



1950

**International Commission
for the
Northwest Atlantic Fisheries**



1970

RESTRICTED

Serial No. 2397
(D.a.69)

ICNAF Res.Doc.70/19ANNUAL MEETING - JUNE 1970Spanish Research Report, 1969

by M.G. Larraneta and J. Rucabado,
Laboratory of Vigo

The present report is based on cod samples from the Spanish trawler "Bochorno" in Subareas 2, 3 and 4. Samples were taken for data on length, age and sex.

Otoliths and sampling data were studied in the Vigo Laboratory of the "Instituto de Investigaciones Pesqueras". Each otolith was read by three persons, and admitted as "good" when at least two readers agreed. A total of 850 otoliths were observed and 627 admitted as good. Total fish measurements 20,236. Total sex determinations 1,547. Statistics for the Spanish catches were not yet available.

Subarea 2

A. Status of the Fisheries

The predominant year-classes were 1963 and 1964, as in the 1968 samples, but the modal class changed from the 1963 year-class (5 age-group) in 1968, and the 1964 one (5 age-group) in 1969.

B. Special Research Studies

Sixteen samples (3,150 cod) in September, October and November were examined, and 119 age determinations carried out. The average length was 53.3 cm and the average age 5.7 years, ranging from 3 to 11 years.

In Table 1 the length frequency distribution and in Table 2 the age composition are given.

Table 1. Length frequencies

Subarea 2	
cm	/oo
33-35	2
36-38	15
39-41	39
42-44	84
45-47	87
48-50	132
51-53	134
54-56	146
57-59	143
60-62	124
63-65	50
66-68	25
69-71	14
72-74	4
75-77	1
Total	1000

Table 2. Age Composition

Subarea 2		
Year-class	age	/oo
1966	3	14
1965	4	63
1964	5	371
1963	6	300
1962	7	121
1961	8	30
1960	9	14
1959	10	4
1958	11	3
Total		920

The sex composition was made up directly from samples, and ratios calculated for cod less than 53.5 cm (immature) and greater than 53.5 cm (mature) grouping every two months (Table 3). In November-December the sex ratio deviates significantly ($P < 0.01$) from 50%.

Table 3. Sex ratios. Subarea 2

Cod	Sex	Sep-Oct		Nov-Dec	
		No.	%	No.	%
< 53.5 cm	male	42	59	15	47
	female	29	41	17	53
	Total	71	100	32	100
> 53.5 cm	male	55	47	10	23
	female	62	53	33	77
	Total	117	100	43	100

Subarea 3

A. Status of the Fisheries

The predominant year-classes were 1962, 1963 and 1964 and the modal class 1963 (6 year-group). In 1968 the predominant year-classes were 1963 and 1964, and also the modal class 1963 (5 year-group).

B. Special Research Studies

Fifty-five samples (13,246 cod) in March, April, May, July and September were examined and 350 age determinations carried out. In Table 4 the length frequency distributions are shown, the average length being 55.1 cm, and in Table 5 the age distribution is shown, with a mean age of 6.25 years. The ages range from 4 to 15 years.

Sex ratios in Table 6 show a significant deviation ($P > 0.01$) from 50% in March-April and May-June for cod greater than 53.5 cm and in May-June for cod less than 53.5 cm. The sex ratio for cod less than 53.5 cm in March-April suggests ($P < 0.05$) some segregation of sexes.

Table 4. Length frequencies

Subarea 3	
cm	/oo
33-35	7
36-38	20
39-41	37
42-44	60
45-47	87
48-50	95
51-53	124
54-56	128
57-59	133
60-62	123
63-65	69
66-68	46
69-71	28
72-74	18
75-77	9
78-80	8
81-83	3
84-86	1
87-89	-
90-92	1
Total	997

Table 5. Age composition

Subarea 3		
Year-class	age	/oo
1965	4	79
1964	5	199
1963	6	350
1962	7	226
1961	8	65
1960	9	32
1959	10	24
1958	11	5
1957	12	1
1956	13	2
1955	14	-
1954	15	1
Total		984

Table 6. Sex ratios. Subarea 3

Cod	Sex	Mar-Apr		May-Jun		Jul-Aug		Sep-Oct	
		No.	%	No.	%	No.	%	No.	%
< 53.5 cm	male	117	43	51	30	21	54	6	46
	female	153	57	118	70	18	46	7	54
	Total	270	100	169	100	39	100	13	100
> 53.5 cm	male	122	36	23	19	21	49	8	53
	female	220	64	97	81	22	51	7	47
	Total	342	100	120	100	43	100	15	100

Subarea 4

A. Status of the Fisheries

As in Subarea 3, the dominant year-classes were 1962, 1963 and 1964, with 1963 (6 year group) the modal class. The dominant year-classes in 1968 were 1963 and 1964, and the modal class 1963 (5 year group). According to Spanish sampling, status of the fisheries in Subarea 2, 3 and 4 showed a similar feature in the presence of the very rich 1963 year-class.

B. Special Research Studies

Sixteen samples (3,841 cod) were examined, and 157 age determinations were carried out. Average length 56.0 cm. Mean age 5.9 years. The age ranges from 3 to 16 years.

The length frequency distribution is given in Table 7, and the age composition of catches in Table 8. Sex ratios (Table 9) do not reveal any significant departure from 50%, only in July-August for cod greater than 53.5 cm there seems to be some difference ($P < 0.05$).

Table 7. Length frequencies

Subarea 4	
cm	/oo
33-35	3
36-38	12
39-41	21
42-44	48
45-47	74
48-50	94
51-53	122
54-56	141
57-59	152
60-62	141
63-65	75
66-68	52
69-71	29
72-74	21
75-77	9
78-80	5
81-83	1
Total	1000

Table 8. Age Composition

Subarea 4		
Year-class	age	/oo
1965	4	80
1964	5	226
1963	6	305
1962	7	162
1961	8	79
1960	9	32
1959	10	14
1958	11	6
1957	12	1
Total		943

Table 9. Sex ratios. Subarea 4

Cod	Sex	Jul-Aug		Sep-Oct	
		No.	%	No.	%
< 53.5 cm	male	15	37	9	47
	female	26	63	10	53
	Total	41	100	19	100
> 53.5 cm	male	21	32	72	49
	female	44	68	76	51
	Total	65	100	148	100



1950

International Commission
for the
Northwest Atlantic Fisheries



1970

RESTRICTED

Serial No. 2397
(D.a. 69)

ICNAF Res.Doc. 70/19
Addendum

ANNUAL MEETING - JUNE 1970

Spanish Research Report 1969

Statistical Information

Seventeen trawlers and 144 pair trawlers (these vessels represent 72 gears) have operated in the ICNAF area during the year 1969. Total tonnage of these vessels is 89,205 tons, 4,414 fishermen make up the crew. Total catch was 293,972.4 tons, of which 97.6% was cod, 1.7% haddock and 0.7% other species (white hake and pollock).

STATISTICAL I.C.N.A.F. 1969

	1.968			1.969		
	TRAWLERS	PAIR TRAWLERS	TOTAL	TRAWLERS	PAIR TRAWLERS	TOTAL
1 A	-	30,-	30,-	-	42,-	42,-
1 B	-	8.466,9	8.466,9	-	7.088,7	7.088,7
1 C	175,5	2.824,2	2.999,7	353,1	1.690,5	2.043,6
1 D	-	9.276,3	9.276,3	842,7	11.565,-	12.407,7
1 E	21,-	784,5	805,5	660,6	1.524,3	2.184,9
1 F	-	144,-	144,-	-	14,7	14,7
TAL SUB. 1	196,5	21.525,9	21.722,4	1.856,4	21.925,2	23.781,6
2 G	-	-	-	-	-	-
2 H	-	-	-	142,8	-	142,8
2 J	32.574,6	278,4	32.853,-	33.004,8	4,5	33.009,3
TAL SUB. 2	32.574,6	278,4	32.853,-	33.147,6	4,5	33.152,1
3 K	13.355,1	465,-	13.820,1	11.971,5	-	11.971,5
3 L	45.652,2	39.904,2	85.556,4	16.683,-	41.148,9	57.831,9
3 M	4.041,-	3,6	4.044,6	1.932,-	748,8	2.680,8
3 N	518,1	36.064,8	36.582,9	403,5	31.770,3	32.173,8
3 O	181,5	34.731,9	34.913,4	-	39.813,-	39.813,-
3 Pn	1.916,7	305,7	2.222,4	78,6	24,-	102,6
3 Pz	1.008,3	27.408,3	28.416,6	298,2	28.533,-	28.831,2
TAL SUB. 3	66.672,9	138.883,5	205.556,4	31.366,8	142.038,-	173.404,8
4 R	2.271,3	508,2	2.779,5	2.688,-	5,4	2.693,4
4 S	-	-	-	42,-	-	42,-
4 T	12,9	128,1	141,-	-	22,5	22,5
4 Vn	787,8	2.124,9	2.912,7	276,9	1.372,2	1.649,1
4 Vm	109,8	40.039,8	40.149,6	629,4	17.867,7	18.497,1
4 W	-	14.182,8	14.182,2	-	16.311,-	16.311,-
4 X	-	2.997,9	2.997,9	-	8.893,2	8.893,2
TAL SUB. 4	3.181,8	59.981,1	63.162,9	3.636,3	44.472,-	48.108,3
5 Y	-	-	-	-	502,2	502,2
5 Zc	-	17.713,2	17.713,2	-	15.023,4	15.023,4
5 Zw	-	303,-	303,-	-	-	-
TAL SUB. 5	-	18.016,2	18.016,2	-	15.525,6	15.525,6
TAL GENERAL	102.625,8	238.685,1	341.310,9	70.007,1	223.965,3	303.972,4

STATISTICAL I.C.N.A.F. 1.969

C O N C E P T S	OTTER TRAWLERS	PAIR TRAWLERS	T O T A L S
Number of vessels	17	144 (1)	161
TONS. R.B.	22.855	66.350	89.205
H.P.	20.980	137.231	158.211
CREW	978	3.436	4.414
Nº of days absent from home port	4.609	19.636	24.245
Nº of days on grounds	4.121	16.756	20.877
Nº of days fished	3.692	14.009	17.701
Nº of sets	17.204	32.554	49.758
Nº of trawl hours	52.010	153.306	205.316
CATCHES			
Cod	69.946,8	216.898,2	286.845,-
Haddock	11,1	5.127	5.138,1
White Hake	4,2	60	64,2
Pollock	<u>45</u>	<u>1.880,1</u>	<u>1.925,1</u>
TOTAL CATCHES	<u>70.007,1</u>	<u>223.965,3</u>	<u>293.972,4</u>

APPLIED CONVERSION FACTOR = 3.

(1) As these vessels are "pair trawlers" they represent only 72 trawl gears.