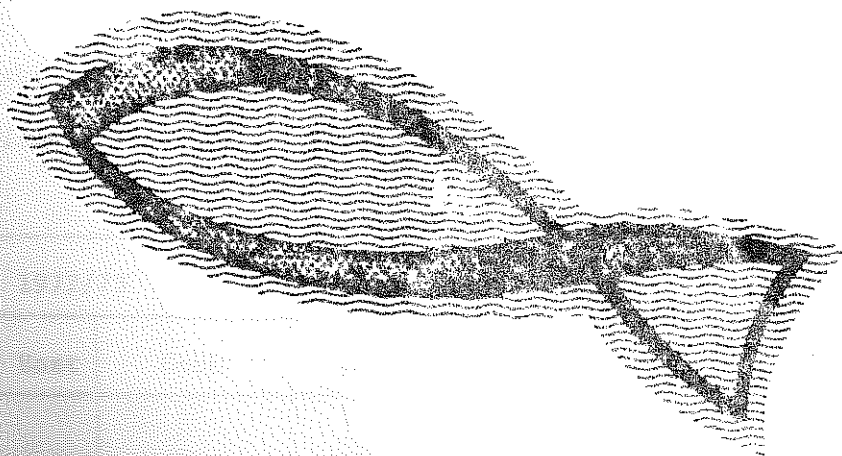




Fishery Leaflet
Number 55
1973

an roinn
talmhaíochta
agus iascaigh

**Herring fisheries on the south and
South-west coasts 1972-73**



by

J. Molloy

DEPARTMENT OF AGRICULTURE AND FISHERIES
FISHERIES DIVISION
DUBLIN.1.

Herring fisheries on the south and southwest coasts

1972-'73

by

J.P. MOLLOY

SOUTH COAST (COUNTIES WEXFORD, WATERFORD, CORK)

The 1972/73 winter herring fishery off the south coast began in the week ending 4 November 1972 and ended on 17 February 1973. The total landings at the ports of Dunmore East and Cobh, amounted to 109,301 crans which was slightly short of the record catch of 110,816 crans made in the 1970/71 season. This represents an increase of 29,509 crans on the figure for the 1971/72 season. Eighty three boats, the same number as in 1971/72, took part in the fishery and landings were made on 80 days out of a possible 92. The introduction of a quota system which restricted catches for periods before and after Christmas undoubtedly contributed to the total catch being lower than it could have been.

The following table shows the monthly landing in crans for each port, compared with the total landings in the previous two seasons.

Month	1972/73		Totals		
	Dunmore East	Cobh	1972/73	1971/72	1970/71
October			-	-	-
November	13,652	10,312	23,964	3,516	14,326
December	30,450	11,250	41,700	23,707	63,268
January	28,450	11,041	39,491	47,118	70,954
February	4,146	-	4,146	4,855	2,268
Totals: 1972/73	76,698	32,603	109,301	--	-
1971/72	47,139	32,436*	-	79,792	-
1970/71	88,424	22,392	-	-	110,816

*217 landed elsewhere

The landed value of all herrings auctioned at Dunmore East and Cobh amounted to £1,060,351, which was a record figure for the fishery and was in fact the first time that the million pound mark has been exceeded. The demand throughout the season was exceptionally good, particularly during November and late January/February, when herrings were rather scarce. The average price per cran per month for Cobh and Dunmore is shown below.

Month	Dunmore East		Cobh	
	Crans	£	Crans	£
November	13,652	11.0	10,312	11.0
December	30,450	9.4	11,250	6.8
January	28,450	9.8	11,041	8.6
February	4,146	14.0	-	-
Seasonal	76,698	10.1	32,603	8.70

The average price during the season of £9.68 was £0.68 higher than in 1971/72. Total landings, total value and the average price paid during the seasons 1968/69 to 1972/73 were as follows:-

Season	Total Landings (Crans)	Value (£)	Average Price (£)
1972/73	109,301	1,060,351	9.68
1971/72	79,792	718,128	9.00
1970/71	110,816	770,703	6.95
1969/70	96,936	544,670	5.60
1968/69	70,781	353,905	5.00

Total international catch: Table 1 shows the total catch that has been taken from this fishery by all nations since 1951. The most important facts to

emerge from the catches in recent years are (1), there has been a continuing decline in the Dutch catches (because of a switch in their fishing effort from the Celtic Sea to the west coast of Scotland) and (2), there has been a recent rise in French catches. However the Irish catch has been by far the greatest (averaging just over 50%) in the area during the years 1969/70 to 1972/73. Because of the decreasing Dutch catches, the total international catch from the fishery has dropped from a maximum of 48,000 tons in 1969 to approximately 35,000 in 1972.

Disposal of catch: With the influx of more buyers, there has been a continuation in the trend towards more diversification in the various outlets through which the catches were channelled. The quantity of herrings which have been frozen (either whole or filleted) has continued to increase, while on the other hand the quantities which are transferred directly to luggers for curing have continued to decline.

The following table shows the disposal of the total catch and the approximate amounts exported to each country.

Disposal of Catch

	Ireland	U.K.	Holland	W. Germany	Belgium	France	Poland	Israel	Denmark	Sweden	Total
Fresh (whole)	500	7266	1430			7783					16979
Rough Packed (whole)		4060	45661	884	540	3418	3300	600			58463
Frozen (whole)		66	17324	8941	2586	1806			576	312	31611
Frozen (Fillets)			956	562					729		2247
Total	500	11392	65371	10387	3126	13007	3300	600	1305	312	109300

Location of fishery: Generally the location of the fishery remained as in previous years, although very few herrings were located on the important spawning beds in Baginbun Bay. The season opened in early November when the first shoals were located off the Daunt Rock. Fishing continued in this area until mid November. The first shoals off Dunmore East were located south of Hook Head on 14 November. In early December good fishing was experienced by the Dunmore East based boats from an area south of Hook Head and on the "roads" area. On the other hand the Cobh based boats were severely hampered by bad weather during this period and also because they were forced to travel as far east as Mine Head before shoals were located. From Christmas until about 12 January very heavy fishing took place south of Dunmore East and in the Mine Head to Ballycotton area. The Cobh boats continued to work the latter areas, although the herring shoals were in very bad ground in shallow water and gear was damaged considerably. However these herrings disappeared in mid January and very few herrings were afterwards landed at Cobh. The Dunmore fleet continued to fish and located shoals in Baginbun Bay towards the end of January. Light fishing continued in this area until the end of the season in mid February.

Landing per type of gear: Once again most herrings landed were as a result of paired midwater trawling. Because this type of fishing appears to have a scattering effect on the shoals and also because few herrings were located on ground suitable to bottom trawlers, the amount of herrings taken by bottom trawlers amounted to less than 2,000 crans. Some single midwater trawling was also tried during the season but with little success. Landing per type of gear for the past five seasons were as follows:-

Type of gear	1972/73	1971/72	1970/71	1969/70	1968/69
Paired midwater	107,523	77,094	95,877	71,046	42,511
Drift nets	-	-	-	-	150
Single midwater trawls	-	-	-	200	432
Bottom trawls	1,778	2,698	14,939	25,690	27,688
Total	109,301	79,792	110,816	96,936	70,781

Catch per effort: The present index of stock abundance is taken as the average catch in crans per night's fishing by a pair of midwater trawlers. However because of the imposition of quotas during 1972/73 and also because of the rapid increase in efficiency in the use of this gear, effected by the introduction of larger nets, more powerful boats, more accurate detecting equipment, and increased carrying capacity, this method of indicating stock abundance has many limitations. The imposition of quotas tend to underestimate stock size, while, on the other hand, the increase in efficiency tends to over-estimate the abundance. However, in the absence of a more reliable method the average catch per effort does give a guide to changes that occur in stock sizes.

The following table shows the average catches per effort (crans per night's fishing) that have been recorded during the seven seasons from 1966.

Crans per night's fishing

	Midwater Trawls			Bottom Trawls
	Dunmore East	Cobh	Total South Coast	Dunmore East
1972/73	87.3	115.1	94.3	35.6
1971/72	59.3	83.8	67.7	30.5
1970/71	118.2	103.2	114.3	37.3
1969/70	94.1	138.2	111.8	35.5
1968/69	85.4	127.6	109.6	54.4
1967/68	86.1	122.3	99.0	49.2
1966/67	92.3	-	92.3	35.0

The average catches per night's fishing (estimated from the catches made on those nights on which there were no quotas) showed a considerable rise on the very low figure recorded the previous year. While this would indicate an

increased abundance of herring, it still did not reach the high figures recorded during 1968-1971, which is surprising because very dense shoals were reported on numerous occasions from the middle of December 1972 until mid January 1973. Apart from this period however, herrings, as reflected by catch per effort data, were still not particularly abundant, especially towards the end of the season. Monthly catch per effort figures are shown in Table 2. Because of the small catches made by bottom trawlers estimates of stock size based on the catches per effort of this type of gear are no longer valid.

Effort: The total number of nights fished by paired midwater trawlers is called the total effort. If we assume that the total catch in each of the last seven seasons had all been taken by midwater trawlers, we can estimate the theoretical total effort by dividing each years total catch by the equivalent catch per effort. This has been done and the figures obtained are shown below.

Season	Total Catch crans	Catch per effort crans	Effort (number of fishing nights)
1972/73	109,301	94.3	1,159
1971/72	79,792	67.7	1,179
1970/71	110,816	114.3	970
1969/70	96,936	111.8	867
1968/69	70,781	109.6	646
1967/68	63,643	99.0	643
1966/67	47,560	92.3	515

As can be seen the total effort remained at about the same level as during 1971/72. This is not really surprising when one considers the effects of the quota system and also the fact that many of the boats left the fishery around the middle of January.

Scientific Investigations: Samples of herrings, totalling 1,848 fish were examined for length, weight, sex maturity and age from Dunmore East and Cobh throughout the main season. In addition 1,522 fish were measured only. Racial investigations were also carried out and fat content and numbers of herrings per kilogramme noted.

Length and Age: The age distribution which is shown below for the seven seasons from 1966/67 is expressed in crans per night's fishing, e.g. if the total average catch per night was 94.3 crans for 1972/73, 3.6 crans would be 2 year old fish, 65.7 crans would be 3 year olds etc.

Age in years (Crans per midwater trawler landing)

Season	2	3	4	5	6	7	8	9	10	>10	Total
1972/73	3.6	65.1	9.0	7.0	5.7	1.8	1.1	0.5	0.3	0.3	94.4
1971/72	6.4	11.8	14.3	18.0	7.6	4.2	2.4	1.8	0.3	0.7	67.5
1970/71	0.8	41.6	40.1	13.5	8.8	4.7	2.6	0.9	0.6	0.7	114.3
1969/70	5.6	52.4	22.6	13.3	7.2	6.7	2.0	0.7	0.5	0.7	111.7
1968/69	6.2	39.6	26.1	8.1	20.3	2.8	2.2	0.8	1.3	2.3	109.7
1967/68	9.0	41.7	12.2	19.8	4.6	4.2	2.1	3.2	1.1	1.2	99.1
1966/67	7.3	21.2	34.2	6.1	8.9	3.6	2.5	5.7	0.9	1.7	92.1

When these figures are examined a number of things become clear, the most important of which is the fact that a very large number of 3 year old herrings were present in 1972/73 (65.1 crans compared with only 11.8 crans in 1971/72). The influx of these fish was solely responsible for the unexpectedly good fishing in the 1972/73 season. Conversely the scarcity of this particular age class in 1971/72 accounted for the poor fishing in that season. While it is obviously very good to have large numbers of young fish entering, there is a scarcity of older fish in the stock at the moment, which means that the fishing is still very dependent on recruitment.

Because of this, it is becoming increasingly important to be able to forecast the abundance of the two and three-year old herrings before they enter the adult fishery, as it is now evident that the present fishery would be in decline were it not for the successful entry of large numbers of young herrings each year. In this way it will be possible to make more accurate forecasts of future fisheries.

Condition of fish: The fat content of herrings was examined daily throughout the season. The method again used was that which assumes a direct relationship between the moisture content of fillets and the fat content, the formula being -

$$\text{Fat content (\%)} = 80 - \text{moisture content (\%)}$$

Throughout most of the 1972/73 season the fat content remained higher than in the previous season. The early catches landed at Cobh had a fat content of 18% but this decreased to 13% towards the end of November. The range in December was from 14% to 11%, while the range in January was from 10% to 7%. The last herrings landed in February had a range of 7% to 6%.

The number of herrings per kilogramme remained fairly constant throughout the season, ranging from 5.5 to 4.5. As usual, herrings landed at Cobh had a slightly lower count.

Maturities: Herrings landed throughout the season showed considerably larger amounts of hard clean (stage V.) herrings than usual. "Mazy" herrings (stage VI) began to appear around Christmas and dominated the catches after this. Some spents (stage VII) appeared throughout the season as different groups spawned at various times. One small group spawned off the Keraghs about 27 November. Another possible small spawning occurred about 22 December. A fairly heavy spawning appeared to have taken place around 3 January south of Hook, while a further spawning occurred off Ballycotton about 11 January. Subsequent to this, very few herrings were taken from this area.

EXAMINATION OF LARGE HERRINGS

The catches throughout the main season at Dunmore East contained some exceptionally large herrings. Because of their very large size they tended to be conspicuous in the catches and the amounts present may possibly have been exaggerated. Some of these herrings were examined in detail but unfortunately the numbers examined were rather low. The twenty four that were examined averaged over 33 cm in length and 390 g in weight. This compares with an average of about 27.5 cm and 200 g, respectively, for ordinary herrings. One interesting thing about these herrings is that in spite of their size, they were comparatively young fish and were usually only 6 or 7 years old. Herrings of around 33 cm could be expected to be at least 12 to 13 years old. Although a change in growth rate is known to have occurred in herrings from the Celtic Sea, it did not appear to the extent that was manifested by these herrings. Similar herrings have also been noticed in the catches made by the Dutch fleet during the summer months.

SAMPLES FROM CO. WEXFORD

During the course of the main season two samples of adult herrings were examined from Co. Wexford drift net boats. The total amount landed from small ports along the county Wexford coast amounted to 3,000 crans which were valued at approximately £24,000. The first sample examined in late November consisted of fish which had a fat content of 14% and averaged 5.6 fish per kilogramme. It consisted almost entirely of clean full fish (stage V) of which 46% were three-year-olds. The second sample, however, consisted of a mixture of clean full fish (stage V), spents (stage VII) and immature fish (stage II). The full fish were again three and four-year-olds. The spents on the other hand were almost all three-year-olds while the immature fish were all two-year-old-fish.

SOUTHWEST COAST (AUGUST-NOVEMBER, 1972)

The autumn herring fishery off the southwest coast carried out by boats from Castletownbere and Dingle opened in the third week of August and continued until early November. Herrings were more abundant than in the previous year and this, together with an excellent demand, resulted in a satisfactory season for the small number of boats involved. Landings made at the ports of Dingle and Baltimore, Reynard Point and Castletownbere were as follows:-

Port	1972	1971	1970
	Crans	Crans	Crans
Castletownbere	8,006 (£65,623)	3,692	4,008
Baltimore	639 (£ 6,469)	80	1,641
Dingle	2,365 (£21,309)	844	158
Reynard Point	169 (£14,900)	-	-
Total	11,179	4,616	5,807
Total value	94,891	34,490	38,000
Average price	8.49	7.47	6.54

All herrings were again landed by midwater trawl, although considerable amounts (2,000 crans) were later landed at Bantry by drift netters fishing from the Gerhies area. These are not included in the above figures.

The majority of herrings landed were frozen whole, while smaller quantities were either exported fresh to Britain, France and Belgium or rough cured. Some quantities were also exported fresh to France and Belgium. Fishing was again confined to the traditional areas, e.g. around Dursey Sound, Bantry Bay and in Dingle Bay. As in 1971, appreciable quantities of mackerel were landed

during the season and amounted to over 5,500 crans valued at £38,000. The majority of this was frozen before export, although some surplus amounts were consigned for reduction to fishmeal.

Effort and Catch per effort: Effort and catch per effort are again given in the same units as for the south coast (i.e. number of nights fished and crans per night's fishing for paired mid water trawlers). The figures now available for pair trawlers fishing from Castletownbere are as follows:-

<u>Year</u>	<u>Catch (Crans)</u>	<u>Effort</u>	<u>Catch/Effort</u>
1972	8,006	121	66.2
1971	3,492	99	41.4
1970	4,179	47	48.7
1969	3,010	29	103.8
1968	2,141	44	88.9
1967	2,238	54	35.3

Although the total effort has shown a gradual increase over the last five years, the catch per effort, although it has fluctuated considerably, has not shown any downward trend. Landings have in fact increased since this fishery started in 1967. A comparison between the catch per effort figures and similar figures for the south coast fishery suggests that the total stock frequenting the southwest coast is a small one. The fact that it is a small stock and as such is dependent on recruitment would also explain the variations that occur in the yearly catch per effort figures.

Scientific investigations: Unfortunately in 1972 scientific investigations were confined to the examination of only two samples at the end of August and in early September. Herrings in these samples had a 17% fat content and averaged about 4.5 fish per kilogramme. As is usual for herrings from Castletownbere, they

contained a mixture of Autumn and Winter spawning races. The dominant age group in both samples was three year old fish.

YOUNG HERRING SURVEYS

The importance of the level of recruitment of young herrings to an adult stock has already been emphasised. This is particularly so in the Celtic Sea herring stock which is heavily dependent on a continuation of good recruitment. Because of this it would be of great benefit to all if it were possible to forecast the level or strength of recruitment before these young fish join the adult stocks. This would then give a very good indication about the availability of herrings in future seasons. In the North Sea and off the west coast of Scotland the abundance of young herrings is satisfactorily estimated every summer by experimentally fishing for them. For this reason during June and July 1972 the Cú Feasa was used in an effort to locate young herrings off the south coast and in the Irish Sea. However very few herrings were located, except in the northern part of the Irish Sea (Lambay - Clogherhead area). Any information about the locations of concentrations of young herrings would be greatly received as it is intended to continue with these cruises during the coming year.

ACKNOWLEDGEMENT

The continued co-operation of skippers, fishermen and merchants and in particular of the members of the South and East Coast Fishermens Association in supplying information and statistics in relation to this report is gratefully acknowledged.

TABLE 1. Herring catches in ICES Division VII g-k, south coast Ireland (metric tons)

Year	C O U N T R Y							Total
	Belgium	France ⁴⁾	Germany ¹⁾	Ireland ²⁾	Netherlands ³⁾	Poland	England	
1951	534	1,001	-	600	-	-	888	3,023
1952	1,792	762	-	845	-	-	681	4,080
1953	502	1,697	-	693	-	-	883	3,775
1954	2,251	14	-	1,386	-	-	1,287	4,938
1955	4,230	21	-	1,619	-	-	1,789	7,659
1956	2,539	226	-	3,348	-	-	2,289	8,402
1957	1,256	397	949	6,116	4,047	-	881	13,646
1958	708	567	11,743	7,869	5,813	77	1,922	29,099
1959	98	1,717	9,248	10,132	3,720	124	770	25,809
1960	-	1,083	60	14,935	1,463	-	73	17,614
1961	128	3,995	785	5,876	3,449	96	2	14,331
1962	249	7,755	475	4,502	4,154	56	-	17,191
1963	7	6,061	251	4,405	10,018	-	340	21,102
1964	-	4,894	-	3,375	6,128	-	744	15,141
1965	-	1,742	353	3,980	7,198	-	1,054	14,327
1966	-	5,506	1,143	6,891	16,605	112	197	31,454
1967	-	3,825	910	11,133	13,184	300	398	29,750
1968	-	2,637	1,662	9,480	15,679	130	598	30,186
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 ^x	-	8,600	297	20,109	7,000	?	-	35,406

1) 1961-63 according to national statistics from "Bundesforschungsanstalt für Fischerei", Hamburg.

2) 1960-66 including catches incorrectly reported to "Bulletin Statistique" as taken in Division VIIa.

3) Catches in 1957-58 according to national statistics, in 1959-68 according to "Bulletin Statistique" ICES Divisions VII g-k + VIIa, f

4) Catches according to "Bulletin Statistique" from 1951 to 1960 and supplied by "Institut des Pêches Maritimes", Boulogne for later years.

x) preliminary

Table 2. Monthly catch per effort figures (crans per nights fishing by midwater trawlers).

	1972/73		1971/72		1970/71	
	D/East	Cobh	D/East	Cobh	D/East	Cobh
October	-	-	97.0	-	-	-
November	78.9	82.5	22.6	20.8	94.5	66.8
December	102.0	269.8	50.7	91.8	160.7	131.6
January	93.0	94.7	82.4	105.6	83.4	173.3
February	42.3	-	85.0	52.9	95.8	59.6