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SOUTH COAST (WATERFORD AND CORK)

HERRING FISHERY 1968-1969.

by

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INTRODUCTION - The 1968/69 herring season proper commenced on November 27, 1968 and terminated on February 17, 1969. Prior to November 27, however, some small quantities of herrings had been taken by boats over a large area extending from Hook Head to the Daunt Rock.

Fifty nine Irish boats made catches throughout the season and a total of 70,781 crans of herrings were landed which was an increase of 7,438 crans (11.7%) on the figure for the previous season. Landings were made on 60 days out of a possible 70. The season, which began later than usual, was very disappointing before Christmas, due mainly to adverse weather conditions and the absence of shoals in inshore waters. After Christmas, however, landings of herrings increased substantially and fishing during January and February was exceptionally heavy, with the result that the total landings for the 1968/69 season were the greatest on record. As in the 1967/68 season, fishing was restricted after Christmas at times due to marketing problems which caused the closure of the port on a number of occasions. The overall catch would otherwise have been considerably higher. Almost all landings of herrings were made at Dunmore East and Cobh and the landings per port per month were as follows:-

Month	1968/69				1967/68
	Dunmore East crans	Cobh crans	Others crans	Total crans	Total crans
October	232	-	-	232	1,002
November	1,309	47	-	1,356	7,110
December	13,261	2,849	111	16,221	20,947
January	21,756	19,048	400	41,204	28,092
February	4,513	7,255	-	11,768	6,192
Total:	41,071	29,199	511	70,781	
1967/68	46,201	15,323	1,819		63,343

LANDINGS PER TYPE OF GEAR AND CATCH PER EFFORT: Two main types of gear were successfully used throughout the season, namely, bottom and paired midwater trawls. Some small landings were also made by boats using single midwater trawls and a small quantity was taken by boats using drift nets in the estuary of Waterford Harbour early in the season. Landings per type of gear were as follows:-

<u>Gear</u>	<u>1968/69</u> crans	<u>1967/68</u> crans
Pair midwater trawls	42,511	38,893
Single midwater trawls	432	170
Bottom trawls	27,688	24,280
Drift nets	150	-
Total:	<u>70,781</u>	<u>63,343</u>

All herrings landed at Cobh were taken by midwater trawls because the nature of the ground in this area prevents boats using bottom trawls successfully. The number of boats engaged in midwater trawling was twenty one pairs, compared with twenty two pairs during the 1967/68 season. The average catch per effort (landing) which is usually referred to as an index of abundance, was very difficult to estimate due to the system of quotas which was imposed throughout the last two seasons. Nevertheless the catches (crans) per landing which were estimated for those days of "open" fishing were as follows:-

<u>Gear</u>	<u>1968/69</u> Crans	<u>1967/68</u> Crans	<u>1966/67</u> Crans
Paired midwater trawls	109.6	99.0	92.3
Bottom trawls	54.4	49.2	35.0

While these figures would appear to indicate an increased abundance of herrings in 1968/69 this may not be so having regard to the increased efficiency of boats, particularly those using the midwater gear. The number of crans per shot is a better index of abundance and it is proposed to collect information in this form in future seasons.

LOCATION AND EXTENT OF THE FISHERY: The location and extent of the fishery was broadly similar to that of the previous season with the fleet being divided for the most part between Dunmore East and Cobh. Prior to Christmas shoals were very scattered and fishing in November and early December took place over a wide area from Hook Head to the Daunt Rock. Very few herrings were taken from Waterford Harbour. In late November boats fished the traditional grounds off Mine Head, Ballycotton and Capel Island with little success and it was not until the second week of December that any worthwhile quantity of herrings were taken from Baginbun Bay. From then until mid February boats continued to fish in Baginbun Bay, south of Hook Head and off the Daunt Rock. The fishing off the Daunt Rock was slightly more to the westward than in 1967/68. Very little fishing took place in the area west of Dunmore East and east of the Daunt Rock, where in previous seasons large catches had been made.

AVERAGE PRICE PER CRAN AND DISPOSAL OF CATCH: The average price per cran was higher than in the 1967/68 season and the total value of herrings landed was over £350,000. The increased value was due mainly to the large quantity of herrings exported fresh (Klondyked) to the Continent. The average price for Klondyked herrings was considerably higher than that for rough packed herrings. The total quantities of herrings landed, their value and the average price per cran for the last five seasons were as follows:

<u>Season</u>	<u>Quantity (Crans)</u>	<u>Value (£)</u>	<u>Average Price per cran</u>
1968/69	70,781	353,905	100/-
1967/68	63,343	253,372	80/-
1966/67	47,560	235,422	99/-
1965/66	20,542	122,225	119/-
1964/65	17,434	61,019	70/-

The disposal of the catch during the 1968/69 season was approximately as follows:-

	<u>Crans</u>
Fresh - Home trade	1,517
Fresh - Britain	7,493
Rough packed - Britain	3,500
Rough packed - Continent	42,271
Klondyked - Continent	15,500
Miscellaneous	<u>500</u>
Total	<u>70,781</u>

SCIENTIFIC INVESTIGATIONS: Scientific investigations were again carried out throughout the season on samples obtained from both Dunmore East and Cobh. The quality of herrings throughout the season was generally very good, although some increase in the number of spent fish present as compared with previous years was detected. A total of 3,451 herrings was examined for length, sex, maturity, vertebral counts, age and racial characteristics. Samples were also analysed for fat content. The monthly age distribution, shown below, revealed that three, four, and six year old fish were the dominant age groups.

Monthly age distribution - years

Month	2	3	4	5	6	7	8	9	10	10*	Total
Nov.	31	196	123	30	42	5	9	5	2	5	448
Dec.	69	314	284	74	106	9	19	4	9	17	905
Jan.	110	576	397	117	234	65	55	14	18	48	1,634
Feb.	32	180	84	26	97	12	11	4	9	9	464
TOTAL:	242	1,266	888	247	479	91	94	27	38	79	3,451
%	7.0	36.7	25.7	7.2	13.9	2.6	2.7	0.8	1.1	2.3	

Recruitment of three year old fish would appear to be satisfactory and these, together with the recruits which entered during 1967/68 (four years old), constituted 62.4% of the total fish present. The 1957/58 year class which entered the fishery as the main recruit brood in the 1960/61 season was an exceptionally strong one and has been well represented in all seasons since then. Even during 1968/69 this year class still was present as eleven year old fish and constituted 2.3% of the total numbers found. A comparison made between fish from the Daunt area and those from Baginbun revealed no significant differences in the age distributions with the same age groups dominating in both areas. When the mean length per age class was compared for the two areas it was found that these were also very similar with the exception of the three year old fish, whose mean lengths were 26.3 cm (Dunmore East) and 27.6 cm (Daunt). This is a significant difference in length and would indicate that the recruits from both areas are subjected to different factors which influence growth. It is also evident that over the last few seasons the mean lengths at which herrings recruit to the adult shoals have increased. Mean lengths and mean vertebral counts per age class per maturity stage are shown in Table I.

MATURITIES: As noticed in previous seasons there is a tendency for herrings at Dunmore East to become "maizy" and spawn earlier in the season than heretofore. During 1968/69 stage VI fish (maizy) were again present throughout most of the season. In Baginbun Bay it was possible to separate at least three major spawnings throughout the season. The first group spawned on December 10, 1968, the second group on January 11 and 12, 1969 and the final group spawned on February 5, 1969. The fact that herrings spawned in different groups over a prolonged period from December to February means that their offspring must have had a greater chance of survival in the critical post-spawning period. The prolonged spawning period was the reason for the larger proportion of spent fish being present in the catches throughout the season compared with previous years. Some spent fish found earlier in the season belonged to a smaller autumn spawning component not fished commercially by Irish boats.

OTOLITH CHARACTERISTICS: Otoliths examined were classified into two groups, viz: those with narrow first winter rings (N) and those with wide first winter rings (W). Those which were unreadable were denoted (U). Fish having a preponderance of narrow first winter rings on their otoliths are usually considered to be faster growing fish while those with mere "wide" first winter rings are considered to be the more normal or slower growing fish. It was found that the three and four year old herrings landed at Cobh had a much greater proportion of narrow first winter rings than those from Dunmore East which implies that they contain a greater number of the faster growing fish and this would account for the larger mean lengths of the three and four year old fish from the Daunt Rock area. This difference in otolith characteristic was not manifested to the same extent in the older fish from the two areas.

FAT CONTENT: Analyses of samples for fat content were carried out throughout the season and the results obtained were as follows:-

25.11.68 (recent spents)	11.9%
3.12.68 (Full)	16.6%
1. 1.69 (Full)	8.1%
8. 1.69 (Full)	7.3%
25. 1.69 (Full)	10.6%
1. 2.69 (Full)	11.7%
8. 2.69 (Full)	11.1%

The variations between the percentage fat present throughout the season is caused by the presence of different groups of herrings spawning at different times. As the onset of spawning approaches oil is removed from the flesh and is used in the formation of the gonads. Consequently herrings just on the point of spawning would have a lower fat content than those which would not be spawning for some time.

Throughout the season the explanatory vessel Cu Feasa assisted the fleet in locating and catching fish. The continued co-operation of skippers, merchants and others in supplying information throughout the season is once again greatly appreciated.

Table 1. Mean lengths per maturity stage per age class.

Age in Years

Maturity Stages		2	3	4	5	6	7	8	9	10	10+	Total
II (immature)	A { No. of fish	42	6									48
	B { Mean Length	24.3	24.9									24.4
III (filling)	A	1										1
	B	23.9										23.9
IV (filling)	A	2	6	1							1	10
	B	24.7	27.4	29.4							31.3	27.4
V (full)	A	46	496	367	100	177	21	31	9	8	15	1270
	B	24.4	27.1	28.2	29.0	29.9	30.4	30.7	31.1	31.2	31.0	28.1
VI (maizy)	A	134	660	447	133	286	61	57	14	24	52	1868
	B	24.2	26.9	28.2	29.1	29.9	30.4	30.7	30.8	31.0	31.0	28.0
VII spent	A	17	96	73	14	16	8	6	4	6	11	251
	B	24.4	26.5	28.0	28.7	29.8	30.6	30.6	30.4	30.9	30.9	27.7
VIII (recovering spent)	A		2				1					3
	B		28.2				31.5					29.3
Total	A	242	1266	888	247	479	91	94	27	38	79	3451
	B	24.3	26.9	28.2	29.0	29.9	30.4	30.7	30.8	31.1	31.0	28.0