

Fishery Leaflet
Number 71
1975

An Roinn
Talmhaíochta
agus Iascaigh

Herring fisheries on the South
and South West coasts
1974-75

by

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Abstract

The important herring fishery which takes place during the Winter months off the South Coast is reviewed. The fishery, which exploits the Celtic Sea Stock of herring, yielded over 68,000 cran in 1974/75 compared with 62,000 cran in the previous season. However, because of poor prices, the value of the fishery declined, from £1.4 million in 1973/74 to £1.3 million. The increased landings, despite abnormally severe weather in January, were attributed to a corresponding increase in effort, as herring were generally considered to be much less abundant. Scientific examination showed that for the second year in succession, the recruitment of three year old herring was very low, and this, coupled with the continued high fishing rate means that the total stock is now at its lowest strength since the middle fifties. The autumn fishery off the South West coast was a disappointing one because of decreased catches.

South Coast (Celtic Sea)

Introduction The 1974/75 winter herring fishery off the south coast began in early October and continued until the middle of February. The total landings, which were made mainly at Dunmore East and Cobh, amounted to 68,715 cran which was 6,523 cran higher than in the previous season. The value of the landed catch was £1.3 million. During the season, 104 boats (excluding some small drifters) took part in the fishery and even though a number of boats left the fishery early or did not participate throughout the season, the fleet in terms of horse power, efficiency and equipment, was the most powerful ever to exploit the stock. After an early start to the season and good fishing during November, the catches throughout December were very poor.

The Weather in January was so unsuitable that fishing was only possible on

eleven nights during the whole month, and although it improved in February, herrings were again very scarce. During the season landings were made on 62 days out of a possible 82. As in the 1973/74 season no trawling for herring was permitted on Saturday or Sunday nights as a conservation measure, brought in at the request of fishermen.

The following table shows the monthly landing per port for 1974/75 and similar figures for the 1973/74 and 1972/73 season. Landings in the column entitled "elsewhere" include landings made at Kilmore Quay and also some landings made by drifters working from south Wexford ports.

Monthly landings in crans per port for 1972/73 - 1974/75.

Month	Dunmore East	Cobh	Elsewhere	1974/75	1973/74	1972/73
October	1951	1517	28	3496	160	-
November	13794	14130	450	28374	6225	23964
December	14354	3180	370	17904	23290	41700
January	16906	391	148	17445	25758	39491
February	1377	117	2	1496	6759	4146
Total						
1974/75	48382	19335	998	68715		
1973/74	44944	17248			62192	
1972/73	76698	32603				109301

The value of all herrings landed at the above ports during 1974/75 amounted to £1.3 million which was slightly less than in the previous season. However the average price per cran for the whole season was £18.95 which was nearly £4.00 lower than in the 1973/74 season. In view of the steep increase in the price of oil, gear and other expenses the decrease that occurred in the price of herring represented a very serious loss of income to fishermen at a time when additional revenue would have been expected.

The average price per cran for herrings landed at Dunmore East and Cobh was £19.23 and £18.28 respectively.

The total landings, the total value and the average price per cran for the last seven seasons was as follows.

Season	Crans	Value (£)	Average Price (£)
1974/75	68715	1,301,913	18.95
1973/74	62192	1,423,683	22.89
1972/73	109301	1,060,351	9.68
1971/72	79792	718,128	9.00
1970/71	110816	770,703	6.95
1969/70	96936	544,670	5.60
1968/69	70781	353,905	5.00

Throughout the season the demand for herring remained fairly constant, although a scarcity towards the end of January and in February produced some exceptionally high prices on occasions for small catches. The average price per cran per month is shown below.

Average price per month for each port.

Month	Dunmore East		Cobh		South Wexford Ports	
	Crans	£	Crans	£	Crans	£
October	1951	17.10	1517	19.27	28	16.00
November	13794	17.67	14130	17.58	450	21.50
December	14354	21.37	3180	21.03	370	17.00
January	16906	18.75	391	16.68	148	11.00
February	1377	27.77	117	18.00	2	23.50
Season	48382	19.23	19335	18.28	988	18.12

International Catch The total catch taken from the Celtic Sea during the period 1st March 1974 to 28th February 1975 was regulated by the North East Atlantic Fisheries Commission so as not to exceed 32,000 tons. Ireland's share

of this total was 18,000 tons. In the following table the catches per calendar year for each country participating in the fishery for the last six years are shown.

Total International catch (1969 - 1974)

Country	1969	1970	1971	1972	1973	1974+
France	7038	3627	3393	7327	5553	1523
F.R. Germany	5906	1481	974	393	294	433
Ireland	18712	24702	12602	20109	13105	14154
Netherlands	16256	7015	9672	6758	5834	2128
Poland	252	1191	881	751	1125	954
United Kingdom	-	220	65	-	-	-
USSR	-	-	-	618	334	-
Total	48164	38236	27587	35956	26245	19192

+ provisional figures for 1974.

As can be seen the total international catch has declined considerably, the decline being particularly evident in the catches of the Dutch and French fleets.

The decrease in 1974 was caused by good fishing in the Summer in parts of the North Sea and by a continual increase in effort off the north west coast of Ireland and west of Scotland. However, the probability of further conservation measures being imposed in both those areas will mean that the effort in the Celtic Sea will probably revert to the level at which it was when the high catches were experienced in the 1968 to 1971 period.

Disposal of catch. In spite of the scarcity of herring throughout the season, the fleet was obliged to restrict landing for two periods because of difficulties by buyers in disposing of catches. Little change took place in the methods of treating the catches although the amounts placed in cold stores was affected by lack of space, particularly early in the season. The following table shows the approximate amounts exported to each country.

Disposal of Catch

	Ireland	United Kingdom	Holland	F.R. Germany	Belgium	France	Poland	Norway	Denmark	Total
Fresh (whole)	300	4000	2000		500	4700				11500
Rough packed (whole)		3500	35000	965	450	700	800			41415
Frozen (whole)			5000	3100	400	2500				11000
Others*				1000	285			3000	500	4785
Total	300	7500	42000	5065	1635	7900	800	3000	500	68700

*spiced and cured, gibbed, marinated.

Location of fishery. The first substantial landing of the season at Dunmore East took place in early October and these herrings were taken from shoals located in Baginbun Bay. The herrings landed at Cobh during November and December were taken from the area between the Daunt and Pollock Rocks. During November most of the catches made by the fleet operating from Dunmore East were taken from the area extending from Hook Hd. to Tramore Bay, while the catches made by the Cobh fleet continued to be made from the Daunt Rock area. In early January heavy fishing took place from around the Keraghs Rock in Baginbun Bay and from south of Hook Hd. However when these shoals had disappeared no further heavy concentrations of fish were located in spite of intensive searches which were made over large areas. Throughout the season very few herrings were located in the traditional fishing areas such as off Mine Head, Caple Island, Youghal Bay and Ballycotton Bay and herrings were present for only short periods in Baginbun Bay.

Landings per type of gear: The amount of herring taken by each type of gear is shown below. As has been the case in the last three seasons the fishery is now almost an exclusively midwater trawl one. The landings made by small boats drift netting in the area show a considerable increase on previous years.

Amounts landed per type of gear

Type of Gear	1970/71	1971/72	1972/73	1973/74	1974/75
Paired midwater trawls	95877	77094	107523	61783	67775
Drift nets	-	-	-	122	846
Bottom trawls	14939	2698	1778	287	94

Catch per effort. The average catch per fishing night per pair of midwater trawlers for each season is used to make comparisons of the abundance of the total stock of herrings. Although this method has obvious limitations (the chief one being that no allowance is made for increased efficiency due to increased horse power etc,) it does allow one to describe the fluctuations that occur in stock size each year, and thus to make estimates of the relative abundance of the stock at any given time. The following table gives the average catches per effort (i.e. crans per night fishing) that have been recorded from the midwater trawlers since they first came into prominence in the 1966/67 season.

Average crans per nights (days) fishing.

Season	Midwater Trawls			Bottom Trawls
	Total	Dunmore east	Cobh	Dunmore East
1974/75	64.7	61.1	75.8	10.5
1973/74	64.5	68.4	56.9	13.7
1972/73	93.4	87.3	115.1	35.6
1971/72	67.7	59.3	83.8	30.5
1970/71	114.3	118.2	103.2	37.3
1969/70	111.8	94.1	138.2	35.5
1968/69	109.6	85.4	127.6	54.4
1967/68	99.0	86.1	122.3	49.2
1966/67	92.3	92.3	-	35.0

These figures show that a very big decrease has taken place in abundance since the 1966-1970 period when the stock size was at its maximum. A more detailed examination of the monthly figures for 1974/75 reveal that herrings were present in intense quantities for only very short periods - at the beginning of January and possibly at the very beginning of the season.

Effort. The effort imposed on this stock is the number of fishing nights by midwater trawler pairs throughout the season. In 1973/74 the fishermen abstained from fishing on Sunday nights in an effort to decrease the high fishing rate and this ban was made compulsory during 1974/75 season by the imposition of a by-law preventing fishing at week-ends. The voluntary restriction in 1973/74 had the effect of reducing the effort by 17% but the advent of more boats into the fishery in 1974/75 increased the effort to a point not far from the record levels of 1971 to 1973. This figure was achieved in spite of the long spells of bad weather which prevented fishing in January. It can be clearly seen that the stock abundance is now in such a state that any increase in effort only leads to a decreased catching rate and that the involvement of more boats in the fishery leads not to increased catches but rather to decreased earnings for the fleet in general. To emphasize this point an examination of the 1974/75 boats returns shows that 35% of the total midwater catch was taken by the top seven pairs. The remaining 65% was shared by the forty other pairs who participated in the fishery.

The total catch per season divided by the corresponding catch per effort figures gives the total effort figure for each season. This is given below for the seasons since 1966/67.

Season	Total Catch	Catch per effort	Effort
1974/75	68715	64.7	1062
1973/74	62192	64.8	960
1972/73	109301	93.3	1159
1971/72	79792	67.7	1179
1970/71	110816	114.3	970
1969/70	96936	111.8	867
1968/69	70781	109.6	646
1967/68	63643	99.0	643
1966/67	47560	92.3	515

Scientific investigations. Scientific examination of the herrings landed at Dunmore East and Cobh was continued during 1974/75. 1558 fish were examined for age and a further 3188 fish measured and converted to age using an age/length key. Racial investigations were also carried out and the numbers of herring per kilogramme and the fat contents were also noted.

Age and recruitment. The age distribution of the catches landed at Dunmore East and Cobh since 1966/67 is shown below. In previous reports this was expressed as the number of crans of each age group present in the catches. This system has now been changed and the age distribution is now given as the number of individual fish present in each age group per average landing for each season.

Age distribution (Years). Thousands of fish per landing.

	2	3	4	5	6	7	8	9	10	10	Total	In No
1974/75	3.4	27.6	10.7	11.8	2.4	2.8	1.4	0.4	0.2	0.2	64.9	60.2
1973/74	5.3	19.2	21.8	2.0	3.3	2.4	1.5	0.6	0.1	0.5	64.7	57.7
1972/73	3.2	58.1	8.0	6.2	5.1	1.6	1.0	0.4	0.3	0.3	94.4	98.0
1971/72	5.1	9.3	11.3	14.3	6.0	3.3	1.9	1.4	0.2	0.5	67.5	63.3
1970/71	0.7	35.9	34.6	11.6	7.6	4.0	2.3	0.8	0.5	0.6	98.5	95.6
1969/70	5.1	47.7	20.6	12.1	6.6	6.1	1.8	0.6	0.5	0.6	101.8	88.6
1968/69	5.4	34.1	22.5	7.0	17.5	2.5	1.9	0.7	1.1	2.0	94.5	60.0
1967/68	8.4	38.6	11.3	18.4	4.2	3.9	1.9	2.9	1.0	1.1	91.8	58.0
1966/67	6.5	18.9	30.5	5.4	8.0	3.2	2.2	5.1	0.8	1.6	82.2	41.2

An examination of the figures for 1974/75 shows that again three year old fish were dominant. However compared with the high numbers of this age group which entered the fishery in the 1967/68 to 1970/71 seasons the numbers in 1974/75 are again below the average for the last eight seasons. Since 1970/71, there have been three seasons in which recruitment has been poor and this, together with the continuing high fishing rate has caused the considerable decline in stock size. The main recruitment takes place when fish are three years old. However it is possible to get an indication of what future recruitment will be like by examining the numbers of fast growing two year olds present. The figure of 3.4 for 1974/75 would indicate

that the main recruitment during the 1975/76 season would once again be below normal. The mortality rate calculated from the above figures shows a decrease on the figure for the previous season and while this is desirable it must be remembered that this is directly related to the total international catch which was the lowest recorded for quite some time.

Stock size. In the report dealing with this fishery for 1973/74 it was pointed out that because the poor recruitment of three year old herrings, that had taken place during the 1971/72 and 1973/74 seasons, had coincided with a continuing high mortality rate, the total stock size had decreased considerably.. The assessment group, established by the International Council for the Exploration of the Sea to examine the stock situation in the Celtic Sea, had suggested that because of the low stock size, the total catch during the 1974/75 season should be limited to 25,000 tons. The group having met again in October 1974 suggested that the catch in 1975/76 should be further reduced to 19,000 tons. The stock size will not increase until the fishing rate has been reduced to such an extent that will enable the spawning population to generate sufficient young herring to ensure a return to a high level of recruitment.

Racial investigations. Since the early nineteen sixties the Celtic Sea fishery has always been regarded as being based on one main winter spawning stock. The presence of a small autumn spawning stock was noted by Foster 1964 in earlier reports who mentioned that the season usually started on large "mazy" herring located in Baginbun Bay in October. These were herring belonging to an autumn spawning race and were a separate and completely different race than that which are caught later in the season. They were fished in October in both 1960 and 1961. However the amounts were small and it was felt that this race would not influence any stock assessments made. Molloy (1970) also mentioned the fact that young immature herrings were taken in Tramore Bay in 1969/70 which were future recruits to an Autumn spawning population not fished at that particular time. The presence of "mazy" herring in

the early catches during October and November of the 1974/75 season was interesting and led to speculation as to whether they belonged to the same stock that spawns later in the season. For this reason an examination of the age distribution and the vertebral counts of these early spawning herrings was made and compared with those from later samples. The results are shown below.

Percentage Age distribution

Vertebral Counts

Month		2	3	4	5	6	7	8	9	10	+ 10	
Oct.	Baginbun Bay	15.2	47.0	9.1	7.3	13.4	3.0	3.7	0.6	-	0.6	56.571
Oct.	Daunt Rock	10.0	53.0	12.0	13.0	6.0	4.0	2.0	-	-	-	56.710
Nov.	whole area	6.6	45.8	14.6	21.1	4.5	4.2	1.6	0.8	0.4	0.4	56.697
Dec.	whole "	3.4	56.0	16.5	17.3	2.9	1.3	2.2	0.2	0.1	0.1	56.810
Jan.	whole "	4.3	39.2	25.2	20.7	2.6	2.9	3.4	0.7	0.5	0.4	56.938
Feb.	whole "	14.1	37.0	15.2	17.4	6.5	3.3	3.3	3.3	-	-	-

While three year old fish are dominant in all months, there are minor differences in the amount of two year old fish present - these being more numerous in the October samples. The amounts of four year old fish are also slightly different - these being less abundant in the early samples. The vertebral counts are distinctly lower in the early samples and these, particularly in the Baginbun herrings would indicate that they belonged to an autumn spawning component. However it has not yet been possible to carry out detailed statistical analysis of these samples and further analyses must be undertaken on these herrings (if they re-appear in future seasons) to determine whether they constitute a separate race.

Maturities. In recent years the fishery has been based almost entirely on "mazy" (stage VI) i.e. spawning fish. This contrasts with the situation that existed in the early sixties when the pre Christmas fishery was based on clean full herrings (stage V), these herrings gradually becoming "mazy" in January. This situation gradually changed however and in the late sixties it was possible to identify three

or possibly four major spawnings that took place throughout the whole season. Each shoal was usually fished intensively for 10-14 days before it spawned. However in the last two seasons herring tended to remain out of reach of the fleet until they were on the point of spawning. They then moved quickly into the spawning area in intense concentrations, spawned quickly and then disappeared.

Condition of fish. The number of fish per kilogramme and the fat content are shown in table 1. The number of the herring per kilogramme ranged from 4.7 to 6.0 which is about average while the fat content ranged from 15% at Cobh in October to 6% at Dunmore East in January. The monthly fat content was however below the average of the previous season.

Drift net fishery off Wicklow and Wexford

The drift net fishery pursued from many small ports along the Wicklow and Wexford coasts proved disappointing in 1974, in spite of a considerable increase in the number of small boats engaged. The total landings amounted to approximately 1,800 cran valued at £28,700, which represented only about half the total quantity and value of the previous season. Only one sample of herring were examined from the fishery and these were landed at Wicklow in November. They were fine full (stage V) fish and numbered 4.6 per kilogramme. An examination of their maturity stages and the number of vertebrae in the vertebral column revealed that they belonged to a winter spawning population. They were mostly three, four, and five year old fish. A comparison was made between these three age groups and those from the fish landed at Dunmore East in November for percentage distribution, mean length and mean vertebral counts and is shown below.

Character	Area	Age in Years		
		3	4	5
% distribution	Wicklow	44.9	24.7	22.5
	Dunmore East	40.0	15.0	29.0
Mean length	Wicklow	27.8	28.9	29.7
	Dunmore East	27.8	29.1	29.9
Mean vertebral count	Wicklow	56.925	56.727	56.550
	Dunmore East	56.800	56.733	56.833

There are obvious similarities between these fish, and it is possible that some of the stock spawning in Baginbun may have come down from the southern section of the Irish Sea.

South-west coast fishery (August to November 1974)

The south west coast fishery which is exploited mainly by boats fishing from Castletownbere and Dingle, started in August 1974 and continued until November. Decreased landings and reduced prices meant that the season was generally a disappointing one. The landings, value and the average price are shown below.

Total landings and value from principal ports (July-November)

(Value in Brackets)

Port	1970	1971	1972	1973	1974
Castletownbere	4008	3692	8006 (65263)	6935 (123020)	4597 (86113)
Baltimore	1641	80	639 (6469)	213 (3132)	- -
Dingle	158	844	2365 (21309)	4345 (63742)	2849 (37656)
Reynard Pt.	-	-	169 (14900)	507 (7425)	758 (9656)
Total Crans	5807	4516	11179	12000	8204
Value	38000	34490	94891	197319	133425
Average Price	6.54	7.47	8.49	16.44	16.26

Approximately 2200 crans, valued at £28,400 were landed at Gerbies during this period, but this fishery was severely restricted because of the oil spillage that occurred at Whiddy Island

Effort and catch per effort. The effort and catch per effort for this fishery are expressed as the number of fishing nights and the average catch in crans per fishing night. In the table below the catches and catches per effort are shown for the boats fishing out of Castletownbere for the last eight seasons.

Catch, effort and catch/effort of midwater trawlers from Castletownbere

Year	Catch (Crans)	Effort (fishing nights)	Catch per effort
1967	2238	54	35.3
1968	2141	44	88.9
1969	3010	29	103.8
1970	4179	47	48.7
1971	3492	99	41.4
1972	8006	121	66.2
1973	6935	151	45.9
1974	4260	101	42.2

The figures show that there has been a slight increase in effort which however was met with a decrease in catch per effort and in the total amount landed.

Scientific investigation. Sampling of herrings on the south west coast was restricted considerably in 1974 and only two samples were examined from Castletownbere. These were from catches made in mid-August and were predominantly 2 and 3 year old fish and very few older fish were present. The percentage age distribution of fish landed at Castletownbere since 1969 is shown in the following table.

Age in years										
Year	2	3	4	5	6	7	8	9	10+	10
1969	15.8	28.7	12.7	20.3	5.6	12.4	2.8	0.8	0.3	0.6
1970	4.9	55.4	12.3	5.3	4.1	7.2	6.3	2.6	0.4	1.4
1971	3.0	11.1	44.5	19.2	4.0	9.1	7.1	1.0	1.0	
1972	2.3	70.8	5.0	11.0	4.6	1.8	1.8	1.4	-	1.4
1973	2.7	20.5	56.9	3.7	7.4	3.4	0.7	2.0	1.0	1.7
1974	36.0	46.0	5.5	8.5	1.5	1.5	-	0.5	-	0.5

As has been pointed out in previous reports the stock fished from Castletownbere is believed to be a small local one which spawns in October/November off Gerhies in Bantry Bay. Because of its smallness it is liable to rapid fluctuations in stock size, depending on whether the incoming year class is a strong or a weak one.

The effects of the major oil spillage that occurred at Whiddy Island in October 1974 and the subsequent "cleaning up" operations will not be known until the progeny of this spawning return to the area for the first time as three year old herrings in 1977.

Acknowledgments

The continued co-operation of skippers, buyers and fishermen and particularly of the staff of both the South and East Coast Fishermen's Association and of the Castletownbere Fishermens Association for supplying information and statistics used in compiling this report is gratefully appreciated.

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