



**SEA AND INLAND
FISHERIES
REPORT FOR
1965**

AN ROINN TALMHAIOCHTA AGUS IASCAIGH
(Department of Agriculture and Fisheries)
FO-ROINN IASCAIGH.
(Fisheries Division)

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REPORT

OF THE
MINISTER FOR AGRICULTURE AND FISHERIES
ON THE
SEA AND INLAND FISHERIES
FOR THE YEAR
1965

PART I.
SEA FISHERIES

The total value of landings of sea-fish in 1965 was £1,700,373 as compared with £1,504,556 in 1964. All sectors shared in this increase, the demersal catch improving from £876,310 to £959,362, pelagic landings from £208,132 to £309,749 and shellfish from £420,114 to £431,262. Fishing under these three heads is accounted for in more detail in subsequent sections of this report.

The following table gives particulars of the quantity and value of sea-fish landings (excluding shellfish) since 1956.

TABLE 1.

Year	cwt.	£
1965	562,677	1,269,111
1964	487,871	1,084,442
1963	399,280	1,059,827
1962	441,149	1,169,201
1961	516,207	1,079,556
1960	688,421	1,271,980
1959	592,319	1,205,971
1958	547,377	1,025,505
1957	532,475	907,119
1956	377,367	787,160

Appendix No. 1 contains details of the varieties of sea-fish landed in 1965. The average price per cwt. for each variety from 1958 onwards is shown in Appendix No. 2.

As in previous years, imports of white fish, mainly plaice, were permitted during the year when supplies from home landings fell short of requirements. Some imports of herrings were also allowed in similar circumstances.

In order of value of fish landed, the principal ports in 1965 were Killybegs, Howth, Castletownbere, Dunmore East, Galway, Dingle and

Kilmore Quay. This order differed from that of the previous year in that in the case of Dunmore East and Dingle fourth and sixth positions were reversed.

DEMERSAL FISHERY.—The quantity of demersal fish landed in 1965 was 282,192 cwt. or 15,037 cwt. more than in 1964. As in previous years, whiting was taken in by far the greatest quantity, accounting for over 38% of the demersal catch and showing an increase of some 15,000 cwt. on the previous year's figure. Haddock, cod, ray, plaice and pollack followed whiting in order of landed weight but there were small decreases in the catch of haddock, ray and plaice as compared with 1964.

The value of the demersal catch increased to £959,362 or 9.5% over the 1964 figure. Demand for available supplies was generally good and, with the exception of brill and pollack, all varieties showed an increase in the level of first-hand prices. Whiting contributed most to fishermen's earnings followed by plaice, cod, haddock, ray and soles.

The following table shows the quantity, total value and average value per cwt. of demersal fish in the past ten years.

TABLE 2.

Year	Quantity	Value	Average Value per cwt.	
			s.	d.
	cwt.	£		
1965	282,192	959,362	68	0
1964	267,155	876,310	65	7
1963	210,318	829,367	78	10
1962	230,110	866,547	75	4
1961	212,703	820,911	77	2
1960	233,785	818,828	70	1
1959	258,178	800,698	62	0
1958	258,978	717,306	55	5
1957	259,722	693,330	53	5
1956	225,488	660,674	58	7

PELAGIC FISHERY.—Herrings:—The total quantity of herrings landed at Irish ports during 1965 amounted to 210,555 cwt. valued at £251,521 as compared with 160,929 cwt. valued at £155,440 in 1964. Supplies were in good demand with the result that the unit price increased to 23/11d. per cwt. compared with 19/4d. per cwt. in 1964. The results from the Achill herring fishery were again disappointing, the landings being slightly under 3,000 cwt.

The 1964/65 herring season at Dunmore East concluded on 10 February, 1965, landings of approximately 40,000 cwt. having been made since 1 January, 1965, by twenty-four Irish boats which took part in the fishery. This catch represented a decrease of some 7,000 cwt. on that for the corresponding period of 1964 but the landings in the later months of 1965, i.e. the opening months of the 1965/66 season, showed a substantial improvement on those of the previous year with the result that for the entire year 1965 the total landings of herrings at Dunmore East at 74,354 cwt. showed an increase of almost 20% on

those of the previous year. Forty-five Irish boats participated in the 1965/66 season and, as in the previous season, trawling was the only method of fishing used.

The 1964/65 herring season off the Donegal coast concluded in mid-February, 1965, with total landings of over 36,000 cwt. for January and February as compared with some 10,000 cwt. for the corresponding period of 1964. From March to October some 27,000 cwt. of herrings were landed at Killybegs and were utilised mainly for fishmeal purposes. In the first week of November, however, the really heavy landings of the 1965/66 winter herring fishery commenced off Donegal and during November and December landings, mainly at Killybegs, totalled over 63,000 cwt. The total landings of herrings off Donegal during 1965 amounted to approximately 127,000 cwt. as compared with 90,000 cwt. in the previous year.

Exports of fresh and frozen herrings to the amount of 69,000 cwt., valued at £139,000, were achieved in 1965, mainly to Great Britain, the Netherlands and Germany and in addition over 17,000 cwt. of salted and marinated herrings valued at £73,000 were consigned to the U.S.A., Great Britain, the Netherlands and other export markets.

The following table shows the quantity, total value and unit value of herrings landed in the past ten years.

TABLE 3.

Year	Quantity	Value	Average Value per cwt.	
			s.	d.
	cwt.	£		
1965	210,555	251,521	23	11
1964	160,929	155,440	19	4
1963	165,696	193,068	23	4
1962	187,534	260,463	27	9
1961	250,078	209,710	16	9
1960	417,414	394,945	18	11
1959	308,064	364,130	23	8
1958	252,759	268,579	21	3
1957	233,365	173,027	14	10
1956	137,849	101,608	14	9

Sprats:—Fishing for sprats was carried out during 1965 at Clogherhead, Skerries, Dingle and Howth with total landings of almost 30,000 cwt. valued at over £12,000. The catch was utilised for fishmeal production and for feeding material for trout and mink farms.

Mackerel:—The expansion achieved during 1964 in the mackerel fishery was more than well maintained in 1965 when landings of 40,000 cwt. valued at £46,000 were achieved. The quantity represented an increase of over 50% on that of 1964 but the unitary price fell from 29/7d. to 22/10d. per cwt. as a large proportion of the catch was used for fishmeal production. The principal landing centres were Killybegs, Castletownbere, Dingle, Kinsale and Galway.

Statistics of mackerel landings over the past ten years are given in the following table:—

TABLE 4.

Year	Quantity	Value	Average Value per cwt.
	cwt.	£	s. d.
1965	40,213	45,853	22 10
1964	26,308	38,891	29 7
1963	14,980	33,753	45 1
1962	16,475	39,297	47 8
1961	24,007	38,238	31 10
1960	37,125	58,144	31 4
1959	25,645	40,978	31 11
1958	35,490	39,570	22 4
1957	22,913	36,209	31 7
1956	13,850	24,815	35 10

SHELLFISH.—The value of the shellfish catch during 1965 at £431,262 exceeded the record figure of the previous year by over £11,000. Lobsters were again the largest single item in the catch although their value of £150,415 was slightly down on that of 1964. A substantial expansion took place in the crawfish catch, the value of which rose from £69,229 to £108,147 and oysters also showed an upward trend. Other shellfish, such as periwinkles, mussels, and crabs, more or less maintained the level of the 1964 catch but scallops and Dublin Bay prawns suffered a fairly substantial set-back.

Table 5 gives the value of shellfish landings in the past ten years.

TABLE 5.

Year	Value
	£
1965	431,262
1964	420,114
1963	353,863
1962	329,794
1961	277,686
1960	339,625
1959	402,716
1958	291,255
1957	239,968
1956	233,634

EXPORTS.—The total value of exports of fish and fishery products, including both sea fish products and freshwater fish products (see Part II of this Report), at £1,971,883, constituted a record for the third successive year. Exports of sea fish products advanced from £862,162 in 1964 to £1,032,981 in 1965—an increase shared by all sectors, demersal, pelagic and shellfish. Details of the exports are shown in Appendix No. 4.

PERSONNEL AND VESSELS.—The total number of men engaged full-time in sea fishing in 1965 was 1,593 compared with 1,650 in 1964. Due mainly to the withdrawal from fishing of some small

unengined boats a small reduction from 3,841 in 1964 to 3,760 in 1965 was also recorded in the number of part-time fishermen.

The total number of larger motor fishing vessels of 25 gross tons and over, which take the vast bulk of the wet fish catch, was 172 as compared with 176 in 1964. The number of boats in this category sold out of the industry, sunk or resumed and laid-up more than offset the numbers added to the fleet during the year which were mainly large vessels of over 50 gross tons. The number of vessels in the latter category increased to 26 as compared with 23 in 1964, 22 in 1963 and 15 in 1962.

TRAINING OF FISHERMEN.—To be eligible for admission under the scheme for training fishermen as skippers, applicants must be at least twenty years of age and have not less than four years' sea-going experience, three of which must have been on board fishing boats. Allowances are payable to fishermen while in training. The course lasts for a maximum period of twenty-eight weeks—sixteen of which are devoted to the theoretical course at Galway Vocational School; the remaining twelve are devoted to the practical course at sea on selected fishing boats. Applicants may be granted exemption from the practical course depending on their fishing experience. In 1965, nine fishermen were selected for training and all were successful in obtaining a Certificate of Competency under the Merchant Shipping Acts. A total of sixty fishermen have now obtained certificates on completion of these courses.

Under the scheme for training boys as fishermen, applicants must be at least sixteen years of age. Previous sea fishing experience is not required. Boys are assigned for training to selected fishing boats and allowances are payable to them. In addition to practical training at sea, trainees also attend a shore course at the Naval Base, Haulbowline, in which they are given instruction in nautical subjects by Naval Service personnel. Tuition in general educational subjects is provided at Cobh Vocational School with the co-operation of the Co. Cork Vocational Education Committee during the period when the boys are resident at Haulbowline.

Fifty-four boys were in training at the beginning of the year and a further thirty-eight others commenced training under the scheme during the year. Of this total of ninety-two, twenty-three completed training and became full crew-members in 1965 and twenty-nine discontinued training. The remaining forty were still in training at the end of the year.

AN BORD IASCAIGH MHARA.—The Board received a grant of £214,000 from the Fisheries Vote in aid of administration and general development in 1964/65. Repayable advances totalling £178,000 were also made to the Board from the Central Fund mainly for the provision of boats and gear.

The Board continued to operate primarily as a development authority and the Market Development and Advisory Services Divisions extended their activities in the fields of promotion of increased sales of fish and the improvement of productivity of the fishing fleet respectively with satisfactory results.

Production in the Board's boatyards at Baltimore, Dingle and Killybegs was undertaken on the usual lines while the boatyard at Meevagh was sold to a private individual who has continued to build and repair fishing vessels in addition to other craft. The usual facilities for the acquisition of boats, equipment and gear under the Board's Marine Credit Plan were provided and were availed of to a satisfactory extent.

The fish processing factories at Galway and Killybegs were again operated as development units for the processing section of the industry. Experimental work on the development of new sea-food products was continued in addition to processing on a contractual basis on behalf of private interests but production was still hampered by lack of adequate supplies of raw material. The premises at Schull were not utilised during the year and are available for sale or leasing.

With the aid of a State grant ice was again available to fishermen at a reasonable price. It is regrettable to have to record that fishermen do not yet seem to appreciate the value of icing their catch as soon as possible after it is taken but every effort is being made by officers of Fisheries Division and of An Bord Iascaigh Mhara to stress the value of icing fish as soon as possible after it is caught.

SEA FISHERIES PROTECTION.—In the course of their patrols of the exclusive fishery limits in 1965, the Naval Service of the Department of Defence arrested four foreign vessels which had been observed fishing inside the limits. The skippers were prosecuted and convictions secured in three of the cases when fines were imposed and fish and gear forfeited. The assistance of the Garda Síochána was, as usual, available in these cases and in the enforcement of fishing laws generally.

MARINE WORKS.—Work proceeded satisfactorily on the development of major fishery harbours at Killybegs, Castletownbere and Dunmore East. A substantial harbour improvement scheme was completed at Greencastle, County Donegal, and other marine works were completed at Russell's Ferry, County Donegal, at East Pier, Wicklow Harbour and at Helvick, County Waterford. Works in progress at the end of the year included improvement of landing facilities at Gola Island, Gortnasate and Stackamore, County Donegal, at Mullaghmore, County Sligo, at Belderrig and Porturlin, County Mayo, at Renard Point, Cahirciveen and Maoil a Goilín, County Kerry and at Bank (Whiddy Island), County Cork. A revised estimate of cost was prepared by the Office of Public Works in respect of the proposed improvement scheme for Kilmore Quay Harbour, County Wexford, but consideration of the scheme was deferred in view of the financial position.

EXPLORATORY VESSEL.—*Cú Feasa.*—During the year a total of 32 weeks was spent in carrying out various research programmes with whiting, plaice, nephrops, sprat and sand-eel. A total of 10 weeks was spent in searching for herring shoals—two weeks in Clew Bay and eight weeks in the Dunmore East herring fishery. The Clew Bay work yielded negative results. The results from Dunmore East were positive and information on markings of shoals was passed to fishermen in the area. The balance of the year—ten weeks—was taken up with overhauls, delays due to gales and one week commercial fishing.

The completion of the second exploratory vessel was held up due to delay in delivery of some special items of equipment. The vessel will, however, go into commission in 1966.

SCIENTIFIC INVESTIGATIONS.—During 1965 two issues of the Sea Fisheries Bulletin giving the background to scientific investigations and details of progress in 1963 and 1964 were published. A further issue in relation to 1965 was published in August, 1966. The latter issue of the Bulletin gives in greater detail than is possible in this Report the progress of the investigations conducted in 1965.

Investigations into the herring stocks at Dunmore East and Killybegs were continued throughout their respective seasons on the same lines as in previous years. At Dunmore East the overall age distribution showed a fairly good recruitment of three-year old fish. In accordance with the usual practice reports on the Dunmore East and Donegal herring fisheries were distributed to the trade during the year and details of the fat content in herrings from selected areas were circulated from time to time.

The Department's research vessel *Cú Feasa* was used during the year to make quarterly stock surveys of whiting in the Irish Sea at the stations used since 1962. Port sampling of whiting from the Irish Sea, Castletownbere and Killybegs was carried out during the year. A tin-tow net survey was carried out in April to ascertain the distribution of whiting eggs and larvae. Experiments to determine conversion factors for different gears used in previous years for whiting stock surveys were also carried out in October.

Plaice were tagged during three cruises of the *Cú Feasa* in the Irish Sea. Over 3,000 plaice were released off Dundrum Bay, Courtown Bay and Bennett Bank. Over 15% of the tagged fish had been recaptured by the end of the period under review. Examination of the catches of plaice by vessels based in the Irish Sea was made in May and October/November, at the beginning and end of the "growing" season.

Sprats and sand eels taken during experimental fishing for industrial purposes were examined by the Department's staff during the year. Of the four species of sand eels identified one, *Ammodytes immaculatus*, was scarce. A study was also made of the catch/effort statistics of the experimental industrial fisheries for these two species.

During the year a start was made to investigate the by-catch in certain fisheries and the constitution of "waste" fish used in rainbow trout and minck farms. Investigations were also carried out into the stocks of fish in Dublin Bay and Waterford Harbour with a view to deciding whether certain bye-laws made in respect of these areas should or should not be revised.

Specimens of fish were identified as usual on behalf of the Irish Specimen Fish Committee, of which the Department's Inspector and Scientific Adviser was a founder member. During the year a number of fish, rare or scarce to Irish waters, were recorded. They included a six-gilled shark (*Hexanchus griseus*); electric ray (*Torpedo nobilitiana*); white skate (*Raja marginata*); painted Ray (*Raja undulata*); sting ray (*Trygon pastinaca*); eagle ray (*Ayliobatis aquila*); grenadier fish

(*Malacocephalus laevis*); moon-fish (*Lampris tuna*); boar-fish (*Capros aper*); ray's bream (*Brana raii*); bogue (*Box boops*); greater weever (*Trachinus draco*); black-fish (*Centrolophus nigra*), and the scorpena (*Scorpaena dactyloptera*). A report on these fish by the Department's Inspector and Scientific Adviser was accepted for publication in the *Irish Naturalists Journal* in accordance with the usual arrangement.

A paper describing the work done on Irish lobsters from 1958 to 1965 was completed at the close of the period under review (Appendix No. 27). The work undertaken in 1965 aimed at determining the annual growth rate and age over a wide size range by tagging and releasing the lobsters on portion of the east coast of Ireland where catches could be conveniently kept under observation. A study was also made of some catch/effort statistics relating to lobsters collected throughout the year in relation to fisheries, using different gears and boats of various sizes in different parts of the country.

For the third year in succession the stocks of Dublin Bay prawns off the south coast were studied, partly with the aid of the *Cú Feasa*.

A field station was established at Fenit, Co. Kerry for the purpose of investigating the stocks of oysters in Tralee Bay. Experiments designed to ascertain the extent of the spatfall in different sectors of the oyster beds were conducted and it was possible to determine the type of "fouling" which occurs. Temperatures, salinities, and the turbidity of the sea water were noted. Stocks of oysters on the public beds at Clarinbridge, Co. Galway, were also investigated during the year.

The condition of mussels from Cromane, Co. Kerry, and Mornington on the Boyne, was kept under observation during the year and the Department's staff co-operated with An Bord Iascaigh Mhara by furnishing advice in connection with mussel transplantation at Cromane. During the year two research studentships under the Department's scheme of awards for research studentships in fisheries science were awarded to graduates pursuing higher university degrees. The studentship holders were assigned to projects relating to the study of the crawfish (*Palinurus vulgaris* L.) and the edible mussel (*Mytilus edulis*).

INTERNATIONAL AND OTHER CONFERENCES.

(1) INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA.—The Inspector and Scientific Adviser attended the annual meeting of the Council held in Rome from 4 to 13 October, 1965. Prior to the main meeting he also attended the joint ICES/ICNAF/FAO symposium on sampling and measuring fish. The Inspector and Scientific Adviser was re-elected as First Vice-President. From this country's point of view the most important matter discussed was the Greenlandic salmon fishery.

(2) NORTH-EAST ATLANTIC FISHERIES COMMISSION.—This Commission, established under the International Fisheries Convention of London of 1959, held its third meeting in Moscow from 11 to 14 May, 1965. A meeting of a Regional Committee in which this country is particularly interested, was held on 9 May. The Assistant Secretary of the Department having responsibility for fisheries and the Inspector

and Scientific Adviser attended the meetings at which certain regulations relating to the Irish Sea were discussed and approved. The Inspector and Scientific Adviser also attended a meeting of the Sub-Committee of this body held in London in March, 1965 for the purpose of drawing up draft proposals for international control under the auspices of the Commission.

(3) F.A.O. TECHNICAL COMMITTEE ON FISHERIES.—This Committee held its biennial meeting in Rome in November, 1965 prior to the main FAO conference at the end of that month. Ireland was represented by the Inspector and Scientific Adviser.

(4) CHALLENGER SOCIETY.—This Society which holds Joint Meetings with representatives of Marine Laboratories held a meeting on 14 and 15 July, 1965 at the Fisheries Experiment Station, Conway, North Wales, at which the main emphasis was on shellfish. The Inspector on the sea fisheries side and one of the Assistant Inspectors attended and took part in the discussions on a number of papers read.

(5) INSTITUTE OF BIOLOGY AND THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.—A joint meeting of these two bodies on the "Design and Use of Biological Laboratories," held in London on 25 and 26 November, 1965 was attended by the Inspector and Scientific Adviser and the Inspector and Engineer. They also took part in a visit to a number of laboratories in the London area including that of the British Medical Research Council.

(6) CONFERENCE ON POLICING OF SEA FISHERIES.—At the request of the European Fisheries Conference which met in London in 1963/64 the British Government undertook to invite the Governments of all countries participating in the North-East Atlantic fisheries to send representatives to a technical conference to prepare for the consideration of governments a draft Convention embodying a modern code for the conduct of fishing operations and of related activities in the North-East Atlantic. In pursuance of that undertaking a preliminary conference met in London in April, 1965, at which this country was represented by the Inspector and Engineer.

(7) THIRD INTERNATIONAL FISHING BOAT CONGRESS.—This Congress which was devoted to small fishing boats was held under the auspices of the F.A.O. at Gothenberg, Sweden, from 23 to 29 October, 1965. The Fisheries Inspector and Engineer, as well as officials of An Bord Iascaigh Mhara and one private boat builder, attended from this country and participated in the proceedings.

(8) ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT.—The Department continued to participate in the work of the Fisheries Committee of this organisation and was represented at meetings held in Paris in May and October, 1965. The Committee completed a study of the various price systems operating for the fishing industry in each member State and approved for circulation a detailed report prepared in the matter.

ENGINEERING AND TECHNOLOGY.—Close co-operation was continued with the biological staff in the investigation of the following fish stocks: whiting and plaice in the Irish Sea, nephrops off the south coast, sprat and sand cel in the Irish Sea. Charts were prepared

indicating nephrops areas off the south coast. The usual search pattern to locate herring shoals in the Dunmore East area was carried out and the fishing vessels were kept advised of the results.

A baseline, one nautical mile in length, was set out in the vicinity of Killybegs to enable the performance of vessels over a definite distance to be measured and logs on fishing vessels to be calibrated.

The Inspector and Engineer and the Inspector and Scientific Adviser collaborated with the Institute for Industrial Research and Standards in the preparation of a Standard Specification for certain fishery products.

LEGISLATION.—Particulars of statutory instruments relating to sea fisheries made during the year are included in Appendix No. 22.

PART II.

INLAND FISHERIES

In 1965 the total catch of salmon by all methods amounted to 2,869,251 lb. valued at £712,495 compared with 3,012,664 lb. valued at £789,318 in 1964. Thus for the fourth year in succession the catch of salmon throughout the country has been very high, due, as explained in earlier reports, in the main to exceedingly good runs of grilse i.e. salmon which have spent less than two years feeding in the sea. The catch of sea trout at 113,630 lb. valued at £18,342 showed a marked increase on that of 1964 which was 105,689 lb. valued at £17,251. Full details of the catch of salmon and sea trout taken in the years 1963 to 1965 inclusive are given in Appendix No. 11. The catches in the former Moville Fishery District, now part of the Foyle Fisheries Commission area, are not included in Appendix No. 11 but are published in that part of this report relating to the Commission.

The runs of spring fish which have spent two or more years feeding in the sea, were again better than average for the past ten years or so and there was again a welcome number of large spring fish (three years feeding in the sea) which in most recent years have been relatively scarce. Small summer fish (just over two full years feeding in the sea) constituting the majority of the May and early June running fish, were also somewhat more abundant than was the case in most recent years. For the fourth year in succession the runs of grilse were exceedingly good but in common with recent experience tended to run late, the peak of the runs of grilse in most rivers being in late July.

Conditions for angling in most rivers were good for the major part of the year because of the relatively high water. This may at times have had an adverse affect on netting operations in some rivers but despite that the net returns were good in most places. The spawning season was generally reported to be good. There is evidence, therefore, that the runs of fish in most rivers were up to the standard of the three previous years.

In the report for 1964 comment was made on the mortality in young salmon from the time they leave the fresh water until they return as adult fish. It is known that the mortality is normally very high. Only a slight shift in the mortality rate will obviously greatly affect the number of returning adult salmon. There is every reason to believe that in recent years the mortality rate of young salmon from Irish rivers has been abated and this, in the main, has been responsible for the improved runs.

Appendix No. 12 gives details of the catch of salmon in each fishery district for the years 1963 to 1965 inclusive. In the year 1965 the catch of salmon was distributed as follows:—

Draft nets	..	..	..	..	43.6%
Drift nets	..	..	..	..	27.7%
Rod and Line	..	..	..	..	14.5%
Stake nets and other commercial methods	..	..	..	..	14.2%

For the second year in succession there was an increase in the proportion of salmon taken by drift nets—from 25.3% in 1964 to 27.7% in 1965. There was also a slight rise in the proportion of rod caught fish from 12.9% in 1964 to 14.5% in 1965 and this again may well have been associated with favourable angling conditions over most of the country. The average weight of fish taken on rod and line was 7.6 lb., somewhat higher than in the previous year but below the figure for 1963.

A sharp rise in the number of rod licences again took place in 1965 when a total of 12,805 licences of all kinds was issued compared with 11,628 for 1964, 9,745 for 1963 and 9,009 for 1962. The average catch per rod throughout the country was 4.3 fish weighing 32.5 lb. valued at £9 13s. 0d., a slight reduction on that of the previous year when the relevant figures were 4.5 fish weighing 33.5 lb. valued at £10 9s. 4d. The Drogheda Fishery District continues to provide the highest average weight at 11.6 lb. In this district relatively few grilse are taken on rod and line and the catches are made up mainly of the heavier groups of salmon which have spent two and three years feeding in the sea. Salmon on rod and line in the western districts of Galway, Connemara, Ballinakill, Bangor and Ballina had as usual a low average weight because they consisted to a high degree of grilse.

The sea trout catch amounting to 113,630 lb. was distributed amongst the various engines as follows:—

Rod and line	73.7%
Draft nets	22.0%
Drift nets	4.1%
Stake nets and other commercial methods ..	0.2%

The catch of sea trout on rod and line at 83,746 lb. was the highest recorded for many years. The average catch of sea trout per licence for many districts is of very little value in assessing the success of fishing for the species since most licence holders are actually fishing for salmon, rather than sea trout. In certain areas, however, when sea trout fishing either predominates or is very important a calculation of this kind is a useful indication of the success or otherwise of the fishery. In the Connemara District, for example, the average catch per licence was 18.4 fish weighing 19.2 lb., which were almost the same as those for 1964 at 18.6 fish weighing 19.4 lb.

In the middle of the last century an open sea drift net fishery for salmon, using small boats, was established in the north-west of Ireland. The catch is landed at a number of landing places in Counties Mayo, Sligo and Donegal. Originally the fishery was pursued from row boats with auxiliary sails but in recent years most of the boats engaged have been open or half decked motor vessels. In 1965 the catch, mainly grilse, taken in this open sea drift net fishery amounted to 106,065 fish weighing 6,079 cwts. This was a considerable increase on the catch of previous years and may be attributed both to suitable weather con-

ditions and to improved boats. The average weight was, however, down to 6.42 lb. compared with 7.0 lb. for 1964 in keeping with the reduced average weight of grilse in 1965.

Reports from the Boards of Conservators and others indicated a fairly good run of smolts to the sea in 1965. Disease which broke out in spring fish in the Kerry Fishery District at the end of 1964 became rather extensive during 1965 and affected fresh as well as spawning fish in the district. Another serious outbreak was reported from the River Feale during the summer and similar outbreaks were reported in spawning fish in the Rivers Blackwater and Lee. Minor outbreaks of no great significance were reported from the River Suir. This disease was the subject of intensive investigations during the year by officers of the Veterinary Research Laboratory and of Fisheries Division.

An officer of the Department paid a number of visits to British salmon markets and the Department acknowledges the help given by the officials of the Fishmonger's Company, London and of the market inspectors, particularly in Manchester, and of salmon merchants in the various centres.

In 1965 the Corporation of Dublin Wholesale Fish Market handled 101,728 salmon weighing 730,643 lb. compared with 111,860 fish weighing 782,226 lb. and 104,475 fish weighing 776,381 lb. for 1964 and 1963 respectively.

BOARDS OF CONSERVATORS.—Details of receipts and expenditure of Boards of Conservators in the fishery year ended 30 September, 1965, are given in Appendix No. 18.

EMPLOYMENT IN THE INDUSTRY.—Exclusive of persons employed on the marketing and transport of fish, a total of some 5,885 persons found either whole-time or part-time employment in inland fisheries during the year. The figure includes 3,687 persons estimated as engaged in netting for salmon under common law right, 607 employed by Boards of Conservators on protection of fisheries over the open and close seasons, 750 engaged in netting in the Foyle Area or employed in that area as gillies or on protection work, 103 engaged in development work on behalf of the Inland Fisheries Trust and the remainder employed by proprietors of commercial salmon fisheries, by fishery owners or by angling associations.

INSTRUMENTS OF CAPTURE.—The total number of fishing licences of all kinds issued during the year was 14,647, representing an increase of 1,049 on the figure for 1964. The totals in recent years were:—

1964	13,598
1963	11,343
1962	10,479
1961	9,980
1960	10,059
1959	9,165

The numbers of the various classes of licences issued in each fishery district during the year and the rates of licence duty are given in Appendices Nos. 19 and 20 respectively.

OFFENCES AGAINST THE FISHERY LAWS.—Prosecutions during 1965 numbered 263 as compared with 266 in 1964. The Garda Síochána continued to co-operate with Boards of Conservators in the protection of inland fisheries during the year.

SALMON EXPORTS.—In line with a reduction in the volume of the salmon catch, exports of salmon in fresh, chilled, frozen and smoked forms fell from 22,926 cwt. valued at £933,172 in 1964 to 19,764 cwt. valued at £759,400 in 1965. Details for the two years are as follows:—

	1965		1964	
	cwt.	£	cwt.	£
Fresh, chilled and frozen salmon	19,420	723,779	22,642	901,652
Smoked salmon	344	35,621	284	31,520

Of the fresh, chilled and frozen salmon exported 15,489 cwt. went to Britain, 2,823 cwt. to France and 735 cwt. to the Six Counties; the balance was exported in varying smaller quantities to a large number of countries, principally Switzerland, the Netherlands, the Federal Republic of Germany and the U. S. A. The smoked salmon was exported mainly to Britain (183 cwt.) and Switzerland (70 cwt.). The average export price for the fresh, chilled or frozen exports was £37 5s. 5d. per cwt. as compared with £39 16s. 5d. per cwt. in 1964. These figures include landings of salmon in County Donegal from waters in the area administered by the Foyle Fisheries Commission.

The number of salmon exporters licensed under the Agricultural and Fishery Products (Regulation of Export) Act, 1947 (Export of Salmon) Order, 1954 (S.I. No. 275 of 1954) was 89.

DEVELOPMENT OF EEL FISHING.—Thirty-eight temporary eel fishing authorisations were issued during 1965. Proposals for the erection of a number of new eel fishing engines and modification of existing installations were examined and designs of eel traps to suit particular sites were issued to a number of applicants.

Experiments designed to encourage development of eel fishing and improved methods of fishing were continued.

In 1965 exports of eels amounted to 8,433 cwt. valued at £120,944 as against 6,512 cwt. valued at £91,776 in 1964 and 3,125 cwt. valued at £45,313 in 1963.

FISH CULTURE.—Production of rainbow trout continued at the three large scale commercial fish farms situated near Woodenbridge (Co. Wicklow), Waterville (Co. Kerry), and Dingle (Co. Kerry); also at the demonstration units near Aherlow (County Tipperary), Athenry (Co. Galway) and Mullingar (Co. Westmeath) and at the two small scale private units near Thomastown (Co. Kilkenny) and Holycross (Co. Tipperary).

Information was supplied by the Fisheries Division to persons who made inquiries regarding production of rainbow trout.

The possibility of improving the economics of small scale fish farming by means of bulk supply of fish food and improved marketing arrangements for finished products was considered.

Due to an oversupply of rainbow trout from continental sources on the export market and a drop in home production towards the end of the year exports during 1965 show a reduced figure of 2,841 cwt. valued at £58,558 as against 3,092 cwt. valued at £60,921 in 1964. An appreciable amount of rainbow trout was held in cold storage for more favourable market conditions.

ARTIFICIAL PROPAGATION.—Details of salmon, sea-trout and brown trout ova produced at the various hatcheries are given in Appendix No. 23.

The output of salmon ova in the 1965 spawning season amounted to 6,180,000 as compared with 5,106,000 produced in the previous season. 1,957,000 salmon ova were distributed from the Department's hatchery at Glenties and the State-assisted hatchery at Lismore, Co. Waterford. 68,000 sea-trout ova from Glenties were supplied to Inland Fisheries Trust.

Some 1,110,000 brown trout fry, summerlings and yearlings and 140,000 rainbow trout fingerlings were reared in the Trust's fish farms and rearing stations in 1965. Of this output over 900,000 brown trout were released in waters under development, 80,000 fry and fingerlings were sold to angling clubs and 42,000 fingerlings were purchased by the Electricity Supply Board for release in waters being developed by the Board. 128,000 rainbow trout fingerlings were stocked in several small lakes, 12,000 fingerlings were sold to angling associations and 500,000 rainbow trout ova to commercial fish farmers.

The produce of Cong Hatchery was distributed as underyearlings as follows:—

80,000 to re-stock River Moy

17,000 for River Corrib system in rivers adjacent to Cong Hatchery

1,000 for tributaries of Lough Mask.

REGULATION OF ERNE SALMON FISHERY.—Following on the improvement in salmon stocks in the Erne fishery as a result of the restrictions imposed on fishing for salmon by commercial methods during the years 1960/64 it was decided to relax the restrictions in 1965. Salmon fishing by commercial methods was permitted in 1965 in the period 14 June to 19 August but the weekly close time was extended to three days. The special local licence duty for draft nets was fixed at £25 and 13 licences were taken out.

The run of fish in the river during 1965 at 13,756 was the highest recorded during the past ten years. Of these, 1,949 were captured by nets and 1,705 in the traps operated by the Electricity Supply Board.

REHABILITATION OF SALMON STOCKS IN THE RIVER LEE.—The programme of work for rehabilitation of salmon stocks in the River Lee, based on experiments carried out in previous years, was continued in co-operation with the Electricity Supply Board, the Inland Fisheries Trust and the Cork Board of Fisheries Conservators.

The work consisted mainly of measures designed to assist the passage of smolts downstream and adult fish upstream past the hydro-electric dams at Inniscarra and Carrigadrohid. During 1965 approximately 17,000 smolts passed downstream. 779 adult fish moved upstream of

Inniscarra Dam of their own accord and of these 399 passed upstream of Carrigadrohid Dam. In addition 537 fish were captured below the dams, transported overland and released in the headwaters of the river above the uppermost dam.

93 salmon were taken from the river for hatchery purposes by the Electricity Supply Board who stocked selected portions of the systems with 375,000 fingerlings and 300,000 fry.

Work continued on the removal of pike from the reservoirs. A total of 2,455 pike were captured by nets and traps. Three of the feeding pike taken in the reservoirs had salmon smolts in their stomachs.

Salmon nursery areas of the river system were surveyed by a team of University undergraduates employed on a studentship basis and the results are being processed.

Salmon fishing was restricted by bye-law to the periods 1 March to 31 July for nets and 13 March to 31 August for rods.

A total of 647 salmon were captured on the River Lee in 1965—335 by nets and 312 by rods.

SCIENTIFIC INVESTIGATIONS.—During 1965 the first issue of *Irish Fisheries Investigations*, Series A (Freshwater) was published containing four papers by members of the Department's staff relating to the Irish salmon industry, salmon of the River Shannon, the effects of arterial drainage works on the salmon stocks of a tributary of the River Moy and recaptures of Irish tagged salmon off Greenland. This series is intended to provide a medium for publication of scientific papers on various aspects of inland fisheries and freshwater fishes.

In June, 1965, a new station for tagging clean salmon in the open seas was established at the northern tip of Killary Harbour and a total of 198 salmon and grilse was tagged and released. Twenty-two recoveries were made, a very low rate compared with most investigations into clean salmon to date. A report on the results of tagging of clean salmon taken by drift nets off the north coast of County Mayo was completed at the close of the period under review.

A total of 2,572 salmon kelts were tagged at various sites on the Rivers Corrib, Erne, Owenea and Shannon during 1965 and 29 clean salmon were returned mostly from the 1965 taggings. A few sea trout were returned from earlier years. Tags originally attached to kelts were returned from the Norwegian coast between Namsos and Trondheim and from two places on the west coast of Britain at Blackpool and Newgate Beach in Pembrokeshire. Two other fish tagged as kelts in the Rivers Shannon and Corrib were recaptured off the West coast of Greenland during the year.

Material consisting of scales and relevant measurements was collected from the Rivers Moy and Shannon and a further paper on the salmon of the River Moy was under preparation at the close of the year. The daily catches on the River Erne were examined in relation to tidal phenomena.

Biological investigations were continued during the year in connection with the rehabilitation of the stocks of salmon in the River Lee. Investigations were also carried out during the year into mortality in rainbow trout at a number of fish farms. Investigations into the effect of reduced water levels in Lough Conn were also continued.

Advantage was taken of large catches of Cole's char (*Salvelinus colii*) from Lough Conn to investigate their biology during the autumn of 1965. A single specimen of Cole's char was also identified from Sessiagh Lough in County Donegal.

With the aid of a student employed on a bursary granted by the Department, the stocks of eels in the estuary of the Cork Blackwater were investigated during the year. Information of considerable value in assessing the commercial prospects for eel fishing in such circumstances was thereby obtained.

Further progress was made in estimating fish stocks by poisoning when a small lake in County Galway was investigated. The yield of 22 trout weighing 1.3 lb. and 76 eels weighing 3.0 lb. per acre was of the same order as that obtained previously for another small lake in the same county.

A synopsis on the pike was completed by the Inspector of Fisheries on behalf of EIFAC (European Inland Fisheries Advisory Commission of FAO). Work on the life history of the pike was continued during the year. The spawning of pike on Lough Sheelin was also investigated in conjunction with the Inland Fisheries Trust.

During the year officers of the Department continued to identify fish and read fish scales on behalf of the public. Fish were also identified and scales read on behalf of the Irish Specimen Fish Committee. Officers of the Department also continued to assist the Foyle Fisheries Commission in that body's research programme into the life history, etc. of salmon of the River Foyle.

Under the scheme of awards for research studentships in fisheries science a studentship was awarded to a science graduate to investigate the occurrence of the chironomidae in selected Irish waters. A second graduate who was awarded a studentship towards the end of 1964 continued research work on a project of study on the effects of the lowering of the level of Lough Conn, Co. Mayo, on the littoral and sub-littoral flora and fauna of the lake. The lake level will be affected by the River Moy Drainage Scheme.

Two Junior Research Fellowships were advertised for competition during the year. The work to be carried out under the fellowships will be a full time research project into water purity and the various conditions including pollution which affect the fishery productivity of rivers and streams. Final arrangements for the selection of candidates were in hand at the end of the year.

Fuller details of the investigations mentioned above will be published in *Inland Fisheries Bulletin*, No. 3.

ENGINEERING.—*Electrical Power Stations:*—The programme which was prepared in 1964 for expediting the safe passage downstream of smolts past Inniscarra Dam on the River Lee was implemented with success in the 1965 season.

In the River Liffey the system of freshets which had been arranged to induce fish movement was not proceeded with due to the continually high discharge during the year.

It has not yet proved possible to instal a fish counter at Cliff dam on the River Erne as had been proposed.

The cooling water arrangements for the thermal electric power stations under construction at Great Island on the River Barrow and Tarbert in the River Shannon continue to be a subject of investigation in so far as the fisheries in the two river systems are concerned.

Arterial Drainage:—Work continued on the major schemes on the Rivers Moy, Inny and Killimor and on the intermediate scheme in the Bunduff, Abbey and Swilly. The principal activities in the fishery interest comprised close liaison with the Office of Public Works in the execution of the schemes to obviate as far as possible damage to fisheries, rehabilitation of spawning beds unavoidably disturbed by the drainage operations, preservation and restoration of pools, and the elimination of obstructions to the passage of fish. Following investigations of the effects of the lowering of a lake complex on the Moy system appropriate advice was tendered to the Office of Public Works. Proposals for the drainage of seven additional rivers were examined in detail and recommendations were made to the Office of Public Works for suitable action to prevent damage to fisheries.

Experimental improvement work carried out by the Inland Fisheries Trust in one tributary stream which had been drained was found to result in an estimated doubling of the fish population therein. A substantial programme of rehabilitation of the spawning areas in the streams discharging into Lough Conn on the Moy catchment was drawn up and it was arranged that it would be implemented by the Inland Fisheries Trust on behalf of the Office of Public Works who will meet the cost. A large part of the work of rehabilitation has been completed.

Investigation of fish movement:—During the period 7 March to 10 October 39,276 smolts were captured in the smolt trap at the Galway sluice barrage. The maximum number of smolts taken in one day was 5,140 on 29 May. Other fish taken in the trap were 1,099 kelts, 152 sea trout, 54 brown trout, 68 eels, 13 lampreys, 5 perch and 6 pike. A new smolt trap was constructed at Glenties Hatchery, but it had not been completed in time for the 1965 smolt run. Fish were recorded as having passed through the electronic adult salmon counters as follows: Galway Sluice barrage 15,285, Ballina (River Bunree) 1,402, Islandbridge (River Liffey) 1,952. A comparison of the record of fish movements through the counter at Islandbridge with that through the fish pass at the Leixlip dam suggests that a delay of six weeks occurs in the passage upstream between the two counters, a distance of eight miles. Automatic water level recorders were installed on the Liffey at Islandbridge and on the Bunree at Ballina to enable correlation to be attempted between fish movement and variations in water levels. The counting tunnel at Islandbridge had to be relocated to overcome the effect of turbulence which impaired the efficiency of the counter. A new counting tunnel for Ennistymon was installed late in the season. The unit there now appears to be working satisfactorily.

Fish Culture installations:—The salmon hatchery at Cong, County Mayo, was opened officially by the Minister for Lands on 4 January, 1965.

Proposals for the rehabilitation and extension of the brown trout hatchery at Oughterard as a rearing station were investigated and an estimate of the cost of the work was prepared.

Rainbow trout farming:—Two proposals for setting up major fish farm units were investigated and the sponsors appropriately advised on their proposals. Four small scale projects and three proposals to enlarge the capacity of existing installations were investigated and advice was tendered as to the schemes in question. The mode of operation of one large scale unit, concerning which the Board of Conservators in whose area it lies, expressed misgivings was examined and proposals were made to eliminate practices objected to by the Board while at the same time providing for the continued operation of the unit.

River improvement schemes:—A number of proposals for the improvement of spawning areas in salmon rivers submitted by Boards of Conservators were investigated, and suitable schemes were prepared. In addition advice sought in six instances by private individuals and fishing clubs was provided.

Eel fishery development: A number of existing eel fishing installations were inspected to ensure compliance with the fishery law and in connection with the issue of temporary authorisations. Work continued on the utilization of electricity in the capture of eels. Enquirers were advised on the installation of suitable arrangements for the safe storage of eels for extended periods.

Fish passes:—Twenty-nine obstructions to fish movement in rivers were examined. Fish passes to the Department's design were constructed at Clondulane weir, Fermoy, on the River Blackwater by Fermoy Estates Ltd.; at Ballinasole on the River Suck, by the River Suck Drainage Board, and at Burrishkeen, County Galway, on the River Burrishkeen by the Office of Public Works. Designs and specifications were prepared for fish passes in the Owenglynn River, Clifden, Co. Galway; at Curry dam on the Curry River, Co. Sligo; Rathvilly on the River Slaney, Co. Wicklow; and Owenboliska Falls, Co. Galway. Proposals were also prepared for the easing of the passage for fish at eight minor obstructions.

Application of electricity to inland fisheries:—Work on this project continued at the State hatchery in Glenties, Co. Donegal, where tests were carried out on two prototype electric barriers, one for adult salmon and one for smolts.

General:—At the request of the Dundalk Board of Conservators the sanctuary area extending half a mile on either side of the defined mouth of the Dundalk river was set out. Three cases of failure to provide fish screens as required under the Fisheries Acts were investigated. Nine proposals were examined concerning discharge of effluents from industrial undertakings, mining concerns, sand washing plants, creameries and town sewage projects. Recommendations were made in the various cases as to the proper steps to be taken to avoid damage to fish life. Water abstraction proposals affecting seven rivers were similarly dealt with in so far as they were likely to affect fisheries. Engineering services and advice were supplied from time to time to the Salmon Research Trust and the Inland Fisheries Trust.

The Engineer attended various meetings in London of the Supervisory Group on Methods of Excluding Fish from Water Intakes.

He also participated in the "Scientific Methods and Management" course sponsored by the Irish Management Institute and in the course on "Administration and the Engineer" conducted under the auspices of the Institute of Public Administration.

A report was prepared by Messrs. C. McGrath and D. Murphy for the 1965 I.C.E.S. Meeting in Rome on "Engineering investigations into the effect of the harnessing of the River Lee, Cork, Ireland, for hydro-electric purposes, on the habitat and migration of salmonid stock in that river system". The Fisheries Engineer continued to act as a Council Member of the Inland Fisheries Trust.

Visitors:—A Study Tour of fishery installations in Ireland was carried out by Mr. R. N. Gordon, Senior Engineer, Department of Fisheries, Vancouver, Canada.

Messrs. J. Chalmers and K. Vickers of the Ministry of Agriculture, Drainage and Fisheries Division, Belfast, inspected a number of fish rearing installations.

The members of the Salmon Net Fishing Association of Scotland under their Chairman, Mr. G. M. J. Smart, inspected fishery installations in Ireland.

FOYLE FISHERIES COMMISSION.—The annual report of the Foyle Fisheries Commission for the year ended 30 September, 1965 contains full details of the Commission's activities during the year.

The prevalence of high water conditions throughout the season, which gave the running fish considerable opportunity to escape into freshwater during the weekly close time for nets, resulted in a decline in the salmon catch by commercial engines compared to the previous year. Rod catch returns however show a substantial increase.

	Salmon and Grilse		Sea Trout		Total	
	No.	lb.	No.	lb.	No.	lb.
Nets ..	93,687	650,267	*532	743	94,219	651,010
Rods ..	5,100	36,641	8,844	9,473	13,944	46,114
TOTAL ..	98,787	686,908	9,376	10,216	108,163	697,124

* Figure represents the Commission's catch only.

Market prices for salmon and grilse were below average due to poor weather conditions in England which tended to reduce the demand.

The following regulations were made by the Commission during the year:—

- (1) Foyle Area (Rivers Finn and Foyle) (Close Season for Angling) Regulations, 1965.
- (2) Foyle Area (Licensing of Fishing Engines) (Amendment) Regulations, 1965.
- (3) Foyle Area (Drift Netting) Regulations, 1965.

Investigations were continued by the Commission in relation to the movement and escapement of fish into freshwater during the weekly close time and the growth and movement of young salmon in two tributaries.

85,750 salmon ova were produced at the Commission's hatchery and a further 703,000 ova were purchased from other hatcheries. The resulting fry were stocked in various tributaries.

Of 154 prosecutions taken for breaches of the fishery laws, 134 resulted in convictions.

INLAND FISHERIES TRUST INCORPORATED.—The Trust continued its programme for development of brown trout, coarse fish and sea angling and detailed information regarding its activities may be obtained in its annual report for 1965.

In the course of development work on trout waters a record number of pike were removed. The fact that fewer big pike are being captured in these waters indicates that the Trust's programme of predator control is achieving successful results.

Access to coarse fishing was improved and plans considered in co-operation with Bord Failte Eireann for more intensive improvement works on waters which have shown that they can produce a high standard of fishing. Supplies of bream, carp and tench were distributed in selected waters.

The Trust helped many sea angling centres to organise and exploit their fishing and assisted in the formation of new clubs.

Recruitment of staff during the year enabled the Trust to intensify its programme of biological investigations which is a necessary prerequisite for development work.

Trust membership increased to 5,942 compared with 5,402 in 1964.

The Trust's report contains information regarding the remarkable growth in recent years of estimated revenue from tourist anglers which reached a total of over £3½ million in 1965.

Approximately 1,110,000 brown trout fry, summerlings and fingerlings and 140,000 rainbow trout fingerlings were reared by the Trust, and most of these were distributed in selected waters under development.

SALMON RESEARCH TRUST OF IRELAND, INCORPORATED.—Details of the Salmon Research Trust's activities will be found in the report of the Trust for the year 1965.

Site improvements include the completion of a rearing pond at Furnace, the construction of two concrete tanks, the building of larger settling tank in the rearing pond water supply at Treanlaur, the fitting of new gate valves in supply pipes to allow for more precise regulation of the water supply during abnormal flow conditions and the making of modifications to the screens of the smolt trap on the Cottage River. Additional automatic feeding machines were installed.

Progress was made in research work and further information was collected and examined from investigations into the rearing, survival and growth rates of salmon and sea-trout. Work continued on the tagging of smolts, kelts and eels and on investigations into the move-

ment of these and other species of fish. The Cottage River Experiment which included a study of the feeding habits of trout and eels and the length/weight relationship of eels was concluded the results being set out in detail in Appendix III of the Trust's report.

Work proceeded also on general feeding experiments.

The Trust continued investigations under the direction of a sub-committee (the Peat Silt Research Group) into the effects of peat silt on fish life and on fauna and flora in certain rivers.

MANAGEMENT OF FISHERIES.—One hundred and fifty-eight fisheries were managed by the Fisheries Division on behalf of the Land Commission and Forestry Division, Department of Lands. The amount received in rents during the year was £3,863 13s. 0d. compared with £3,136 6s. 10d. in 1964.

Forty-five fisheries were advertised for letting in 1965.

Steps were taken during the year to have improvement works carried out on certain fisheries to enhance their value for angling purposes.

INTERNATIONAL AND OTHER CONFERENCES.—

(1) **INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA.**—As mentioned earlier the Council held its annual meeting in Rome in October. This country was represented by the Department's Inspector and Scientific Adviser who was re-elected Chairman of the Salmon and Trout Committee. Officers of the Department contributed papers on the main theme of the meeting of the Salmon and Trout Committee, namely the effects etc. of hydro-electric development of salmon rivers. From the Irish point of view, the most important matter under discussion was the Greenlandic salmon fishery. It was decided to set up a Working Group on the subject with the International Commission for the North Atlantic Fisheries (ICNAF), the first meeting of the Group to take place in May, 1966 in Madrid, Spain in conjunction with the annual meeting of ICNAF.

(2) **SALMON RESEARCH GROUP.**—This body, sponsored by the British Development Commissioners was set up to provide a forum for discussion of research problems relating to salmon and it held two meetings during the year. The first meeting, held at Pitlochry, Perthshire in April was attended by the Department's Inspector and Scientific Adviser, the Engineer, one of the Assistant Engineers and a representative of the Salmon Research Trust of Ireland. This meeting was devoted to the discussion of American practice in relation to a number of aspects of fisheries development and afterwards the Group paid a visit to the Cuaich Louver Screen Installations where demonstrations were arranged. The second meeting held in London was called to hear a first hand account of the Scottish team's experiences in Greenland during the cooperative salmon tagging operations in September/October, 1965.

(3) **SECOND SYMPOSIUM OF THE OFFICE INTERNATIONAL DES EPIZOOTIES. PERMANENT COMMISSION ON DISEASES OF FISH.**—This symposium took place in Munich in the Federal Republic of Germany

from 20 to 24 September and was attended by the Director of the Veterinary Research Laboratory and an Assistant Inspector of Fisheries. The meeting passed resolutions concerned with the control of fish disease including the establishment of an international list of contagious fish diseases and the employment of certificates of origin as health certificates in the international exchange of eggs, living fish and fishery products.

(4) **PRO AQUA CONGRESS.**—This congress which was held in Basle, Switzerland from 1-4 March, 1965, was attended by the Department's Inspector and Engineer. The theme of the congress was water and air purity and pollution, emphasis being on water. Matters of particular interest dealt with included the disposal of imputrifiable industrial wastes, decontamination of liquid waste concentrates and qualitative and quantitative implications of hydro-electric power stations on ground and surface water. More than 500 participants representative of research organisations, professional practice, Government services and industry from seventeen countries, attended the congress.

(5) **EUROPEAN INLAND FISHERIES ADVISORY COMMISSION—WORKING GROUP ON ELECTRIC FISHING.**—A meeting of this working group was held in Biarritz, from 2-4 June, 1965. An officer of the Department, who is a member of the working group, accompanied by an adviser, who is also attached to the working group, attended the meeting. The principal business of the meeting was the examination, discussion and revision of a report based on written contributions submitted by the member countries on various aspects of electric fishing.

(6) **EUROPEAN FEDERATION FOR THE PROTECTION OF WATER.**—The Fisheries Inspector and Engineer attended a symposium held by this body at Heidelberg, Germany, from 11 to 14 October, 1965. The subject of the symposium was intensified agriculture and water protection.

LEGISLATION.—Particulars of Statutory Instruments relating to inland fisheries made during the year are included in Appendix No. 22.

CHARLES J. HAUGHEY,

Minister for Agriculture and Fisheries

29 September, 1966.

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APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed
in 1964 and 1965.

Kinds of Fish	Quantity		Value	
	1965	1964	1965	1964
	cwt.	cwt.	£	£
Soles	3,741	3,665	84,565	68,639
Brill	2,120	2,467	22,665	26,627
Turbot	2,042	2,207	21,164	22,170
Plaice	23,828	28,024	181,609	206,243
Dabs	4,443	4,185	12,056	10,533
Megrims	4,698	3,105	15,979	7,908
Other Flat Fish	2,491	3,060	9,139	7,159
Ray/Skate	23,879	26,140	98,678	95,622
Cod	32,306	28,552	131,917	110,405
Haddock	34,397	35,089	106,451	86,455
Hake	1,765	2,111	11,653	12,600
Whiting	108,164	92,932	211,308	172,374
Pollack	13,187	8,478	34,176	27,263
Other Round Fish	25,131	27,140	18,002	22,312
TOTAL DEMERSAL	282,192	267,155	959,362	876,310
Herrings	210,555	160,929	251,521	155,440
Pilchards	39	7	157	19
Mackerel	40,213	26,308	45,853	38,891
Sprats	29,678	33,472	12,218	13,782
TOTAL PELAGIC	280,485	220,716	309,749	208,132
TOTAL WET FISH	562,677	487,871	1,269,111	1,084,442
	Nos.	Nos.		
Lobsters	362,851	383,622	150,415	162,249
Crawfish	163,899	109,638	108,147	69,229
Crabs	118,593	114,173	2,207	2,552
Escallops	197,668	343,379	5,342	9,015
Oysters	1,465,179	1,228,213	31,084	26,558
	cwt.	cwt.		
Dublin Bay Prawns	15,769	20,058	62,287	79,900
Mussels	18,597	17,751	7,627	7,913
Periwinkles	33,356	33,445	58,052	55,851
Other Shellfish	2,408	2,749	6,101	6,847
TOTAL VALUE SHELLFISH	—	—	431,262	420,114
TOTAL VALUE ALL FISH	—	—	1,700,373	1,504,556

APPENDIX No. 2

Comparison of the Average Price per cwt. of various kinds of Sea Fish for the years 1958-1965

	1958	1959	1960	1961	1962	1963	1964	1965
Soles	£ s. d. 14 5 10	£ s. d. 14 14 5	£ s. d. 14 4 2	£ s. d. 15 6 5	£ s. d. 16 9 2	£ s. d. 17 15 4	£ s. d. 18 14 7	£ s. d. 22 11 1
Brill	8 0 0	9 9 7	9 6 9	10 2 3	10 4 4	11 0 11	10 15 10	10 13 10
Turbot	10 7 1	9 16 2	10 2 2	10 0 0	10 0 8	10 13 11	10 0 11	10 7 3
Plaice	8 3 6	8 8 8	8 2 8	8 5 1	8 18 11	7 14 10	7 7 2	7 12 5
Dabs	—	—	—	*2 15 3	2 13 3	2 13 11	2 10 4	2 14 3
Megrim	—	—	—	*3 8 3	3 6 6	2 17 4	2 10 11	3 8 0
Ray/Skate	2 15 3	3 15 5	3 6 4	3 7 5	3 11 10	3 13 7	3 13 2	4 1 7
Cod	4 14 0	5 9 11	5 7 6	6 1 6	6 12 1	5 13 3	3 17 4	4 1 8
Haddock	2 17 1	3 5 5	3 16 3	5 5 8	6 7 1	3 13 4	2 9 3	3 1 11
Hake	6 9 7	6 19 7	7 12 7	6 0 9	7 17 11	7 8 2	5 19 4	6 12 1
Whiting	1 5 3	1 9 4	1 14 8	1 19 11	1 19 4	2 1 1	1 17 1	1 19 1
Pollack	—	—	—	*2 15 1	3 3 2	3 10 5	3 4 4	2 11 10
Herrings	1 1 3	1 3 8	0 18 11	0 16 9	1 7 9	1 3 4	0 19 4	1 3 11
Pilchards	—	—	—	*0 7 8	0 8 7	3 12 10	2 14 3	4 0 6
Mackerel	1 2 4	1 11 11	1 11 4	1 11 10	2 7 8	2 5 1	1 9 7	1 2 10
Sprats	0 6 8	0 7 8	0 13 0	0 7 3	0 7 2	0 8 8	0 8 3	0 8 3

N.B.—“ Average price ” as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

* Comparable figures for years prior to 1961 are not available for these varieties.

APPENDIX No. 3

Value of Landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded £20,000 in 1965.

Port	Total Value	Demersal	Pelagic	Shellfish
	£	£	£	£
1. Killybegs ..	318,211	180,098	137,336	777
2. Howth	169,359	164,502	811	4,046
3. Castletownbere ..	126,062	96,635	9,638	19,789
4. Dunmore East ..	117,335	1,196	107,991	8,148
5. Galway	84,319	66,088	3,325	14,906
6. Dingle	81,937	54,450	6,461	21,026
7. Kilmore Quay ..	66,931	48,248	356	18,327
8. Skerries	52,016	22,567	2,931	26,518
9. Burtonport ..	50,408	38,659	8,358	3,391
10. Schull	49,036	40,322	2,924	5,790
11. Caherciveen ..	38,103	22,308	—	15,795
12. Dun Laoghaire ..	33,754	32,323	—	1,431
13. Clogherhead ..	31,913	18,860	8,878	4,175
14. Union Hall ..	29,379	23,026	2,713	3,640
15. Fenit	27,288	—	—	27,288
16. Carna	26,291	4	170	26,117
17. Greencastle ..	24,092	23,154	—	938
18. Clifden and Cloggan	21,365	1,196	100	20,069
19. Balbriggan ..	21,071	13,388	8	7,675

APPENDIX No. 4

IMPORTS AND EXPORTS OF FISH AND FISHERY PRODUCTS
IN 1965
(as compared with 1964)

	Quantity		Value	
	1965	1964	1965	1964
	cwt.	cwt.	£	£
I.—IMPORTS:				
Fish, fresh, chilled or frozen ..	21,604	12,845	100,867	78,325
Fish, cured—not in airtight containers ..	30,983	29,911	229,797	212,924
Fish and fish preparations in airtight containers ..	28,733	27,870	661,673	540,275
Other fish and fish preparations	9,741	9,708	233,689	186,418
TOTALS	91,061	80,334	1,226,026	1,017,942
II.—EXPORTS:				
Fish, fresh, chilled or frozen:				
Salmon	19,420	22,642	723,779	901,652
Herrings	68,760	55,832	138,654	110,410
Freshwater eels	8,433	6,512	120,944	91,776
Other fish	19,301	16,756	236,389	158,349
Fish dried, salted or smoked not in airtight containers ..	17,695	15,030	108,677	90,048
Shellfish, fresh, chilled, frozen, salted, dried	61,917	62,535	566,192	492,925
Other fish and fish preparations	2,534	4,632	77,248	102,871
TOTALS	198,060	183,939	1,971,883	1,948,031

APPENDIX No. 5

HERRING FISHING 1965

County	Ports at which more than 500 cwt. were landed	Total Quantity cwt.	Value £
Louth ..	—	148	172
Dublin ..	Howth	897	936
Wicklow ..	—	4	11
Wexford ..	—	4	10
Waterford ..	Dunmore East, Passage East	75,527	109,568
Cork	Castletownbere, Kilcrobane ..	2,947	4,181
Kerry	Dingle	1,133	1,265
Clare	—	—	—
Galway	—	210	504
Mayo	Achill	2,905	2,058
Sligo	—	—	—
Donegal	Killybegs, Burtonport ..	126,780	132,816
	TOTALS	210,555	251,521

APPENDIX No. 6

MACKEREL FISHING 1965

County	Ports at which more than 250 cwt. were landed	Total Quantity cwt.	Value £
Louth ..	—	—	—
Dublin ..	—	16	20
Wicklow ..	—	—	—
Wexford ..	—	181	376
Waterford ..	—	403	716
Cork	Castletownbere, Kinsale, Union Hall, Schull	9,005	15,674
Kerry	Dingle	2,984	5,027
Clare	Quilty	942	2,442
Galway	Galway, Costello Bay ..	2,471	5,079
Mayo	Portacloy, Porturlin and Belderrig	1,440	2,000
Sligo	—	40	90
Donegal	Killybegs	22,731	14,429
	TOTALS	40,213	45,853

APPENDIX No. 7

REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL
ENGAGED IN FISHING IN 1965

Coast	How Engaged	Men	Total Vessels	MOTOR VESSELS						Boats propelled by outboard engines, sails or oars	
				Gross Tons						18' Keel and upwards	Less than 18' Keel
				75—120	50—74	25—49	15—24	10—14	Under 10		
EAST (Omceath to Carnsore Point)	Solely	398	126	1	5	58	6	—	17	28	11
	Partially	205	58	—	—	—	1	1	7	40	9
	Laid-up	—	—	—	—	—	—	—	—	—	—
	TOTALS	603	184	1	5	58	7	1	24	68	20
SOUTH (Carnsore Point to Loop Head)	Solely	560	294	—	9	52	9	13	73	55	83
	Partially	872	165	—	—	—	1	3	23	69	69
	Laid-up	—	4	—	—	2	2	—	—	—	—
	TOTALS	1,432	463	—	9	54	12	16	96	124	152
WEST (Loop Head to Erris Head)	Solely	227	254	—	2	13	6	2	60	135	36
	Partially	1,407	351	—	—	—	—	1	29	157	164
	Laid-up	—	3	—	—	—	1	—	—	—	—
	TOTALS	1,634	608	—	2	13	7	3	91	292	200
NORTH (Erris Head to Moville)	Solely	408	268	2	7	23	7	3	95	124	7
	Partially	1,276	275	—	—	—	—	2	45	179	49
	Laid-up	—	4	—	—	2	1	—	1	—	—
	TOTALS	1,684	547	2	7	25	8	5	141	303	56
TOTALS (All Coasts)	Solely	1,593	942	3	23	146	28	18	245	342	137
	Partially	3,760	849	—	—	—	2	7	104	445	291
	Laid-up	—	11	—	—	4	4	—	3	—	—
	TOTALS	5,353	1,802	3	23	150	34	25	352	787	428

APPENDIX No. 8

TRAWLING AND SEINING, 1965

Port or Locality	Number of men engaged	Number of boats engaged	Tonnage of Motor Boats			Fishing Period
			Not exceeding 10 tons	Over 10 tons	Over 15 tons	
Clogherhead	25	7	—	—	7	All year.
Balbriggan	25	6	—	—	6	All year.
Skerries	40	8	—	—	8	All year.
Howth	100	19	—	—	19	All year.
Dun Laoghaire	5	1	—	—	1	All year.
Ardfow	130	26	—	—	26	All year.
Wexford	7	2	—	1	1	All year.
Kilmore Quay	48	10	—	—	10	All year.
Dunmore East	35	7	—	—	7	All year.
Helwick	15	3	—	—	3	All year.
Youghal	3	1	—	1	—	All year.
Ballycotton	24	10	8	—	1	All year.
Cobb	8	4	4	—	—	All year.
Kinsale	5	1	—	—	1	All year.
Union Hall and Raheen	35	7	—	2	5	All year.
Baltimore	5	1	—	—	1	All year.
Schull	10	2	—	—	2	All year.
Castletownbere	60	15	—	—	15	All year.
Ballinskelligs	6	1	—	—	1	All year.
Cahiriveen	15	3	—	—	3	All year.
Dingle	70	14	—	—	14	All year.
Portmagee	20	4	—	—	4	All year.
Liscannon	2	1	1	—	—	Summer and Autumn
Galway and Aran Islands	45	13	—	—	13	All year.
Cleggan and Inishboffin..	6	2	2	—	—	All year.
Murrisk	4	1	—	—	1	All year.
Achill	20	5	—	—	5	All year.
Enniscrone	6	4	4	—	—	All year.
Killybegs	120	20	—	—	20	All year.
Teelin	5	1	—	—	1	Spring.
Burtonport	36	6	—	—	6	All year.
Kincasslagh	5	1	—	—	1	All year.
Dunfanaghy	3	1	1	—	—	All year.
Buncrana	6	2	—	—	2	All year.
Glengad	24	10	8	2	—	Spring, Summer and Autumn.
Greencastle	52	13	5	—	8	All year.
TOTALS	1,026	232	34	6	192	

APPENDIX No. 9

STATEMENT OF ACCOUNT IN RESPECT OF REPAYABLE ADVANCES

I. Advances of £408,500 made to the Irish Sea Fisheries Association Ltd. during the period of twenty-one years to 23 April, 1952, for the provision of boats and gear:—

Advances and interest thereon up to 31 March, 1960 ..	£ 566,255
Repayments made to 31 March, 1960 ..	248,281
Amount written off in 1961-62 ..	186,000
Balance of advances to be repaid by a new annuity ..	131,974
	<u>566,255</u>
Instalments of new annuity to accrue up to 1972 ..	160,433
Repayments of new annuity:	
made to 31 March, 1964 ..	46,792
made during year ended 31 March, 1965 ..	13,369
not accrued at 31 March, 1965 ..	100,272
	<u>160,433</u>

II. Advances of £63,215 made to Irish Sea Fisheries Association Ltd., during the period of five years to 23 April, 1952, for purposes other than boats and gear:—

Total repayments to be made including interest ..	£ 85,973
Repayments	
made to 31 March, 1964 ..	54,370
made during year ended 31 March, 1965 ..	4,278
not accrued at 31 March, 1965 ..	27,325
	<u>85,973</u>

III. Advances of £1,916,563 during the period of thirteen years to 31 March, 1965, for the provision of boats and gear and for other purposes:—

Total repayments to be made, including interest ..	£ 3,274,733
Repayments:	
made to 31 March, 1964 ..	728,977
made during year ended 31 March, 1965 ..	126,572
not accrued at 31 March, 1965 ..	2,419,184
	<u>3,274,733</u>

APPENDIX No. 10

COASTAL EXTENT OF FISHERY DISTRICTS AND NAMES OF THE PRINCIPAL RIVERS IN EACH DISTRICT

District	Coastal Extent of District	Principal Rivers
No. 1 Dublin	Most easterly point on Red Island, Skerries, to Wicklow Head.	Liffey Vartry.
No. 2 Wexford	Wicklow Head to Kiln Bay, east of Bannow Bay, Co. Wexford.	Slaney Avoca.
No. 3 Waterford	Kiln Bay, east of Bannow Bay, to Helvick Head, Co. Waterford.	Suir Barrow Nore.
No. 4 Lismore	Helvick Head to Ballycotton Pier, Co. Cork.	Blackwater, Funshion, Bride, Awbeg.
No. 5 Cork	Ballycotton Pier to Crow Head, Co. Cork.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarriff, Adrigole.
No. 7 Kerry	Crow Head, Co. Cork, to Kerry Head, Co. Kerry.	Roughty, Sheen, Finnihy, Blackwater, Sneem, Launc, Flesk, Maine, Caragh, Currane, Cummeragh, Inny.
No. 8 Limerick	Kerry Head, Co. Kerry, to Hag's Head, Co. Clare.	Shannon, Deel, Fergus, Mulcair, Little and Upper Brosna, Inny, Maigue, Feale.
No. 9 ¹ Galway	Hag's Head to the sea point of the boundary between the townlands of Keeraunagark Sth. and Banraghbaun Sth., Co. Galway.	Corrib, Claregalway.
No. 9 ² Connemara	The sea point of the boundary between the townlands of Keeraunagark South and Banraghbaun South, Co. Galway, to Slyne Head, Co. Galway.	Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Sreebe, Furnace.
No. 10 ¹ Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Errif, Bundooragha, Dawros, Carrowniskey, Bundoowen (Louisburgh).
No. 10 ² Bangor	Pigeon Point to Benwee Head, Co. Mayo.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenanoy.
No. 11 Ballina	Benwee Head to Coonamore Point, Co. Sligo.	Moy, Cloonaghmore (Palmerston), Easkey.

District	Coastal Extent of District	Principal Rivers
No. 12 Sligo	Coonamore Point to Carrickgarve, Co. Sligo.	Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
No. 13 Ballyshannon	Carrickgarve to Rossan Point, Co. Donegal.	Erne, Bundrowes, Bunduff, Eske, Eaney Water, Oily, Glen.
No. 14 ¹ Letterkenny	Rossan Point to Malin Head, Co. Donegal.	Owenea, Gweebarra, Gweedore (Crolly), Clady, Lackagh, Lennon, Crana.
No. 17 ² Dundalk	Carlingford Lough to Clogherhead, Co. Louth.	Fane, Dee, Glyde.
No. 17 ¹ Drogheda	Clogherhead to the most easterly point on Red Island, Skerries, Co. Dublin.	Boyne, Blackwater, Decl.

Note—The area comprised in the former No. 14² of Moville District was, by the Foyle Fisheries Act, 1952, incorporated in the Foyle Area which is administered by the Foyle Fisheries Commission.

APPENDIX No. 11

Quantity and Value of all Salmon and Sea Trout taken in 1963, 1964 and 1965 by Instruments of Capture.

SALMON						
	1965	1964	1963	1965	1964	1963
Instruments	lb.	lb.	lb.	£	£	£
Total for all engines ..	2,869,251	3,012,664	2,836,640	712,495	789,318	703,217
Total for rod and line ..	416,289	390,079	341,539	123,587	121,700	101,101
Total for drift nets ..	794,961	761,568	687,159	167,963	177,639	143,771
Total for draft nets ..	1,250,171	1,496,028	1,395,945	307,509	379,019	348,028
Total for stake nets, weirs, etc.	407,830	364,989	411,997	113,436	110,960	110,317

SEA TROUT						
	1965	1964	1963	1965	1964	1963
Instruments	lb.	lb.	lb.	£	£	£
Total for all engines ..	113,630	105,689	91,681	18,342	17,251	15,231
Total for rod and line ..	83,746	71,918	64,835	12,936	11,209	9,946
Total for drift nets ..	4,656	1,203	838	889	213	167
Total for draft nets ..	24,965	29,707	21,908	4,474	5,177	4,226
Total for stake nets, weirs, etc.	263	2,861	4,100	43	652	892

This Appendix does not include returns from the former Moville District.

APPENDIX No. 12

Quantity and Value of Salmon taken in 1963, 1964 and 1965 by Fishery Districts

Fishery District	*	Quantity			Value		
		1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin	R	3,636	2,913	4,128	1,310	1,136	1,409
	N	13,217	6,510	7,161	3,086	1,834	1,922
Wexford	R	28,883	29,178	29,567	10,052	10,515	9,505
	N	30,242	40,024	43,894	11,792	14,608	15,785
Waterford	R	58,107	51,264	43,236	15,703	15,489	12,696
	N	292,898	304,598	371,890	66,859	86,697	84,416
Lismore	R	32,311	45,595	39,863	9,686	13,651	11,542
	N	226,094	238,741	259,826	61,059	67,884	64,611
Cork	R	30,873	26,321	28,883	9,956	9,145	9,818
	N	82,669	95,607	87,077	19,571	23,121	22,200
Kerry	R	47,453	46,139	46,437	13,775	13,548	13,309
	N	291,151	343,116	267,511	62,871	84,359	62,374
Limerick	R	58,902	61,803	47,817	18,797	20,963	13,968
	N	344,538	347,151	358,956	97,278	98,502	84,463
Galway	R	13,702	10,337	7,681	3,741	2,991	2,167
	N	70,580	50,660	52,661	20,716	17,083	15,150
Connemara	R	9,189	6,031	4,842	2,421	1,642	1,270
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	7,546	7,943	7,412	2,066	2,246	2,097
	N	43,623	34,116	28,225	7,137	6,654	5,469
Bangor	R	13,866	9,489	12,140	3,921	2,777	3,500
	N	90,678	89,322	80,172	16,983	18,773	15,818
Ballina	R	24,991	26,447	17,586	6,544	7,115	4,519
	N	357,197	450,877	374,039	80,625	104,103	84,372
Sligo	R	11,241	12,269	8,112	3,362	3,921	2,203
	N	62,216	70,406	61,969	11,362	17,118	14,323
Ballyshannon	R	9,064	10,445	5,797	2,766	3,187	1,731
	N	100,055	127,611	96,450	20,722	29,098	20,724
Letterkenny	R	44,276	24,581	17,782	11,424	6,319	4,711
	N	297,044	253,092	212,673	54,607	53,151	42,657
Dundalk	R	6,030	5,203	6,995	1,935	1,674	2,017
	N	42,966	67,865	70,250	12,167	17,886	17,316
Drogheda	R	16,219	14,121	13,261	6,128	5,381	4,639
	N	117,794	102,889	122,347	42,073	36,747	50,516
TOTALS		2,869,251	3,012,664	2,836,640	712,495	789,318	703,217

* R indicates capture by means of single rod and line.
N by means of nets, weirs, etc.

APPENDIX No. 13

Quantity and Value of Sea Trout taken in 1963, 1964 and 1965 by Fishery Districts

Fishery District	*	Quantity			Value		
		1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin	R	805	1,859	1,267	155	286	207
	N	6,051	4,577	3,716	1,287	946	846
Wexford	R	1,881	2,643	968	353	393	138
	N	9,255	8,396	3,345	1,673	1,425	509
Waterford	R	1,617	3,130	788	236	562	109
	N	291	354	428	43	48	39
Lismore	R	1,223	409	658	196	62	105
	N	1,080	1,552	1,687	148	232	251
Cork	R	9,188	8,532	7,398	1,445	1,335	1,069
	N	562	1,026	2,427	96	204	384
Kerry	R	11,009	12,176	12,098	1,678	1,924	1,839
	N	2,041	4,137	4,165	296	819	875
Limerick	R	3,973	5,156	5,784	595	787	864
	N	4,909	4,719	5,191	964	1,032	1,428
Galway	R	2,819	2,166	3,041	447	366	487
	N	35	36	239	17	5	39
Connemara	R	11,834	9,543	11,319	1,796	1,436	1,803
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	8,518	6,771	4,891	1,310	1,032	777
	N	301	1,016	910	43	133	124
Bangor	R	10,017	7,680	6,508	1,534	1,200	988
	N	1,059	2,920	843	144	416	119
Ballina	R	4,569	2,347	1,232	673	330	171
	N	86	64	74	13	10	13
Sligo	R	800	538	654	129	88	108
	N	138	133	240	23	24	48
Ballyshannon	R	2,311	2,229	1,572	349	330	251
	N	340	676	299	45	93	41
Letterkenny	R	8,320	3,762	3,713	1,217	559	537
	N	1,751	695	486	259	103	74
Dundalk	R	2,268	1,070	1,032	386	177	154
	N	1,485	2,655	2,196	269	414	375
Drogheda	R	2,594	1,907	1,912	437	342	339
	N	500	815	600	86	138	120
TOTALS		113,630	105,689	91,681	18,342	17,251	15,231

* R indicates capture by means of single rod and line.
N by means of nets, weirs, etc.

APPENDIX No. 14

Quantity and Value of Eels taken in 1963, 1964 and 1965 by Fishery Districts

Fishery District	Quantity			Value		
	1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin	Nil	380	Nil	Nil	38	Nil
Wexford	123,764	102,654	33,200	15,398	12,832	3,662
Waterford	7,460	6,560	7,576	1,220	768	702
Limerick	136,074	88,987	73,934	30,612	18,960	12,851
Galway	45,485	40,278	43,928	8,695	7,574	7,267
Bangor	Nil	140	Nil	Nil	25	Nil
Ballina	541	1,668	2,763	109	332	332
Sligo	8,400	6,656	8,065	1,557	1,191	1,557
Ballyshannon	37,684	42,001	12,000	5,221	4,827	1,749
Dundalk	12,470	7,689	28,511	1,790	896	4,193
Drogheda	15,970	25,492	21,723	1,978	3,041	2,484
TOTALS	387,848	322,505	231,700	66,580	50,484	34,797

Note—The catch figures set out above are based on returns which are not complete. This explains any apparent inconsistency between the figures and the official export figures in any particular year.

APPENDIX No. 15

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all Engines in 1963, 1964 and 1965 by Fishery Districts

Fishery District	Total Weight for District			Total Value for District		
	1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin	23,709	16,239	16,272	5,838	4,240	4,384
Wexford	194,025	182,895	110,974	39,268	39,773	29,599
Waterford	350,373	365,906	423,918	84,061	93,564	97,962
Lismore	260,708	286,297	302,034	71,089	81,829	76,509
Cork	123,292	131,486	125,785	31,068	33,805	33,471
Kerry	351,654	405,568	330,211	78,620	100,650	78,397
Limerick	548,396	507,816	491,682	148,246	140,244	113,574
Galway	132,621	103,477	107,550	33,616	28,019	25,110
Connemara	21,023	15,574	16,161	4,217	3,078	3,073
Ballinakill	59,988	49,846	41,438	10,556	10,065	8,467
Bangor	115,620	109,551	99,663	22,582	23,191	20,425
Ballina	387,384	481,403	395,694	87,964	111,890	89,407
Sligo	82,795	90,002	79,040	16,433	22,342	18,239
Ballyshannon	149,454	182,962	116,118	29,103	37,535	24,496
Letterkenny	351,391	282,130	234,654	67,507	60,132	47,979
Dundalk	65,219	84,482	108,984	16,547	21,047	24,055
Drogheda	153,077	145,224	159,843	50,702	45,649	58,098
TOTALS	3,370,729	3,440,858	3,160,021	797,417	857,053	753,245

APPENDIX No. 16

Number, Quantity and Value of Salmon taken by single Rod and Line
in 1963, 1964 and 1965 by Fishery Districts

Fishery District	No. of Fish			Quantity			Value		
	1965	1964	1963	1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin ..	470	351	469	3,636	2,913	4,128	1,310	1,136	1,409
Wexford ..	2,804	3,034	3,011	28,883	29,178	29,567	10,652	10,515	9,505
Waterford ..	8,040	6,827	5,047	58,107	51,264	43,236	15,703	15,489	12,696
Lismore ..	4,124	5,898	4,261	32,311	45,595	39,863	9,686	13,651	11,542
Cork ..	3,889	4,231	3,384	30,873	26,321	28,883	9,956	9,145	9,818
Kerry ..	6,739	6,661	6,109	47,453	46,139	46,437	13,775	13,548	13,309
Limerick ..	7,927	8,258	5,736	58,902	61,803	47,817	18,797	20,963	13,968
Galway ..	2,091	1,646	1,067	13,702	10,337	7,681	3,741	2,991	2,167
Connemara ..	1,393	976	698	9,189	6,031	4,842	2,421	1,642	1,270
Ballinakill ..	1,066	1,261	1,009	7,546	7,943	7,412	2,066	2,246	2,097
Bangor ..	1,987	1,064	1,333	13,866	9,489	12,140	3,921	2,777	3,500
Ballina ..	3,858	4,077	2,501	24,991	26,447	17,586	6,544	7,115	4,519
Sligo ..	1,401	1,585	1,007	11,241	12,269	8,112	3,362	3,921	2,203
Ballyshannon	1,206	1,481	714	9,064	10,445	5,797	2,766	3,187	1,731
Letterkenny	5,849	3,542	2,182	44,276	24,581	17,782	11,424	6,319	4,711
Dundalk ..	623	518	730	6,030	5,203	6,995	1,935	1,674	2,017
Drogheda ..	1,398	1,100	1,136	16,219	14,121	13,261	6,128	5,381	4,639
TOTALS ..	54,865	52,510	40,394	416,289	390,079	341,539	123,587	121,700	101,101

APPENDIX No. 17

Number, Quantity and Value of Sea Trout taken by single Rod and Line
in 1963, 1964 and 1965 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1965	1964	1963	1965 lb.	1964 lb.	1963 lb.	1965 £	1964 £	1963 £
Dublin ..	831	2,348	1,662	805	1,859	1,267	155	286	207
Wexford ..	2,261	3,418	1,240	1,881	2,643	968	353	393	138
Waterford ..	1,615	2,726	835	1,617	3,130	788	236	562	109
Lismore ..	1,090	384	603	1,223	409	658	196	62	105
Cork ..	12,136	10,997	8,575	9,188	8,532	7,398	1,445	1,335	1,069
Kerry ..	9,531	10,439	10,826	11,009	12,176	12,098	1,678	1,924	1,839
Limerick ..	4,616	5,868	6,453	3,973	5,156	5,784	595	787	864
Galway ..	2,607	2,174	3,053	2,819	2,166	3,041	447	366	487
Connemara	11,355	9,143	10,779	11,834	9,543	11,319	1,796	1,436	1,803
Ballinakill ..	7,644	6,138	4,581	8,518	6,771	4,891	1,310	1,032	777
Bangor ..	10,445	8,438	6,898	10,017	7,680	6,508	1,534	1,200	988
Ballina ..	4,020	2,443	1,170	4,569	2,347	1,232	673	330	171
Sligo ..	609	459	678	800	538	654	129	88	108
Ballyshannon	2,240	2,720	1,537	2,311	2,229	1,572	349	330	251
Letterkenny	7,556	3,927	4,168	8,320	3,762	3,713	1,217	559	537
Dundalk ..	2,159	1,072	968	2,268	1,070	1,032	386	177	154
Drogheda ..	2,307	1,961	1,649	2,594	1,907	1,912	437	342	339
TOTALS ..	83,022	74,655	65,675	83,746	71,918	64,835	12,936	11,209	9,946

APPENDIX No. 18

PARTICULARS OF RECEIPTS AND EXPENDITURE OF BOARDS OF CONSERVATORS
FOR THE YEAR ENDED 30 SEPTEMBER, 1965

Fishery District	RECEIPTS						EXPENDITURE					Closing Balance
	Opening Balance	Licence Duty	Fishery Rate	Grant from Department	Miscellaneous Receipts	Total Receipts	Salaries	Water Keepers	Law Costs	Traveling and Miscellaneous	Total Expenditure	
	£	£	£	£	£	£	£	£	£	£	£	£
Dublin	+ 413	2,442	337	600	916	4,295	1,455	475	31	2,281	4,242	+ 466
Wexford	+ 385	1,811	1,845	750	115	4,521	827	2,022	—	1,398	4,247	+ 659
Waterford	+ 411	3,839	2,727	8,500	775	15,841	1,668	6,695	10	4,730	13,103	+ 3,149
Lismore	+ 1,267	1,942	6,607	3,000	211	11,760	1,145	8,168	250	2,344	11,907	+ 1,120
Cork ..	— 273	2,622	1,054	6,350	205	10,231	1,081	5,971	137	2,240	9,429	+ 529
Kerry	+ 1,932	3,692	3,660	1,850	167	9,369	1,274	5,785	168	2,300	9,527	+ 1,774
Limerick	+ 1,472	4,699	4,509	8,600	707	18,515	1,485	10,423	748	7,068	19,724	+ 263
Galway	+ 2,036	1,293	1,749	1,000	903	4,945	2,576	1,139	2	1,703	5,420	+ 1,561
Connemara	+ 463	842	2,242	—	21	3,105	350	2,571	—	592	3,513	+ 55
Ballinakill	+ 498	864	1,241	1,000	72	3,177	469	1,702	50	608	2,829	+ 846
Bangor	+ 475	1,278	1,454	1,150	235	4,117	1,774	1,378	212	865	4,229	+ 363
Ballina	— 272	1,344	5,240	300	324	7,208	846	4,494	124	1,405	6,869	+ 67
Sligo ..	+ 370	758	1,292	400	141	2,591	384	1,290	6	787	2,467	+ 494
Ballyshannon ..	+ 854	1,578	630	1,000	4,769	7,977	630	3,709	2,175	1,772	8,286	+ 545
Letterkenny	+ 1,065	3,640	2,134	500	453	6,727	1,178	4,362	136	1,254	6,930	+ 862
Drogheda	+ 1,853	1,635	2,559	2,400	429	7,023	869	3,708	56	1,868	6,501	+ 2,375
Dundalk	+ 578	1,150	488	1,900	49	3,587	534	1,834	421	1,321	4,110	+ 55
TOTALS	13,527	35,429	39,768	39,300	10,492	124,989	18,545	65,726	4,526	34,536	123,333	15,183

APPENDIX No. 19

PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1965

Fishery District	SALMON ROD								Special Local Licences (Tidal waters)	Draft net	Drift net	Pole net	Bag net	Stake net	Head Weir	Box or Crib	Loop net	Snap net	Gap, eye basket, or Coghill net for eels	Long line for Eels	Oyster Dredge	Eel Trap	Fyke net for Eels
	Annual (all districts)	Annual (district of issue)	Late Season (all districts)	Twenty-one day (all districts)	Seven day (all districts)	Late season (district of issue)	Foyle Area extension (one district)	Foyle Area extension (all districts)															
Dublin ..	473	49	43	—	99	32	4	—	14	21	—	—	—	—	—	—	—	—	—	—	—	—	—
Wexford ..	151	157	—	1	198	81	—	—	91	—	1	—	—	—	—	—	—	—	—	—	—	1	97
Waterford ..	158	706	2	2	95	49	—	—	15	113	—	1	—	—	—	—	—	—	—	—	—	—	—
Lismore ..	105	259	13	1	345	—	—	—	11	64	—	—	—	—	—	—	—	—	—	—	—	—	—
Cork ..	221	301	15	—	301	108	—	—	43	20	—	—	2	—	—	—	—	—	—	—	—	—	—
Kerry ..	193	230	9	1	915	221	—	—	65	1	—	1	—	—	—	—	—	—	—	—	—	—	—
Limerick ..	215	844	5	—	194	65	—	—	118	80	—	—	4	—	—	—	—	—	—	—	49	—	—
Galway ..	71	81	36	—	218	66	1	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Connemara ..	15	13	1	—	445	143	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Baltinakill ..	25	32	14	—	378	95	2	—	17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bangor ..	62	37	18	—	455	109	2	—	39	6	—	1	—	—	—	—	—	—	—	—	—	—	—
Ballina ..	48	143	28	—	235	64	—	—	11	72	—	—	—	—	—	—	—	—	—	—	—	—	—
Sligo ..	70	114	3	—	45	8	—	—	8	6	—	—	—	—	—	—	—	—	—	—	—	—	—
Ballyshannon ..	47	66	14	—	267	32	41	21	13	59	17	—	—	—	—	—	—	—	—	—	—	—	—
Letterkenny ..	101	437	88	1	599	160	103	154	14	43	88	—	—	—	—	—	—	—	—	—	—	—	—
Drogheda ..	177	124	5	—	32	9	—	—	107	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dundalk ..	62	121	6	—	37	62	47	51	34	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS ..	2,194	3,714	302	6	4,858	1,304	201	226	27	683	488	1	4	8	1	32	40	151	122	61	106	21	97

APPENDIX No. 20

Licence Duties Payable on Fishing Engines.

	£	s.	d.
On each Salmon Rod—Annual (valid all districts)	4	0	0
Do. Salmon Rod—Late Season (valid all districts) ..	3	0	0
Do. Salmon Rod—Twenty-one day (valid all districts)	3	0	0
Do. Salmon Rod—Seven day (valid all districts)	1	0	0
Do. Salmon Rod—Annual (valid district of issue only)	3	0	0
Do. Salmon Rod—Late Season (valid district of issue only)	2	0	0
Do. Salmon Rod—Foyle area extension (valid all districts)	2	10	0
Do. Salmon Rod—Foyle area extension (valid district of issue only)	1	10	0
On each—Draft net	4	0	0
Do. —Drift net ..	3	0	0
Do. —Snap net ..	2	10	0
Do. —Bag net ..	10	0	0
Do. —Stake net	30	0	0
Do. —Head Weir	6	0	0
Do. —Box or Crib	10	0	0
Do. —Gap, Eye, Basket or Coghill Net for Eels	2	0	0
Do. —Long line for Eels	2	0	0
Do. —Oyster fishing engine	2	0	0

LICENCE DUTIES PAYABLE ON FISHING ENGINES OTHER THAN THOSE MENTIONED ABOVE.

Fishery District	Pole Net	Loop Net	Eel Trap	Special Local Licences	
				Rod	Draft Net
	£ s.	£ s.	£ s.	£ s.	£ s.
1. Dublin	2 0	—	—	—	—
2. Wexford	2 0	—	—	—	—
3. Waterford	2 0	—	—	—	—
4. Lismore	2 0	—	—	—	—
5. Cork	2 0	—	—	—	—
7. Kerry	2 0	—	—	—	—
8. Limerick	2 0	—	—	—	—
9. Galway	2 0	—	15 0	—	—
9 ^a . Connemara	2 0	—	—	—	—
10 ^a . Ballinakill	2 0	—	—	—	—
10 ^b . Bangor	2 0	—	—	—	—
11. Ballina	2 0	—	—	—	—
12. Sligo	2 0	—	—	—	—
13. Ballyshannon	2 0	—	2 0	*3 0	*25 0
14 ^a . Letterkenny ..	2 0	0 10	—	*3 0	†12 10
17 ^a . Drogheda	2 0	0 10	2 0	—	‡20 0
17 ^b . Dundalk	2 0	—	—	—	—

‡River Lackagh Tidal Waters.

†River Owenca Tidal Waters.

*River Erne Tidal Waters.

APPENDIX No. 21

PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1965

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
4 March, 1965	Ballyvaughan, Co. Clare	Application of Mr. Martin S. O'Loughlin, Ard-na-Gréine, Ennis, Co. Clare, for an oyster fishery order.	Order not granted.
1 June, 1965	Drogheda, Co. Louth	Application for alteration of the annual close season for the capture of salmon by engines other than rod and line in the river Boyne.	No change.
16 August, 1965	Dublin	Use of monofilament drift nets.	Bye-law made prohibiting the use of monofilament drift nets.
17 August, 1965	Waterford	do.	do.
18 August, 1965	Youghal	do.	do.
19 August, 1965	Cork	do.	do.
24 August, 1965	Limerick	do.	do.
18 October, 1965	Carrigart Co. Donegal	do.	do.
19 October, 1965	Burtonport, Co. Donegal	do.	do.
20 October, 1965	Glenamoy, Co. Mayo	do.	do.
21 October, 1965	Enniscrone, Co. Sligo	do.	do.
28 October, 1965	Wexford	Application for a bye-law prohibiting the use of draft nets with a mesh larger than 8" in the river Slaney.	Bye-law to be made.
8 December, 1965	Tralee, Co. Kerry	Revision of bye-laws governing the Tralee Bay oyster fishery.	Under consideration.
15 December, 1965	Ballincen, Co. Cork	Application for a bye-law altering the annual close season for angling in the river Bandon.	No change.

APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN
1965.

GENERAL

**Monofilament Drift Nets for Salmon Bye-Law No. 520, 1965,
dated 22 January, 1965.**

PROHIBITING during the period from 15 February, 1965, to 31 December, 1965, the use, in fishing for salmon, of any drift net made wholly or partly of monofilament synthetic material.

**Fishing Nets (Regulation of Mesh) Order, 1965 (S.I. No. 16 of
1965), dated 29 January, 1965.**

PRESCRIBING minimum sizes for meshes of trawl and seine nets used in sea-fishing.

**Monofilament Drift Nets for Salmon Bye-Law No. 523, 1965,
dated 10 February, 1965.**

AMENDING Article 2 of the Monofilament Drift Nets for Salmon, Bye-Law No. 520, 1965, by substituting "1st day of June, 1965" for "15th day of February, 1965".

**Fisheries (Transfer of Departmental Administration and
Ministerial Functions) Order, 1965 (S.I. No. 83 of 1965),
made by the Government on 27 April, 1965.**

TRANSFERRING to the Minister for Agriculture and the Department of Agriculture, respectively, the ministerial functions and departmental administration in relation to fisheries.

**Agriculture (Alteration of Name of Department and Title of
Minister) Order, 1965 (S.I. No. 146 of 1965), made by the
Government on 6 July, 1965.**

ALTERING the name of the Department of Agriculture to that of the Department of Agriculture and Fisheries and the title of the Minister for Agriculture to that of the Minister for Agriculture and Fisheries.

**Monofilament Drift Nets for Salmon Bye-Law No. 527, 1965,
dated 17 November, 1965.**

PROHIBITING during the years 1966 to 1970 the use, in fishing for salmon, of any drift net made wholly or partly of monofilament synthetic material.

**Fishing Nets (Regulation of Mesh) (Amendment) Order, 1965
(S.I. No. 231 of 1965) dated 18 November, 1965.**

DETERMINING the dimensions for meshes of nets used in sea-fishing for certain types of fish.

LOCAL

Cork District Bye-Law No. 521, 1965, dated 25 January, 1965.

PROHIBITING during specified periods, in the waters of the River Lee, its lakes and tributaries, and Cork Harbour:—

- (a) fishing or attempting to fish with nets for salmon;
- (b) angling for salmon;
- (c) the use, for angling in a specified part of the waters, of any lure other than artificial fly as used for angling for brown trout.

Limerick District Bye-Law No. 522, 1965, dated 25 January, 1965.

PROHIBITING during specified periods in the waters of the River Maigue, and its tributaries:—

- (a) angling for any fish;
- (b) angling with any lure other than artificial fly.

**Limerick District Bye-Law No. 524, 1965, dated 10 February,
1965.**

REVOKING Article 2 (which relates to angling for any fish) of the Limerick District Bye-Law No. 522, 1965.

**River Corrib Weekly Close Time Bye-Law No. 525, 1965, dated
10 February, 1965.**

FIXING a period, in lieu of the prescribed statutory period, for the weekly close time in respect of the River Corrib.

**Ballyshannon District Bye-Law No. 526, 1965, dated 14 June,
1965.**

PROHIBITING during a specified period in 1965 and during the years 1966, 1967 and 1968 the use, in fishing for salmon and trout in the tidal waters of the River Erne and its tributary the Abbey river of:—

- (a) any fishing engine other than rod and line in specified portions of the upper tidal waters;
- (b) any fishing engine other than a rod and line, a landing net used solely as an auxiliary to lawful fishing with rod and line, or a draft net not exceeding 85 yards in length, in the tidal waters exclusive of the portions referred to at (a).

FIXING a period, in lieu of the prescribed statutory period, for the weekly close time in respect of the river Erne and the Abbey river.

**River Erne (Special Local Licences) (Amendment) Order, 1965
(S.I. No. 131 of 1965) dated 14 June, 1965.**

PROVIDING that the special local licence duty payable in respect of a draft net for use in the tidal waters of the River Erne shall be £25.

OUTPUT OF OVA IN 1964/65

	River system stocked	Salmon Ova ('000)	Sea Trout Ova ('000)	Brown Trout Ova ('000)
Parteen	Scarriff River System and River Shannon and tributaries	1,225	—	—
Fanure	Various Trust waters in Cos. Clare, Cork, Longford and Monaghan and the Brosna Rivers	—	—	1,500
Ballyshannon	Erne River system	560	—	—
Lee	Rivers Sullane, Foherish and Laune and their tributaries	653	—	—
Mullingar	Tributaries of Loughs Sheelin, Owel, Ennell, and Derravarragh	—	—	2,250
Cloncrim	River Suck system, tributaries of Lough Mask and Midland Lakes and various Trust Waters in Co. Sligo	—	—	450
Castlebar	Castlebar River system	—	—	450
Inistioge	River Nore and tributaries	44	—	—
Lismore	Shannon and tributaries	237	—	—
Mallow	River Blackwater and tributaries	1,200	—	—
Oughterard	Lough Corrib and tributaries	—	—	300
Screebe	Screebe river	196	122	—
Ballisodare	Ballisodare river and tributaries	75	—	—
Cong	240,000 Salmon ova for the River Moy; remainder to Loughs Corrib and Mask	270	—	—
Glenties	1,120,000 Salmon ova distributed to hatching stations throughout the State; remainder to River Owenea. 68,000 sea-trout ova supplied to Inland Fisheries Trust and remainder to an angling association	1,720	85	—
	TOTALS	6,180	207	4,950

SCIENTIFIC PAPERS ETC. PREPARED AND PUBLISHED BY THE DEPARTMENT'S STAFF.

A. DEPARTMENTAL PUBLICATIONS:

INLAND FISHERIES BULLETINS. Nos. 1 and 2.

IRISH FISHERIES INVESTIGATIONS Series A (Freshwater) No. 1 containing:—

- I. A. E. J. WENT. Review of the Irish salmon industry. Pp. 1-25.
- II. EILEEN TWOMEY. Salmon of the River Shannon (1957 to 1962). Pp. 26-35.
- III. E. D. TONER, ANN O'RIORDAN AND EILEEN TWOMEY. The effects of arterial drainage works on the salmon stock of a tributary of the River Moy. Pp. 36-55.
- IV. A. E. J. WENT. Recaptures of Irish tagged salmon at Greenland. Pp. 56-57.

SEA FISHERIES BULLETINS. Nos. 1 and 2.

B. OTHERS.

BURD, A. C. and J. BRACKEN (1965) Studies on the Dunmore Herring Stock I. A population assessment. *Jour du Cong. Copenhagen XXIX.* 277-301.GIBSON, F. A. and C. E. O'RIORDAN (1965). *Palinurus vulgaris* (h) the Crawfish in Irish waters. *Rapp. et Pros Verb Copenhagen.* clvi. 47-49.WENT, A. E. J. (1965). Rare fishes taken in Irish waters in 1964. *Irish Nat. J.* XV. 38-40.WENT, A. E. J. and D. J. PIGGINS. Long-distance migration of Atlantic Salmon. *Nature.* ccv. 723.

DUNMORE EAST HERRING INVESTIGATIONS, 1965/66

by

J. P. MOLLOY, B.Sc., *Assistant Inspector*

The 1965/66 herring season at Dunmore East commenced on 25 November, 1965, and terminated on the 11 February, 1966. During most of the season fishing was badly affected by adverse weather conditions and landings were made on only 41 days out of a possible 67. Forty-five boats including nine from Northern Ireland ports landed a total of 20,542 crans, an increase of 3,108 crans on the figure for the previous year. Monthly landings for the season were as follows—

November	..	..	100 crans
December	**	..	9,552 ..
January	**	..	6,668 ..
February	**	**	4,222 ..
			<hr/>
Total			20,542 ..

Three types of gear were used throughout the season, viz. single mid-water trawls, paired mid-water trawls and bottom trawls. The number of boats using the paired mid-water trawl increased from three pairs in 1964/65 to nine pairs in 1965/66. Landings per type of gear were as follows:—

Single mid-water trawls	**	..	227 crans
Paired mid-water trawls	**	**	2,956 ..
Bottom trawls	..	..	17,359 ..
			<hr/>
Total			20,542 ..

The bulk of the landings up to 21 December was made by boats using mid-water trawls. From then until the close of the season all fish were taken by bottom trawls. Shoals were first located off Youghal and Ballycotton towards the end of November and some fishing took place in these areas and off Mine Head, Brownstown Head and Helvick Head until 23 December. After this the shoals moved into Baginbun Bay where they were heavily fished until the end of the season. No estuarine fishing took place this season. Throughout the season continental boats successfully fished off Ballycotton and although Irish boats reported good markings from this area, the nature of the ground prevented them from successfully fishing it.

Samples of herrings were obtained for biological investigations from 30 November until the close of the season. 2,712 fish were individually examined for length, sex, maturity, vertebral count, age and racial type. The dominant age groups were found to be the 3, 4, 5 and 8 year olds, and recruitment of the 1962/63 year class appeared to be very good. The 1957/58 year class which entered as the main recruit brood in the 1960/61 season was still well represented as 8 year old fish in the 1965/66 season. The monthly age distributions are shown in Table 1. Maturity distributions per month showed that during November the majority of fish were filling (stage V). However, full fish (stage VI) appeared a little earlier than usual in December and were present from the middle of the month until mid-February. A small percentage of spents were present throughout the season. The mean lengths and mean vertebral counts per maturity stage per age class are shown in Table 2.

Samples of herrings were examined for fat content throughout the season and the results circulated to interested parties.

TABLE I.—Monthly Age Distribution

AGE IN YEARS

Month	2	3	4	5	6	7	8	9	10	10+	TOTAL
November ..	5	113	21	29	3	11	13	1	—	7	203
December ..	17	734	138	139	39	51	81	17	8	19	1,243
January ..	4	279	82	112	36	25	70	11	4	9	632
February ..	—	370	84	64	15	19	56	10	3	13	634
Nov.—Feb. ..	26	1,496	325	344	93	106	220	39	15	48	2,712

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TABLE 2.—Mean lengths and mean vertebral counts per maturity stage per age class.

AGE IN YEARS

Maturity Stage		2	3	4	5	6	7	8	9	10	10+	TOTAL
II	No. of fish Mean length Mean V.C.	13 22.9 56.54	10 24.1 56.70									23 23.5 56.61
III	No. of fish Mean length Mean V.C.		1 24.8 57.00									1 24.8 57.00
IV	No. of fish Mean length Mean V.C.	1 23.8 56.00	1 24.8 57.00									2 24.3 56.50
V	No. of fish Mean length Mean V.C.	9 23.5 56.44	720 25.7 56.96	163 27.5 57.01	186 29.0 56.86	52 29.9 56.96	52 30.2 56.87	106 30.2 56.83	19 30.8 56.53	7 30.7 56.43	24 31.2 57.08	1,338 27.3 56.93
VI	No. of fish Mean length Mean V.C.	3 24.0 56.67	666 25.8 56.95	150 27.7 57.01	140 29.1 56.86	37 29.7 57.08	47 30.2 56.91	106 30.2 56.84	19 30.7 56.79	8 30.5 57.13	21 31.0 57.00	1,197 27.3 56.94
VII	No. of fish Mean length Mean V.C.		94 25.8 56.96	12 28.1 57.00	18 29.0 56.89	4 29.83 57.00	7 30.2 56.71	8 29.9 56.88	1 30.5 57.00		3 30.6 57.67	147 27.0 56.95
VIII	No. of fish Mean length Mean V.C.		4 26.7 56.50									4 26.7 56.50
TOTAL	No. of fish Mean length Mean V.C.	26 23.3 56.50	1,496 25.7 56.95	325 27.6 57.01	344 29.0 56.86	93 29.8 57.00	106 30.2 56.88	220 30.2 56.84	39 30.7 56.67	15 30.6 56.80	48 31.1 57.08	2,712 27.2 56.93

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SOME NOTES ON LOBSTERS IN 1965

by

F. A. GIBSON, PH.D., *Inspector of Fisheries.*

During 1965 with the aid and co-operation of the fishermen concerned, the catches by two types of boats using lobster pots, were studied, the information obtained being recorded without reference to any particular fisherman. Analyses of the catches by punts (12'-18') and 32 foot lobster boats, were made. Table 1 gives the ratio of males to females in the catches made by these boats. Females in the catch always outnumbered males by 4% to 26% but in the main fishing season (June/September) the excess of females over males was from 4% to 16%. A possible explanation for the dominance of females in the catches by punts in the early part of 1965 is that female recruits to the commercial fishery, which have been shown elsewhere to range in size from 75.0 to 82.0 mm, were abundant at that time. This is borne out by Table 2. These females moult in June and July and it is probable that they are feeding actively during the early part of the year and thus are readily caught at that time.

The proportion of lobsters, of both sexes, below the legal size limit, in the catches is indicated in Table 3. It is obvious that considerable numbers of lobsters below the legal minimum size limit occur in the catches. The even larger proportion of small lobsters in the catches on the east coast is to some extent due to the fact that owing to the sheltered nature of the grounds there, fishing can take place throughout the year, whereas in most other areas fishing is restricted to that time of year when weather conditions are suitable.

To obtain the maximum benefit from our lobster fisheries, it is essential that the size limit of 83 mm (carapace length) be strictly observed so that lobsters may have the opportunity of reaching reasonable sizes. As an example, if the 391 small lobsters caught by the east coast punts (Fig. 3) were returned to the sea, after one moult during the year in which they were released they would have doubled their weight. Since natural mortality at this size is low and lobster stocks are very local, fishermen stand a good chance of recapturing, at a later date, a lobster which had previously been returned to the water when undersized, but which has made considerable growth in the meantime. Therefore, fishermen who land undersized lobsters are doing themselves a disservice because such lobsters fetch only half as much money as they would after one further moult. In addition, they are also committing breaches of the law by having undersized lobsters in their possession.

Conclusion: The evidence points to the fact that sub-legal sized lobsters occur in the catches in amounts varying from 11% to 52%. If these are landed, a very real threat to the continuation of the stocks will arise. However, if they are returned alive to the sea, not only will the stock be protected but many of them will be recaptured when they have made further growth thus ensuring higher earnings and a more

acceptable market produce. Thus if fishermen are to secure the future of lobster stocks, they must conform to the legal requirements and select the undersized lobsters from their catches and return these alive to the water.

TABLE 1. The Ratios of Male to Female Lobsters caught by Punts and 32 foot Boats:

Boat Class	Coast	Period of examination	% males	% females	Excess of females	Total number of lobsters examined
Punts	East	Jan.—March ..	40.7%	59.3%	18.6%	164
do.	do.	Apr.—June ..	36.9%	63.1%	26.2%	413
do.	do.	Jul.—Sept. ..	42.0%	58.0%	16.0%	180
do.	South	do. ..	48.0%	52.0%	4.0%	382
32' boats	South	do. ..	44.0%	56.0%	12.0%	1,172
					TOTAL	2,311

TABLE 2. Average carapace measurements of lobsters of each sex caught by punts and 32' boats, the equivalent total lengths being given for convenience.

Boat Class	Coast	Period	Average size (carapace)		Total length equivalent in inches	
			Males	Females	Males	Females
Punts	East	Jan.—March	79.9 mm	75.0 mm	8.8"	8.6"
do.	do.	Apr.—June	82.9 mm	82.2 mm	9.4"	9.4"
do.	do.	July—Sept.	90.5 mm	82.8 mm	10.2"	9.5"
do.	South	do.	94.2 mm	92.7 mm	10.5"	10.5"
32' boats	do.	do.	95.9 mm	96.8 mm	10.7"	10.9"

TABLE 3. Number and percentage of lobsters below the minimum size (83 mm carapace length) and of legal size landed by different types of boats. (Type A and B boats being from different areas).

Boat class	Coast	Number and percentage of lobsters		Total
		Below minimum legal size	Of legal size	
32' boats A	South	87 11.4%	675 88.6%	762 100%
Punts	South	55 14.2%	327 85.8%	382 100%
32' boats B	South	69 16.8%	341 83.2%	410 100%
Punts	East	391 51.6%	366 48.4%	757 100%

APPENDIX No. 27

CATCH AND EFFORT IN THE LOBSTER AND CRAWFISH FISHERY

by

F. A. GIBSON, PH.D., *Inspector of Fisheries.*

Much useful information has been collected since 1958 of the actual catch of lobsters and crawfish in relation to particular types of fishing gear in use at various centres around the Irish coast. The purpose of this paper is to give a comparison of the catches of lobsters made by three types of lobster trap as fished by boats of different lengths.

Three main types of lobster gear are used in Ireland namely: (a) French crawfish creels (called "barrels"); (b) variations of the Scottish lobster creel, and (c) the Kilmore Quay lobster trap. They are popular with fishermen in the above order. Almost 60% of the lobster traps used are of the French crawfish creel design. In this article the term—lobster trap—refers either to modified Scottish creels or to those used at Kilmore Quay.

Experiments were made on the south east coast in 1958 and 1959 to determine the relative efficiency of these three types of trap for catching lobsters. The results showed that the Kilmore Quay trap was the most efficient, ahead of the Scottish creels and much more productive for lobsters than the French crawfish creel. Since then a considerable amount of information has been provided by fishermen from many parts of the coast concerning catch and effort. The analysis of this information forms the basis of this paper.

In order to find a common ground for comparing all kinds of traps used for catching lobsters, a standard unit of measure must be adopted. The catch for each type of trap has been evaluated by the number of lobsters taken every 100 times the gear was raised from the sea-bed. This makes it possible to compare on a common basis all traps and the boats from which they were fished.

The details of catch came from punts of 12 to 18 foot in length, 24-38 foot boats and 50-56 foot trawlers. In the case of trawlers, the lobsters caught were usually the by-catch during crawfish fishing. *Lobster catch by punts (12'-18')*. Table 1 gives the catch by this type of boat in terms of catch per punt and catch per 100 lifts. The records relate to varying periods of fishing time and, therefore, the final column is a mean catch per month for the most productive part of the year, i.e. June to September. These months have also been used for comparing catches by the intermediate sized boats and by the 50-56' trawlers.

TABLE 1. Catch of lobster from punts.

Year	Area	Type of trap	Total catch of lobsters	Total no. of trap lifts	No. of trap lifts per punt June/Sept.	Catch per 100 lifts	Average monthly catch per punt
1958	Co. Dublin	Lobster trap	3,029	12,116	3,110	25	222
1959	do.	do.	4,305	14,350	3,189	30	314
1960	do.	do.	3,909	13,950	2,793	28	288
1963	Co. Cork	French crawfish creel	966	17,482	8,741	6	242
1964	do.	do.	1,496	15,040	3,013	10	299
1964	do.	do.	1,645	14,744	2,948	11	188
1965	Co. Dublin	Adapted French creel	1,319	5,833	5,833	23	264

The records for the catch in County Dublin landing places extend usually from April to November. In calculating the catch per month per punt in Co. Dublin, the actual landings for months outside June to September have not been included, thus permitting a comparison to be made with the Co. Cork punts, which only fish the shorter period. The first noticeable feature of Table 1 is that using French crawfish creels the average number of trap lifts in 1963 and 1964 was 4,900, compared with 3,000 lifts for the lobster traps over comparable periods of time—when the average monthly catch was 272 for lobster traps and 243 for French creels. Therefore, not only was the catch per punt less but the total effort in terms of lifts was more than 39% greater in the case of French creels than it was for lobster traps. This point is clearly seen in the penultimate column of Table 1. The average for lobster traps was approximately 28 lobsters per 100 lifts compared with 9 per 100 lifts with French creels, i.e. nearly 3 times as many lobsters per standard unit of effort. It is interesting to note that a much altered crawfish creel on the east coast in 1965 raised the catch from 9 to 23 for this type of gear, but with associated high effort.

Lobster catch by 24 to 44 foot boats. The greater part of the information has been gathered from boats of this size range, and particularly from those of 26 to 32 feet, which in recent years have become popular with fishermen. The details of these records are summarised in Table 2 below.

TABLE 2. Catch of lobster by boats of 24 to 44 feet in length.

Year	Area	Type of trap	Total catch of lobsters	Total no. of trap lifts	No. of trap lifts per boat	Catch per 100 trap lifts	Average monthly catch per boat
1958	Co. Wexford	Lobster trap	1,783	4,226	2,113	42	287
1959	do.	do.	4,094	11,770	3,923	35	341
1959	do.	do.	683	1,935	1,935	35	342
1963	Co. Galway	French crawfish creel	2,834	45,820	9,164	6	289
1963	do.	do.	1,476	8,660	8,660	17	492
1963	Co. Kerry	do.	1,790	30,520	15,260	6	358
1964	Co. Wexford	Lobster trap	820	2,180	2,180	38	320
1964	do.	do.	8,966	30,365	3,374	30	284
1964	Co. Cork	French crawfish creel	1,406	7,968	2,656	18	235
1965	Co. Kerry	do.	2,245	13,330	1,904	17	80
1965	Co. Galway	do.	745	9,735	3,245	8	124
1965	Co. Wexford	Lobster trap	10,807	41,651	5,206	26	412
1965	do.	French crawfish creel	946	8,190	1,024	12	39

Interpretation of this information is not as easy as for the punts. The main reason for this is that larger boats tend to use their fishing gear specifically for either crawfish or lobsters and sometimes both species together. For example, in 1965 the catch of lobsters was only 80 per month for French crawfish creels for Co. Kerry. The boats concerned were, however, fishing for both lobsters and crawfish. On the other hand, in the case of the lobster fishery off Co. Wexford where in 1965 a number of French crawfish creels were used to catch crawfish in conjunction with lobster traps, the catch of lobsters was 39 only per month per boat but the catch of lobsters in lobster traps averaged 412 for the same period and area.

The average landings per month, excluding the 1965 Co. Kerry and Co. Wexford catches by crawfish creels, was approximately 300 which is considerably better than the 243 per month for punts. It can be said, therefore, that the use of crawfish creels by the larger boats for catching lobsters, is considerably better than in the case of punts. The average monthly catch of lobsters in lobster traps was 331, only 11% more productive. However, on the basis of the standard unit of effort, i.e. every 100 lifts, the mean effort by crawfish creels was 12 per 100 as compared with 34 per 100 for lobster traps, which is again something of the order of 3 times the efficiency.

Lobster catch by boats of 50' and over. With the exception of one 50' boat in Co. Wexford the other records of the lobster catch from this category of boat arise from fishing operations where the primary objects of the fishery are crawfish. The results are given in Table 3.

TABLE 3. Catch of lobsters by boats of 50 feet and over.

Year	Area	Type of trap	Total catch of lobsters	Total no. of trap lifts	No. of trap lifts per boat	Catch per 100 trap lifts	Average monthly catch per boat
1963	Co. Kerry	French crawfish creel	1,822	31,165	15,582	5	233
1965	do.	do.	2,433	58,582	14,654	4	122
1965	Co. Wexford	Lobster trap	2,694	10,140	10,140	27	673

Information from very few boats was obtained but the difference between the lobster and the crawfish catch here is very significant. There is strong evidence that where 50' boats are used, the catch of lobsters is secondary to crawfish with a mean of less than 5 lobsters per 100 lifts and about 177 lobsters per month. On the other hand, the catch of lobsters by a single 50' boat off Co. Wexford in 1955 gave an average catch per standard unit of effort of 27 per 100 lifts and a monthly average catch of 673. The 25 to 38 foot boats in the same period, off Co. Wexford, caught an average of 412 lobsters per month with almost exactly half the fishing effort, i.e. 10,140 lifts to 5,206 lifts (Table 2).

Weight of lobsters. It was found that the more heavily an area was fished, the lighter the average weight of lobsters which it yielded. For example, the average weight of the lobsters landed from the intensely fished Co. Dublin area was 1 lb. 2 oz.; whilst off Co. Kerry where fishing is primarily for crawfish, the average weight of lobsters was 1 lb. 12 oz. The average weight and size of lobsters caught in any particular area is an indication of the intensity of fishing. Thus where the intensity of fishing is great, older lobsters have already been fished out and the catch depends to a great extent upon young fish. Conversely where the average weight and length are high, the fishing intensity is not such that the lobsters are heavily fished before they reach middle age, as it were. This is obviously the case in the Co. Kerry area, which leads to an interesting conjecture, applicable to any part of the coast where crawfish and lobsters are fished by French crawfish creels. Supposing that the 6, Co. Kerry, boats had fished lobster traps, what might they have been expected to catch by way of lobsters, assuming the same efficiency as at Co. Wexford, where, since the average weight of lobster is less, the stock is smaller? The actual catch by the 6 Co. Kerry boats was as follows:—

Period	Total catch of lobsters	Total catch of crawfish
June—September ..	2,245	428

The actual catch of lobsters off Co. Wexford by 6 similar sized boats was as follows:—

Period	Total catch of lobsters	Total catch of crawfish
June—September ..	10,092	322

This would suggest that not only could almost five times as many lobsters be caught by the Co. Kerry boats, with corresponding increase in earnings, but also that the catch reduction in the catch of crawfish by use of lobster traps would not have any significant effect upon the gross earnings.

A number of trends emerge from analysing the material supplied by fishermen during the period under review, namely:—

- (1) The catch of lobsters from lobster traps appears on average to be 3 times that from crawfish gear, in terms of yield per 100 trap lifts.
- (2) The average monthly catch of lobsters by lobster traps exceeds that by French crawfish creels.
- (3) The average monthly catch of lobsters by boats of more than 25 feet in length exceeds that of smaller boats by 12% to 15%.

There is a strong case for distinguishing between lobster and crawfish fishing. If a boat proposes to fish for lobsters, the catch will be greater and the fishing effort will be less, if lobster traps are used

Whilst there is some evidence, (Table 3) that the catch of lobsters by boats of 50' and over is likely to be better than in the case of intermediate sized boats or punts, it is probable that the trawler type of boat can be more profitably used for crawfish fishing. Trawlers have a greater creel carrying capacity, can endure bad weather conditions and operate in deeper water, all of which are a great advantage in capturing crawfish. There is, therefore, a considerable amount of evidence to suggest that lobster fishing can most profitably be pursued by boats in the 25 to 38 foot range.

