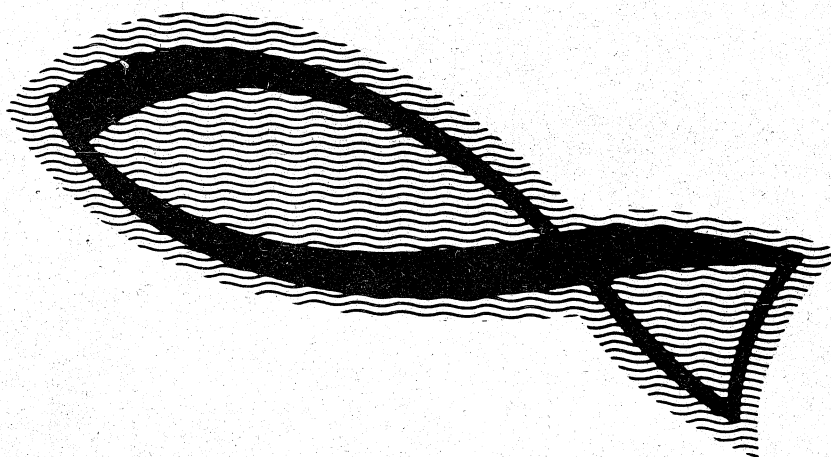




**Fishery Leaflet
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**an roinn
talmhaíochta
agus iascaigh**

**The Clogherhead herring
fishery 1971-73.**



by

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DUBLIN.1.**

The Clogherhead Herring Fishery 1971 - 1973

by

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Landings of herrings have occasionally been made at Clogherhead during the last twenty years. The amounts however have varied considerably, the variations being caused both by changes in the availability of herrings and by the effort of the local fishing fleet. Throughout the last few years the scarcity of herrings throughout Europe has resulted in a very good demand and considerable attention is now being paid to the herring stocks in the northern part of the Irish Sea. Table 1 shows the annual catches in tons since 1951 in the ICES statistical area V11a (Irish Sea). These figures have been altered to include landings made in the Isle of Man and to exclude landings made at Dunmore East in the year 1960-1966. Also shown in Table 1 are the landings made along the eastern Irish coast and the landings made at Clogherhead. As can be seen, after considerable fluctuations in the nineteen sixties, the total catch has risen dramatically since 1969. This increase is particularly evident in the catches made from the Isle of Man fishery. In 1969 also the Irish catch increased considerably because of the establishment of a fish meal factory at Mornington. Incidentally almost all the herrings taken from area V11a are taken from that portion which is north of a line drawn from Dublin to Liverpool. For areas and places mentioned in text, see Fig 1.

The Fisheries. In the northern part of the Irish Sea the most important herring fishery is that which is carried out around the Isle of Man. Other fisheries are carried out in localized areas particularly off the Irish coast. The Isle of Man fishery is based on a stock which spawns in Autumn on the eastern side of the Island. Prior to spawning the shoals are fished on the western side of

the island during the July to September period. This fishery is at present exploited at a very intense level and restrictions designed to effect a decrease in the fishing effort were enforced in 1973. Fishing for herrings was prohibited from 1 October to 17 November in an effort to conserve the spawning stock. The fishery conducted off the coast of Co Louth and Co Down is also exploited on a stock which spawns in October. During 1973, boats, using paired midwater trawls, from Northern Ireland, the Republic and to a lesser extent Scotland took part in this fishery. Most landings by southern Irish boats were made at Clogherhead, although occasional landings were made at Skerries and Howth. Small boats using drift nets ("skiffs") operating from Kilkeel also take part in the fishery when the shoals are close inshore. Fishing is carried out in two main areas, each area producing a different type of fish. Mixed herrings, i.e. clean hard herrings, spent herrings, and immature herrings are taken from an area known variously as the "Ballynahinch Ground" or the "Greenore Man's Track" which lies south east of Kilkeel in about 25 fms. (Gruffydd). Herrings are reported to remain in this area for most of the year but are fished mainly before and after the actual spawning fish appear on the inshore grounds. Spawning herrings appear off the Co Down coast in September and are fished as they migrate southwards past Leestown, Kilkeel and Carlingford Lough. These herrings migrated as far south as Dundalk Bay in 1973 where they spawned but spawning usually takes place slightly to the north. This stock of herrings which is also known as the Mourne Stock, scatters over a large area after spawning and has been located as far north as the South Rock off Belfast Lough.

Further south young herrings are taken from an area extending from off Clogher Head to Rockabill Light. These herrings are mainly taken in the autumn and landed at Mornington for reduction to fishmeal. The annual landings of herrings at Mornington since 1969 are shown

in table 2.

A small drift net fishery which in recent years has produced increased catches is also carried out in the southern part of the Irish sea, off the coast of Wicklow and Wexford. These herrings probably belong to a small stock which spawns in winter off the south east coast although some autumn spawning herrings have been identified among the catches.

Scientific investigations. Since 1971, samples have been examined from herrings landed in the autumn fishery at Clogherhead. Samples have also been periodically examined since 1969 from young herrings landed at Mornington for reduction to fishmeal. The main purpose of these investigations was to examine the stock situation in this area and to determine whether any of the existing fisheries were interconnected in any way. Herrings were examined in the usual way for length, sex, maturity, racial characters, and age. Numbers per kilogramme and fat content were also examined for the adult fisheries.

Age: The percentage age distribution, which is based on a raised age distribution is shown below for Clogherhead for the August to October period.

Years	1971	1972	1973
2	66.7	32.0	36.3
3	10.3	51.1	35.1
4	13.7	2.3	20.9
5	4.1	7.2	1.1
6	1.5	2.4	2.0
7	2.1	1.2	2.5
8	0.6	2.6	0.4
9	0.9	0.2	1.6
10	-	0.4	-
+10	0.1	0.6	0.1

In each year over 85% of all fish were either 2, 3 or 4 years of age. The fact that the fishery is so dependent on young fish of a particular year class and also the relative recent origin of this particular fishery would indicate that the total stock is small and could quickly be depleted. The recent increase in abundance can be largely attributed to the strong 1969 year class which entered the fishery in 1971 as two year old herring. This strong year class was also reflected in the high catches of 1 year old herring at Mornington in 1970.

Average lengths and number per kilogramme. A comparison made below shows the mean lengths of the Clogherhead fish, fish from the winter spawning stock at Dunmore East and autumn spawning stocks at Killybegs, the Isle of Man and Castletownbere.

Years	Autumn Spawners						Winter spawners
	Clogherhead			Isle of Man September	Castletownbere September	Killybegs Sept./Oct.	Dunmore East November-February
	1971	1972	1973	1972	1973	1973	1973/74
2	24.2	24.3	23.4	23.4	25.4	25.0	24.4
3	26.2	26.7	26.6	25.7	27.2	26.8	27.3
4	27.4	28.1	28.0	27.1	29.0	28.5	28.7
5	28.6	28.7	28.5	28.1	29.9	29.3	29.1

The average lengths of the Clogherhead area are smaller than those from the other areas but they are considerably higher than those from the adjacent Isle of Man stock. Numbers per kilogramme are shown in Table 3. Considerable variations occur because of the mixture of herrings and because of the areas fished. Generally, however, the number per kilogramme is considerably higher than in other Irish fisheries.

Fat content. Fat content analyses, estimated by determining the

moisture content of fillets, are also shown in Table 3. The fat content is very high in August and September (15% - 20%) but decreases rapidly during October (10% - 16%) as the herrings become mazy. Spent herrings in early November had a fat content of 11%. Generally speaking these herrings seem to have a relatively high fat content considering the fact that they are a spawning population.

Racial investigations. The two main characters used in racial studies were maturity stages and vertebral counts. An autumn spawning race, normally in September to October, would be either in maturity stage V or VI and would have a low vertebral count (approximately 56.30 - 56.50). The average vertebral counts per maturity stage for all Clogherhead herrings for the past three years are shown below.

Mean Vertebral counts per maturity stage

Maturity Stages	1971	1972	1973	Total
I	56.72 (71)	56.85 (60)	56.56 (55)	56.72 (186)
II	56.71 (14)	-	56.25 (4)	56.61 (18)
III	-	-	56.44 (9)	56.44 (9)
IV	57.00 (9)	56.00 (1)	56.56 (25)	56.66 (35)
V	56.71 (84)	56.81 (47)	56.70 (89)	56.73 (220)
VI	56.67(272)	56.63(360)	56.61(132)	56.64 (764)
VII	56.43(51)	56.73 (26)	56.63 (35)	56.66 (112)

The overall vertebral count and the presence of so many stages would suggest a mixture of both autumn and winter spawning races. However typical winter spawning counts of over 56.80 are only found in strength on two occasions i.e. immature (stage I) and full fish (stage V), both in 1972. Indeed on one occasion a number of stage VI fish were taken in 1971 which had a very high vertebral count of 56.95. In view of

this it is possible that immature fish with high vertebral counts need not necessarily belong to a winter spawning population. There are no significant differences between the counts of the different stages and it must be assumed that the fishery is based on a predominantly autumn spawning population. This population on which the adult fishery is based is located in two separate areas - Dundalk Bay area and the Channel area (Ballinahinch, Greenore Man's Track). Spawning takes place in the former area while immature and prespawners are located in the latter area for a major portion of the year. After spawning the spent fish appear to distribute themselves over a large area.

Recruitment. From an examination of the age distribution and the maturity stages it is evident that recruitment takes place when herrings are either 2 or 3 years of age. Examination of vertebral counts of the young fish landed at Mornington reveal similarities between the counts of these fish and the adult Clogherhead fish. They thus appear to be recruits to this fishery. Monthly examination of young fish at Mornington would suggest the following cycle. Young fish of between 8-11 cm. first appear in the catches off the River Boyne area during July; these fish remain in this area for a period of approximately 1 year and when they leave they are approximately 17 to 20 cm. in length. They are next located in the Channel area where they either remain for a further year or else the faster growing ones become mature and recruit in the same year to the spawning population in Dundalk Bay. The slower growing fish would remain in the Channel area until the following year when they recruit as 3 year old fish. After spawning the larvae remain inshore during the winter and the following summer appear as young herrings in the Mornington landings.

The existence of winter spawning herring in the northern part of the Irish Sea was noticed by earlier workers (Burd, 1959 and Symonds, 1964).

Since there is no winter spawning fishery known to exist in the northern part of the Irish Sea, it has been suggested that these young fish could possibly be recruits to the Dunmore East winter spawning fishery. However, in view of the high vertebral counts of the herrings spawning in the Dundalk Bay - Carlingford Lough area it seems more likely that they are potential recruits to this fishery.

Conclusions

The herring fishery, exploited off the coast of Co. Down and Co Louth is based on an autumn spawning stock. This stock is a small localised one which remains throughout its life cycle in the north western section of the Irish Sea. The present fishery appears to be linked with the appearance of a strong year class in 1969 which first appeared in the fishery as 2 year olds in 1971. Because of the dependence on the strength of one particular year class the fishery could be rapidly overfished. The recruits (juveniles) to this fishery are fished for approximately one year before they migrate out to deeper water.

References

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- Gruffydd, Ll, D. (1964) "Manx and Northern Irish Herrings in 1964". Rep. Mar biol. sta. Port Erin, 77.
- Symonds D.J. (1964) "Studies on Manx Herring" Jour.du.Cons. Vol. XXIX. No.2.

Table 1. Annual landings of herrings in metric tons

Year	(a) Clogherhead	(b) East Coast	(c) Irish Sea	Year	Clogherhead	East Coast	Irish Sea
1951	114	410	5030	1963	94	227	6773
1952	75	423	4630	1964	11	85	3830
1953	19	496	5187	1965	7	52	7335
1954	85	341	6464	1966	-	18	4340
1955	123	426	7947	1967	-	118	13114
1956	93	297	8623	1968	1	68	9899
1957	56	375	9134	1969	18	3778	14888
1958	149	441	11808	1970	37	5080	24706
1959	166	513	12751	1971	316	3776	26149
1960	595	889	9079	1972	178	2274	25682+
1961	40	387	6505	1973	1601	3012	22083+
1962	5	153	10452				

(a) From official statistics of the Department of Agriculture and Fisheries

(b) Landings made by Irish vessels along the east coast extending from Carlingford to Carnsore Point.

(c) Based on figures from Bulletin Statistique ICES

+ Estimated

Table 2.

Landings of herrings at Mornington. (tons)

	Total landings (all fish)	Total Herring landings (official)	Total Herring landings (based on samples)
1969	5918	3620	3166
1970	9747	4407	3977
1971	10249	3255	830
1972	6666	1758	2146
1973	6609	745	1639

Clogherhead Herrings

Table 3. Fat Content and numbers per kilogramme.

Date	F.C.%	Condition	N/kg
28/9/71	15.0	mazy	6.9
6/10	10.5	mazy	5.8
15/10	-	mazy	6.9
26/10	15.0	full	7.9
4/11	16.0	full	8.1
4/11	12.0	spent	8.1
22/9/72	19.0	full	7.4
27/9	17.0	mazy	5.4
10/10	14.0	mazy	5.1
17/10	14.0	mazy	4.8
26/10	11.5	mazy	5.0
1/11	-	mixed	8.1
29/8/73	20.0	mixed	6.7
10/10	13.5	mazy	5.0
17/10	14.0	mazy	6.1
17/10	14.0	spent	6.1

