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Portuguese Research Report for 1987

by

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A. Status of the Fisheries

During 1987, the Portuguese fishing fleet operated in Subarea 3, Divisions 3L, 3M and 3N, and the overall nominal catch was 82,134 tonnes (Table 1).

Compared with 1986, the catches of cod, American plaice and witch flounder decreased, respectively 52%, 68% and 61% as opposed to the catches of redfish which increased by 52%.

The decrease in the Portuguese total catch was about 16%.

B. Special Research Studies

1. Biological studies

Biological studies were undertaken on board a commercial otter trawler in Divisions 3L, 3M and 3N. Table 2 presents the sampling intensity by division and month for cod, redfish, American plaice and roundnose grenadier.

a) Cod in Divisions 3L and 3M

Biological sampling was done for length composition and ageing. Length measurements observed were fork length (cm). The corresponding length distributions by each division and month are presented in Table 3, and Table 4 presents the respective age composition.

b) Redfish in Divisions 3L, 3M and 3N

Biological sampling involved the collection of length compositions by each division, during the third and fourth quarters (Table 5), with measurements recorded as fork length (cm).

c) American plaice in Divisions 3L, 3M and 3N

Length compositions of the sampled catch are presented by month in Table 6. Length measurements were recorded as total length.

d) Roundnose grenadier in Divisions 3L and 3N

Length compositions of the sampled catch in Div. 3L and 3M by month are presented in Table 7. Length measurements were recorded as annual length (cm).

Table 1. Portuguese nominal catches (mt) in NAFO area, 1987.

Species	3L	3M	3N	Total 87	Total 86
Cod	13,620	2,802	4,108	20,530	43,143
Redfish	19,858	21,823	7,854	49,535	32,525
American plaice	1,502	969	1,014	3,485	10,981
Witch flounder	1,138	30	475	1,643	4,230
Greenland halibut	1,390	273	169	1,832	-
Roundnose grenadier	912	7	82	1,001	-
White hake	0	46	190	236	993
Silver hake	67	32	62	161	-
Atlantic halibut	18	4	91	113	-
Skates	1,557	177	1,522	3,256	742
Others	22	77	243	342	5,521
Total	40,084	26,240	15,810	82,134	98,135

Table 2. Intensity of sampling, 1987.

Species	Div.	Month	No. of samples	Number measured	Number aged
Cod	3L	Sep	1	116	115
	3M	Aug	1	50	50
		Nov	24	2958	216
Redfish	3L	Aug	24	2888	-
		Sep	3	351	-
		Oct	7	4199	-
		Nov	8	881	-
		Dec	12	1332	-
	3M	Nov	3	380	-
	3N	Aug	1	99	-
		Sep	34	4399	-
		Dec	15	1847	-
Am. plaice	3L	Sep	3	347	-
	3M	Nov	2	236	-
	3N	Sep	4	420	-
Grenadier	3L	Aug	1	73	-
	3N	Sep	1	109	-

TAB. 3-LENGTH FREQUENCY AND MEAN LENGTH OF COD CATRES, BY MONTH, IN DIVISION 3L AND 3M, IN 1987

LENGTH (cm)	DIVISION 3L		DIVISION 3M	
	SEP.	AUG.	NOV.	
15	--	--	--	1
18	--	--	--	58
21	--	--	--	593
24	--	--	--	1015
27	5	--	--	773
30	11	--	--	365
33	5	--	--	173
36	7	--	--	33
39	18	1	--	4
42	17	1	--	3
45	8	3	--	5
48	9	7	--	4
51	5	4	--	--
54	9	10	--	1
57	8	4	--	--
60	5	5	--	--
63	2	7	--	--
66	3	3	--	--
69	--	4	--	--
72	--	3	--	--
75	1	2	--	--
78	--	--	--	--
81	1	--	--	--
84	--	--	--	--
87	1	--	--	--
90	--	--	--	--
93	--	--	--	--
96	--	--	--	--
99	1	--	--	--
102	--	--	--	--
TOTAL	116	54		3028
MEAN LENGTH (cm)	46.3	60.0		26.7
WEIGHT SAMPLED (kg)	143	114		580

Table 4. Age composition (N, %), mean length (cm), and mean weight (g) by age-group, of cod from the sampled catch in Div. 3M (August and November) and in Div. 3L (September), 1987.

Year-class	Age (yr)	Div. 3M (August)			Div. 3M (November)			Div. 3L (September)		
		N (%)	Mean length	Mean weight	N (%)	Mean length	Mean weight	N (%)	Mean length	Mean weight
1986	1	-	-	-	92 (30)	21.9	91	-	-	-
1985	2	-	-	-	506 (69)	24.6	133	155 (18)	30.5	293
1984	3	140 (7)	45.6	829	385 (99)	29.9	260	171 (20)	38.5	567
1983	4	300 (15)	55.0	1643	15 (16)	38.4	570	201 (23)	38.6	767
1982	5	300 (15)	62.8	2480	2 (2)	52.0	1473	205 (23)	48.5	1222
1981	6	220 (11)	69.7	3449	-	-	-	172 (20)	55.5	1758
1980	7	40 (2)	74.5	4174	-	-	-	52 (6)	65.6	3049
1979	8	-	-	-	-	-	-	17 (2)	65.6	3006
1978	9	-	-	-	-	-	-	9 (1)	82.0	4500
1977	10	-	-	-	-	-	-	-	-	-
1976	11	-	-	-	-	-	-	9 (1)	84.0	6500
1975	12	-	-	-	-	-	-	-	-	-
1974	13	-	-	-	-	-	-	9 (1)	100.0	10000
1973	14	-	-	-	-	-	-	-	-	-
Total		1000			1000			1000		
Mean age (yr)		4.7			2.3			4.5		
Mean length (cm)		60.0			26.7			46.3		
Mean weight (g)		2287.0			196.0			1080.0		
Number aged		50			216			115		

() Number of otoliths observed.

TAB. 5 LENGTH FREQUENCY DISTRIBUTION OF REDFISH, BY MONTH, IN DIVISION 3L, 3M AND 3N, IN 1987

LENGTH (cm)	DIVISION 3L					DIVISION 3M	DIVISION 3N		
	AUG.	SEP.	OCT.	NOV.	DEC.	NOV.	AUG.	SEP.	DEC.
10	-	-	-	-	-	-	2	-	-
11	-	-	-	-	-	-	1	-	-
12	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	2	-	-
14	-	-	-	-	-	-	1	-	-
15	-	-	-	-	-	-	1	-	-
16	-	-	-	-	-	-	3	-	-
17	-	-	1	-	-	-	4	1	-
18	2	1	1	-	-	1	9	13	-
19	11	4	3	-	1	-	7	76	1
20	19	7	4	-	-	1	14	159	6
21	23	10	8	-	-	9	10	227	10
22	24	8	9	-	-	24	4	186	14
23	49	15	16	-	3	51	6	252	22
24	51	11	23	-	2	77	5	430	19
25	77	12	53	-	9	86	10	537	38
26	148	17	120	1	23	37	8	443	57
27	197	28	175	7	39	23	7	304	64
28	305	34	322	15	59	8	4	329	92
29	398	54	533	33	82	10	-	382	152
30	412	60	718	53	125	12	-	315	219
31	315	30	577	48	136	11	1	190	186
32	212	21	430	72	126	10	-	122	206
33	182	10	330	107	154	9	-	93	190
34	105	10	279	120	127	7	-	88	165
35	94	6	236	158	163	1	-	81	146
36	81	5	150	111	128	-	-	56	95
37	31	2	70	79	77	-	-	42	54
38	36	1	51	41	42	-	-	25	38
39	41	1	25	22	18	-	-	16	26
40	34	1	19	9	6	-	-	16	14
41	23	2	16	1	5	-	-	7	13
42	19	-	9	1	3	-	-	3	10
43	13	-	13	-	1	-	-	-	6
44	3	-	3	1	1	-	-	2	3
45	3	1	2	2	1	-	-	1	1
46	-	-	-	-	1	-	-	2	-
47	-	-	1	-	-	-	-	1	-
48	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-
50	-	-	1	-	-	-	-	-	-
TOTAL	2888	351	4199	881	1332	380	99	4399	1847
MEAN LENGTH (cm)	30.7	29.1	31.6	34.6	33.3	26.1	21.9	27.3	32.2
Weight sampled (kg)	1368	145	2183	589	798	106	36	1480	1001

TAB. 6-LENGTH FREQUENCY OF AMERICAN PLAICE, BY MONTH, IN
DIVISION 3L, 3M AND 3N IN 1987

LENGTH (cm)	DIVISION 3L SEP.	DIVISION 3M NOV.	DIVISION 3N SEP.
18	1	-	-
20	1	-	1
22	2	-	3
24	3	4	10
26	7	10	17
28	10	14	22
30	14	5	18
32	30	10	26
34	26	16	30
36	52	35	27
38	41	21	24
40	33	23	20
42	30	44	23
44	29	32	20
46	21	6	27
48	16	3	25
50	7	9	20
52	11	3	23
54	3	-	21
56	3	1	14
58	5	-	10
60	2	-	14
62	-	-	9
64	-	-	9
66	-	-	3
68	-	-	3
70	-	-	-
72	-	-	1
TOTAL	347	236	420
MEAN LENGTH (cm)	43.6	40.1	39.5
WEIGHT SAMPLED (kg)	253	178	435

TAB. 7-LENGTH FREQUENCY OF GRENADIER, BY MONTH, IN
DIVISION 3L AND 3N IN 1987

LENGTH (cm)	DIVISION 3L AG.	DIVISION 3N SEP.
14	-	-
15	4	-
16	5	-
17	10	-
18	5	2
19	4	2
20	6	1
21	3	2
22	2	4
23	12	5
24	10	11
25	5	13
26	3	21
27	2	15
28	1	16
29	-	6
30	1	5
31	-	3
32	-	1
33	-	-
34	-	-
35	-	1
36	-	1
TOTAL	73	109
MEAN LENGTH (cm)	21.5	25.6
WEIGHT SAMPLED (kg)	81	178