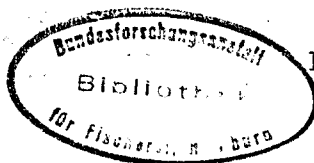


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International Council for the
Exploration of the Sea



CM 1975/H:5
Pelagic Fish (Northern) Committee

REPORT OF THE HERRING ASSESSMENT WORKING GROUP FOR THE AREA SOUTH OF 62°N

6 October, 1974, Charlottenlund, Denmark

1. Introduction

The Working Group met on Sunday, 6 October to consider the Total Allowable Catch for Celtic Sea Herring in the 1975 - 76 season.

The participation was:

E. Biester	German Democratic Republic
A.C. Burd	U.K. (England)
A. Corten	Netherlands
J. Jacobsson	Iceland
A. Maucorps	France
J. Molloy	Ireland
J. Popiel	Poland
K.H. Postuma	Netherlands
A. Saville (Chairman)	U.K. (Scotland)
H. Schultz	German Democratic Republic
A. Schumacher	Federal Republic of Germany

Mr. David Griffith, ICES Statistician, also attended the Meeting.

2. Catch Data

The preliminary catch data for 1973 and for the fishing season 1973/74 given for this stock in C.M.1974/H:4 were corrected. The final figures for the years 1969-73 on an annual basis, and for the seasons 1969/70 to 1973/74, are given in Tables 1 and 2. These final figures show only minor differences from those presented in the previous report. They again point to a major decline since the high catch recorded in 1969 with the 1973 catch being the lowest recorded since 1965.

Stock and Mortality Estimates

From the data of Table 3, giving the total catches by age group in number, stock sizes were calculated by cohort analysis. Because of changes in the catch data for 1972-73 and the additional cohort data from 1973-74 season, there are some minor differences in stock and mortality from those reported in C.M.1974/H:4. These values are given in Tables 4 and 5.

In Figure 1 are shown the stock sizes and mortalities from 1957 to 1972, using the data of C.M.1973/H:2 and the new data. It is seen that the stock of adult fish has decreased drastically since 1969, while at the same time the fishing mortality has increased by the order of 2 times.

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The estimates of the numbers of recruits as 1-ringers are shown in Figure 2. It is seen that three of the last four year classes for which estimates can be made from the cohort analysis, have abundance indices of similar level to those of the 1955-61 year classes.

No estimate has been given for the 1971 year class as its abundance in the Dutch catches in 1973 was based on low sampling levels. In view of this, a mean abundance for the last five year classes has been taken as an estimate for this and subsequent year classes.

4. Prediction of Total Allowable Catch in 1975-76

The prediction of the total allowable catch for the Celtic Sea stock in 1975-76 has been based on the last reliable estimate of stock size derived from the V.P.A., that is that at 1 March 1972. It has been projected forward to 1 March 1975 by assuming a fishing mortality rate of 0.08 on 1-ringers and 0.7 on all older age groups. This gives stock in numbers per age group in 1975-76 for 4-ringed fish and all older age groups. It has been necessary therefore to assume average recruitment for the younger year classes which will be in the fishery in 1975-76. For these, it has been assumed that the fishing mortality will also have been 0.08 as 1-ringers and 0.7 as 2-ringers. The stock size from V.P.A. in 1972-73 and the stock sizes in 1973-74 to 1975-76 calculated in this way are given in Table 6.

The total allowable catch in 1975-76 has then been calculated from the stock size at 1 March 1975 assuming that the F on 1-ringers remains at 0.08 and that for the older age groups the aim is to fish the stock at the M.S.Y. point of 0.45. The mean weights per age group used in calculating the yield were:

<u>1-ringers</u>	<u>2-ringers</u>	<u>3-ringers</u>	<u>4-ringers</u>	<u>5-ringers</u>	<u>6-ringers</u>	<u>7-ringers</u>
128.4	181.5	222.0	249.2	257.5	260.3	273.8
		<u>8-ringers</u>	<u>>8-ringers</u>			
		310.2	315.0			

On this basis the estimated T.A.C. for the Celtic Sea stock in 1975-76 is 19 000 tons.

It must be pointed out, however, that if the T.A.C. of 32 000 tons set by NEAFC for the 1974-75 season is taken, this will entail an F in 1974-75 of about 1.1. This would result in the stock size at 1 March 1975 being 15% lower in number than that given in Table 6. This in turn would result in a decrease of a similar order of magnitude in the T.A.C. at the M.S.Y. point in 1975-76.

Table 1. Herring Catches in Celtic Sea (Metric Tons).

Year	France	Germany (F.R.)	Ireland	Netherlands	Poland	England	USSR	Total
1969	7 038	5 906	18 712	16 256	252	-	-	48 164
1970	3 627	1 481	24 702	7 015	1 191	220	-	38 236
1971	3 393	974	12 602	9 672	881	65	-	27 587
1972	7 327	393	20 109	6 758	751	-	618	35 956
1973	5 553	294	13 105	5 834	1 125	-	334	26 245

Table 2. Total Catch by Seasons in Celtic Sea (Metric Tons).

Season	Mar/May	Jun/Aug.	Sep/Nov.	Dec/Feb.	Total Metric Tons
1969/70	1 136	9 783	13 818	16 263	41 000
1970/71	1 703	3 789	8 879	18 348	32 719
1971/72	1 755	4 742	7 240	19 625	33 362
1972/73	2 039	2 936	7 668	17 720	30 363
1973/74	3 581	2 326	5 571	12 111	23 589

Table 3. Catch in Number per Age Group, $\times 10^{-3}$

Season	Winter Rings									Total
	1	2	3	4	5	6	7	8	>8	
1968/69	13 463	61 022	44 213	12 897	25 646	5 223	4 563	1 440	5 303	173 770
1969/70	7 353	86 869	51 438	30 517	11 219	16 303	4 355	2 011	3 228	213 293
1970/71	701	34 546	53 348	28 409	20 011	7 771	6 299	2 108	3 498	156 691
1971/72	11 543	25 254	38 675	45 597	20 753	11 032	4 251	5 451	2 411	164 967
1972/73	6 352	108 514	14 767	12 057	11 932	3 779	2 316	1 835	654	161 206
1973/74	22 670	34 890	46 178	6 410	8 437	4 760	3 282	2 010	730	129 367

Table 4. Calculated Stock Size in Numbers ($\times 10^{-6}$) by Age and Year (M=0.1) as at 1 March.

Winter Rings	Season				
	1968	1969	1970	1971	1972
1	281.8	140.2	66.7	254.5	86.7
2	206.0	242.2	119.9	59.7	219.3
3	133.2	128.6	136.9	75.7	30.1
4	46.6	78.6	67.6	73.3	32.0
5	62.4	30.0	42.2	34.3	23.4
6	16.9	32.2	16.5	19.3	11.5
7	12.0	10.4	13.7	7.6	7.0
8	5.6	6.5	5.3	6.5	2.8
Adults (2 - 8 Winter Rings)	482.7	528.5	402.1	276.4	326.1

Table 5. Fishing Mortality Estimates from V.P.A. and Weighted Mean Values of F.

Winter Rings	Season				
	1968/9	1969/70	1970/71	1971/72	1972/73
1	0.05	0.05	0.01	0.05	0.08
2	0.37	0.47	0.36	0.58	0.73
3	0.43	0.54	0.52	0.76	0.72
4	0.34	0.52	0.58	1.04	0.50
5	0.56	0.50	0.68	0.99	0.76
6	0.39	0.75	0.68	0.91	0.42
7	0.51	0.58	0.65	0.88	0.42
8	0.31	0.39	0.54	2.06	1.12
Weighted F Adults	0.41	0.51	0.51	0.87	0.64

Table 6. Calculated Stock Size at 1 March 1972 and Estimated Stock Size at 1 March 1973 - 75 in Millions of Fish.

Winter Rings	Season			
	1972	1973	1974	1975
1	86.7	166.0*	166.0*	166.0*
2	219.3	72.4	138.7*	138.7*
3	30.1	98.5	32.5	62.3*
4	32.0	13.5	44.3	14.6
5	23.4	14.4	6.1	19.9
6	11.5	10.5	6.5	2.7
7	7.0	5.2	4.7	2.9
8	2.8	3.1	2.3	2.1
>8		1.3	1.4	1.0
Adult Stock (>1)	326.1	218.9	236.5	244.2

Stock Size in 1972 from VPA. Stock in 1973-75 calculated from stock in 1972, assuming $F = 0.70$ for adults (>1 winter rings) and $F = 0.08$ for 1 ringers.

*) Recruitment from 1973 onward is assumed to be at average strength.

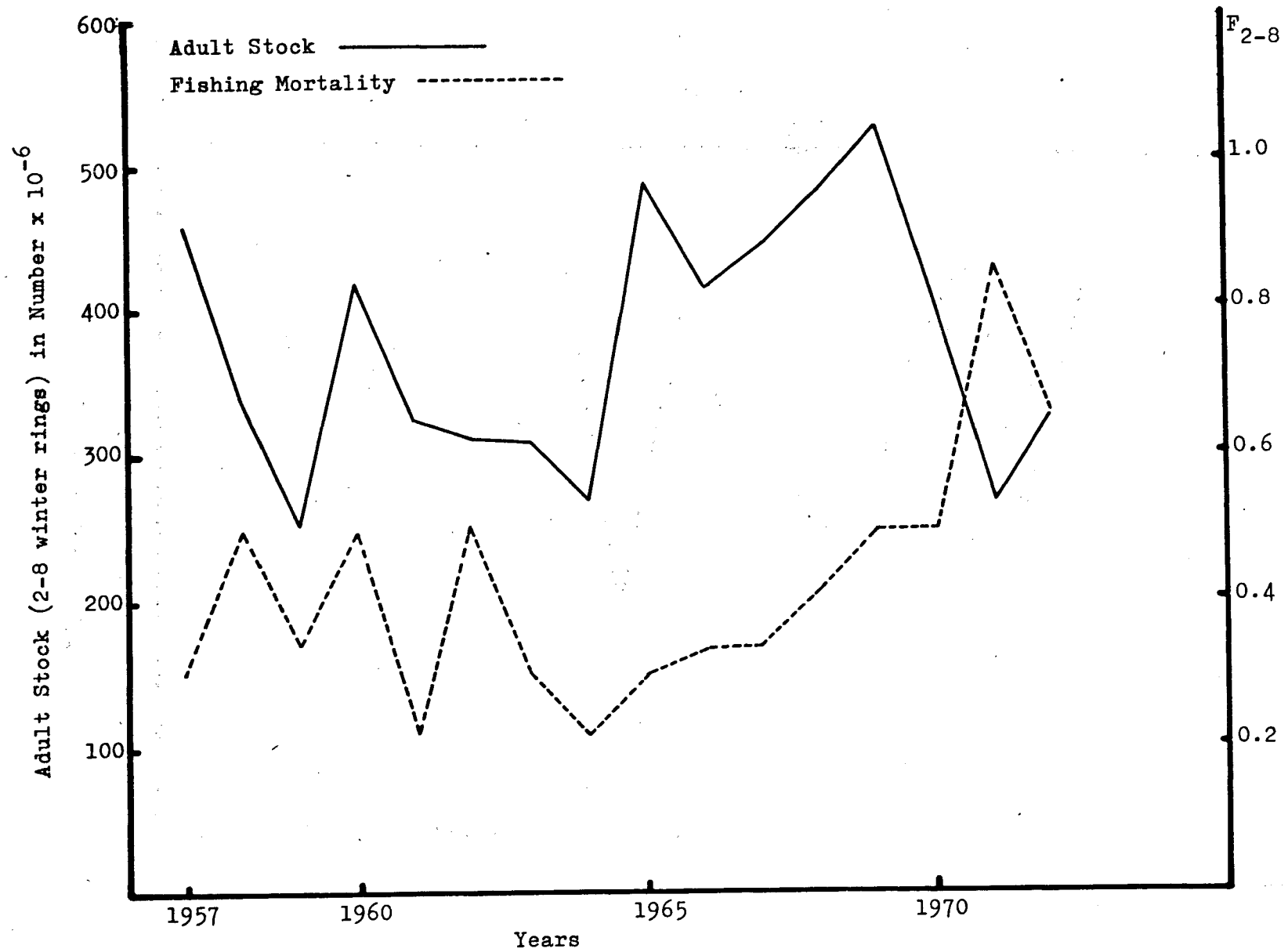


Figure 1

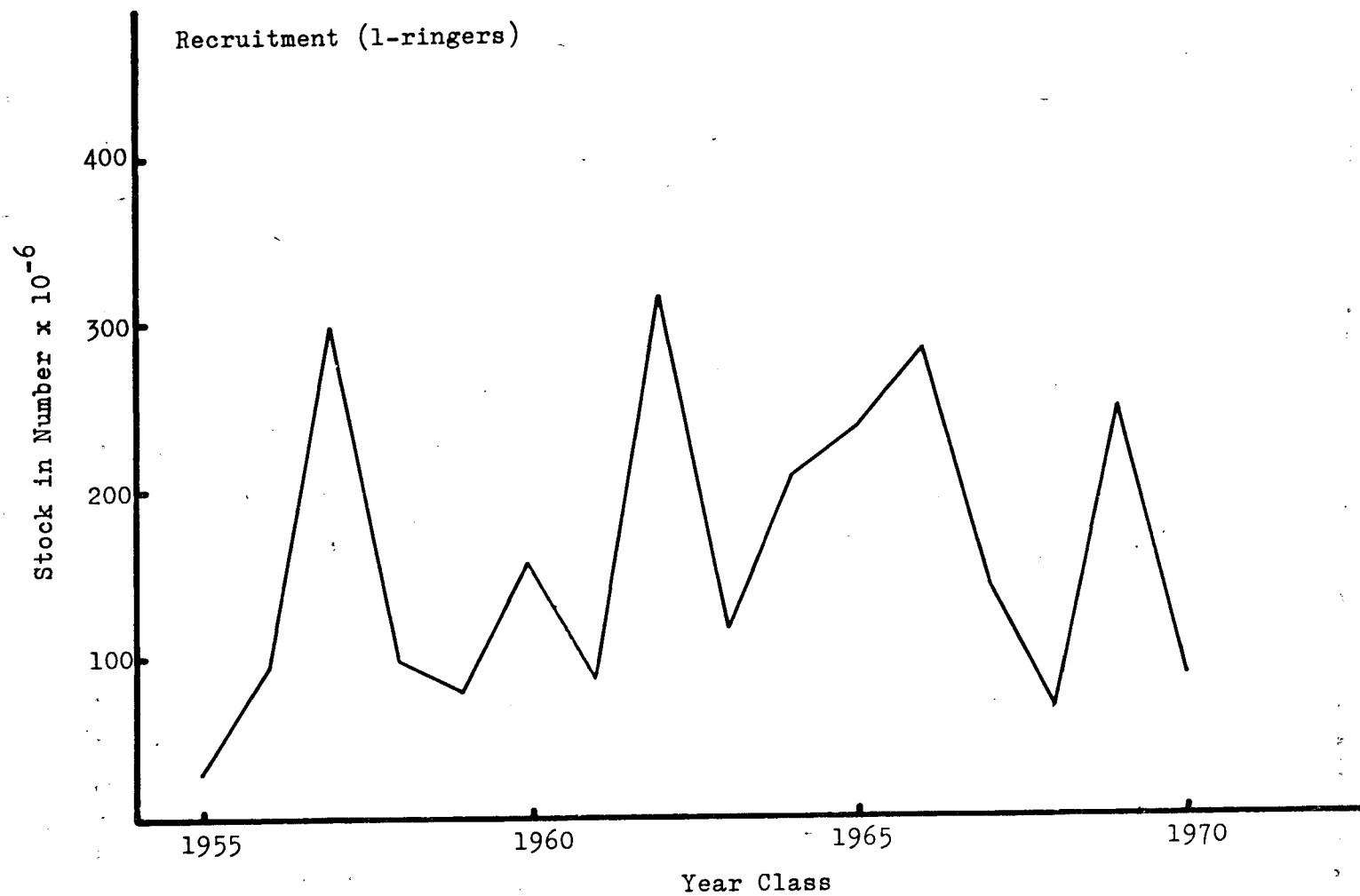


Figure 2