

Northwest Atlantic



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Portuguese Research Report for 1988

by

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A. Status of the fisheries

During 1988 the Portuguese fishing fleet operated in Subarea 3, Division 3L, 3M and 3N and the overall nominal catches was 38171 tonnes.

Comparatively with 1987 the catches of Cod, Red fish, and American plaice decreased respectively 63%, 34% and 51%. The catch of Greenland halibut increased about twice in 1988.

The decrease of the Portuguese Total Catch in 1988 was about 54%.

B. Special research studies

1. Biological studies

Biological samplings were collected on board of two commercial gillnets boats from April to June and one otter trawler during December.

One of the gillnets boat developed, for some days in May, an experimental fishing with long line.

Table 3 presents the intensity of sampling by species, Division, gear and month.

1.1. Cod in Division 3M.

Length measurements were taken, as fork length, from the monthly catches of May (long line) June (gillnets) and December (trawl).

The corresponding length distribution is presented in Table 4, Fig. 1.

1.2. Red fish in Division 3M

Length composition was obtained only for December (trawl), for males and females and is presented in Table 4, Fig. 1.

1.3. Cod in Division 3N

Length measurements were taken for length and age composition from April to September (gillnets only).

The corresponding length distribution is presented in Table 5, Fig. 2.

Table 6 presents the respective age composition.

1.4. American plaice in Division 3N

Biological sampling were taken for length composition from April to September and is presented in Table 7, Fig. 3.

1.5. Yellowtail flounder in Division 3N

Length composition was obtained for July, August and September and is presented in Table 8, Fig. 4.

TABLE 1. PORTUGUESE NOMINAL CATCHES (mt) IN NAFO AREA, 1988.

Species	DIVISION				TOTAL 88	TOTAL 87
	3L	3M	3N	3O		
Cod	8615	389	3927	-	12931	20530
Redfish	8667	6571	1827	7	17072	49535
American plaice	433	941	415	2	1791	3485
Witch flounder	1	-	11	-	12	1643
Greenland halibut	4118	18	58	-	4194	1832
Atlantic halibut	141	-	11	-	152	113
Roundnose grenadier	859	-	55	-	914	1001
White hake	-	-	8	-	8	236
Skates	792	46	256	3	1097	3256
TOTAL	23626	7965	6568	12	38171	82134

TABLE 2. PORTUGUESE FISHING EFFORT (A - days of fishing and B - days on ground)
1988 COMPARED WITH 1987

N.days	Div.	3L		3M		3N		3D		TOTAL 88		TOTAL 87	
	Gear	OT	GN	OT	GN	OT	GN	OT	GN	OT	GN	OT	GN
1988 A		2414	80	886	89	561	317	2	-	3863	486	-	-
B		2492	100	922	99	582	358	3	-	3999	557	-	-
1987 A		2381	232	1977	246	833	370	-	-	-	-	5191	848
B		2680	257	2175	270	934	398	-	-	-	-	5789	925

TABLE 3. INTENSITY OF SAMPLING DURING 1988, BY SPECIES, DIVISION,
GEAR AND MONTH.

Species	Div.	Gear	Month	N. of Samples	N. fish measured	N. aged
Cod	3M	Longline	May	2	207	
		Gillnets	May	3	384	
	3M	>>	Jun.	6	840	
	3M	Trawl	Dec.	20	5458	
Red fish	3M	Trawl	Dec.	20	4642	
Cod	3N	Gillnets	Apr.	1	26	22
		Gillnets	May	29	2358	281
		Gillnets	Jun.	43	5975	-
		Gillnets	Jul	49	7912	224
		Gillnets	Aug	51	7889	-
		Gillnets	Sep	29	2529	267
American plaice	3N	Gillnets	Apr.	1	66	
		Gillnets	May	14	1355	
		Gillnets	Jun.	22	2653	
		Gillnets	Jul	30	3334	
		Gillnets	Aug	35	1944	
		Gillnets	Sep	16	708	
Yellowtail flounder	3N	Gillnets	Jul	1	132	
		Gillnets	Aug	22	976	
		Gillnets	Sep	1	41	

TAB. 4 - LENGTH COMPOSITION OF COD AND RED FISH IN DIVISION 3M. BY MONTH AND GEAR, 1988
LENGTH FREQUENCY DISTRIBUTION OF COD, IN DIVISION 3M,

COD					RED FISH		
MONTH	MAY		JUNE	DECEMBER	MONTH	DECEMBER	
LF (cm)	LONG LINE %	GILLNETS %	GILLNETS %	TRAWL %	LF (cm)	M %	F %
15	0	0	0	0	20	1	0
18	0	0	0	1	21	1	0
21	0	0	0	17	22	2	0
24	0	0	0	61	23	5	0
27	0	0	0	91	24	9	0
30	10	0	1	202	25	19	1
33	5	0	0	252	26	27	2
36	10	3	4	190	27	38	3
39	126	0	18	105	28	32	2
42	77	0	13	50	29	46	6
45	63	0	7	18	30	52	12
48	63	0	2	7	31	65	18
51	101	3	2	2	32	63	25
54	130	10	2	0	33	60	31
57	135	26	17	0	34	73	29
60	44	57	44	1	35	66	27
63	44	88	64	2	36	62	28
66	19	104	75	1	37	43	29
69	24	91	106	0	38	26	18
72	29	62	80	0	39	14	16
75	19	52	77	0	40	6	11
78	14	75	74		41	3	6
81	24	106	85		42	4	4
84	14	93	107		43	2	2
87	10	70	80		44	4	2
90	24	86	51		45	1	1
93	10	47	32		46	1	0
96	5	21	29		47	0	0
99		7	9		48	0	1
102		3	12		49	0	1
105		3	6		50	0	0
108			1		51	0	0
111		3			52	0	0
114			1		53	0	0
117							
120			1				
TOTAL					TOTAL	1000	1000
LF (cm)					LF (cm)	32.3	35
Sampled Weight (Kg)					Sampled Weight (Kg)	1689	814
Fish measured					Fish measured	3376	1286

TABLE 5. LENGTH COMPOSITION OF COD (%) BY MONTH, IN DIVISION 3N (GILLNETS), 1988.

	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
Lf (cm)	GILLNETS %	GILLNETS %	GILLNETS %	GILLNETS %	GILLNETS %	GILLNETS %
57	0	0	0	0	0	0
60	0	0	0	0	0	0
63	0	3	0	0	1	0
66	0	5	0	1	1	0
69	0	14	1	2	3	0
72	0	19	2	3	6	0
75	0	27	4	6	10	4
78	0	36	6	8	18	3
81	0	40	12	19	35	6
84	0	55	23	45	62	15
87	39	52	39	59	77	21
90		90	70	101	116	41
93	154	124	108	139	127	58
96	192	110	125	137	129	78
99	115	123	134	118	106	106
102	192	94	139	121	86	108
105	77	81	113	78	62	101
108	39	44	79	57	50	108
111	39	32	54	40	36	85
114	39	20	36	30	24	90
117	38	11	24	16	20	63
120	38	9	14	9	15	48
123	38	6	11	7	9	39
126	0	3	3	3	4	18
129	0	2	2	1	1	6
132	0	0	0	0	1	2
135	0	0	1	0	1	0
138	0	0	0	0	0	0
141	0	0	0	0	0	0
144	0	0	0	0	0	0
TOTAL	1000	1000	1000	1000	1000	1000
Lf (cm)	102.8	96	100	97.5	96.9	106.4
Fish measured	26	2358	5975	7912	7889	2529

TAB.6 - AGE COMPOSITION (%), MEAN LENGTH AT AGE (Lf,cm) OF COD FROM DIV. 3N, BY MONTH, 1988.

YEAR	AGE	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
		%	Lf	%	Lf	%	Lf	%	Lf	%	Lf	%	Lf
1983	5												
1982	6			17	72.1	2	65.5	3	74	6	75	1	79
1981	7			48	75.4	9	79	31	81.4	56	80.9	11	80.6
1980	8	11	91.8	117	82.4	43	86	59	86.8	81	85.6	22	87.2
1979	9	43	95.4	70	91	52	93.1	116	91.8	126	91.1	51	93
1978	10	337	98	343	96	343	97.8	269	95.5	267	94.9	163	98.2
1977	11	344	101.6	244	100.8	307	101.9	169	100	150	99.5	150	103.2
1976	12	101	106.5	87	104.2	123	107.3	127	103.3	110	103.5	159	108
1975	13	69	115.3	34	111.7	52	113	87	108.1	82	109.3	173	112.5
1974	14	58	119.5	27	112.7	44	113	91	108.3	78	109.6	172	112.8
1973	15	26	118	9	119.3	15	119	26	110	21	109.9	51	113.8
1972	16	7	121.4	2	119.5	3	118	14	114.2	14	111	31	112.3
1971	17	4	116	2	122.5	3	121	2	124	2	119.5	8	122.1
1970	18					1	130	1	127	2	109	1	127
1969	19											1	130
1968	20											1	130
1967	21											1	133
No. fish aged		24		-		271		205		-		188	
No. fish meas.		26		2358		5975		7912		7889		2529	
Mean age		11.1		10.2		10.8		10.9		10.7		12.1	
Mean length			102.8		96		100		97.5		96.9		106.4

TAB. 7 - LENGTH COMPOSITION (%) OF AMERICAN PLAICE (GILLNETS)

IN DIV. 3N FROM APRIL TO SEPTEMBER 1988.

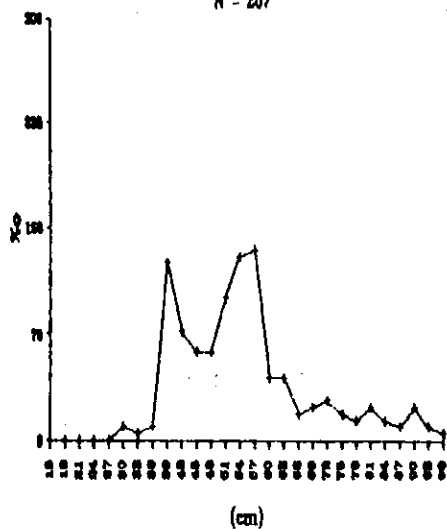
LENGTH (cm)	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	M	F	M	F	M	F	M	F	M	F	M	F
22	0	0	1	2	0	0						
24	15	0	1	1	0	0			1			
26	30	0	4		0	0	2		6	1	3	
28	15	0	17	1	14	0	10		29		13	
30	106	0	85	7	60	2	49		46	1	58	
32	167	15	140	19	117	9	113	3	79	3	114	
34	151	61	126	31	136	22	120	22	96	6	178	3
36	46	30	111	43	112	34	96	36	94	17	160	4
38	91	46	58	51	81	32	83	45	69	24	113	9
40		30	27	37	51	27	54	45	72	34	66	24
42		46	9	33	37	28	38	44	39	42	42	31
44		15	1	23	26	20	30	37	24	37	16	24
46	15	30	4	14	16	22	14	32	16	21	7	18
48				13	7	17	6	21	6	18	0	17
50			2	15	5	22	1	17	3	23		20
52		30	1	16	2	21	1	18	2	13		11
54		15		21		19		18	1	26		21
56				17		20		14		32		14
58				17	1	14		10		34		11
60		46		25		12		10		27		10
62				7		6		5		25		7
64				11		4		2		16		2
66				4		3		3		7		
68				6		1		1		3		2
70				1						4		1
72										1		1
74										1		
76												
78				1								
80												
TOTAL	636	364	586	414	665	335	617	383	584	416	770	230
NUN. FISH MEAS.	42	24	794	561	1764	889	2059	1275	1133	811	545	163
MEAN LENGTH (mm)	340	441	350	460	369	466	370	455	372	510	365	494
SAMPLED WEIGHT (Kg)	23	16	294	569	690	903	913	1043	558	1262	237	219

TAB. 8 - LENGTH COMPOSITION (%) OF YELLOWTAIL FLOUNDER
(GILLNETS) IN DIV. 3N FOR JULY, AUGUST AND
SEPTEMBER, 1988.

LENGTH (cm)	JULY		AUGUST		SEPTEMBER	
	M	F	M	F	M	F
22	0	0	1	0	0	0
24	8	0	15	3	24	0
26	76	8	76	15	49	0
28	60	15	103	20	73	24
30	98	30	70	39	195	0
32	182	83	99	65	98	122
34	53	159	56	82	98	24
36	23	76	35	69	49	73
38	15	38	29	52	49	49
40		53	28	47		24
42		8	10	28		0
44		0	1	30		49
46		8		15		
48		8		8		
50				3		
52				1		
54				0		
56				0		
58				0		
60				1		
TOTAL	515	486	523	478	635	365
NUM. FISH MEAS.	68	64	510	466	26	15
MEAN LENGTH (mm)	317	359	323	371	322	366
SAMPLED WEIGHT (Kg)	22	31	181	248	8	7.5

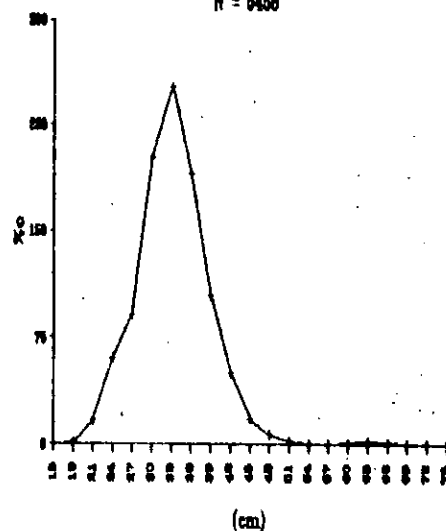
COD/LONG LINE/MAY

N = 207



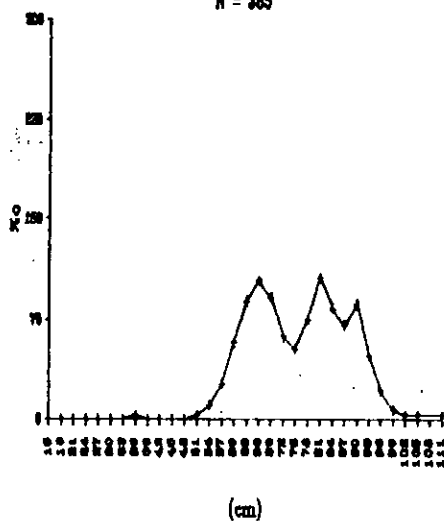
COD/TRAWL/DECEMBER

N = 8488



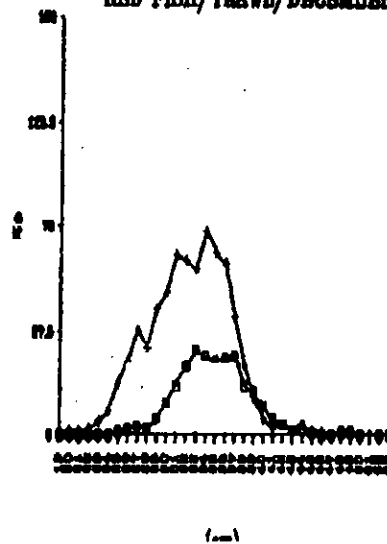
COD/GILLNETS/MAY

N = 985



RED FISH/TRAWL/DECEMBER

→ 8-11
→ 7-10



COD/GILLNETS/JUNE

N = 840

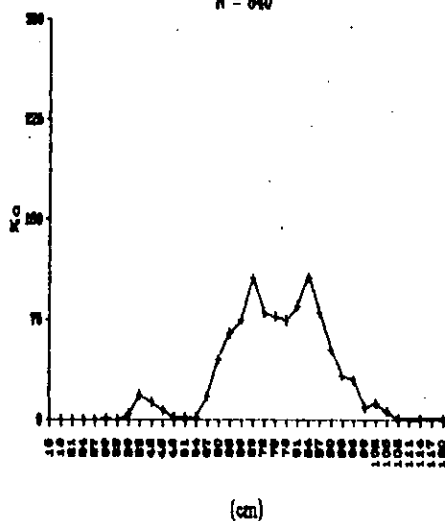


FIG. 1 - Length composition (%) of Cod and Red fish, division 3M, by gear in 1988.

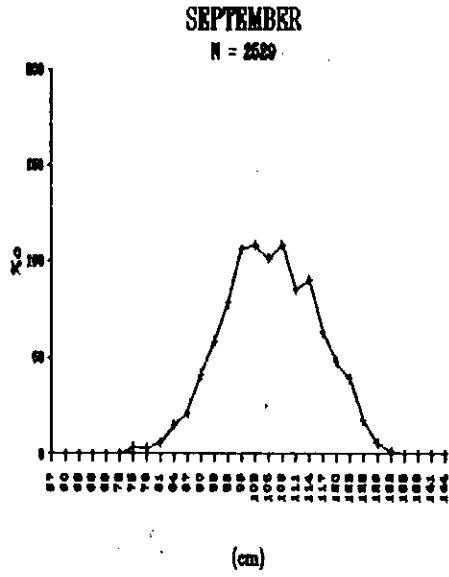
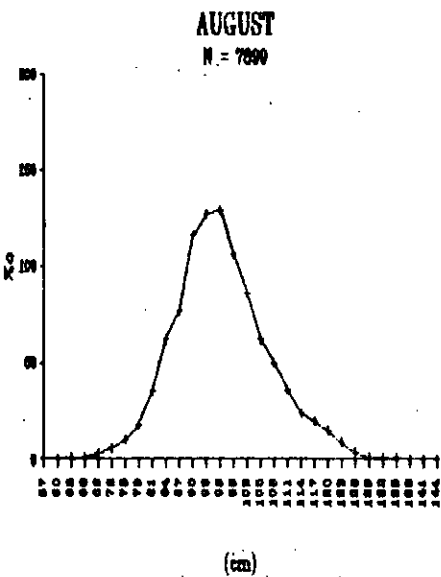
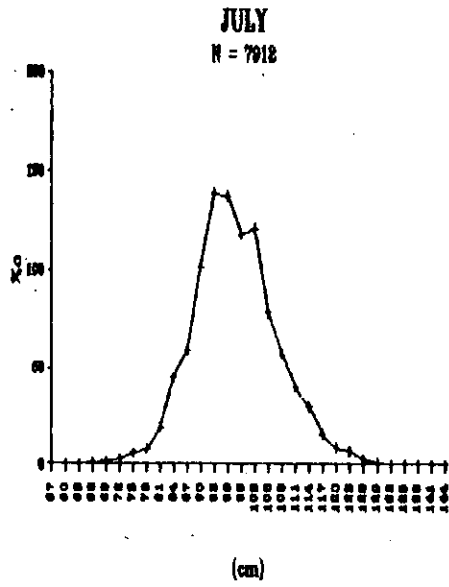
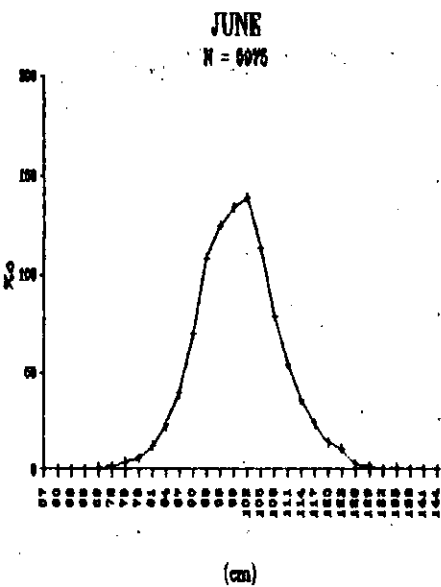
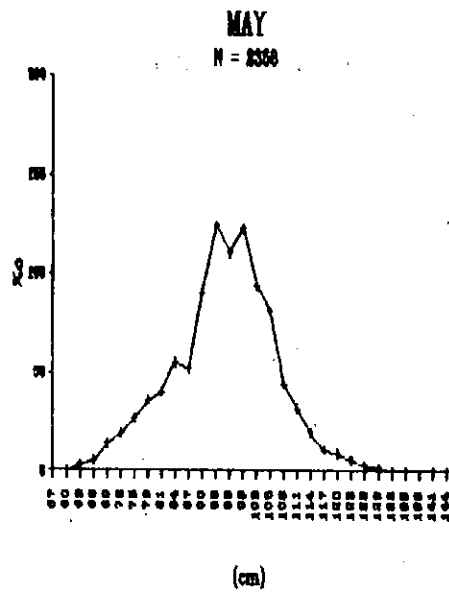
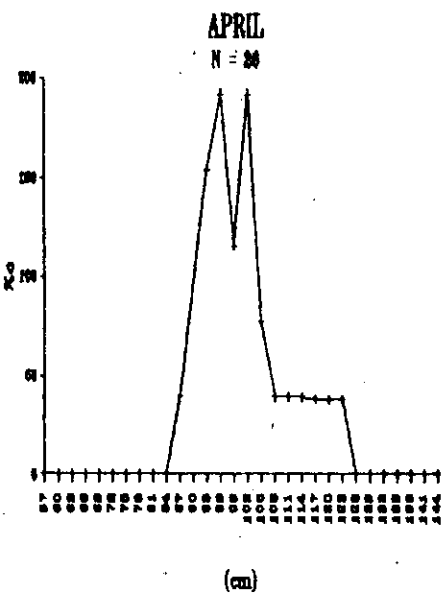


FIG. 2 - Length composition of Cod (Gillnets) for division 3N, 1988.

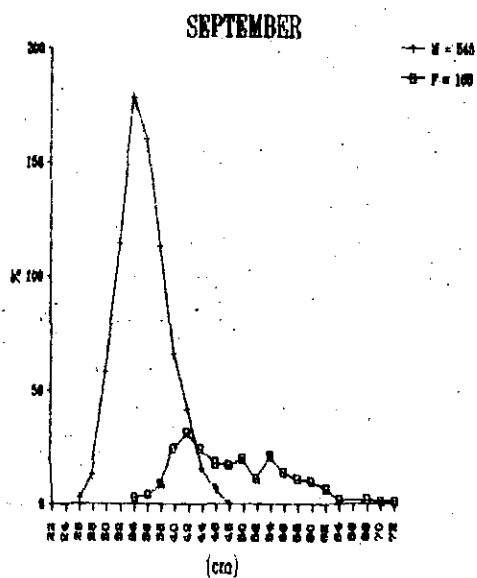
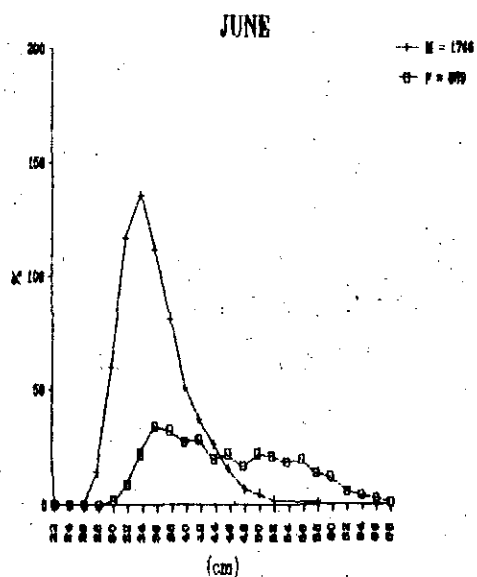
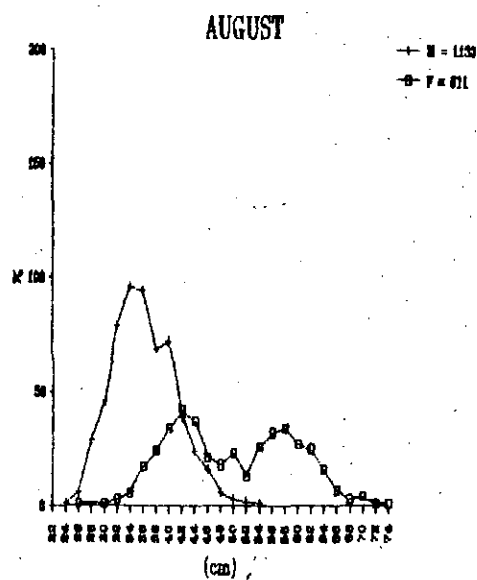
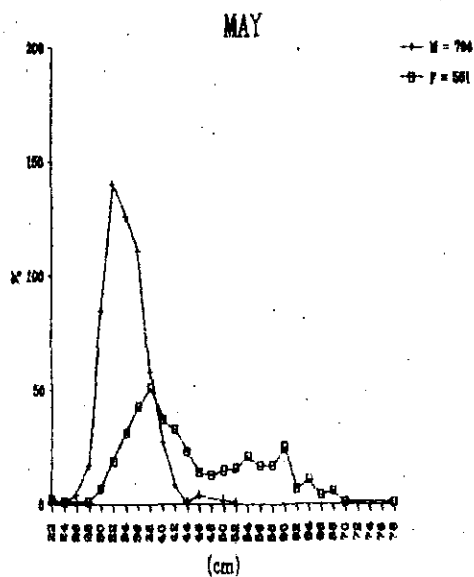
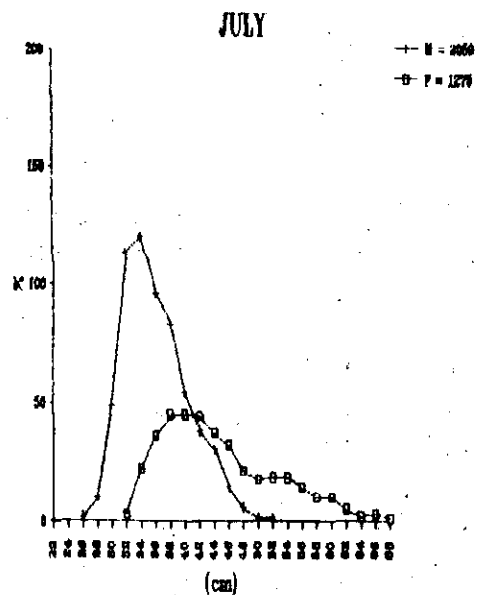
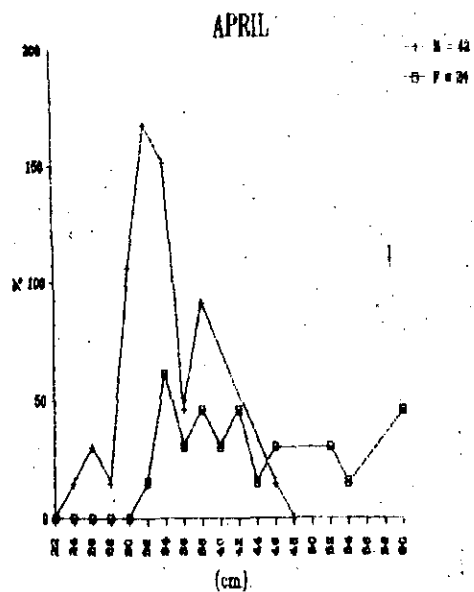


FIG. 3 - Length composition (%) of American plaice (Gillnets),
Division 7E from April to September, 1962

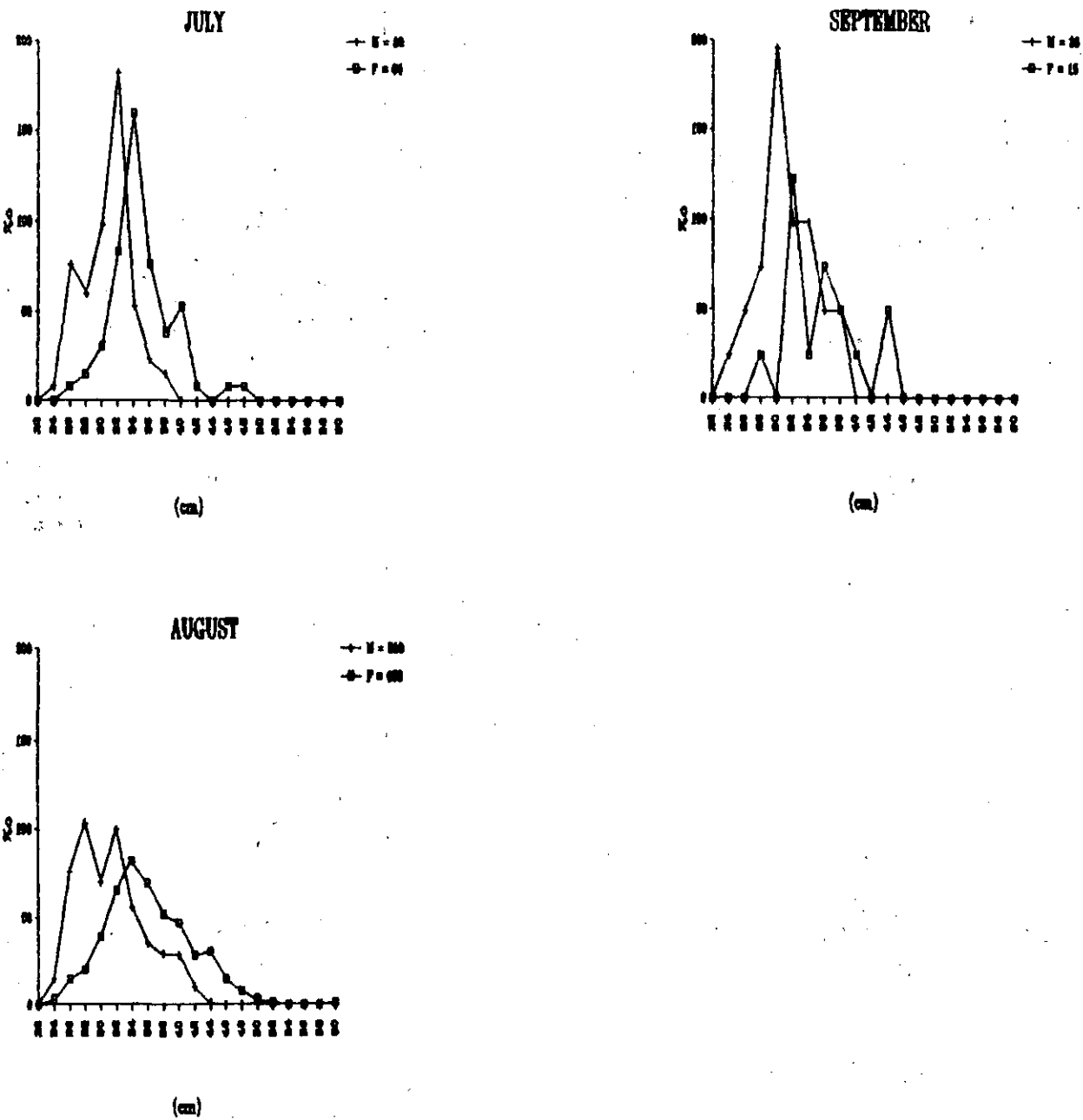


FIG. 4 - Length composition (%) of Yellowtail flounder (Gillnets), in division 3N for July, August and September, 1988.