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Spanish Research Report for 1987

by

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Subarea 3

A. Status of the Fisheries

Pair trawl fishery of cod

Cod catches and effort data are presented in Table 1. The derived catch-rate indices are presented in Table 2. The overall fishing effort in 1987 was reduced by a 22% in relation to 1986. The reduction was significant in Division 3L, 10%, and it was specially high in Division 3N, 34%. The fishing effort in Division 3M was maintained at approximately the same level that in 1986.

By-catches are presented in Table 3. During 1987 there were three observers on board pair trawlers for periods of two months each. Sampling intensity of catch was:

	Div. 3L	Div. 3M	Div. 3N
Samples	5	61	62
Fishes measured	772	11327	4355
Otoliths aged	-	1474	778

Estimates of the length and age composition of the catch in months with samples are presented in Tables 4 and 5. Figure 1 shows the age composition of the catch from 1984 to 1987. The 1981 year class continue to be dominant in 3M catches.

Groundfish fishery of freezers

Catch and effort data are presented in table 6. Catch sampling was made on board by three observers during 1987. American plaice length and age composition of the catch estimated in months with samples are presented in table 7 and 8. Length frequencies of witch flounder, redfishes, yellowtail, silver hake, skates and squid (*Illex*) are presented in tables 9 to 14.

Table 1.- Cod catches (t) and fishing effort (hours) of pair trawlers in 1987.

Month	3L				3M				3N			
	PTB-4		PTB-5		PTB-4		PTB-5		PTB-4		PTB-5	
	catch	f	catch	f	catch	f	catch	f	catch	f	catch	f
JAN -	422	1150	392	860	34	95	54	245	30	111	-	-
FEB -	522	1234	57	383	89	578	28	347	21	56	-	-
MAR -	2181	2212	405	196	56	425	68	287	-	-	-	-
APR -	1091	1256	-	-	34	303	14	90	920	1102	-	-
MAY -	199	288	-	-	29	91	-	-	909	1317	-	-
JUN -	1094	679	-	-	307	632	-	-	3313	3250	-	-
JUL -	859	1288	-	-	459	986	-	-	796	1567	-	-
AUG -	133	438	-	-	649	696	22	88	1087	1158	48	210
SEP -	781	2153	103	184	180	818	44	283	516	2353	137	298
OCT -	402	2073	54	73	243	1153	14	120	1479	4317	361	1461
NOV -	601	663	288	321	141	436	10	120	2978	5748	898	1322
DEC -	1416	2159	460	552	183	685	2	22	1492	1594	327	352
Total	9731	15593	1759	2569	2404	6898	256	1602	13541	22573	1771	3643

Table 2. Catch rate indices for cod derived from pair trawl catches.

	1982	1983	1984	1985	1986	1987
3L -		1.680	1.052	1.049	1.125	0.831
3M -		0.789	1.302	1.169	0.796	0.413
3N -	0.520	0.698	1.053	0.576	0.467	0.510

Table 3. By-catches of the pair trawl cod fishery (tons).

	Div.:	3L	3M	3N	total
Haddock		-	-	-	-
Redfishes		330	99	31	460
American plaice		1110	39	462	1611
Yellowtail flounder		-	-	-	-
Atlantic halibut		302	4	3	309
Wolffishes		164	30	5	199
Skates		1633	10	121	1764
Cod catches		11490	2660	15312	29462

Table 4. Length composition of pair trawlers cod catches (x 10E-3).

Div. Month	3L			3M						3N		
	JAN	FEB	OCT	JAN	FEB	MAR	AUG	SEP	OCT	AUG	SEP	OCT
24-26										3		
27-29			4				1			6		
30-32			16				1		3	21		
33-35			15				1	1	3	25	1	
36-38	2	10	21						2	29	3	
39-41	13	54	22				3	3	1	37	3	
42-44	39	103	24				12	13	12	33	6	
45-47	105	92	19	2	1		25	29	46	27	9	
48-50	62	52	18	3	1	1	36	33	45	24	12	
51-53	60	38	14	2	1	1	27	24	24	11	14	
54-56	39	25	19	3	2	1	26	17	16	17	13	
57-59	26	17	8	2	2	1	26	18	13	7	14	1
60-62	15	8	12	2	2	2	26	11	8	6	12	
63-65	5	15	8	2	1	2	18	3	5	6	11	2
66-68	11	10	7	2	2	2	15	2	2	4	13	
69-71	5	17	6	2	2	2	17	1	2	1	9	1
72-74	3	4	5	2	2	2	13	1	1	4	7	1
75-77	6	4	3	2	2	3	12	1	1	2	6	1
78-80	11	8	6	2	3	3	9	1		3	5	2
81-83	6		2	1	1	3	6		1	4	7	5
84-86	3		6	1	2	2	3		1	5	5	6
87-89	3	4	4		1	1	5	1	1	14	5	10
90-92	5	2	3	1	1	1	1			15	4	22
93-95	5	2	2		1	1	2		1	13	3	19
96-98	5		1		1		2		1	17	4	23
99-101	5		2		1	1	1			11	3	20
102-104	2									9	3	19
105-107			1							3	2	14
108-110	2									4	1	13
111-113			1							3	2	10
114-116										3	1	7
117-119										1	1	3
120+											2	11
total	438	465	249	29	30	29	288	159	189	368	181	189
fish.meas.	270	223	279	765	1983	1944	3507	1813	1315	2164	1225	966
Catch (t)	814	609	456	88	117	124	671	224	257	1135	653	1840

Table 5. Age composition of pair trawlers cod catches (x 10E-3).

Div. Month	3M						3N		
	JAN	FEB	MAR	AUG	SEP	OCT	AUG	SEP	OCT
age									
2				2			36	1	
3		1		16	16	21	90	8	
4	2	1		78	74	102	51	14	
5	8	5	3	76	47	52	55	43	1
6	11	10	11	71	18	10	27	50	2
7	6	8	10	32	3	3	11	22	3
8	1	2	2	10	1	1	24	15	9
9	1	2	2	1			28	9	62
10		1	1	1			21	7	41
11							13	5	29
12							9	3	36
13				1			3	2	4
14								1	2
15									
16+								1	
total	29	30	29	288	159	189	368	181	189
Catch (t)	88	117	124	671	224	257	1135	653	1840

Table 6. Catches (t) and fishing effort of freezers in 1987

	Div.	3L	3M	3NO	total
Cod		212	979	476	1667
Redfishes		5	726	127	858
American plaice		4092	4098	8812	17002
Yellowtail flounder		-	-	1183	1183
Atlantic halibut		59	18	405	482
Witch flounder		22	282	2479	2783
Skates		1895	3528	8779	14202
Silver hake		-	-	267	267
White hake		-	10	4778	4788
Haddock		-	44	1074	1118
Squid ( <u>Illex</u> )		-	-	1125	1125
hours fishing		11559	13132	38415	63106

Table 7. American plaice length frequency of freezers catch. Div. 3N.

Month sex	FEB		MAR		APR		MAY		JUN		JUL		SEP		OCT	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10-11																
12-13													1			
14-15												9	7		1	
16-17												10	9		2	5
18-19												5	7		6	8
20-21												20	22		18	16
22-23	13				1	1	2					33	35		25	32
24-25	50	27	4	2	5	6	7	2	2	3	8	2	62	52	56	42
26-27	37	50	20	18	36	33	25	17	10	10	34	33	104	101	114	97
28-29	52	41	42	46	62	57	54	49	15	15	86	28	108	117	147	146
30-31	113	89	72	80	91	89	83	51	15	14	86	42	107	112	128	140
32-33	132	102	80	100	93	97	85	85	15	11	85	58	101	81	120	102
34-35	59	27	63	77	72	80	64	52	14	13	91	56	66	76	111	103
36-37	87	32	47	71	45	62	37	52	11	8	72	40	51	76	76	83
38-39	92	37	38	59	28	48	25	62	4	9	34	31	43	61	59	60
40-41	50	79	29	48	19	39	17	48	4	6	30	57	23	57	54	58
42-43	61	70	20	38	8	27	6	32	3	5	18	20	13	40	33	71
44-45	24	40	15	34	4	19	2	15	2	3	17	35	8	37	23	54
46-47	26	51	7	27	1	17		21	1	4	10	19	9	41	16	54
48-49	11	77	5	26		21		18	1	3	6	33	5	45	7	50
50-51	13	51		19		17		20	1	6	6	14	2	28	6	39
52-53	7	48		14		11		12		5		35		27	1	32
54-55		28		9		8		6		6		25	1	33		26
56-57		30		5		6		5		3		14		30		14
58-59		30		3		2		2		2		9		17		10
60-61				1				2		2		11		8		8
62-63						1		1		1		8		8		4
64-65										2		4		5		4
66-67										1		3		1		1
68-69														1		1
total	827	909	442	677	465	641	407	552	98	132	583	577	781	1134	1003	1260
samples		9		90		58		14		23		20		24		56
fish.meas.	149	160	3013	4438	2656	3563	673	902	609	793	605	643	1241	1608	3142	3724
catch (t)	1116		593		512		470		135		719		952		1123	

Table 8. American plaice catch at age frequency. Div. 3N.

Month sex	FEB		MAR		APR		MAY		JUN		JUL		SEP		OCT	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
age																
2																7
3																
4	22	3			8	12	7	6	2	2	10	17	32	40	22	15
5	87	63	33	32	58	64	50	46	14	14	106	102	198	266	145	238
6	177	131	117	122	155	130	138	90	31	26	232	63	265	150	347	296
7	244	162	151	173	180	230	158	188	36	35	88	104	82	163	255	154
8	158	154	78	169	37	91	33	100	6	17	91	87	80	126	106	159
9	39	103	11	78	15	46	12	50	5	3	13	43	13	69	32	174
10	86	119	48	53	9	21	7	22	2	6	29	35	17	53	36	44
11	78		1	25	3	19	2	18	2	7	8	51	5	54	13	45
12	49		14		18		21		8		29		1 41		1 15	
13	14	32	3	7	7		7		5		23		34		30	
14	5		1		1		2		2		12		17		12	
15	10		3		2		2		1		4		7		5	
16+																
total	827	909	442	677	465	641	407	552	98	132	583	577	781	1134	1003	1260
catch (t)	1116		593		512		470		135		719		952		1123	



Table 10. Redfish length frequency in samples. Div. 3N.

length	FEB			APR			
	i	M	F	i	M	F	
10							
11				1			
12							
13							
14							
15		1					
16			1				
17		2	2	6	2	3	4
18		4	5	8	2	10	11
19		6	7	10	5	33	30
20		5	6	13	4	80	54
21		4	7	15	7	87	101
22		3	10	9	4	77	91
23		2	8	9	4	53	86
24		3	6	14	1	39	57
25		1	6	9		30	44
26			4	8		17	25
27			3	4		17	22
28			1	3		7	11
29			3	5		3	14
30			1	3		5	9
31				1		1	7
32						4	7
33							6
34							
35							1
36							1
37							
38							
total	31	69	118	30	466	581	
n. samples		3			15		
fish.meas.		218			1077		

Table 11. Yellowtail flounder length frequency in samples. Div. 3N.

length	JUN			JUL			
	i	M	F	i	M	F	
20-21							
22-23					1	2	
24-25					5	2	
26-27			3		36	19	
28-29			17	2		58	41
30-31			53	9		109	60
32-33			129	8		162	71
34-35		2	140	10		191	70
36-37		5	281	41		358	112
38-39		9	338	106		435	150
40-41		9	189	160		299	304
42-43		3	53	176		68	322
44-45		6	11	97		6	189
46-57		1		44		2	84
48-49				11			30
50-51				10			18
52-53				2			5
54-55							1
56-57							1
58-59							
total	35	1214	676	1730	1481		
n. samples		24			43		
fish.meas.		1925			3211		

Table 12. Silver hake length frequency in samples. Div. 3N.

<u>length</u>	APR			MAY		
	<u>i</u>	<u>M</u>	<u>F</u>	<u>i</u>	<u>M</u>	<u>F</u>
25						
26				2		
27		3		10		
28		9		50		
29		7	2	110	5	
30		14	3	176	27	
31		6	8	116	68	
32		8	13	57	114	
33		3	21	37	168	
34		2	13	13	151	
35		1	9	2	117	
36			6	1	69	
37			7		30	
38			2		18	
39					8	
40					3	
41						
42						
43						
44						
45						
46						
47						
48					1	
49						
50						
total		53	84	574	779	
n. samples		2		12		
fish.meas.		137		1353		





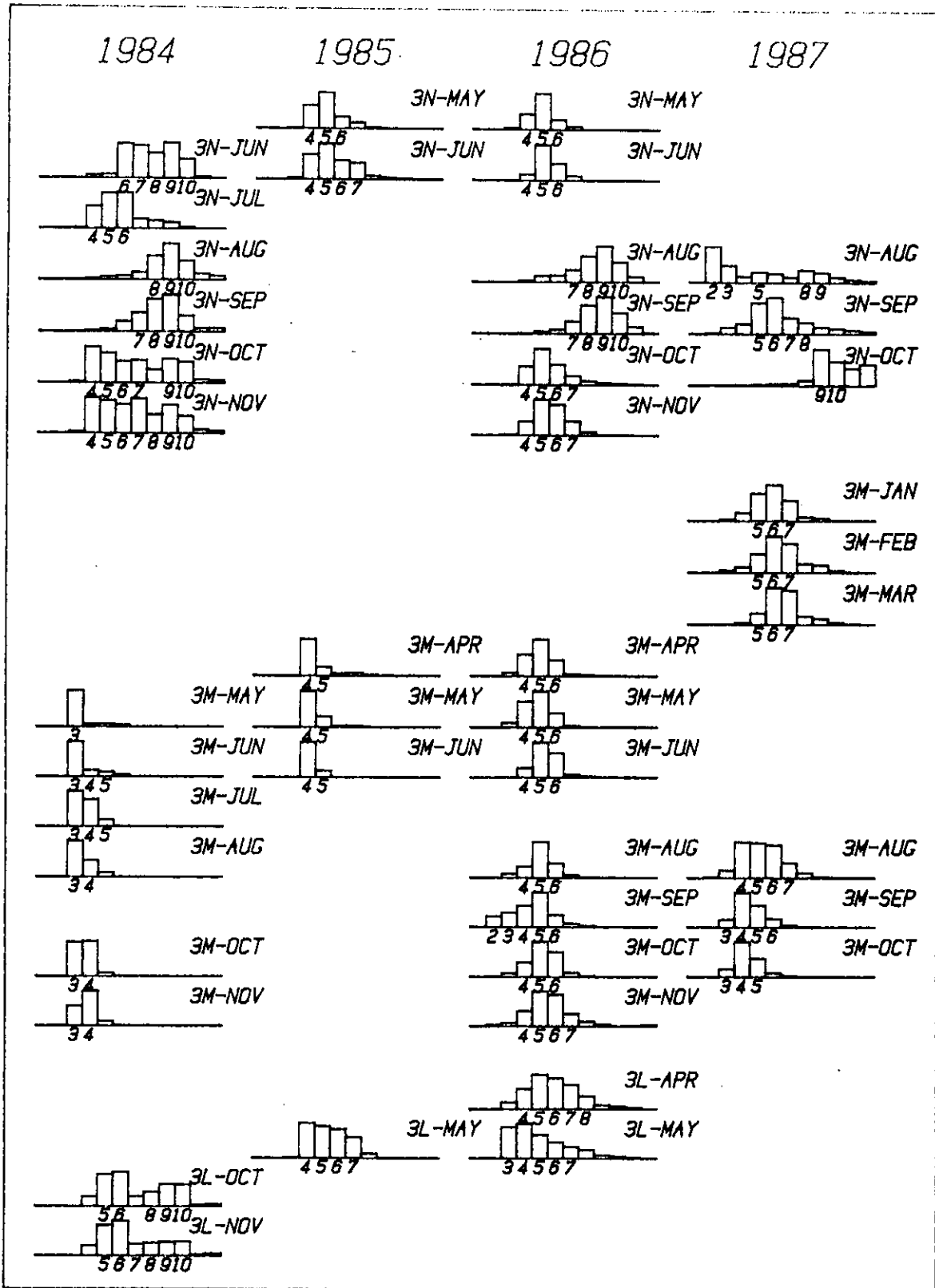


Fig. 1. Age distribution of pair trawl cod catches.