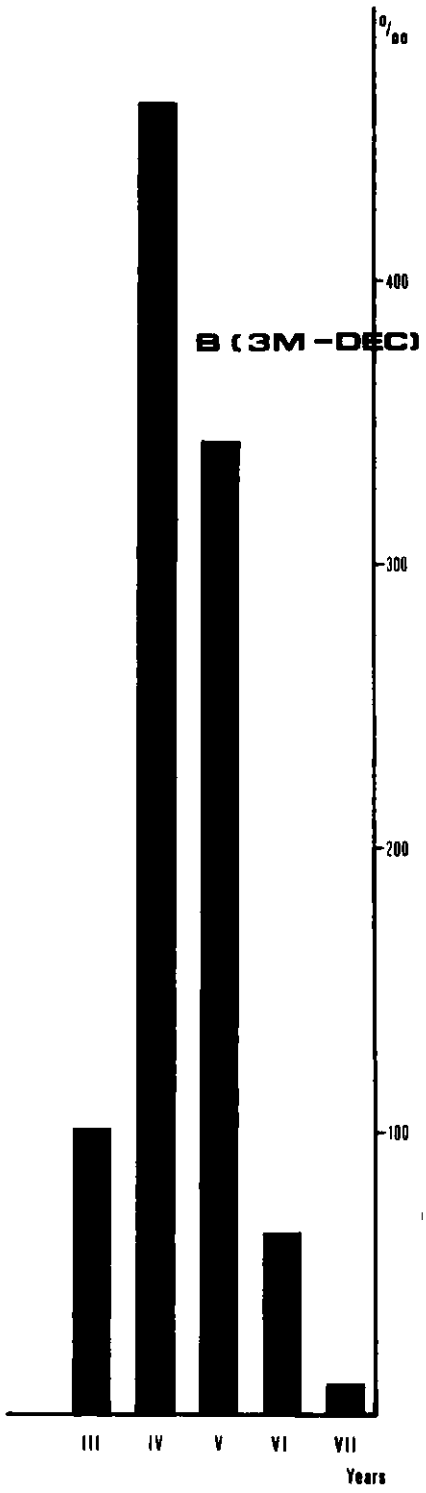
SUBAREA 3 - 1975

3M - November, December

(TRAWL)

Fig. 1B





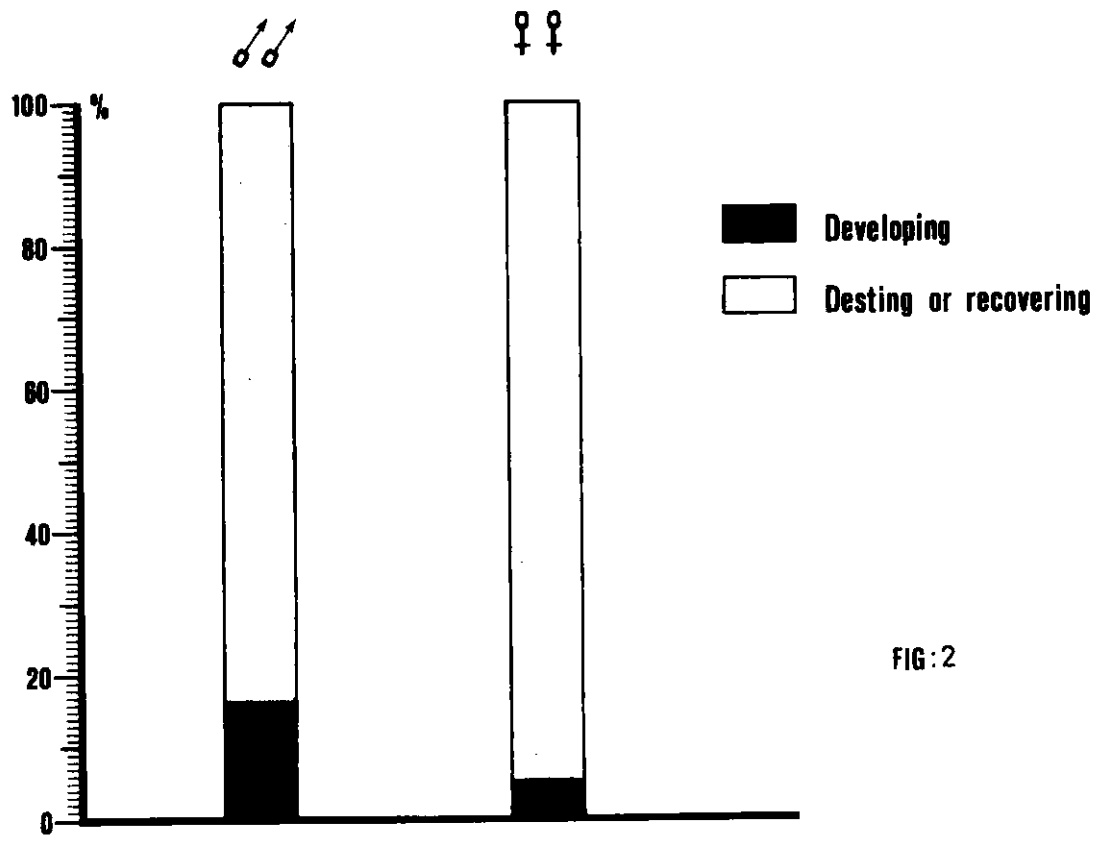
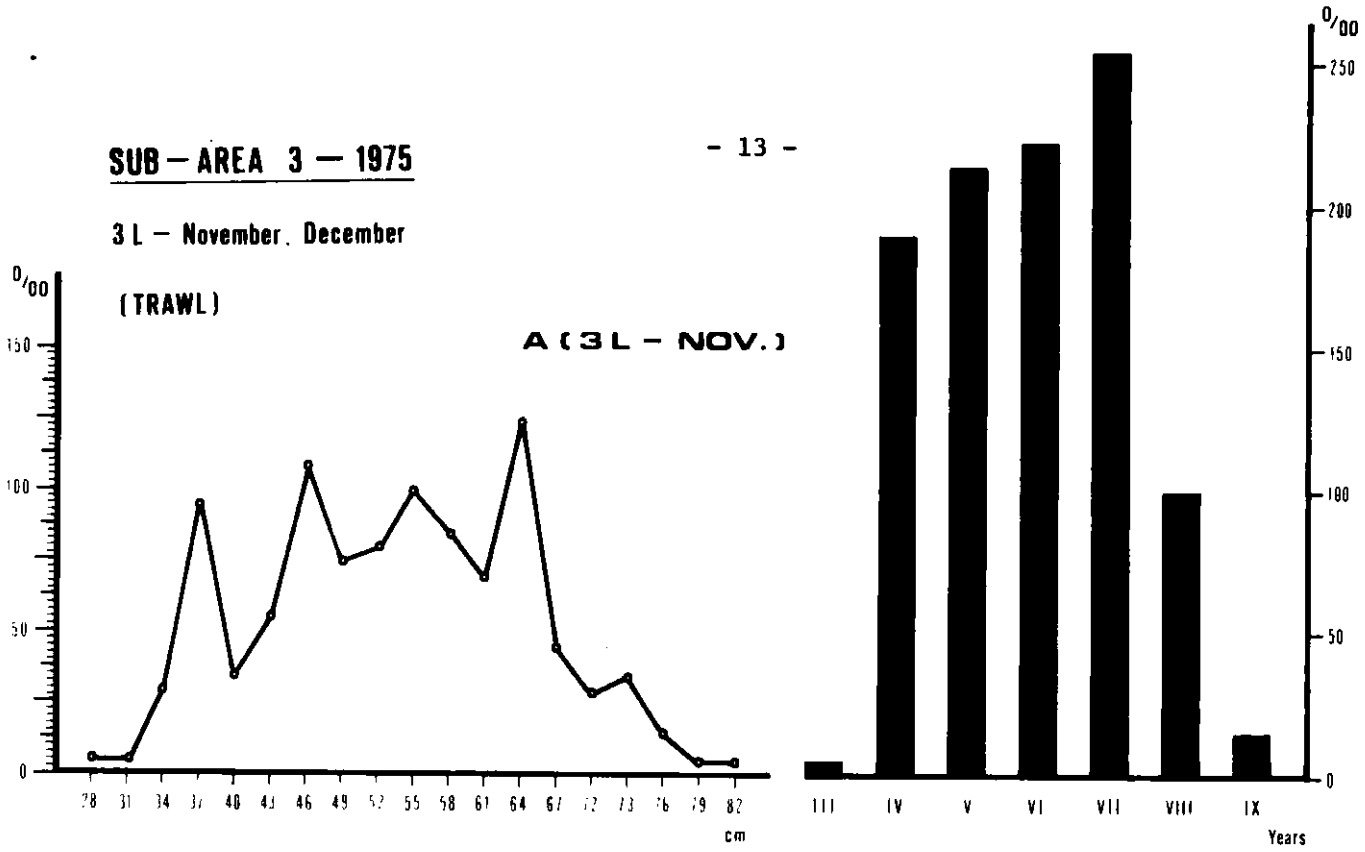

STAGES OF MATURITY
DIVISON 3 M — NOVEMBER 1975
♂♂
♀♀
100
%
80
60
40
20
0
Developing
Desting or recovering

FIG:2


SUB – AREA 3 – 1975
3 L – November. December
(TRAWL)
A (3 L – NOV.)
0/00
150
100
50
0
28 31 34 37 40 43 46 49 52 55 58 61 64 67 72 73 76 79 82
cm
0/00
250
200
150
100
50
0
III IV V VI VII VIII IX
Years

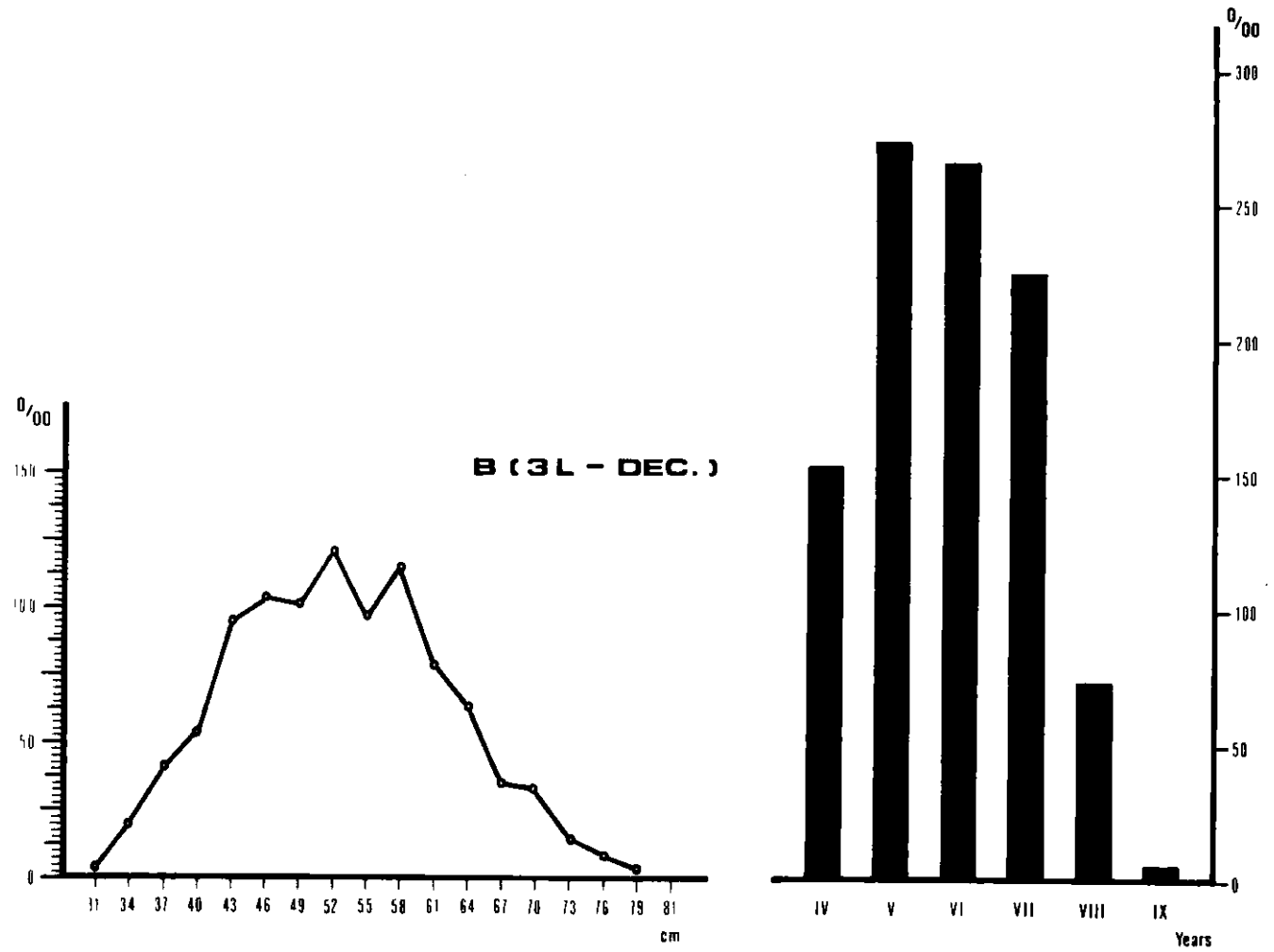

B (3L – DEC.)
0/00
150
100
50
0
31 34 37 40 43 46 49 52 55 58 61 64 67 70 73 76 79 81
cm
0/00
300
250
200
150
100
50
0
IV V VI VII VIII IX
Years

FIG. 3

STAGES OF MATURITY

DIVISON 3 L — NOVEMBER 1975

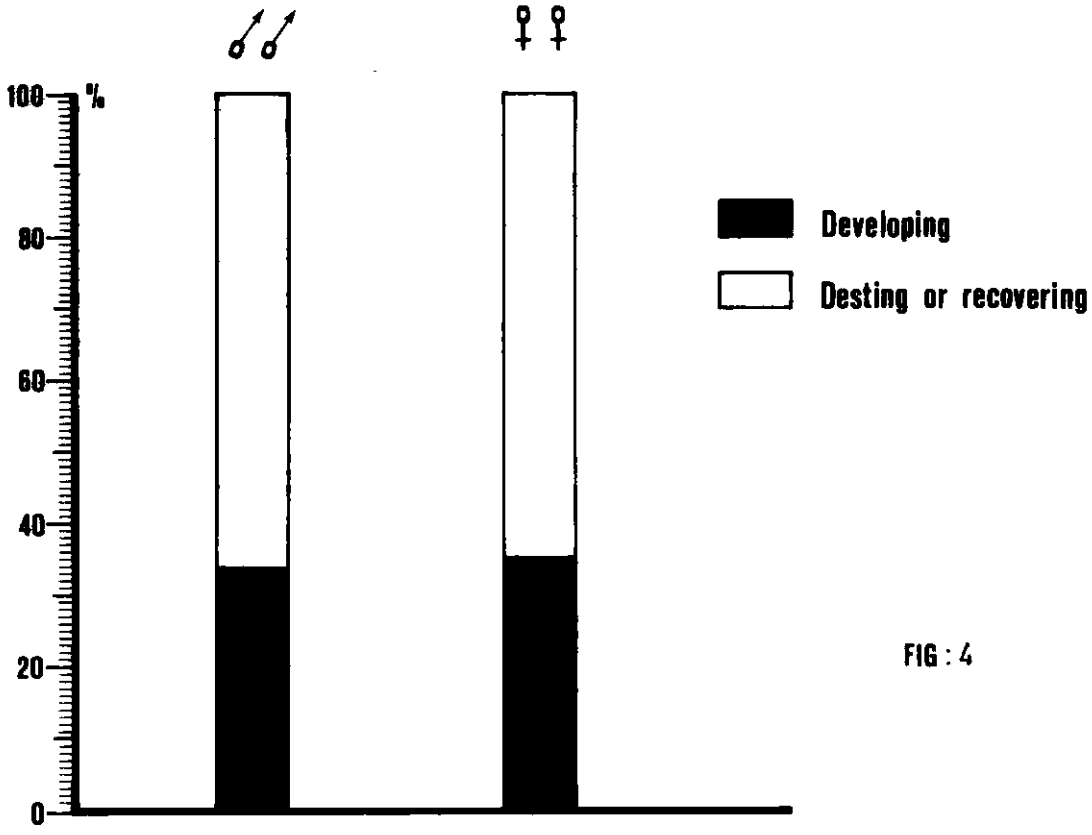


FIG : 4