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The Faroese Longline Fishery on the Flemish Cap Cod in 1979

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Abstract

Data on catch and effort for 1979 are presented for the Faroese cod fishery on Flemish Cap. An estimate of the age distribution in the Faroese long line fishery in 1979 based on sampling of landings on wet salted cod is presented. From commercial size categories, only an estimate of the catches of the dominant 1973 year-class in 1977, 1978 and 1979 is made. Assuming that the 1973 year-class recruited to the longline fishery in 1977, these estimates indicate a total instantaneous mortality coefficient (Z) of 0.97 and 0.18 between 1977-78 and 1978-79 respectively, and 0.57 between 1977 and 1979.

The Fishery in 1979

Hoydal (MS 1979) presented data on the Faroese fishery on Flemish Cap for 1973-78 with some data for 1979. These data have now been extended to cover the whole 1979 fishery (Table 1). Further to the information presented in the previous document, Faroese landings from Flemish Cap have been sampled from the summer and autumn fishery in 1979.

Three of the larger vessels started fishing in January and completed their first trip by April. Six other vessels performed one trip mainly in April-July and 3 larger vessels made a second trip in July-October. The fishery on Flemish Cap was stopped in October when the reported catches at that time had passed the allocation for Faroe Islands.

Sampling

The catches of one vessel for the summer period and one vessel in the July-October fishery were sampled at landing. The cod are landed as wet-salted split cod. The samples were measured by the traditional salt fish measurement to the nearest cm below. This measurement is shown in Fig. 1. This was then converted to total length by using a conversion factor of 1.409. This conversion factor has not been established by experiment in the present case, but is the one used generally in Faroese fishery. The samples were unstratified, but were used to give estimates of the length distribution inside each commercial size category. The samples were then raised by commercial size-category and season.

For the first trips in January-April no sample was at hand, so to get the total numbers landed in 1979 by length group, the numbers were raised by commercial size group to total catches. Details on this are given in Table 2. The length distribution was finally grouped into 3-cm groups and using an age-length key from research vessel data in January-February 1979, supplied kindly by Mr Wells, St. John's, total Faroese landings by age were calculated. No correction for growth during the year was applied (Table 3).

Estimating the Catch of the 1973 Year-class from Commercial Size Distributions

The commercial size groups are rather coarse, and in the research document (Hoydal, MS 1979) presented at the June 1979 meeting some reservations were made with respect to the attempts using them to estimate age distributions. However, since no sampling is at hand for 1977 and 1978, they are the only data for Faroese fishery on size that we have. The estimates of proportions of the 1973 year-class in each size group for each year, derived from the age curves given by Wells (MS 1979), have been used again and applied to total landings. The details are given in Tables 4 and 5.

From these data and information on total effort, it is possible to estimate the catches in numbers of the 1973 year-class per effort and this is given in Table 5. It will be noted, that the estimate of the 1973 year-class derived in a rather crude way from the commercial size distributions differs for the

year 1979 from the estimate from the sampling of the catches. The former estimate is 1823 (Table 5), whereas the latter is 1350 (Table 3). This underlines the remarks on effects on the estimates from commercial size groups, when the distribution inside the group is skewed.

Indication of Total Mortality Level

Using the estimates of catch by effort of the 1973 year-class in 1977, 1978 and 1979, the reduction in number can be calculated (Table 6). If these reduction rates are to be used as estimates of total instantaneous mortality rates, it has to be assumed that the 1973 year-class recruited to the fishery in 1977 as 4-year-olds and no selection occurred. From the size of hooks and bait in the fishery, there is no reason to think, that the longline will select away 4-year-old fish, which according to Wells in 1977 should have an average of 45 cm. Experience from longline fishery at the Faroese would indicate this to be quite common if fish in this size group are available. The rates calculated are 0.63 and 0.61 between 1977-78 and 1978-79 respectively.

References

- HOYDAL, K. MS 1979. The Faroese longline catches on Flemish Cap, 1973 to 1979, as an indicator of stock abundance. ICNAF Res. Doc. 79/VI/125, Serial No. 5519.
- WELLS, R. MS 1979. Observations on the distribution, abundance, growth, mortality and sex and maturity of cod from the Flemish Cap. ICNAF Res. Doc. 79/VI/63, Serial No. 5404.

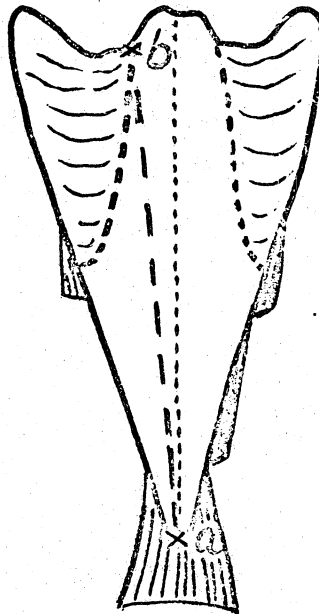


Fig. 1. Size measurement of split wet-salted cod used in Faroese. Distance between point a and b is measured.

Table 2. Sampling of Faroese cod catches on Flemish Cap in 1979:
(A) length frequencies by 3-cm groups, (B) landings by
Faroes commercial categories for wet-salted cod.

Length (cm)	Jan-Apr	Apr-Jul	Jul-Oct	Total
A. 37-39			21	
40-42		7	51	
43-45		13	154	
46-48		35	240	
49-51		68	336	
52-54		73	306	
55-57		65	223	
58-60		52	295	
61-63		18	118	
64-66		22	106	
67-69		16	70	
70-72		25	78	
73-75		14	48	
76-78		17	45	
79-81	NO SAMPLING	12	43	
82-84		11	22	
85-87		8	28	
88-90		7	5	
91-93		2	8	
94-96		2	11	
97-99		2	2	
100-102		2	5	
103-105		1	3	
106-108		1	4	
109-111		-	-	
112-114		1	-	
Total		474	2222	
Sample wt (kg)		1035	4301	
Landing (t)	2715	2437	2332	
B. Over 22"	207	344	333	884
19-22"	468	524	465	1457
Middle	809	715	584	2108
Small	1150	785	900	2835
Handfish	80	69	51	200
Total	2715	2437	2332	7484

Table 3. Estimated numbers landed by age-group from Faroese longline
fishery on Flemish Cap. (Age-length key from Wells, MS 1979.)

Age (years)	4	5	6	7	8	9	10+	Total
Numbers (000 fish)	115	2314	1350	119	35	10	33	3976

Table 4. Distribution by commercial size categories in Faroese landings of cod from Flemish Cap.

Faroese commercial categories wetsalted	Lower class limit cm total length	Total landings, tons, ungutted			Est ^x Av. weight kg	Estimated numbers landed		
		1977	1978	1979		1977	1978	1979
over 22"	81	827	927	885	7298	113	127	121
19-22"	70	567	1008	1457	4219	134	239	345
middle	59	1371	2544	2108	2746	499	926	768
small	44	2692	3317	2836	1327	2029	2500	2137
handfish	37	210	126	200	640	328	197	313
total		5667	7922	7487		3103	3989	3684

^xclass midpoint cubed x 10⁻⁵ kg.

Table 5. Estimated landings of 1973 year-class in Faroese longline cod fishery on Flemish Cap, by using age-length data of Wells (MS 1979): (A) proportion of 1973 year-class by Faroese size category, (B) estimated numbers of 1973 year-class ('000 fish) by Faroese size category.

	Size category	1977 age 4	1978 age 5	1979 age 6
A.	2	0	0	0.15
	3	0.25	0.48	0.63
	4	0.85	0.87	0.59
	5	1.00	0.50	0.03
B.	2	0	0	52
	3	125	444	484
	4	1725	2175	1261
	5	328	99	25
	Total	2178	2718	1822

Table 6. Numbers of 1973 year-class per 1000 hooks in Faroese longline cod fishery in Div. 3M, and estimated total Mortality (Z).

Year	Number pr 1000 hooks	Z
1977	195	0.63 0.61
1978	74	
1979	62	
		0.57