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by Manuel Lima Dias
(Instituto de Biologia Maritima)
Lisboa

During 1964 the Portuguese fleet caught 211,300 metric tons of cod from Subareas 1, 2, 3 and 4. This amount represents a decrease from 1963 of almost 19,200 tons for the same species.

The present report is based on observations made on board commercial trawlers by two members of the Research Unit of the Portuguese Advisory Commission for the Northwest Atlantic Fisheries in Subareas 2 and 3. The samples were taken, at random after discards, for data on length and age composition, stage of maturity and age at first maturity.

For the age-length keys we have used stratified subsamples, obtained from the initial random samples by choosing, in each 3-cm length class, a number of otoliths which show mean age similar to that given by the total readings of the random samples ("t" test; level, 0.05). This procedure is the first attempt at stratified sampling on commercial vessels, where biological observations cannot be made as easily as on research vessels.

Details of length and age compositions will be published in ICNAF Sampling Yearbook, Vol. 9, for 1964.

SUBAREA 2

A. Status of the FisheriesI. Cod

Landings from Subarea 2 decreased from 73,300 tons in 1963 to 41,150 tons in 1964. All landings were made by trawlers.

Samples were obtained in Div. 2J between 13 March and 30 October as follows:

Sample Group for Div. 2J	Sample Nos.	Date	Depths (m)	No. Lengths	No. Aged
A	1, 3-8, 10	13-31 March	256-420	925	525
B	11-21, 23-24	4-30 April	256-439	1,716	924
C	26-34	2-19 May	196-366	1,624	574
D	36-42	18-31 August	210-300	950	300
E	43-45	1-28 September	240-300	550	150
F	46-7, 49-55, 58-64	1-30 October	180-345	2,275	825
				8,040	3,298

a. Lengths (Fig. 1) ranged from 37 to 94 cm classes. The mean lengths are: A-56.4 cm; B-53.5 cm; C-53.8 cm; D-54.0 cm; E-53.9 cm; F-54.3 cm.

b. Ages (Fig. 1)

In all cases age-group VII (1957 year-class) is dominant followed by the VI and VIII age-groups (1958 and 1956 year-classes) for March, April, May and October, and by the V and VIII age-groups (1959 and 1956 year-classes) for August and September.

Age-group III (1961 year-class) appeared for the first time in September.

Mean ages of the various sample groups are: A-7.7 years; B-7.5 years; C-7.6 years; D-6.8 years; E-6.8 years; F-6.9 years.

c. Growth is shown in the following table of average lengths (figures in brackets are numbers of fish)

Age Group	1st Quarter March	2nd Quarter April - May	3rd Quarter August-Sept.	4th Quarter October
III	-	-	37.0 (3)	36.7 (3)
IV	46.0 (1)	41.3 (14)	40.4 (9)	40.7 (10)
V	44.4 (34)	42.8 (154)	44.7 (27)	42.6 (21)
VI	51.1 (99)	49.0 (256)	49.7 (12)	48.6 (20)
VII	54.3 (232)	52.3 (552)	58.9 (34)	57.3 (31)
VIII	57.7 (95)	56.8 (268)	63.8 (24)	63.2 (25)
IX	60.9 (24)	61.9 (65)	66.4 (9)	70.3 (11)
X	65.3 (10)	63.1 (34)	70.0 (5)	72.3 (7)
XI	68.7 (7)	65.6 (32)	74.0 (5)	76.5 (8)
XII	61.3 (4)	67.0 (32)	78.7 (3)	76.3 (4)
XIII	71.0 (4)	67.4 (26)	66.0 (1)	74.3 (4)
XIV	71.0 (2)	70.0 (21)	72.7 (3)	81.5 (2)
XV	71.5 (2)	75.4 (8)	75.0 (1)	71.0 (1)
XVI	70.8 (5)	79.2 (9)	72.0 (2)	118.0 (1)
XVII	77.0 (1)	77.1 (10)	124.0 (1)	76.0 (2)
XVIII	74.3 (3)	80.2 (6)	78.0 (1)	-
XIX	81.0 (2)	83.8 (5)	-	-
XX	-	87.5 (2)	-	-
XXI	-	76.0 (1)	135.0 (1)	-
XXII	-	-	-	-
XXIII	-	98.0 (3)	-	-

d. Stage of maturity (Fig. 2)

Spawning decreases gradually from March to May. At the same time the number of cod with gonads in the developing, resting or recovering stage is more frequent. During August and through to October, there is little spawning. After October spawning increases again.

SUBAREA 3

A. Status of the Fisheries

I. Cod

From 1963 to 1964, landings increased 22,000 metric tons and amounted to 102,600 tons (72,900 for trawlers and 29,700 for dory vessels).

Samples were taken from the landings from 10 March to 24 September in Div. 3K, and from 18 April to 4 July in Div. 3L, as follows:

<u>Sample Group</u>	<u>Sample Nos.</u>	<u>Date</u>	<u>Depths (m)</u>	<u>No. Lengths</u>	<u>No. Aged</u>
<u>For Div. 3K</u>					
A	2-4	10-24 March	329-402	250	250
B	7-19	13-31 May	284-375	1,725	925
C	20-23	1-4 June	256-338	675	275
D	49-55	10-29 August	220-400	1,100	300
E	56-69	2-24 September	210-300	1,974	749
				<u>5,724</u>	<u>2,499</u>
<u>For Div. 3L</u>					
A	5-6	18-19 April	274-280	200	200
B	24-29	8-30 June	83-238	3,236	1,225
C	44, 46-47	1-4 July	192-237	886	0
				<u>4,322</u>	<u>1,425</u>

a. Lengths

In Div. 3K (Fig. 3), lengths ranged from 37 to 91 cm classes with a relatively small variation between months. Mean lengths were: A - 53.1 cm; B - 57.7 cm; C - 55.4 cm; D - 54.7 cm; E - 54.4 cm.

In Div. 3L (Fig. 4) the lengths ranged from 40 to 91 cm classes with mean values of: A - 64.8 cm; B - 59.8 cm; C - 57.9 cm.

b. Ages

In Div. 3K (Fig. 3), as in Div. 2J, age-group VII (1957 year-class) is dominant, followed by age-groups V, VI and VIII (1959, 1958 and 1956 year-classes). Age-groups IV and III (1960 and 1961 year-classes) appeared, for the first time, during May and August respectively.

Mean ages of the sample groups are: A - 6.9; B - 8.1; C - 7.6; D - 6.5; E - 6.5.

Div. 3L (Fig. 4), in both April and June, age-groups VI and VII (1958 and 1957 year-classes) are dominant. The mean ages are: A - 7.9; B - 7.2.

c. Growth (figures in brackets are numbers of fish)

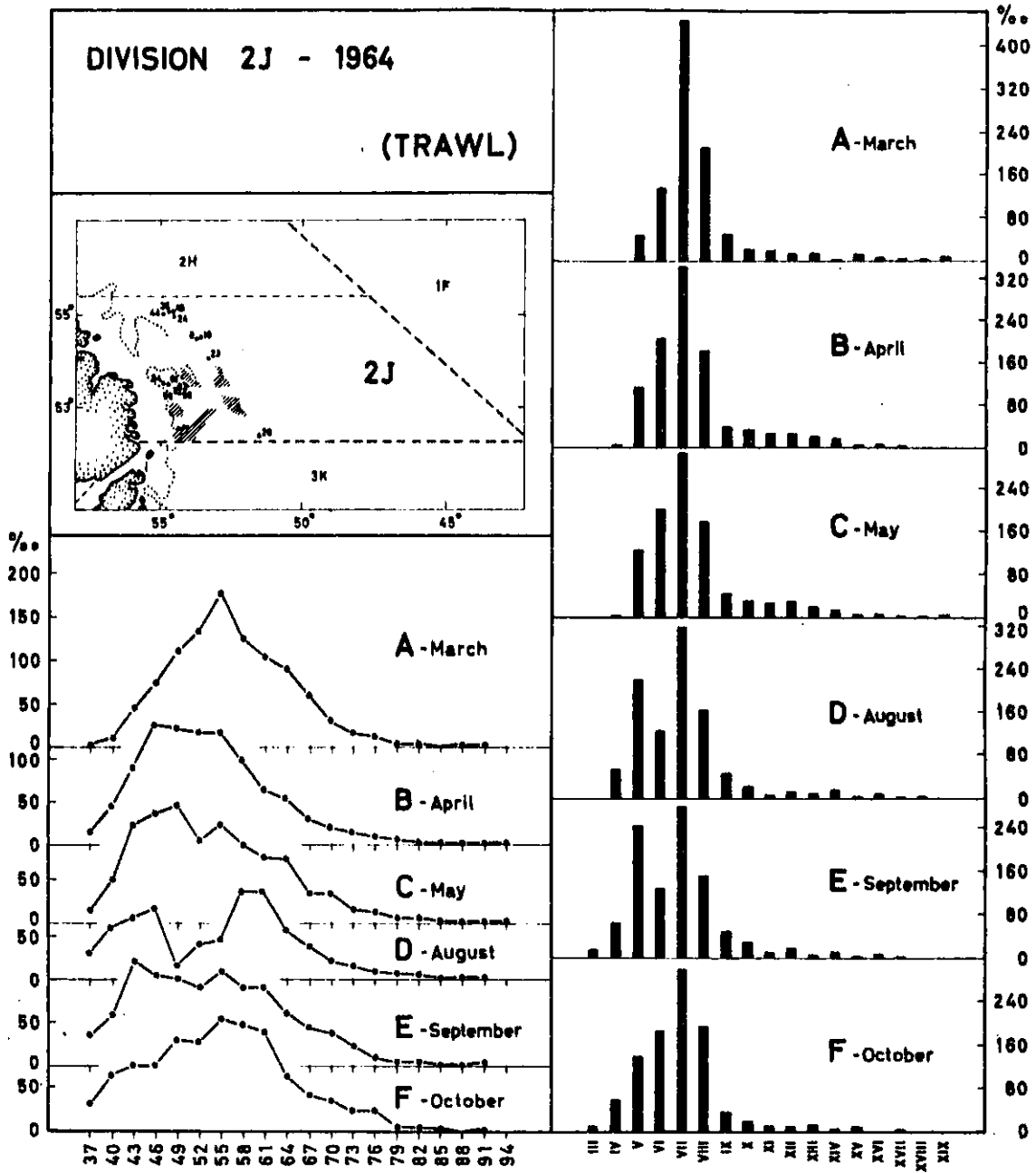


Fig. 1. Cod. Div. 2J. Length and age composition, March-October 1964

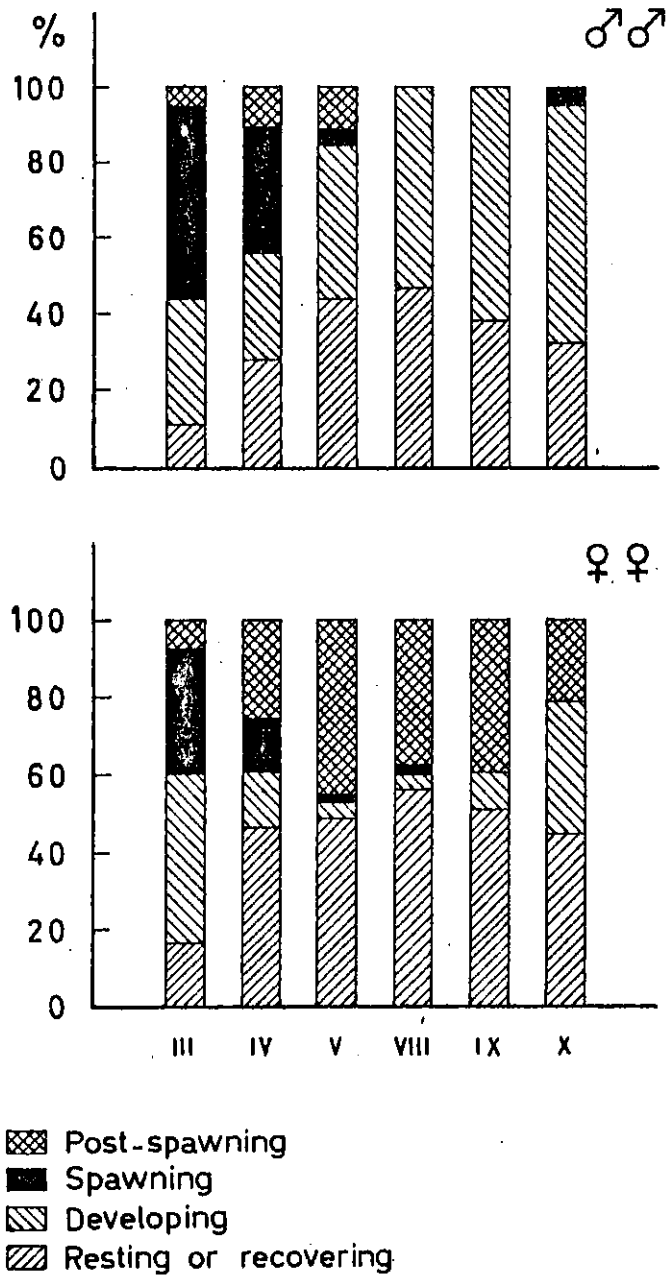


Fig. 2. Cod. Div. 2J. Stages of maturity, 1964

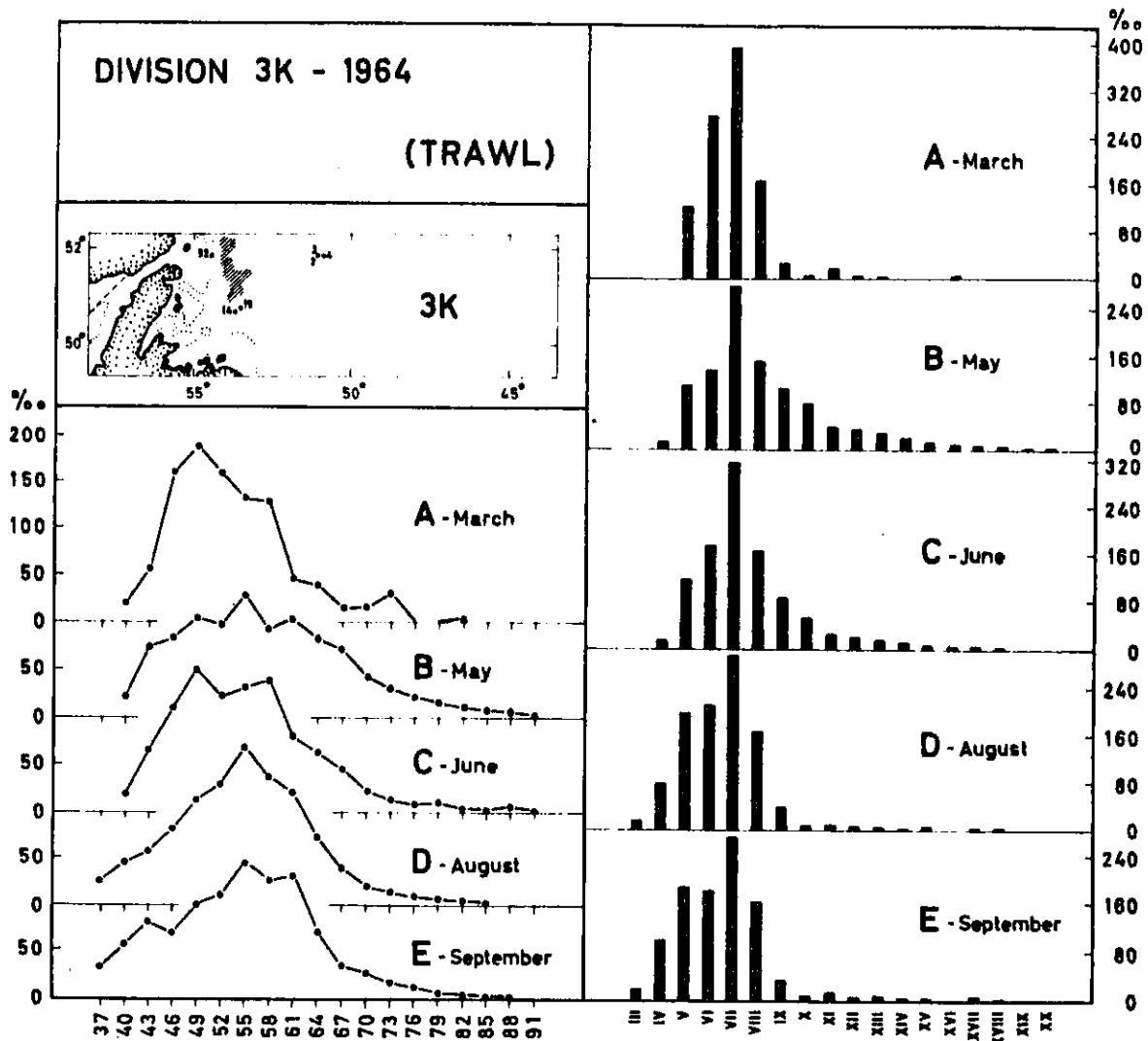


Fig. 3. Cod. Div. 3K. Length and age composition, March-September 1964

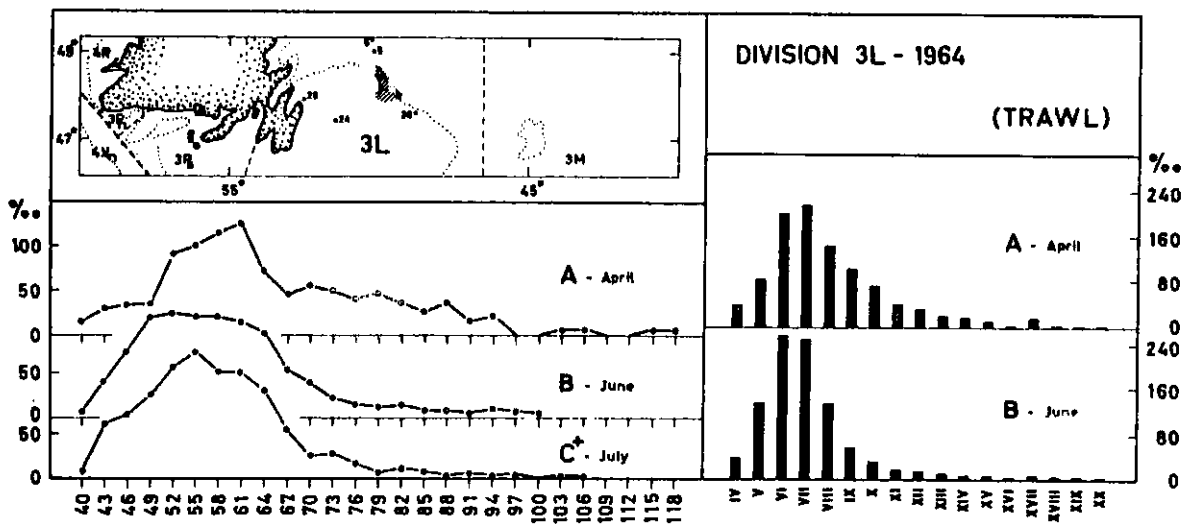


Fig. 4. Cod. Div. 3L. Length and age composition, April-July 1964

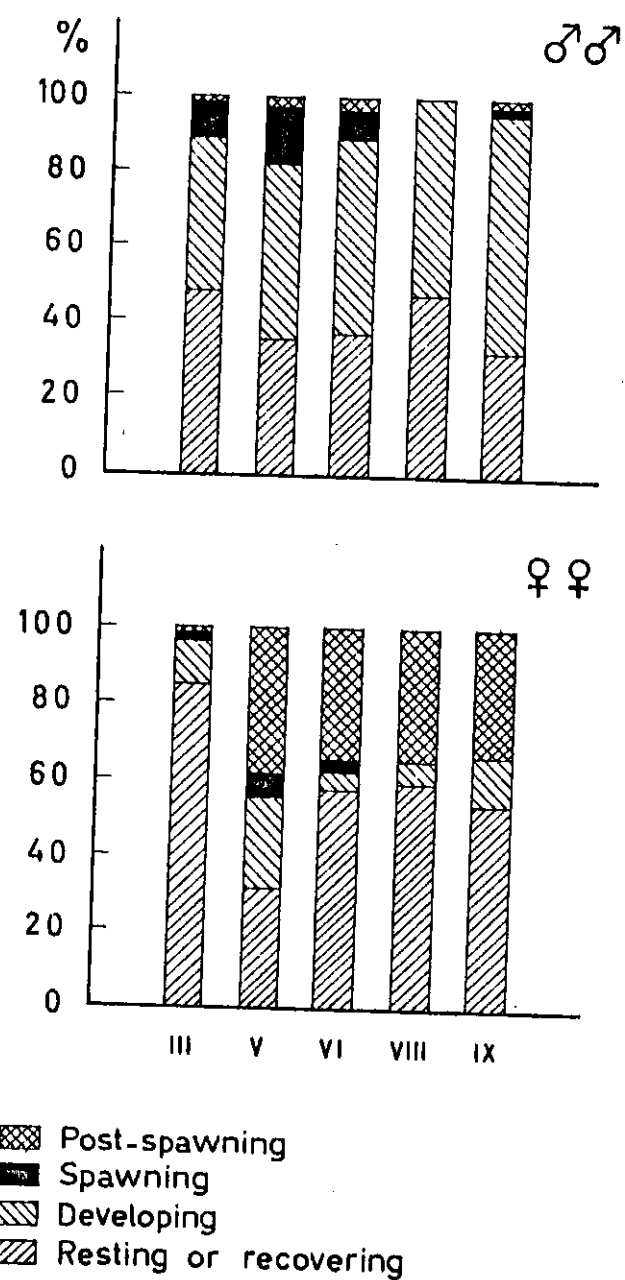


Fig. 5. Cod. Div. 3K. Stages of maturity, 1964

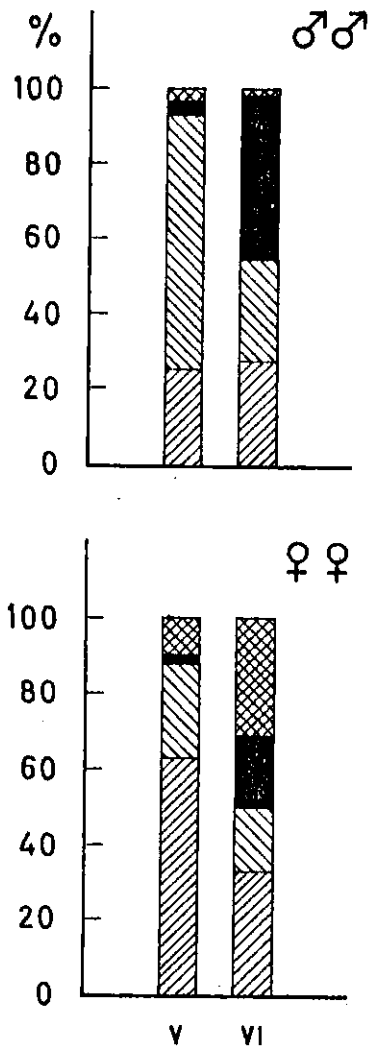


Fig. 6. Cod. Div. 3L. Stages of maturity, 1964.