



SEA AND INLAND
FISHERIES

REPORT FOR
1966

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
1966

PART I.

SEA FISHERIES

The total value of landings of sea-fish in 1966 was £2,033,336. This, the highest value on record for any year, constituted an increase of £332,963 over the corresponding figure for 1965. All sectors of the sea-fishing industry shared in the increase: landings of demersal fish gained £36,341 to reach £995,703, those of pelagic fish gained £148,723 to reach £458,472, and the catch of shellfish rose by £147,899 to reach £579,161.

The weights and values of annual landings of sea-fish (excluding shellfish) since 1957 are set out in the following table.

TABLE 1.

Year	cwt.	£
1966	626,316	1,454,175
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

Particulars of the quantities and values of the several varieties of sea-fish and shellfish landed in 1965 and in 1966 are contained in Appendix No. 1. The average price per cwt. realised for each variety of sea-fish (other than shellfish) from 1959 onwards is shown in Appendix No. 2.

As in previous years, imports of white fish, mainly plaice, were permitted at times when supplies from home landings fell short of

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home market requirements. Some imports of herrings also took place in similar circumstances.

The leading fishing ports in 1966, in order of value of fish landed, were: Killybegs, Dunmore East, Howth, Castletownbere, Dingle, Galway, and Kilmore Quay. As compared with the corresponding order of importance in the previous year, Dunmore East advanced two places to take precedence over Howth and Castletownbere, and Dingle advanced one place to take precedence over Galway.

DEMERSAL FISHERY.—The quantity of demersal fish landed in 1966 was 272,491 cwt. This was 9,701 cwt. less than the quantity landed in 1965. Increased landings of cod and plaice in 1966 were not sufficient to offset decreases in the quantities of other varieties landed. Whiting continued to be the variety obtained most generally and it accounted for 36% of the total demersal catch. Cod, landings of which have been increasing appreciably in recent years, was the second variety in order of landed weight and was followed by haddock, plaice, ray and pollack in that sequence.

Demand continued to be good and prices obtained on first-hand sale were better than in 1965—except for dabs, ray, and cod, which sold for slightly lower average prices than in 1965. In the circumstances, the small decrease in the quantity landed, as compared with 1965, was accompanied by an increase, from £959,362 to £995,702 in the total value of the catch of demersal fish. Plaice, which accounted for 22% of the total value of the demersal landings, displaced whiting as the variety which contributed most to the fishermen's earnings. Whiting, followed by cod, haddock, ray and sole were the next varieties in order of value of catch.

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

TABLE 2.

Year	Quantity	Value	Average Value per cwt.	
			s.	d.
1966	272,491	995,703	73	0
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

PELAGIC FISHERY.—*Herrings.*—The year as a whole was very satisfactory for herring fishing. The total quantity landed increased by almost 40% to 293,300 cwt., and the value, at £399,312, was the highest on record and exceeded that for 1965 by £147,791. Demand

was good and the average price per cwt. increased from 23/11d. in 1965 to 27/3d. in 1966. Herring fishing was again largely concentrated in two areas, namely—off the Donegal coast and off Dunmore East, Co. Waterford. Landings elsewhere (chiefly at Bantry, at Castletownbere, and in the Achill area) were small in comparison.

The 1965/66 herring season off the Donegal coast came to a close in the last week of February, 1966. The total catch from the fishery in the months of January and February amounted to 53,000 cwt., which was 17,000 cwt. more than the quantity caught in the corresponding period of 1965. The spring herring fishing for the 1966/67 season commenced about April, and from then until the end of October some 45,000 cwt. of herrings, or 18,000 cwt. more than in the corresponding period of 1965, were landed at Killybegs. Whereas the bulk of the spring and summer landings in 1965 had been disposed of for reduction to fishmeal, a high proportion of the 45,000 cwt. landed in 1966 was sold for curing and export to France. The first heavy landings, marking the opening of the 1966/67 winter herring fishery in this area, were made in the last week of October. Fishing continued until late in November, when it was interrupted by bad weather. The weather remained bad throughout most of the following month and it severely restricted the fishing. In the months of November and December the total quantity of herrings landed from the Donegal fishery was 52,000 cwt., as compared with 63,000 cwt. in the corresponding period of 1965. This brought the total landings of herrings from the Donegal fishery in the year 1966 to a little more than 150,000 cwt.—or about 23,000 cwt. greater than the landings in 1965.

At Dunmore East fishery, the 1965/66 winter herring-fishing season came to a close on 11th February, 1966. From 1st January up to that date a total of some 37,000 cwt. was landed, compared with about 40,000 cwt. in the corresponding period of 1965. The 1966/67 season at Dunmore East opened on 22nd October, 1966, so that winter fishing there commenced five weeks earlier in 1966 than it did in 1965. The weather was generally good and, as recruitment of three-year-old fish during the preceding season had strengthened the stocks considerably, very good fishing was experienced up to the end of the year. In that period a total of just over 91,000 cwt. of herrings was landed from the fishery, compared with some 35,000 cwt. in the opening period of the 1965/66 season. Total landings of herrings from the fishery in the year 1966 amounted to almost 129,000 cwt., as compared with a little less than 76,000 cwt. in 1965.

The increased herring landings were reflected in increased exports of herrings in both fresh and processed forms. Exports of fresh, chilled, or frozen herrings amounted to 100,000 cwt. valued at £218,000, as compared with the previous year's figures of 69,000 cwt. valued at £139,000. These exports went mainly to Great Britain, the Netherlands and Germany (F.R.). Exports of cured and marinated herrings, which were sent mainly to France, the Netherlands and Germany (F.R.), amounted to 97,000 cwt. valued at £318,000 as compared with the previous year's figures of 17,000 cwt. valued at £73,000.

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

TABLE 3.

Year	Quantity	Value	Average Value per cwt.
	cwt.	£	s. d.
1966	293,300	399,312	27 3
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

Sprats: The total quantity of sprats landed during the year was 30,520 cwt. valued at £13,000; these figures are very much the same as those for 1965. The landings took place very largely at Clogherhead but some small quantities were landed at Bantry, Killybegs and Inver. As in 1965, the catch was disposed of for reduction to fish meal and as feeding material for mink and ponded trout.

Mackerel: At 29,645 cwt. landings of mackerel were substantially less than in 1965 and showed a considerable decline in the quantity landed at Killybegs for reduction to fishmeal. The pattern of landings was otherwise generally the same as in 1965, and Killybegs, Castle-townbere, Dingle, Schull and Kinsale were again the main landing centres. Freshing prices were higher than in 1965, so that the total value (£46,389) of the catch was a little greater than in the preceding year, notwithstanding the decline in quantity.

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.
1966	29,645	46,389	31 4
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

SHELLFISH.—At £579,161, the value of the shellfish catch in 1966 far surpassed the levels reached in 1964 and 1965, in which years the catch had attained record values of £420,114 and £431,262 respectively. Larger catches of lobsters, periwinkles, Dublin Bay prawns and

escallops contributed to the great increase in value. The lobster catch was a particularly good one and, with prices substantially higher than in preceding years, its total value increased to £231,482 or over 50% more than in 1965. The crawfish catch showed little change in quantity or value from the corresponding figures for 1965, but quantity and value decreases were recorded in the catches of crabs, oysters and mussels.

Table 5 gives the value of shellfish landings in each of the past 10 years.

TABLE 5.

Year	£
1966	579,161
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

EXPORTS.—At £2,492,531, exports of fish and fishery products, including both sea fish products and freshwater fish products (see Part II of this Report), established a record value for the fourth successive year. Exports of sea fish products were valued at £1,521,546, which was almost 50% greater than the figure (£1,032,981) for 1965. This substantial increase was largely due to the greater landings of herrings and shellfish. Details of the exports are given in Appendix No. 4.

PERSONNEL AND VESSELS.—The total number of men engaged full-time in sea fishing increased from 1,593 in 1965 to 1,634 in 1966. On the other hand, the number of part-time fishermen decreased from 3,760 in 1965 to 3,627 in 1966, owing mainly to the trend towards a falling-off in the use of small unengined boats for fishing.

Much the greatest part of the catch of wet fish is obtained by motor fishing vessels of 25 gross tons and over. The number of such vessels increased to 182 in 1966 from 172 in 1965. The additional ten vessels brought into operation in 1966 were mainly large vessels of 50 gross tons and over, the total number of which at the end of 1966 was 32 as compared with 26 in 1965, 23 in 1964, 22 in 1963 and 15 in 1962. Two of the additions made during the year were large stern trawlers, of 280 gross tons each.

The number of motor vessels of less than 10 gross tons increased considerably as the result of an expansion in the issue of boats, primarily designed for lobster fishing, under the Marine Credit Plan administered by An Bord Iascaigh Mhara. The number of boats in this category at the end of 1966 was 427, as compared with 352 at the end of 1965 and 344 at the end of 1964.

TRAINING OF FISHERMEN.—The schemes for training fishermen as skippers and boys as fishermen were continued during 1966.

In 1966, 8 fishermen were selected for training as skippers and 7 of them were successful in obtaining Certificates of Competency under the Merchant Shipping Acts. A total of 67 fishermen have now obtained certificates since the scheme was inaugurated in 1958. In addition, successful port courses were organised by An Bord Iascaigh Mhara in association with the Vocational Education Committees in Counties Donegal, Dublin, Waterford and Wexford and resulted in the award of certificates to a further 15 fishermen.

During 1966 satisfactory results were achieved under the scheme for training boys as fishermen. At the beginning of the year, 40 boys were in training and a further 62 commenced training during the year. Of this total of 102, 15 completed training and became full crewmembers in 1966 and 38 discontinued training. The remaining 49 were still in training at the end of the year. Since the commencement of the scheme in 1959, 110 trainees have qualified as deck hands.

During the year an Educational Committee was set up to prepare a comprehensive programme for the education and training of man power in the sea fishing industry. The Committee comprised representatives of the Department of Agriculture and Fisheries, the Department of Education, the Department of Defence, and An Bord Iascaigh Mhara, as well as an expert from the vocational side. The Committee had not completed its examination of the matter at the end of 1966.

AN BORD IASCAIGH MHARA.—The Board received a grant of £265,000 from the Fisheries Vote in aid of administration and general development in 1965/66. Repayable advances totalling £231,000 were also made to the Board from the Central Fund mainly for the provision of boats and gear.

Continued progress was achieved by the Board towards improving distribution of fresh fish throughout the country with the result that home consumption increased considerably during the year. Promotional backing from the Board also helped in securing a greater share of the home market for Irish processed fish, particularly smoked fish. The Board also assisted processors in the development of new processed shellfish exports. Port fishery co-operatives and individual firms were assisted in organising new exports of quality white fish in the fresh state.

The Board expanded its service to fishermen during the year and introduced improved methods of fishing in various ports around the coast where technical advice on the mounting and setting of gear was given. The Board also assisted with the development of port fishery co-operatives and study tours to fishing ports abroad were organised for groups of Irish fishermen.

SEA FISHERIES PROTECTION.—In the course of their patrols of the exclusive fishery limits in 1966, the Naval Service of the Depart-

ment of Defence arrested four foreign vessels which had been observed fishing inside the exclusive fishery limits. Prosecutions were instituted against the skippers and convictions secured in all cases, resulting in fines and forfeiture of fish and gear. In the conduct of these cases and in the enforcement of fishing laws generally, the assistance of the Garda Síochána was available as usual.

MARINE WORKS.—Progress continued to be made in the development of major fishery harbours at Killybegs, Castletownbere and Dunmore East.

A substantial harbour improvement scheme was completed at Renard Point, Co. Kerry. Other marine works were completed at Gola Island, Gortnasate, Stackamore and Bloodyforeland, Co. Donegal, at Mullaghmore, Co. Sligo, at Belderrig, Co. Mayo, at Aillebrack, Co. Galway, and at Cahirciveen and Maoil-a-Goilin, Co. Kerry. Works in progress at the end of the year included the improvement of landing facilities at Porturlin and Portacloy, Co. Mayo, at Inisbarra Island, Co. Galway, at Liscannor and Seafield (Quilty), Co. Clare, at Ballydavid and Rinn na Ratha, Co. Kerry and at Bank (Whiddy Island), Garnish (Dursey) and Hare Island, Co. Cork. Work was also in hand on the erection of navigation lights at Burtonport (southern approach channel) and Chapel Strand, Co. Donegal and at Achill Sound and Tullaghan Bay (beacons), Co. Mayo.

A survey team consisting of representatives of the Department of Agriculture and Fisheries, Roinn na Gaeltachta, the Office of Public Works, An Bord Iascaigh Mhara and Kerry County Council, was set up to examine and report on the landing facilities required to meet present and expected needs of the fishing industry in South Kerry. During October to December the team inspected fishing ports and landing places in South Kerry. The team's report is expected early in 1967. Arrangements were also made to set up a further survey team to carry out a similar survey of landing places on the Galway and Mayo coasts, including the islands in the area. It is expected that this second survey will be completed towards the end of 1967.

EXPLORATORY VESSELS.—During the year approximately 30 weeks were spent by the exploratory fishing vessel *Cú Feasa* in carrying out various research programmes on whiting, plaice, prawns and sprats. A further 11 weeks was devoted to searching for herring shoals during the Dunmore East herring fishery and information on markings of shoals was passed to fishermen in the area. The balance of the year was taken up with overhauls, delays due to gales and short periods of fishing.

A second exploratory fishing vessel *Cú na Mara* was commissioned on 11th June, 1966. This vessel is being used primarily in research work on shellfish and during the part of 1966 in which she was in operation was engaged mainly on research and exploratory work on nephrops, scallops, crawfish and plaice.

An account of the investigations in which the vessels are engaged is published separately in the Department's Sea Fisheries Bulletin.

SCIENTIFIC INVESTIGATIONS.—Greater details than is possible in this report are given of the progress made in marine fisheries investigations in the issue of the *Sea Fisheries Bulletin* (No. 4) published in 1967.

Investigations into the herring stocks at Dunmore East were continued throughout the year. A very good recruitment of three-year-old herring during the 1965/66 season was reflected in increased landings made during the 1966/67 season. Herring investigations were renewed at Killybegs in the autumn of 1966 and some isolated samples of small herring were examined from Castletownbere. In accordance with the usual practice a report on the Dunmore East herring fishery was circulated to the trade during the year. With the aid of the research vessel *Cú Feasa* investigations were made into the occurrence of sprats in the Irish Sea from May onwards. A paper on the Dunmore East herring fishery was contributed to the Herring Committee of the International Council for the Exploration of the Sea at its meeting in Copenhagen in October. The fat content of herrings was determined from time to time and details circulated to the trade.

The commercial catches of whiting at Howth were examined regularly throughout 1966 and the research vessel *Cú Feasa* was used to make quarterly stock surveys of whiting in the Irish Sea at a number of stations used since 1962. Tow-net hauls for plankton were also made in May and June in the northern Irish Sea to ascertain the distribution of whiting eggs and larvae.

The *Cú Feasa* was also used to tag plaice off Dundrum Bay in March, and during the year 22% of the tagged fish were recaptured. Mesh selection experiments were also carried out using cod-end meshes of 67.5 mm and 98 mm, respectively. In July and August the relative indices of fishing power of the research vessels *Cú Feasa* and *Cú na Mara* were compared. Throughout the year blood samples from plaice were analysed to investigate the protein structure of the serum and haemoglobin. A paper on the plaice of the western Irish Sea was contributed to the Joint Meeting of the Challenger Society with Marine Laboratories in London. During the year the by-catch in certain demersal fisheries was investigated. "Waste" fish used for a variety of purposes was also investigated with a view to determining the quantity and species of protected fishes contained in it.

Catch/effort statistics were collected in relation to the demersal fisheries off Howth, Castletownbere and Killybegs, but the material had not been worked up at the close of the period under review.

Specimens of fish were identified for members of the public and for the Irish Specimen Fish Committee, of which the Department's Inspector and Scientific Adviser and the Inspector of Fisheries on the marine side are members. During the year a number of fish, rare or scarce to Irish waters, were recorded. They included four six-gilled sharks (*Hexanchus griseus*), a black-mouthed dogfish (*Pristiurus melastomus*), three large white skate (*Raja marginata*), three painted rays (*Raja undulata*), two sturgeons (*Acipenser sturio*), a broad-nosed

pipe-fish (*Siphonostoma typhle*), a boar-fish (*Capros aper*), a stone-basse (*Polyprion americanus*), seven pilot fish (*Naucrates ductor*), two Ray's bream (*Brama raii*), a black bream or old wife (*Spondylusoma cantharus*), a red band or red snake-fish (*Cepola rubescens*), a gold shinny (*Ctenolabrus rupestris*) and a plain bonito (*Auxis rochei*). A report on these species was accepted for publication in the *Irish Naturalists' Journal* in the usual way.

INTERNATIONAL AND OTHER CONFERENCES.

(1) INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA.—The annual conference of the Council was held in Copenhagen from 3rd to 12th October, 1966, and this country was represented by the Inspector and Scientific Adviser, who was elected President, and the Inspector of Fisheries on the marine side. Papers were contributed by members of the Department's staff to the Herring and Shellfish Committees. On 6th and 7th May, 1966, a special meeting of the Council took place in Edinburgh, at which rearrangements and reorganisation of the Committee structure of the Council were agreed upon, and, before the annual conference on 29th and 30th September, 1966, a further special meeting was held to draw up new rules of procedure in preparation for the introduction of the new Convention of Copenhagen signed in September, 1964. The Inspector and Scientific Adviser represented this country at these two special meetings. From this country's point of view one of the most important items discussed at the annual conference was the Greenlandic salmon problem to which reference will be made later.

(2) THE NORTH-EAST ATLANTIC FISHERIES COMMISSION.—This Commission, established under the International Fisheries Convention of London of 1959, held its fourth meeting in Edinburgh from 10th to 13th May, 1966; a meeting of Regional Committee 2, in which this country is interested, was held on 9th May. Ireland was represented by the Assistant Secretary in charge of fisheries and the Department's Inspector and Scientific Adviser. A meeting of a sub-committee of the Commission, attended by the Inspector and Scientific Adviser, to formulate proposals for international control, was held in London from 15th to 18th November.

(3) CHALLENGER SOCIETY.—This Society, established to promote the study of oceanography, holds "Joint Meetings" with Marine Laboratories each year. One of the Assistant Inspectors attended the meeting in London on 22nd and 28th January and read a paper on "Plaice in the western Irish Sea". The Inspector of Fisheries from the marine side also attended a meeting in Port Erin, Isle of Man, on 20th and 21st September and later took part in a discussion as to the need for a symposium on Irish Sea problems to be held at a suitable venue in the near future.

(4) MARINE RESEARCH GROUP.—The Inspector and Scientific Adviser attended a meeting in Belfast on 15th and 16th September, at which the need for some formal organisation to deal with Irish marine

biological research problems was discussed. It was agreed that for the time being an informal arrangement should be entered into whereby an annual meeting of persons actively engaged in marine biological research would be held in some suitable centre and that a Chairman chosen ad hoc for the meeting in question would be responsible for organisation, etc.

(5) CONFERENCE ON POLICING OF SEA FISHERIES.—The conference convened by the British Government to prepare a draft convention, embodying a modern code for the conduct of fishing operations and related activity in the North Atlantic, met in London in April and October. Eighteen states were represented. This country was represented by the Inspector and Engineer. The conference was adjourned to March, 1967, when it is expected that agreement will be reached on the text of a convention.

(6) INTERNATIONAL LABOUR ORGANISATION.—The Inspector and Engineer attended as an adviser on "Questions relating to Fishermen" to the Government panel of the Irish Delegation to the International Labour Conference, held in Geneva in June, 1966.

(7) CODEX ALIMENTARIUS MEETING IN BERGEN.—An Assistant Engineer attended this meeting in connection with the preparation of draft standards for various fishery products.

(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 March, September and December, 1966. The Committee commenced a confrontation of the fisheries policies of member countries of the organisation. This study will be continued in 1967.

ENGINEERING AND TECHNOLOGY.—A special team consisting of representatives of the Department of Agriculture and Fisheries, Office of Public Works, Roinn na Gaeltachta, Kerry County Council and An Bord Iascaigh Mhara, was set up, with the Inspector and Engineer as Chairman and an Assistant Engineer as Secretary, to inspect and advise on improvements desirable in fishery harbours in the South Kerry area. The team completed its task and as mentioned earlier the report of its findings is expected early in 1967.

A search pattern to locate herring shoals at Dunmore East was executed in accordance with the standard arrangement and the fishing fleet was kept advised of the results.

Close co-operation was maintained with the biological staff in the investigation of fish stocks, particularly in the extensive whiting larvae survey in the Irish Sea extending from Arklow to Islay (Scotland) and from the east coast of Ireland to the west coast of Britain.

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

PART II.

INLAND FISHERIES

The total catch of salmon and grilse by all methods in 1966 amounted to 2,326,422 lb. valued at £684,825, compared with 2,869,251 lb. valued at £712,495 for the previous year. The catch of sea trout, at 86,350 lb. valued at £16,522, was substantially lower than in the previous year, when 113,630 lb. valued at £18,342 were landed. Details of the catch of salmon (and grilse) and sea trout in the years 1964 to 1966, inclusive, are given in Appendix No. 11. Catches made in the former Moville Fishery District, now incorporated in the Foyle Fisheries Commission area, are not so included but are published in that part of this report relating to the Commission.

The runs of spring fish which have spent two or three years feeding in the sea appear to have been somewhat smaller than in the previous two years, as also was the case with the small summer fish (just over two full years feeding in the sea) which constitute a high proportion of the runs in May and early June in most Irish rivers. Although not so abundant as in the years 1962 to 1965, inclusive, the runs of grilse were still good compared with the decade or so before 1962.

Over most of the country conditions were reasonably favourable for angling during 1966 but in the Galway, Connemara, Ballinakill and Bangor Fishery Districts they appear to have been unfavourable, for at least part of the season. In some areas floods towards the end of the season made conditions unfavourable for netting.

Details of the catch of salmon in each fishery district for the years 1964 to 1966, inclusive, are given in Appendix 12. In 1966 the catch of salmon was distributed as follows :—

Draft nets	...	...	...	...	41.3%
Drift nets	...	...	...	...	32.0%
Stake nets and other minor commercial methods	...	...	...	...	13.7%
Rod and line	...	...	...	...	13.0%

The proportion of fish taken by drift nets continued to rise (from 27.7% in 1965 to 32.0% in 1966). This rise was associated to some extent with the suitable weather conditions for drift netting for salmon during the peak of the runs of grilse in many areas. There was a slight drop in the proportion of rod caught fish, which was probably due to the reduced catches in a small number of rivers affected by U.D.N. disease. The average weight of salmon landed was, however, much higher (at 8.4 lb.) than in 1965, when the figure was 7.6 lb.

The number of rod licences of all kinds for salmon and sea trout issued in 1966 amounted to 12,053, a drop of 752 on that of the

previous year, but still well above the figures for the years 1962 to 1964, inclusive. The average catch per rod was 3.0 salmon weighing 25 lb. and valued at £8.17.0. This was a considerable reduction on the figure for the previous year (4.3 fish weighing 32.5 lb valued at £9.13.0). As is usual, the highest average weight of salmon landed on rod and line (12.2 lb) was made in the Drogheda Fishery District in which the angling depends mainly on the earlier running spring fish, very few grilse being taken by this method. Fish taken on rod and line in western districts were, as usual, of low average weight due to the dependence of the angler on the lighter and later running grilse.

The sea trout catch, amounting to 86,350 lb, was distributed amongst the various methods of capture as follows:—

Rod and line	...	...	...	73.3%
Draft nets	...	...	...	23.4%
Drift nets, stake nets, etc.	...	...	...	3.3%

The proportion of sea trout taken on rod and line was almost exactly the same as in 1965, and the reduction in catch by all methods was due mainly to the smaller runs of fish. In many districts the average catch of sea trout per licence is of little value in assessing success or otherwise of fishing since few anglers are actually fishing specifically for sea trout. In certain Fishery Districts, however, in which sea trout angling predominates or is important, the average catch per licence is a useful index of the success of fishing. In the Connemara Fishery District, for example, the catch per licence was 16.7 sea trout, weighing 16.0 lb, compared with 18.4 fish, weighing 19.2 lb, for 1965.

In 1966 the catch, mainly of grilse, made by the long established open sea drift net fishery amounted to 94,555 fish, weighing 5,846 cwt, compared with 106,065 fish, weighing 6,079 cwt, for 1965. The average weight of fish landed was 6.98 lb, compared with 6.42 lb for 1965.

In 1966 the Corporation of Dublin Wholesale Fish Market handled 98,950 salmon and grilse weighing 751,560 lb, compared with 101,728 fish, weighing 730,643 lb, and 111,860 fish, weighing 782,226 lb, for 1965 and 1964, respectively.

During the year a number of important Irish salmon rivers and some minor ones were adversely affected by Ulcerative Dermal Necrosis (U.D.N.) disease in salmon, and mortalities to varying degrees were experienced therein. Investigations into this disease were continued by officers of the Veterinary Research Laboratory and the Fisheries Division. During the year, tanks for experimental work were installed at the Veterinary Research Laboratory, Co. Dublin. Through the generosity of the firm of Messrs. Arthur Guinness Son and Co. Ltd., the Salmon Research Trust of Ireland, Inc. was able to second a fully qualified bacteriological technician to assist in the work at Abbots-town. A Junior Research Fellow was also appointed, as a result of a generous grant from the Electricity Supply Board, to undertake work on the fungal aspects of the problem at University College, Dublin,

under the general supervision of a lecturer of the Department of Botany of that college. Investigations of the blood cells and proteins of diseased and healthy salmon was also carried out by a lecturer of the Department of Zoology, University College, Cork. Fuller details of the work on the disease have already been given in the Department's *Inland Fisheries Bulletin* No. 4.

Reports from Boards of Conservators and others indicated that in most areas, and even in rivers adversely affected by U.D.N. disease in salmon, the runs of smolts to the sea were at least of average proportions. The spawning season was reported to be good in most rivers unaffected by U.D.N. disease of salmon. Spawning in rivers seriously affected by U.D.N. was generally reduced, but substantial numbers of salmon evidently spawned in most of these rivers as well.

Visits were paid by an officer of the Department to British salmon markets to obtain information upon which to base a campaign for the improvement of the quality of Irish salmon. The Department gratefully acknowledges the help given in this regard by the officials of the Fishmongers' Co. Ltd., London, of the market inspectors, of various British markets and of some merchants of the various centres.

BOARDS OF CONSERVATORS.—Details of receipts and expenditure of Boards of Conservators in the fishery year ended 30th September, 1966 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 6,011 persons found either whole-time or part-time employment in inland fisheries during the year. This figure includes 3,854 persons estimated as engaged in netting for salmon under common law right, 690 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 ghillies or on protection work, and 104 engaged in development work on behalf of the Inland Fisheries Trust. The remainder were 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 13,809, representing a decrease of 838 on the figure for 1965. The totals in recent years were:—

1965	...	...	14,647
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 1966 numbered 202, as compared with 263 in 1965. The Garda Síochána continued to co-operate with Boards of Conservators in the protection of inland fisheries during the year.

SALMON EXPORTS.—The decline in the volume of the salmon catch resulted in a decrease in salmon exports. The total quantity of salmon exported in fresh, chilled, frozen and smoked forms was 17,435 cwt., as compared with 19,764 cwt. in 1965. The reduction in quantity was, however, more than offset by the higher prices realised on the export markets. At £813,612, the value of salmon exports was £54,212 greater than in 1965. Details for the two years are as follows:—

	1966		1965	
	cwt.	£	cwt.	£
Fresh, chilled and frozen salmon ...	17,159	782,334	19,420	723,779
Smoked salmon ...	276	31,278	344	35,621

Of the total quantity of fresh, chilled, and frozen salmon exported in 1966, 13,800 cwt. went to Great Britain, 2,438 cwt. to France, 310 cwt. to the Netherlands, 186 cwt. to the Federal Republic of Germany, 183 cwt. to Belgium and 137 cwt. to Switzerland. The smoked salmon was exported mainly to Great Britain (131 cwt.) and to Switzerland (85 cwt.). The average export price of fresh, chilled, or frozen salmon was £45 : 11 : 10 per cwt., as compared with £37 : 5 : 5 per cwt. in 1965. 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 Agriculture and Fishery products (Regulation of Export) Act, 1947 (Export of Salmon) Order, 1954 (S.I. No. 275 of 1954) was 91.

DEVELOPMENT OF EEL FISHING.—Investigations of eel stocks and methods of capture were continued during the year. A research studentship for this work was also awarded to a University Science graduate. These investigations will be of assistance in planning development of the eel fishing industry.

Temporary eel fishing authorisations were issued to 41 applicants during 1966. Advice was furnished to interested persons on design and operation of eel fishing engines.

Exports of eels amounted to 6,075 cwt. valued at £106,218, compared with 8,433 cwt. valued at £120,944 in 1965.

FISH CULTURE.—Production of rainbow trout declined in 1966, due mainly to reduced output from the large scale commercial fish

farm at Waterville, Co. Kerry, whose management decided to cease production of rainbow trout and to concentrate on extension of mink production. The two other large scale units at Dingle and Woodenbridge took steps to increase their output.

Fodder fish, which constitutes the main diet of rainbow trout reared in fish farms, met with increased demand, especially from mink producers.

Exports of rainbow trout in 1966 amounted to 2,453 cwt. valued at £51,155, as against 2,841 cwt. valued at £58,558 in 1965.

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 1966 spawning season amounted to 3,047,000, as compared with 6,180,000 produced in the previous season. 635,000 salmon ova were distributed from the Department's hatchery at Glenties.

Some 1,708,000 brown trout fry, summerlings and fingerlings and 250,000 rainbow trout fingerlings, summerlings and yearlings were reared in fish farms and rearing stations of the Inland Fisheries Trust in 1966. Of this output, 1,479,000 brown trout were released in waters under development, 236,500 fry and fingerlings were sold to angling associations and clubs, and 9,000 fingerlings were sold to the Electricity Supply Board for release in waters being developed by the Board. 75,000 rainbow trout fingerlings were stocked in several small lakes and the balance, together with 390,000 ova, were sold to commercial fish producers.

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

70,000 to re-stock River Moy

25,000 for River Corrib system in rivers adjacent to Cong Hatchery.

REGULATION OF ERNE SALMON FISHERY.—The salmon stock position in the River Erne continued to show improvement, and restrictions imposed on fishing for salmon by commercial methods during the years 1960/64 were relaxed further in 1966. Salmon fishing by commercial engines was permitted in the period from 1st March to 19th August, but the extended weekly close time of three days imposed in 1965 was retained. Twelve draft net licences were taken out and the special local licence duty for these nets was fixed at £25.

The total recorded run of fish in the river was 15,522, which was the highest for eleven years. 2,037 fish were captured by nets and 2,547 in the traps of the Electricity Supply Board.

REHABILITATION OF SALMON STOCKS IN THE RIVER LEE.—Work on the rehabilitation of salmon stocks in the River Lee during

1966 consisted mainly of measures designed to facilitate the downstream passage of smolts past the hydro-electric dams and the removal of pike from the reservoirs.

The presence of disease in the river affected the extent of rehabilitation work.

Only 1,192 smolts were counted passing downstream through the Inniscarra fish pass in 1966 between 1st April and 13th June, compared with approximately 17,000 in 1965.

During 1966, 971 pike were removed from the reservoirs compared with 2,455 in 1965. The reduced number of pike captured in 1966 would suggest that the efforts to reduce these predators in recent years have been successful. Three of the feeding pike taken in the reservoirs had salmon smolts in their stomachs.

The total number of adult salmon which passed upstream of Inniscarra Dam was 289, and 114 were recorded passing upstream of the Carrigadrohid dam. The Electricity Supply Board removed 40 salmon from the river for hatchery purposes and planted out 251,440 fed fry and fingerlings and 300,000 unfed fry in selected parts of the system.

In addition to the Electricity Supply Board, the Cork Board of Fishery Conservators and the Inland Fisheries Trust co-operated in the rehabilitation work.

Salmon fishing was restricted by bye-law to the periods 1st March, 1966, to 31st July, 1966, for nets and 12th March, 1966, to 31st August, 1966, for rods.

The total number of salmon captured in the River Lee in 1966 was 361, of which 114 were taken by rods and 247 by nets.

SCIENTIFIC INVESTIGATIONS.—Details of the scientific investigations in the inland fisheries field, conducted by officers of the Department, have already been described in some detail in the *Inland Fisheries Bulletin* (No. 4).

Material relating to the Rivers Moy and Shannon, consisting of sets of scales with relevant data, was collected during the year, and at the close of the period under review the Inspector of Fisheries on the inland fisheries side had commenced to study that from the River Moy. Conditions in the River Erne were also studied in connection with plans for the rehabilitation of that river from the earlier adverse effects of the erection of the hydro-electric scheme. In particular, the effects of the tides on the catches of salmon were investigated.

Statistics relating to the catches of Irish salmon in recent years were compiled for transmission to the Joint Working Group on Atlantic Salmon, established by the International Council for the Exploration of the Sea and the International Commission for the North-West Atlantic Fisheries.

Tagging of clean salmon in the open sea at Dooneen Point, Killary Harbour, Co. Mayo, was continued in June and July. A total of 41 salmon were tagged, but the results were disappointing as only one fish was recaptured and that at a short distance from the tagging station. The number of fish tagged was small because of the lateness of the runs of fish along this part of the coast in 1966.

One of the Assistant Inspectors of Fisheries prepared a paper during the year giving the results of taggings made from drift nets along the north coast of Mayo in former years and this was offered for publication in the *Proceedings of the Royal Irish Academy*.

The kelt tagging programme was continued in 1966, and a total of 2,906 salmon kelts were tagged at selected sites on the Rivers Corrib, Erne, Owenea, Screebe and Shannon. A total of 33 recaptures of tagged fish were reported. Biological investigations were continued during the year in connection with the rehabilitation of the stocks of salmon in the River Lee and investigations were continued into the effect of reduced water levels in Lough Conn.

During 1966, char were identified from a number of waters in Ireland. For the first time for more than a century, specimens of char (*Salvelinus colii* or Cole's char) were obtained from Lough Naback, Co. Longford. Large numbers of char were also identified from Lough Fad near Moville, Co. Donegal, where they have been known for some time, and further specimens of the same species were obtained from Lough Conn during the gill netting operations in the month of October. Char were also identified from the stomachs of pike taken during netting operations in the same lake from October to December.

Investigations into the stocks of freshwater eels in the estuary of the River Blackwater were continued during the year and, at the request of the Foyle Fisheries Commission, investigations were started on the River Foyle. A student appointed under the Studentship Schemes started investigations on the eels of the River Boyne.

Work on the fecundity, survival of young pike up to the age of five to six months, and the age and growth of pike in selected waters, was undertaken during the year. Considerable progress was made in investigating the samples of scales taken over the past six years from pike from Lough Conn.

A start was made on investigating conditions relating to the stocks of salmonid fishes in the River Owenea, Co. Donegal, and by means of a bursary awarded to a student of Zoology, bottom and drift faunas from the river were collected for examination by the staff of the Department.

A considerable amount of the time of the scientific staff was devoted to activities connected with the disease in salmon which has been experienced in certain rivers in the country. The main task of investigating the disease is being undertaken by officers of this Department's

Veterinary Research Laboratory at Abbotstown, Co. Dublin. The Salmon Research Trust, through the good offices of one of its sponsors, Messrs. Arthur Guinness, Son and Co. Ltd., made available funds to enable the Trust to appoint a qualified bacteriological technician for secondment to the laboratory in connection with the salmon disease investigations.

The Department's Inspector and Scientific Adviser who advises the Foyle Fisheries Commission on scientific and developmental matters undertook the investigation of salmon of the Rivers Roe and Finn and of the sea trout of the River Foyle during the year and, at the close of the period under review, had prepared a paper on the subject for inclusion in the Annual Report of the Commission.

During the year the Department provided a grant to enable a number of the staff of University College, Dublin, to undertake work on the parasites of freshwater fishes.

Two Junior Fellows were appointed in March, 1966, to study the water purity and biological, chemical and physical conditions in the Cork Blackwater (as an example of an important salmon river) and the River Martin (as an example of a minor river). This work is being carried out in close liaison with the Irish Sugar Company Ltd. and the Institute for Industrial Research and Standards.

A third Junior Fellow was appointed, with the aid of funds provided by the Electricity Supply Board, to investigate the fungal aspects of the salmon disease under the supervision of a member of the staff of University College, Dublin.

Under the scheme whereby selected students are awarded student-ships in fishery science the holders of four such awards carried out research during the year into—

- (a) The littoral and sub-littoral faunas of Lough Conn;
- (b) the Chironomidae of Irish waters;
- (c) the eel populations in the River Boyne; and
- (d) the lactic dehydrogenase isoenzymes in the guppy (*Lebistes reticulatus*).

The scientific staff of the Department continued to give advice on fishery management to the general public. The identification of fish and the reading of scales on behalf of the Irish Specimen Fish Committee were undertaken during the year. The Department's Inspector and Scientific Adviser acted as Director of research of the Salmon Research Trust of Ireland, Inc. The Division also provided stands for the Royal Dublin Society Spring Show in May and Scientific Exhibition in October.

ENGINEERING.—Salmon Disease Investigation Installations:—Installations were designed and built, as a matter of urgency, to enable

investigations into the nature and cause of this outbreak to proceed as rapidly as possible. These included a unit consisting of 16 200-gallon and 6 450-gallon asbestos cement tanks with a gravity-fed water supply system and a stand-by pump supply for use in case of emergency, an ultra-violet lamp arrangement to sterilise the incoming water, and a controlled drip chlorine feed dosing apparatus to cope with the effluent. An existing large tank unit on the banks of the River Liffey at Islandbridge was converted and equipped to hold adult fish under controlled experimental conditions. Two sea water recirculation tank units were built with suitable pumping arrangements and re-aeration devices. A mobile pressure filter unit was designed and built to filter the water passing from one fish tank to another. A pre-fabricated site laboratory unit was designed and assembled at the fish tank site complete with all services. In addition, designs were prepared for a unit consisting of 6 200-gallon tanks, each equipped with a temperature control arrangement to allow experiments to be carried out under controlled temperature conditions, and a mobile laboratory equipped with all necessary facilities to permit on-the-site investigations.

*Hydro-Electric Development:—*The various hydro-electric installations were kept under observation and the effects of their operation on fish life observed. The arrangements made in 1964 to expedite the safe passage downstream of smolts past Inniscarra Dam, on the River Lee, were once more implemented in the 1966 season but the run of smolts was disappointing. It is becoming clear that additional steps will be necessary to ensure that the salmon run in the River Lee will benefit to the full the potential for the growth of young salmon remaining in the head waters. During the year it was necessary for the Electricity Supply Board to lower the reservoir at Leixlip in order to carry out maintenance repairs at Leixlip Dam. In view of the serious results from a similar operation in 1951, a careful programme was drawn up to enable this operation to be carried out without the loss of fish experienced on the former occasion. The steps taken were very successful and very small numbers of salmon died.

It is not yet proved possible to install a fish counter at Cliff Dam on the River Erne as had been proposed but arrangements are now well in hand to complete the installation.

*Thermal Power Stations:—*Due attention was paid to the need to ensure that the construction of the thermal power stations at Great Island, Pigeon House and Tarbert, will have the minimum impact on fishery interests. The Department's Engineer availed of an opportunity presenting to inspect the Pigeon House Station model investigations in progress at the Department of Scientific Research Hydraulics Laboratory at Wallingford in England and observed the work in progress there. The possible effects of the operation of the Station on the effluent from the Dublin Corporation Sewage Works was also discussed with the Corporation Engineers.

*Arterial Drainage:—*Work continued on the major schemes on the Rivers Moy, Inny, Killimor and Deel. In the case of the Inny Drain-

age Scheme, final revisions of the modified original scheme were agreed upon with the Office of Public Works, incorporating special provisions to safeguard the special fishery interests of Lough Sheelin. Close liaison was maintained with the Office of Public Works in the execution of the schemes in hands. Schemes in the course of design were also studied in detail and the Office of Public Works was provided with comprehensive reports on the fishery interest and agreement was reached in all cases on the special measures to be taken. Particular attention was paid to the Boyne Catchment for which the design of a drainage scheme is nearing completion.

Maintenance operation of existing drainage schemes continued to give some cause for concern to angling interests. Furthermore, in some rivers existing fishing engines were adversely affected by unusually high flows. It is not possible to establish whether this was due to the drainage work or was a natural phenomenon, but the matter is being kept under review.

Investigation of Fish Movement :—During the period 27th March to 12th June, 16,978 smolts were captured in the smolt trap at the Galway Sluice Barrage. The maximum number of smolts taken from the trap in one day was 4,200 on 2nd May. This however, was the yield of two days fishing, the trap not having been fished on the Sunday. Other fish taken in the trap were 38 kelts, 19 sea-trout, 1 brown trout, 30 eels, 2 perch, 5 lampreys. This represented a reduction in the catch from that obtained in 1965 and was attributed to greater than usual river flows during the time of the operation of the trap, which enabled larger numbers of fish to by-pass the trap and pass through the barrage gates. Of 61 kelts tagged on release from Cong Salmon Hatchery on 1st April, 8 were recaptured in the smolt trap as follows :

On 9th April	...	5
„ 11th April	...	1
„ 13th April	...	1
„ 23rd April	...	1

The minimum speed of travel of the kelts downstream through Lough Corrib therefore, varied from 0.9 miles per day to 2.3 miles per day. It had been intended to alter the new smolt traps at Glenties to cope with heavy river flows. Discharge conditions in the river did not permit this to be done in time for the 1966 smolt run.

Fish were recorded as having passed through the electronic adult salmon counters as follows :

Galway Sluice Barrage	...	10,700
Ballina (River Bunree)	...	1,824
Islandbridge (River Liffey)	...	3,747

A start was made in the attempt to correlate fish movements with variations in water levels. A time-of-event recorder was installed in conjunction with the counter for adult fish at Bunree. Data collected is being studied. The observations will be repeated over a number of

years. The new counting tunnel at Ennistymon Fish Pass appeared to be functioning satisfactorily but due to extraneous factors it was in operation only from July to mid-December, during which period 88 fish were counted by it as having passed upstream.

Fish Culture Installations :—The salmon hatchery and rearing station at Cong, Co. Mayo, operated successfully during the season and fish were distributed from it as follows :

80,000 to the River Moy

5,000 to Lough Mask

10,000 to the Abbert River and

10,000 released into Lough Corrib.

The gravel hatching box arrangement was utilised again with satisfactory results.

At the request of the Slaney Anglers Association, designs were prepared for hatching tray units for use in the Bunclody hatchery.

Rainbow Trout Farming :—Proposals were received for the building of sea water ponds for rainbow trout farming, and the sponsor was advised on the project.

Discussions took place with the officers in charge of the pilot farm areas to investigate the suitability of fish farming operations for introduction to these areas.

The sites of two fish farm projects were investigated and the sponsors advised on their suitability.

River Improvement Schemes :—Interest in this work is still confined to a few Boards of Conservators, but considerable benefit is being derived by these Boards from the scheme in the Development of spawning areas in salmon rivers. A survey was made of the Dungloe lakes with a view to drawing up proposals for development. The Glengarriff River and the Glencolumbkille area were investigated with a view to future development; but the results as far as Glencolumbkille is concerned were disappointing. A start was made by the Dundalk Board on the provision of new spawning areas in the Glyde and Dee catchment which had been subjected to drainage operations some years ago.

Eel Fishery Development :—A number of existing eel fishing installations were inspected to ensure compliance with the fishery laws and in connection with the issue of temporary authorisations. Designs were prepared for two new eel weirs, one of which was built and operated very successfully. Advice was supplied on the reconstruction of a major eel weir. Advice was sought from the Department as to a project to erect an electric barrier for eel fishing. A number of proposals for the development of eel fisheries were examined and

commented on as so were proposals for the processing of eels for the market.

Fish Passes :—Work commenced on the construction of the large fish pass at Clifden, Co. Galway, and was well advanced at the end of the year. Two fish passes to this Department's design were built by the Office of Public Works, one at Castlecor on the River Inny and one on the Spaddagh River in the Moy catchment. Fish pass designs were prepared for the Willistown Weir, on the River Dee; Dingle fish farm weir; and Baltinglass Weir.

Electric Fish Barrier on the River Boyne :—In response to the request of the Drogheda Board of Fishery Conservators, tentative proposals were drawn up for the installation of an electric fish barrier at Oldbridge Salmon Weir with the object of blocking the movement of all adult fish upstream in the River Boyne in the event of an outbreak of U.D.N. in the salmon in this river system. Certain difficulties arose to prevent the implementing of these proposals and these, coupled with the fact that the outbreak of disease feared did not occur, caused the abandonment of this project.

Application of Electricity to Inland Fisheries :—Work on this project continued at the State Hatchery in Glenties, Co. Donegal, where tests are continuing on a prototype electric barrier for the diversion of smolts and eels. An electric barrier to prevent the upstream migration of salmon was erected at Cork Waterworks Weir on the River Lee, but modifications were found necessary. These have been designed and will be tested in due course.

Exhibitions :—Special display stands were designed and built for exhibition at the R.D.S. Spring Show, for which a scale model of the fish farm unit at Kilmaglish was constructed to illustrate the application of fish farming in small farm development. At a Science Exhibition in Carlow, the Ennistymon Fish Pass model was put on display to illustrate the programme of development of salmon rivers. At the Science Exhibition held at the R.D.S. a display was designed and built to illustrate the application of electronics to fishery work.

General :—Water abstraction proposals affecting five rivers were examined and precautions required in the fishery interest were specified. In collaboration with the Bangor Board of Fishery Conservators, sanctuary areas were marked out in the joint estuary of the Owenmore and the Owenduff. Engineering services and advice were supplied from time to time to the Inland Fisheries Trust, Salmon Research Trust and the Foyle Fisheries Commission, for whom a design of a fish pass incorporating a fish trapping device was prepared for installation at Ballyarton Weir on the River Faughan. Advice was also supplied on electric fishing gear and on the installation of smolt screens at mill installations.

Draft regulations were prepared to cover the handling of salmon.

The Engineer attended various meetings in England of the Supervisory Group on Methods of Excluding Fish from Water Intakes, in the course of which it was possible for him to inspect the Axe Smolt Trap operated by the Ministry of Agriculture, Fisheries and Food, London; and the smolt barrier at Bossington.

Visitors :—A study tour of fishery installations in Ireland was carried out by Mr. Earl Leitritz, formerly of the Inland Fisheries Branch of the California Department of Fish and Game.

Messrs. J. Scott, A. Neilsen, V. Corbett of the Ministry of Finance, Belfast, together with Mr. K. U. Vickers, Ministry of Agriculture, Drainage and Fisheries Division, Belfast, visited a number of fish rearing installations.

Messrs. R. S. Randle, W. Croker, A. Addington, J. Brayshaw and F. Nott of the Avon and Dorset River Authority inspected electronic fish counting installations, fish rearing and other facilities.

Mr. W. J. Hartley of the Ministry of Agriculture, Fisheries and Food, London, and Mr. D. Simpson of the North of Scotland Hydro-Electric Board, Pitlochry, inspected the electric fish barrier experiments at the State Hatchery, Genties, and Cork Waterwork Weir and also the electronic fish counting installations fitted to various fish passes.

FOYLE FISHERIES COMMISSION.—The annual report of the Foyle Fisheries Commission for the year ended 30th September, 1966, contains full details of the Commission's activities during the year.

Runs of fish during the year showed a considerable increase over the previous year and the spawning stock was one of the highest observed for many years.

The increased runs of fish combined with suitable weather conditions resulted in an increase in the total catch by commercial engines. Angling conditions were generally unfavourable and the returns were accordingly poor.

	Salmon		Sea Trout		Total	
	No.	lbs.	No.	lbs.	No.	lbs.
Nets ...	108,085	793,207	*412	599	108,497	793,806
Rods ...	1,524	11,939	4,635	4,155	6,159	16,094
Total ...	109,609	805,146	5,047	4,754	114,656	809,900

* Figure represents the Commission's catch only.

Market prices for salmon and grilse were unusually high during the months of June, July and August.

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

- (i) Foyle Area (River Foyle Angling Authorisation) Regulations, 1966;
- (ii) Foyle Area (Rivers Faughan and Roe Angling) Regulations, 1966;
- (iii) Foyle Area (Control of Netting) Regulations, 1966.

The Commission continued its investigations into the movement and escapement of fish into freshwater during the close season. The results of research to date into the growth and movement of young salmon in the tributaries are given in Appendix IV of the Commission's Report.

250,000 salmon ova were produced at the Commission's hatchery and the resulting fry were planted in various tributaries.

A number of diseased fish were taken from the Foyle system and sent to the Veterinary Research Department, Ministry of Agriculture, Belfast, for examination.

66 prosecutions were taken for breaches of the fishery laws, and of these 61 resulted in convictions.

INLAND FISHERIES TRUST INCORPORATED.—Details of the Trust's work on development of brown trout, coarse fish, and sea angling, are contained in the annual report of the Trust for 1966.

During the year the Trust removed a record weight of predators (pike and perch) from waters being developed for brown trout, and the output of brown trout at the Trust's fish farms was also a record. Trout angling especially in the Western and Midland lakes showed continued improvement. During the year the Electricity Supply Board granted a long lease to the Trust of extensive brown trout and coarse fishing in certain waters on the River Shannon system, which up to then had been held by the Trust on an agency basis. These waters include lakes Sheelin, Ennell, Derravaragh and Owel and the rivers Brosna, Inny and Suck and are regarded as having excellent fishing potential.

A five year plan for the more intensive development of coarse fishing was initiated in co-operation with Bord Fáilte Éireann.

Biological research was continued into the growth and requirements of various species of fish as a basis for long term development.

Surveys of sea angling potential were extended and advice given to local groups promoting sea angling.

Membership of the Trust increased from 5,942 in 1965 to 6,398 in 1966.

SALMON RESEARCH TRUST OF IRELAND INCORPORATED.
—A full account of the activities of the Salmon Research Trust for 1966 is given in the Trust's report for that year.

The programme of investigations into the rearing, survival and growth rate of salmon and sea-trout was continued, and a further study was made of the specific characteristics of brown trout and salmon sea-trout hybrids. Work proceeded on feeding experiments and the movement of smolts, kelts and eels. A study was made of age and growth of eels and the feeding inter-relationships of eels, salmon and trout. The results are summarised in Appendix V of the Trust's report.

Further experimental work was carried out on the Cottage River to confirm some of the conclusions reached in 1965 and to prepare for future work on this river. The results obtained are set out in Appendix IV of the Trust's report.

Under the direction of a sub-Committee (The Peat Silt Research Group), the Trust continued its study on the effects of peat silt on fish life in the River Boyne. A report on the biological aspects of this work to date is given in Appendix II of the Trust's report. In conjunction with the Laboratoire Central d'Hydraulique de France the sub-committee undertook investigations of the physico-chemical properties of peat silt in suspension.

MANAGEMENT OF STATE FISHERIES.—The Fisheries Division managed 145 State-owned fisheries in 1966 and collected £4,156 in rents as compared with £3,864 in 1965. In 1966, 38 fishing stretches were advertised for letting. Improvement works were carried out on a number of the fisheries.

INTERNATIONAL AND OTHER CONFERENCES.—

(1) **INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA (ICES).**—As mentioned earlier, the annual conference of this Council was held in Copenhagen from 3rd to 12th October, 1966. From the inland fisheries point of view the most important item on the agenda was the draft report of the Joint Working Group on Atlantic salmon set up by the Council and the International Commission for the North-West Atlantic Fisheries (ICNAF) for the purpose of investigating the possible effects of the Greenlandic salmon fisheries on stocks of Atlantic salmon over its range of distribution. This country's representative also took part in a meeting of the Joint Working Group held in Madrid, Spain, from 25th to 28th May, 1966, in conjunction with meetings of ICNAF. A representative of the Salmon Research Trust of Ireland Inc. took part in the International smolt tagging experiments organised by the Salmon and Trout Committee in southern Sweden in April, 1966.

(2) **EUROPEAN INLAND FISHERIES ADVISORY COMMISSION.**—This Commission held its fourth meeting at Belgrade from 9th to 14th

May, 1966. Delegates from 16 member countries and observers from one country and from four international organisations attended the meeting. The Irish delegation consisted of two officers of the Department, a representative of the Salmon Research Trust and an electrical fishing expert. Matters of particular interest dealt with were survey and appraisals of fishing waters and their fish population, fish culture and fish diseases (including, as a sanitary control, a recommendation for adoption of a common form of health certificate for inter-country movement of fish eggs), and water pollution study and control. Included in the matters decided to be the subject of studies in the inter-session period were a survey of the economics of sport fishing resources in selected countries, the methodology of economic evaluation of fish culture and commercially exploited natural resources, and recommendations on fish disease control. In the latter connection Ireland is to present a working paper for the fifth session.

(3) SALMON RESEARCH GROUP.—This Group, established nearly 20 years ago by the British Development Commissioners, meets periodically to discuss salmon research problems in suitable centres. A meeting of the Group was held on 15th June, 1966, at the Freshwater Biological Association Laboratory on Lake Windermere, at which Dr. J. R. Brett of the Fisheries Research Board of Canada discussed research on sockeye salmon. After the meeting a visit was paid to the Lancashire River Authority's installations at Haverthwaite on the River Leven. The Department's Inspector and Scientific Adviser, the Department's Engineer and a representative of the Salmon Research Trust of Ireland, Inc., were present. A second meeting of the Group was held in London, at which the diseases of salmon were discussed. This meeting was attended by representatives from this country of this Department (both of the Fisheries Division and the Veterinary Research Laboratory), the Electricity Supply Board, the Salmon Research Trust of Ireland, Inc., Dr. M. Stuart of the Botany Department, U.C.D., and Mr. H. Fuller, Junior Fellow, who had been appointed earlier to undertake the investigations on the fungi associated with diseased salmon.

(4) INTERNATIONAL TECHNICAL MEETING ON THE PRODUCTIVITY OF FRESHWATER COMMUNITIES SPONSORED BY THE INTERNATIONAL BIOLOGICAL PROGRAMME.—This technical meeting was held in the University of Reading from 1st to 5th September, and representatives of this Department, the Salmon Research Trust of Ireland Inc., and the Inland Fisheries Trust Inc., were present. The purpose of the meeting was to review the present state of knowledge about the biological production of fish in fresh water and to identify those aspects in which progress was lacking. The conference was attended by a large number of persons from every part of the world and provided an unrivalled opportunity to meet workers in the freshwater field from many countries.

(5) ANNUAL CONFERENCE OF THE SALMON AND TROUT ASSOCIATION.—This Association holds an annual conference in London at which matters of interest in the inland fisheries field are discussed. The 1966 annual conference was held on 22nd and 23rd November, and one

of the main papers was an account by an officer of the Inland Fisheries Trust, Inc., of the work of that body. The conference was attended by representatives of this Department, the Inland Fisheries Trust, Inc., the Salmon Research Trust of Ireland, Inc., and the Electricity Supply Board.

(6) INLAND FISHERIES RESEARCH GROUP.—In 1965 it was decided to arrange annually an informal meeting of those persons actively engaged in inland fisheries research in Ireland. On 15th April a meeting of the Group was held at Fanure Fish Farm of the Inland Fisheries Trust, Inc., near Roscrea, Co. Tipperary, under the chairmanship of Dr. M. Kennedy of that body. Representatives from the Universities, the Salmon Research Trust of Ireland, Inc., the Electricity Supply Board, and of this Department (both of the Fisheries Division and the Veterinary Research Laboratory), were also present.

(7) INSTITUTION OF CIVIL ENGINEERS AT EDINBURGH.—The Engineer, accompanied by an Assistant Engineer, attended the meeting of this body at Edinburgh, at which was presented the paper by L. H. Dickerson, P. L. Aitken and W. J. N. Menzies entitled "Fish Passes and Screens at Water Power Works", following which they participated in a tour of Scottish fishery installations at hydro-electric dams.

LEGISLATION.—The Fisheries (Amendment) Bill, 1966, was introduced in Dáil Éireann on 22nd March, 1966. The main provisions of the Bill relate to the incorporation of boards of conservators and the definition of their powers and duties, superannuation of the supervisory staffs of such boards with recruitment on recommendation of the Local Appointments Commission, establishment of an Inland Fisheries Conservancy Fund and substitution of a first sales levy on salmon for the former salmon export levy and revision of fishing licence duties. No further stages of the Bill had been taken before the end of the year.

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

NEIL T. BLANEY,

Minister for Agriculture and Fisheries.

10 June, 1968.

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FISHERIES FOR THE YEAR 1966.**

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APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed in 1965 and 1966.

Kinds of Fish	Quantity		Value	
	1966	1965	1966	1965
	cwt.	cwt.	£	£
Soles	3,057	3,741	71,060	84,565
Brill	1,264	2,120	13,733	22,665
Turbot	1,491	2,042	15,936	21,164
Plaice	28,117	23,828	222,668	181,609
Dabs	3,827	4,443	10,053	12,056
Megrims	4,295	4,698	16,316	15,979
Other Flat Fish	2,635	2,491	11,245	9,139
Ray/Skate	22,418	23,879	90,164	98,678
Cod	38,839	32,306	153,238	131,917
Haddock	29,087	34,397	106,222	106,451
Hake	1,551	1,765	15,827	11,653
Whiting	99,248	108,164	215,634	211,308
Pollack	11,423	13,187	30,532	34,176
Other Round Fish	25,239	25,131	23,075	18,002
TOTAL DEMERSAL	272,491	282,192	995,703	959,362
Herrings	293,300	210,555	399,312	251,521
Pilchards	360	39	198	157
Mackerel	29,645	40,213	46,389	45,853
Sprats	30,520	29,678	12,573	12,218
TOTAL PELAGIC	353,825	280,485	458,472	309,749
TOTAL WET FISH	626,316	562,677	1,454,175	1,269,111
Lobsters	Nos. 491,668	Nos. 362,851	231,482	150,415
Crawfish	160,693	163,899	117,553	108,147
Crabs	49,582	118,593	1,336	2,207
Escallops	309,454	197,668	9,584	5,342
Oysters	1,387,201	1,465,179	29,871	31,084
Dublin Bay Prawns	cwt. 24,735	cwt. 15,769	83,275	62,287
Mussels	15,134	18,597	7,617	7,627
Periwinkles	45,179	33,356	84,584	58,052
Other Shellfish	3,666	2,408	13,859	6,101
TOTAL VALUE SHELLFISH	—	—	579,161	431,262
TOTAL VALUE ALL FISH	—	—	2,033,336	1,700,373

The above figures for 1966 include landings, without counterpart in 1965, which were made outside the State by certain Irish-registered fishing vessels.

APPENDIX No. 2

Comparison of the Average Price per cwt. of various kinds of Sea Fish for the years 1959—1966

	1959	1960	1961	1962	1963	1964	1965	1966
Soles	£ 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	£ s. d. 23 4 11
Brill	9 9 7	9 6 9	10 2 3	10 4 4	11 0 11	10 15 10	10 13 10	10 17 4
Turbot	9 16 2	10 2 2	10 0 0	10 0 8	10 13 11	10 0 11	10 7 3	10 13 9
Plaice	8 8 8	8 2 8	8 5 1	8 18 11	7 14 10	7 7 2	7 12 5	7 18 4
Dabs	—	—	*2 15 3	2 13 3	2 13 11	2 10 4	2 14 3	2 12 6
Megrims	—	—	*3 8 3	3 6 6	2 17 4	2 10 11	3 8 0	3 16 0
Ray/Skate	3 15 5	3 6 4	3 7 5	3 11 10	3 13 7	3 13 2	4 1 7	4 0 5
Cod	5 9 11	5 7 6	6 1 6	6 12 1	5 13 3	3 17 4	4 1 8	3 18 11
Haddock	3 5 5	3 16 3	5 5 8	6 7 1	3 13 4	2 9 3	3 1 11	3 13 0
Hake	6 19 7	7 12 7	6 0 9	7 17 11	7 8 2	5 19 4	6 12 1	10 4 1
Whiting	1 9 4	1 14 8	1 19 11	1 19 4	2 1 1	1 17 1	1 19 1	2 3 5
Pollack	—	—	*2 15 1	3 3 2	3 10 5	3 4 4	2 11 10	2 13 5
Herrings	1 3 8	0 18 11	0 16 9	1 7 9	1 3 4	0 19 4	1 3 11	1 7 3
Pilchards	—	—	*0 7 8	0 8 7	3 12 10	2 14 3	4 0 6	0 11 0
Mackerel	1 11 11	1 11 4	1 11 10	2 7 8	2 5 1	1 9 7	1 2 10	1 11 4
Sprats	0 7 8	0 13 0	0 7 3	0 7 2	0 8 8	0 8 3	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 1966.

Port	Total Value	Demersal	Pelagic	Shellfish
	£	£	£	£
1. Killybegs ...	314,441	161,753	151,936	752
2. Dunmore East ...	218,839	3,212	207,019	8,608
3. Howth ...	182,259	179,231	330	2,697
4. Castletownbere ...	133,528	88,372	12,760	32,396
5. Dingle ...	111,130	76,101	9,694	25,335
6. Galway ...	101,644	82,286	2,193	17,165
7. Kilmore Quay ...	72,364	53,015	630	18,719
8. Burtonport ...	59,854	38,307	16,530	5,017
9. Skerries ...	58,567	26,212	636	31,719
10. Clogherhead ...	39,359	18,784	10,379	10,196
11. Greencastle ...	34,992	34,339	—	653
12. Carna ...	34,242	—	337	33,905
13. Dun Laoghaire ...	30,674	29,296	—	1,378
14. Clifden and Cleggan	29,426	3,183	—	26,243
15. Fenit ...	27,479	—	—	27,479
16. Schull ...	27,113	13,679	6,879	6,555
17. Portmagee ...	24,728	3,571	—	21,157
18. Balbriggan ...	24,722	15,249	21	9,452
19. Cahirciveen ...	24,293	12,007	1,046	11,240
20. Ballinagoul ...	22,821	20,918	394	1,509
21. Kinsale ...	21,022	11,968	2,966	6,088
22. Blacksod Point and Iniskea ...	20,595	—	—	20,595
23. Arklow ...	20,522	20,345	177	—

APPENDIX No. 4

IMPORTS AND EXPORTS OF FISH AND FISHERY PRODUCTS IN 1966

(as compared with 1965)

	Quantity		Value	
	1966	1965	1966	1965
I.—IMPORTS :	cwt.	cwt.	£	£
Fish, fresh, chilled or frozen ...	20,307	21,604	85,212	78,325
Fish, cured, not in airtight containers ...	28,395	30,983	205,275	229,797
Fish and fish preparations in airtight containers ...	32,757	28,733	688,808	661,673
Other fish and fish preparations	11,867	9,741	266,707	233,689
TOTALS ...	93,326	91,061	1,246,002	1,226,026
II.—EXPORTS :				
Fish, fresh, chilled or frozen :				
Salmon ...	17,159	19,420	782,334	723,779
Herrings ...	100,434	68,760	217,755	138,654
Freshwater eels ...	6,075	8,433	106,218	120,944
Other fish ...	15,338	19,301	217,710	236,389
Fish, dried, salted or smoked not in airtight containers ...	97,089	17,695	351,948	108,677
Shellfish, fresh, chilled, frozen, salted, dried ...	68,489	61,917	703,012	566,192
Other fish and fish preparations	2,441	2,534	113,554	77,248
TOTALS ...	307,025	198,060	2,492,531	1,971,883

APPENDIX No. 5

HERRING FISHING 1966

County	Ports at which more than 500 cwt. were landed	Total Quantity cwt.	Value £
Louth	—	—	—
Dublin	—	304	346
Wicklow	—	72	177
Wexford	—	—	—
Waterford	Dunmore East, Passage East ...	128,800	216,849
Cork	Kilcrohane, Bantry, Castletown- bere	8,031	10,571
Kerry	Dingle	985	1,599
Clare	—	170	360
Galway	—	403	1,258
Mayo	Achill	1,812	1,486
Sligo	—	150	190
Donegal	Killybegs, Teelin, Burtonport ...	152,573	166,476
TOTALS ...		293,300	399,312

APPENDIX No. 6

MACKEREL FISHING 1966

County	Ports at which more than 250 cwt. were landed	Total Quantity cwt.	Value £
Louth	—	—	—
Dublin	Skerries	270	653
Wicklow	—	—	—
Wexford	—	352	630
Waterford	—	224	403
Cork	Ballycotton, Kinsale, Schull, Castletownbere	8,491	18,157
Kerry	Valentia, Cahirciveen, Dingle, Brandon Creek	4,922	10,525
Clare	—	378	1,282
Galway	Galway, Costello Bay, Letter- mullen	1,735	3,228
Mayo	Portacloy, Kilcummin ...	1,923	3,999
Sligo	—	54	132
Donegal	Killybegs	11,210	7,269
TOTALS ...		29,559	46,278

APPENDIX No. 7
REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL
ENGAGED IN FISHING IN 1966

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
				over 75	50-74	25-49	15-24	10-14	under 10		
EAST (Omeath to Carnsore Point)	Solely	420	125	2	7	60	4	—	27	23	2
	Partially	227	73	—	—	1	—	—	6	47	20
	Laid-up	—	2	—	—	—	—	—	—	—	—
	TOTALS	647	200	2	7	61	5	—	33	70	22
SOUTH (Carnsore Point to Loop Head)	Solely	516	255	2	8	51	5	8	77	58	46
	Partially	847	224	—	—	1	1	2	32	132	57
	Laid-up	—	1	—	—	—	—	1	—	—	—
	TOTALS	1,363	480	2	8	51	6	11	109	190	103
WEST (Loop Head to Erris Head)	Solely	234	222	—	2	13	5	1	86	82	33
	Partially	1,311	298	—	—	—	1	—	32	136	130
	Laid-up	—	6	—	—	—	—	—	5	—	—
	TOTALS	1,545	526	—	2	13	6	1	123	218	163
NORTH (Erris Head to Moville)	Solely	464	265	3	8	26	7	3	114	100	4
	Partially	1,242	239	—	—	—	—	—	48	147	44
	Laid-up	—	—	—	—	—	—	—	—	—	—
	TOTALS	1,706	504	3	8	26	7	3	162	247	48
TOTALS (All Coasts)	Solely	1,634	867	7	25	150	21	12	304	263	85
	Partially	3,627	834	—	—	1	1	2	118	462	251
	Laid-up	—	9	—	—	—	—	—	5	—	—
	TOTALS	5,261	1,710	7	25	151	24	15	427	725	336

APPENDIX No. 8
TRAWLING AND SEINING 1966

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	30	8	—	—	8	All year.
Balbriggan	20	5	—	—	5	All year.
Skerries	40	8	—	—	8	All year.
Howth	125	25	—	—	25	All year.
Dun Laoghaire	10	2	—	2	—	All year.
Arklow	129	25	—	2	23	All year.
Wexford	6	2	—	1	1	All year.
Kilmore Quay	53	12	—	—	12	All year.
Passage East	6	2	2	—	—	Summer and Autumn
Dunmore East	25	5	—	—	5	All year.
Helvick	15	3	—	—	3	All year.
Youghal	4	1	—	1	—	All year.
Ballycotton	20	7	6	—	1	All year.
Cobh	8	4	4	—	—	All year.
Kinsale	6	1	—	—	1	All year.
Union Hall, Raheen	40	8	—	2	6	All year.
Baltimore	12	2	—	—	2	All year.
Schull	25	4	—	—	4	All year.
Castletownbere	65	12	—	—	12	All year.
Ballinskelligs	8	1	—	—	1	All year.
Cahirciveen	17	3	—	—	3	All year.
Dingle	90	14	—	—	14	All year.
Portmagee	25	4	—	—	4	All year.
Liscannor	2	1	1	—	—	Summer and Autumn
Galway and Aran Islands	70	14	—	—	14	All year.
Cleggan and Inisboffin	8	3	3	—	—	All year.
Achill	16	4	—	—	4	All year.
Enniscrone	8	4	4	—	—	All year.
Killybegs	138	23	—	—	23	All year.
Burtonport	36	6	—	—	6	All year.
Kincasslagh	5	1	—	—	1	All year.
Dunfanaghy	3	1	—	—	1	All year.
Buncrana	12	4	2	—	2	All year.
Glengad	24	8	6	2	—	Spring, Summer and Autumn
Greencaste	52	13	1	—	12	All year.
TOTALS	1,153	240	29	10	201	

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, 1965	60,161
made during year ended 31 March, 1966	13,369
not accrued at 31 March, 1966	86,903
	<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, 1965	58,648
made during year ended 31 March, 1966	4,278
not accrued at 31 March, 1966	23,047
	<u>85,973</u>

III. Advances of £2,147,563 during the period of fourteen years to 31 March, 1966, for the provision of boats and gear and for other purposes:—

	£
Total repayments to be made, including interest ...	3,698,181
Repayments:	
made to 31 March, 1965	855,549
made during year ended 31 March, 1966	140,534
not accrued at 31 March, 1966	2,702,098
	<u>3,698,181</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, Owwane, Coomhola, Glengarriff, Ardrigole.
No. 7 Kerry	Crow Head, Co. Cork, to Kerry Head, Co. Kerry.	Roughy, Sheen, Finnihy, Blackwater, Sneem, Laune, 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 South and Banraghbaun South, 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, Screebe, Furnace.
No. 10 ¹ Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Errif, Bundo- dorrigha, Dawros, Carrowniskev, Bun- owen (Louisburgh).
No. 10 ² Bangor	Pigeon Point to Benwee Head, Co. Mayo.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy.
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 (Croll), 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, Deel.

Note—The area comprised in the former No. 14² or Merville 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 Salmon and Sea Trout taken in 1964, 1965 and 1966 by Instruments of Capture.

SALMON

	1966	1965	1964	1966	1965	1964
Instruments	lb.	lb.	lb.	£	£	£
Total for all engines	2,326,422	2,869,251	3,012,664	684,825	712,495	789,318
Total for rod and line	301,575	416,289	390,079	106,698	123,587	121,700
Total for drift nets	744,023	794,961	761,568	192,997	167,963	177,639
Total for draft nets	961,428	1,250,171	1,496,028	279,645	307,509	379,019
Total for stake nets, weirs, etc.	319,396	407,830	364,989	105,485	113,436	110,960

SEA TROUT

	1966	1965	1964	1966	1965	1964
Instruments	lb.	lb.	lb.	£	£	£
Total for all engines	86,350	113,630	105,689	16,522	18,342	17,251
Total for rod and line	63,274	83,746	71,918	12,175	12,936	11,209
Total for drift nets	1,975	4,656	1,203	354	889	213
Total for draft nets	20,202	24,965	29,707	3,806	4,474	5,177
Total for stake nets, weirs, etc.	899	263	2,861	187	43	652

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

APPENDIX No. 12

Quantity and Value of Salmon taken in 1964, 1965 and 1966 by Fishery Districts

Fishery District	*	Quantity			Value		
		1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin	R	5,033	3,636	2,913	2,479	1,310	1,136
	N	12,017	13,217	6,510	4,217	3,086	1,834
Wexford	R	23,980	28,883	29,178	9,619	10,052	10,515
	N	31,633	30,242	40,024	12,145	11,792	14,608
Waterford	R	53,168	58,107	51,264	17,708	15,703	15,489
	N	275,709	282,898	304,598	77,334	66,859	86,697
Lismore	R	9,887	32,311	45,595	3,238	9,686	13,651
	N	189,680	226,094	238,741	62,412	61,059	67,884
Cork	R	11,668	30,873	26,321	4,393	9,956	9,145
	N	85,454	82,669	95,607	25,696	19,571	23,121
Kerry	R	39,188	47,453	46,139	13,702	13,775	13,548
	N	220,569	291,151	343,116	55,839	62,871	84,359
Limerick	R	40,590	58,902	61,803	14,629	18,797	20,963
	N	242,633	344,538	347,151	73,474	97,278	98,502
Galway	R	8,143	13,702	10,337	2,761	3,741	2,991
	N	65,569	70,580	50,660	25,901	20,716	17,083
Connemara	R	2,790	9,189	6,031	886	2,421	1,642
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	2,869	7,546	7,943	1,009	2,066	2,246
	N	7,680	43,623	34,116	1,802	7,137	6,654
Bangor	R	12,031	13,866	9,489	4,408	3,921	2,777
	N	43,096	90,678	89,322	9,789	16,983	18,773
Ballina	R	14,969	24,991	26,447	4,512	6,544	7,115
	N	276,110	357,197	450,877	68,880	80,625	104,103
Sligo	R	8,600	11,241	12,269	2,945	3,362	3,921
	N	42,119	62,216	70,406	10,726	11,362	17,118
Ballyshannon	R	7,246	9,064	10,445	2,695	2,766	3,187
	N	95,453	100,055	127,611	24,129	20,722	29,098
Letterkenny	R	29,633	44,276	24,581	9,789	11,424	6,319
	N	264,018	297,044	253,092	65,342	54,607	53,151
Dundalk	R	8,033	6,030	5,203	2,654	1,935	1,674
	N	63,281	42,966	67,865	16,673	12,167	17,886
Drogheda	R	23,747	16,219	14,121	9,271	6,128	5,381
	N	109,826	117,794	102,889	43,768	42,073	36,747
TOTALS	...	2,326,422	2,869,251	3,012,664	684,825	712,495	789,318

* 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 1964, 1965 and 1966 by Fishery Districts

Fishery District	*	Quantity			Value		
		1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin	R	601	805	1,859	138	155	286
	N	3,729	6,051	4,577	926	1,287	946
Wexford	R	561	1,881	2,643	113	353	393
	N	4,842	9,255	8,396	779	1,673	1,425
Waterford	R	1,251	1,617	3,130	213	236	562
	N	591	291	354	84	43	48
Lismore	R	268	1,223	409	59	196	62
	N	2,313	1,080	1,552	352	148	232
Cork	R	7,658	9,188	8,532	1,362	1,445	1,335
	N	765	562	1,026	156	96	204
Kerry	R	11,435	11,009	12,176	2,235	1,678	1,924
	N	1,507	2,041	4,137	270	296	819
Limerick	R	3,721	3,973	5,156	694	595	787
	N	3,858	4,909	4,719	788	964	1,032
Galway	R	1,880	2,819	2,166	409	447	366
	N	55	35	36	13	17	5
Connemara	R	9,559	11,834	9,543	1,879	1,796	1,436
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	4,580	8,518	6,771	842	1,310	1,032
	N	73	301	1,016	11	43	133
Bangor	R	6,818	10,017	7,680	1,337	1,534	1,200
	N	512	1,059	2,920	78	144	416
Ballina	R	2,970	4,569	2,347	585	673	330
	N	57	86	64	9	13	10
Sligo	R	386	800	538	70	129	88
	N	322	138	133	70	23	24
Ballyshannon	R	1,300	2,311	2,229	249	349	330
	N	200	340	676	35	45	93
Letterkenny	R	5,427	8,320	3,762	1,019	1,217	559
	N	1,903	1,751	695	287	259	103
Dundalk	R	2,466	2,268	1,070	492	386	177
	N	1,703	1,485	2,655	359	269	414
Drogheda	R	2,393	2,594	1,907	479	437	342
	N	646	500	815	130	86	138
TOTALS	...	86,350	113,630	105,689	16,522	18,342	17,251

* 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 1964, 1965 and 1966 by Fishery Districts

Fishery District	Quantity			Value		
	1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin ...	112	Nil	380	14	Nil	38
Wexford ...	2,840	123,764	102,654	469	13,398	12,832
Waterford ...	5,074	7,460	6,560	681	1,220	768
Lismore ...	29	Nil	Nil	3	Nil	Nil
Cork ...	840	Nil	Nil	64	Nil	Nil
Limerick ...	119,453	136,074	88,987	26,363	30,612	18,960
Galway ...	13,711	45,485	40,278	2,488	8,695	7,574
Bangor ...	169	Nil	140	37	Nil	25
Ballina ...	11,589	541	1,668	1,802	109	332
Sligo ...	Nil	8,400	6,656	Nil	1,557	1,191
Ballyshannon	23,717	37,684	42,001	3,073	5,221	4,827
Dundalk ...	1,074	12,470	7,689	108	1,790	896
Drogheda ...	6,442	15,970	25,492	878	1,978	3,041
TOTALS ...	185,050	387,848	322,505	35,980	66,580	50,484

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 1964, 1965 and 1966 by Fishery Districts

Fishery District	Total Weight for District			Total Value for District		
	1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin ...	21,492	23,709	16,239	7,774	5,838	4,240
Wexford ...	63,856	194,025	182,895	23,125	39,268	39,773
Waterford ...	335,793	350,373	365,906	96,020	84,061	93,564
Lismore ...	202,177	260,708	286,297	66,064	71,089	81,829
Cork ...	106,385	123,292	131,486	31,671	31,068	33,805
Kerry ...	272,699	351,654	405,568	72,046	78,620	100,650
Limerick ...	410,255	548,396	507,816	115,948	148,246	140,244
Galway ...	89,358	132,621	103,477	31,572	33,616	28,019
Connemara ...	12,349	21,023	15,574	2,765	4,217	3,078
Ballinakill ...	15,202	59,988	49,846	3,664	10,556	10,065
Bangor ...	62,626	115,620	109,551	15,649	22,582	23,191
Ballina ...	305,695	387,384	481,403	75,788	87,964	111,890
Sligo ...	51,427	82,795	90,002	13,811	16,433	22,342
Ballyshannon	127,916	149,454	182,962	30,181	29,103	37,535
Letterkenny ...	300,981	351,391	282,130	76,437	67,507	60,132
Dundaik ...	76,557	65,219	84,482	20,286	16,547	21,047
Drogheda ...	143,054	153,077	145,224	54,526	50,702	45,649
TOTALS ...	2,597,822	3,370,729	3,440,858	737,327	797,417	857,053

APPENDIX No. 16

Number, Quantity and Value of Salmon taken by single Rod and Line
in 1964, 1965 and 1966 by Fishery Districts

Fishery District	No. of Fish			Quantity			Value		
	1966	1965	1964	1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin ...	550	470	351	5,033	3,636	2,913	2,479	1,310	1,136
Wexford ...	2,355	2,804	3,034	23,980	28,883	29,178	9,619	10,052	10,515
Waterford ...	5,970	8,040	6,827	53,168	58,107	51,264	17,708	15,703	15,489
Lismore ...	1,171	4,124	5,898	9,887	32,311	45,595	3,238	9,686	13,651
Cork ...	1,494	3,889	4,231	11,668	30,873	26,321	4,393	9,956	9,145
Kerry ...	5,102	6,739	6,661	39,188	47,453	46,139	13,702	13,775	13,548
Limerick ...	5,044	7,927	8,258	40,590	58,902	61,803	14,629	18,797	20,963
Galway ...	1,083	2,091	1,646	8,143	13,702	10,337	2,761	3,741	2,991
Connemara ...	430	1,393	976	2,790	9,189	6,031	886	2,421	1,642
Ballinakill ...	386	1,066	1,261	2,869	7,546	7,943	1,009	2,066	2,246
Bangor ...	1,469	1,987	1,064	12,031	13,866	9,489	4,408	3,921	2,777
Ballina ...	2,125	3,858	4,077	14,969	24,991	26,447	4,512	6,544	7,115
Sligo ...	1,086	1,401	1,585	8,600	11,241	12,269	2,945	3,362	3,921
Ballyshannon	849	1,206	1,481	7,246	9,064	10,445	2,695	2,766	3,187
Letterkenny ...	3,704	5,849	3,542	29,633	44,276	24,581	9,789	11,424	6,319
Dundalk ...	974	623	518	8,033	6,030	5,203	2,654	1,935	1,674
Drogheda ...	1,940	1,398	1,100	23,747	16,219	14,121	9,271	6,128	5,381
TOTALS ...	35,732	54,865	52,510	301,575	416,289	390,079	106,698	123,587	121,700

APPENDIX No. 17

Number, Quantity and Value of Sea Trout taken by single Rod and Line
in 1964, 1965 and 1966 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1966	1965	1964	1966 lb.	1965 lb.	1964 lb.	1966 £	1965 £	1964 £
Dublin ...	555	831	2,348	601	805	1,859	138	155	286
Wexford ...	873	2,261	3,418	561	1,881	2,643	113	353	393
Waterford ...	1,190	1,615	2,726	1,251	1,617	3,130	213	236	562
Lismore ...	298	1,090	384	268	1,223	409	59	196	62
Cork ...	9,654	12,136	10,997	7,658	9,188	8,532	1,362	1,445	1,335
Kerry ...	9,545	9,531	10,439	11,435	11,009	12,176	2,235	1,678	1,924
Limerick ...	4,347	4,616	5,868	3,721	3,973	5,156	694	595	787
Galway ...	2,117	2,607	2,174	1,880	2,819	2,166	409	447	366
Connemara ...	9,961	11,355	9,143	9,559	11,834	9,543	1,879	1,796	1,436
Ballinakill ...	4,078	7,644	6,138	4,580	8,518	6,771	842	1,310	1,032
Bangor ...	7,329	10,445	8,438	6,818	10,017	7,680	1,337	1,534	1,200
Ballina ...	2,700	4,020	2,443	2,970	4,569	2,347	585	673	330
Sligo ...	345	609	459	386	800	538	70	129	88
Ballyshannon	1,300	2,240	2,720	1,300	2,311	2,229	249	349	330
Letterkenny ...	5,890	7,556	3,927	5,427	8,320	3,762	1,019	1,217	559
Dundalk ...	2,503	2,159	1,072	2,466	2,268	1,070	492	386	177
Drogheda ...	2,124	2,307	1,961	2,393	2,594	1,907	479	437	342
TOTALS ...	64,809	83,022	74,655	63,274	83,746	71,918	12,175	12,936	11,209

APPENDIX No. 18

PARTICULARS OF RECEIPTS AND EXPENDITURE OF BOARDS OF CONSERVATORS FOR THE YEAR ENDED 30th SEPTEMBER, 1966

Fishery District	Opening Balance	RECEIPTS					EXPENDITURE					Closing Balance
		Licence Duty	Fishery Rate	Grant from Dept.	Misc. Receipts	Total Receipts	Salaries	Water Keepers	Law Costs	Traveling and Misc.	Total Expenditure	
	£	£	£	£	£	£	£	£	£	£	£	£
Dublin ...	+ 466	2,704	318	1,000	641	4,663	1,615	937	332	2,046	4,930	+ 199
Wexford ...	+ 660	1,664	1,701	750	249	4,364	885	2,051	—	1,735	4,671	+ 353
Waterford ...	+ 3,150	4,068	3,322	6,500	515	14,405	1,766	8,073	36	5,013	14,888	+ 2,667
Lismore ...	+ 1,120	1,414	6,555	4,000	145	12,114	1,197	7,976	29	2,285	11,487	+ 1,747
Cork ...	+ 529	2,283	993	6,500	123	9,899	1,133	5,975	179	2,106	9,393	+ 1,035
Kerry ...	+ 1,774	3,078	4,164	2,000	875	10,117	1,365	6,109	120	2,346	9,940	+ 1,951
Limerick ...	+ 263	4,712	4,372	10,000	711	19,795	1,771	11,134	400	5,004	18,309	+ 1,749
Galway ...	+ 1,134	1,193	4,590	1,000	3,207	9,990	2,562	1,260	605	2,687	7,114	+ 4,010
Connemara ...	+ 71	806	2,907	—	23	3,736	680	2,333	—	654	3,667	+ 140
Ballinakill ...	+ 846	788	1,204	750	280	3,022	492	1,820	7	933	3,252	+ 616
Bangor ...	+ 364	1,194	1,798	1,500	297	4,789	2,376	1,441	25	972	4,814	+ 339
Ballina ...	+ 67	1,538	4,781	500	456	7,275	880	4,716	118	1,052	6,766	+ 576
Sligo ...	+ 495	777	1,516	400	199	2,892	554	1,191	26	835	2,606	+ 781
Ballyshannon ...	+ 545	1,633	676	2,500	2,938	7,747	1,238	3,577	—	2,354	7,169	+ 1,123
Letterkenny ...	+ 856	4,076	2,233	500	544	7,353	1,167	3,976	130	1,627	6,900	+ 1,309
Drogheda ...	+ 2,375	2,082	2,583	2,400	92	7,157	937	3,859	49	2,146	6,991	+ 2,541
Dundalk ...	+ 55	1,205	394	1,000	100	2,699	518	1,763	498	1,269	4,048	- 1,294
TOTALS ...	+ 14,770	35,215	44,107	41,300	11,395	132,017	21,136	68,191	2,554	35,064	126,945	+ 19,842

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APPENDIX No. 19

PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1966

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 ...	545	59	17	—	86	30	—	4	11	32	—	—	—	—	—	—	—	—	—	—	—	—	—
Wexford ...	165	135	—	—	160	32	—	—	94	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Waterford ...	171	758	7	—	134	35	—	—	12	125	—	1	3	1	2	—	125	12	—	—	—	—	—
Lismore ...	78	181	6	—	202	—	—	—	11	61	—	—	2	—	1	—	17	—	—	—	—	—	—
Cork ...	206	253	11	—	270	98	—	—	42	11	—	—	—	—	—	—	—	—	—	—	—	—	—
Kerry ...	177	217	3	3	930	158	—	—	59	1	—	1	—	—	3	—	—	34	17	3	—	—	—
Limerick ...	210	838	4	2	182	50	—	—	118	78	—	—	4	—	4	—	—	11	5	54	—	—	—
Galway ...	77	98	29	—	199	33	—	1	7	—	—	—	—	—	5	—	—	—	—	—	—	—	—
Connemara ...	15	5	16	—	437	123	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ballinakill ...	17	34	—	22	321	72	—	1	18	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Bangor ...	65	40	15	—	344	120	—	—	37	9	—	1	—	—	—	—	—	—	—	—	—	—	—
Ballina ...	57	182	17	—	207	53	2	3	12	81	—	—	—	—	7	—	—	10	4	—	—	—	—
Sligo ...	63	137	1	—	40	5	—	—	7	5	—	1	—	—	—	—	—	1	3	—	—	—	—
Ballyshannon ...	53	76	10	—	366	19	13	46	12	55	10	—	—	—	2	—	—	7	20	—	—	—	—
Letterkenny ...	78	509	4	—	446	82	138	124	35	97	—	—	—	—	2	25	—	—	—	—	—	—	—
Drogheda ...	166	158	1	—	45	9	—	—	194	—	—	—	—	—	6	—	—	3	5	—	13	—	—
Dundalk ...	82	113	5	—	86	56	65	35	30	—	—	—	—	—	—	—	—	8	1	—	1	—	—
TOTALS ...	2,225	3,793	146	27	4,455	975	218	214	25	742	510	1	4	9	1	32	25	142	86	55	58	16	50

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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 ¹ . Galway ...	2 0	—	15 0	—	—
9 ² . Connemara ...	2 0	—	—	—	—
10 ¹ . Ballinakill ...	2 0	—	—	—	—
10 ² . Bangor ...	2 0	—	—	—	—
11. Ballina ...	2 0	—	—	—	—
12. Sligo ...	2 0	—	—	—	—
13. Ballyshannon ...	2 0	—	2 0	*3 0	*25 0
14 ¹ . Letterkenny ...	2 0	0 10	—	†3 0	†12 10
					†20 0
17 ¹ . Drogheda ...	2 0	0 10	2 0	—	—
17 ² . Dundalk ...	2 0	—	—	—	—

†River Lackagh Tidal Waters.

†River Owenea Tidal Waters.

*River Erne Tidal Waters.

APPENDIX No. 21

PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1966

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
10th January, 1966	Courthouse, Adare, Co. Limerick	Application for a Bye-Law regulating fishing on the River Maigue and its tributaries.	Bye-Law made.
1st March, 1966	Courthouse, Tulla, Co. Clare	Application for a Bye-Law regulating fishing on Loughs Clondanna and Clondorney, Co. Clare.	Bye-Law made.
22nd September, 1966	Courthouse, Ballycroy, Co. Mayo	Review of temporary regulations governing fishing on the Rivers Owenmore and Owenduff.	Bye-Law and Orders to be made.
1st November, 1966	Courthouse, Limerick	Application for review of (i) certain Bye-Laws regulating the use of drift nets in the River Shannon, (ii) duration of the salmon fishing season in the Shannon Estuary, (iii) statutory restrictions on the number of drift and draft nets in the Shannon Estuary (Not pursued at Inquiry).	(i) Bye-Law to be made. (ii) Application refused. (iii) —
9th December, 1966	Courthouse, Youghal	Necessity for regulations relating to the mesh of draft nets and of snap nets in Lismore Fishery District.	Under consideration.
20th December, 1966	Land Commission Courtroom, Dublin	Application for bye-laws for River Dodder (i) Prohibiting taking of trout of less than 8" and (ii) altering close season for trout.	Bye-Laws to be made.

APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN 1966

GENERAL

**Agricultural and Fishery Products (Regulation of Export) Act, 1947
(Export of Salmon and Trout) Order, 1966 dated 26 April, 1966,
(S.I. No. 86 of 1966).**

PROHIBITING the export save under licence of salmon and trout except those preserved and packed in airtight containers.

**Fish (Regulation of Import) Order, 1966 (S.I. No. 148 of 1966) dated
29 June, 1966.**

PROHIBITING as from 1 July, 1966, the importation save under licence, of fresh, chilled or frozen fish, with certain specified exceptions.

LOCAL

Cork District Bye-Law No. 528, 1966, dated 12 January, 1966.

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. 529, 1966, dated 3 February, 1966.

PROHIBITING during specified periods in the portion of the waters of the River Maigue and its tributaries upstream of Adare Road Bridge:—

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

Bangor District Bye-Law No. 530, 1966, dated 11 March, 1966.

PROHIBITING in the tidal waters of the Rivers Owenmore and Owenduff:—

- (a) the use, in fishing for salmon of any drift net, or having in possession any such net, on or near the waters;
- (b) the use, in fishing for salmon in, or the possession on or near specified portions of the waters, of any fishing engine other than rod and line.

REVOKING the bye-law dated 10 February, 1866, relating to the size of net meshes,

Wexford District Bye-Law No. 531, 1966, dated 31 March, 1966.

PROHIBITING in the tidal waters of the River Slaney the use of draft nets with meshes exceeding in length two inches from knot to knot or eight inches in the round or having such nets in possession on or near the waters.

Limerick District Bye-Law No. 532, 1966, dated 20 May, 1966.

PROHIBITING during a specified period in the waters of Loughs Clondanna and Clondorney:—

- (a) fishing with any lure or bait other than artificial fly, whether used with a spinning reel and bubble or not;
- (b) having in possession on or near the said waters any mounted rod to which is attached any lure or bait other than artificial fly;
- (c) taking or killing, or having in possession any trout of less than 9 inches in length;
- (d) taking or having in possession on or near the waters a total of more than eight trout.

**Limerick District Close Season Bye-Law No. C.S. 111, 1966, dated
20 May, 1966.**

PRESCRIBING the annual close season for angling for trout in Lough Clondanna and Lough Clondorney to be the period commencing on 1 October in each year and ending on 30 April in the next following year.

**Skin-diving for Shell Fish Bye-Law No. 533, 1966, dated 14 June,
1966.**

PROHIBITING taking or attempting to take shell fish by means of skin-diving.

**Loughrosmore and Loughrosbeg Bays Close Season Bye-Law, No.
C.S. 112, 1966, dated 30 June, 1966.**

PRESCRIBING the annual close season for the taking of salmon and trout by engines other than rod and line in the tidal portions of the rivers Owenca, Owentocker and Bracky, and in Loughrosmore and Loughrosbeg Bays to be the period commencing on 18 July in each year and ending on 21 May in the next following year.

Tralee Bay Oysters Bye-Laws No. 534, 1966, dated 31 August, 1966.

PRESCRIBING a minimum size limit of three inches for any oyster taken from the Tralee Bay oyster beds;

PRESCRIBING restrictions on the number and size of dredges to be used in oyster fishing;

PROHIBITING the taking of oysters between sunset and sunrise;

PRESCRIBING the weekly close time for oyster fishing; and

REVOKING the Tralee Bay Oysters Bye-Laws, No. 506, 1961.

APPENDIX No. 23

OUTPUT OF OVA IN 1965/66.

	River system stocked	Salmon Ova (,000)	Sea Trout Ova (,000)	Brown Trout Ova (,000)
Parteen ...	Scariff River System and River Shannon and tributaries ...	986	—	—
Fanure ...	Various Trust waters in Cos. Clare, Cork, Longford and Monaghan and the Brosna Rivers ...	—	—	766
Ballyshannon	Erne River System ...	607	—	—
Lee ...	Rivers Lee, Sullane, Foherish, Paudine and Laune and their tributaries ...	321	—	—
Mullingar ...	Tributaries of Loughs Sheelin, Owel, Ennell, Derravaragh and Glone ...	—	—	1,770
Cloncrim ...	River Suck system, Rivers Bunowen and Owenmore, Lakes Corrib, Carra, Mask, Arrow, Bo, midland lakes and various Trust waters in Co. Sligo ...	—	—	475
Castlebar ...	Castlebar River system ...	—	—	406
Screebe ...	Screebe River ...	298	26	—
Cong ...	150,000 Salmon ova for the River Moy; remainder to Corrib system ...	200	—	—
Glenties ...	425,000 Salmon ova distributed to hatching stations throughout the State; the remainder to River Owenea ...	635	—	—
	TOTALS ...	3,047	26	3,417

APPENDIX No. 24

PAPERS PREPARED AND PUBLISHED BY THE DEPARTMENT'S STAFF.

A. DEPARTMENTAL.

SEA FISHERIES BULLETIN No. 3.

B. OTHERS.

GRIFFITH, D. DE G. Plaice of the western Irish Sea. *Rep. Challenger Soc. 3 No. XVIII.*

————— *Raia undulata* (Lacépède), a species new to Irish waters. *Irish Nat. J. XV.* 166-8.

HILLIS, J. P., Stone crab, *Lithodes maia* (Linn.) from Co. Kerry, *Mauroliticus mülleri* (Gmelin) in the Irish Sea and Abnormal thornback ray, *Raia clavata*, from Co. Kerry. *Irish Nat. J. XV.* 175-8.

————— White-sided dolphin, *Lagenorhynchus acutus*, from Co. Donegal. *Irish Nat. J. XV.* 212.

MOLLOY, J. P., Sand eels of the Irish Sea. *Irish Nat. J. XV.* 232-233.

WENT, A. E. J., Some ancient Irish salmon fishing weirs, *Industrial Archaeology* Vol. 3. No. 3. August, 1966.

————— Notes on some confidential returns of rod catches in the River Foyle system. *14 Rep. Foyle Fish Com.* 39-43.

————— Rare fishes taken in Irish waters in 1965. *Irish Nat. J. XV.* 159-163.

WOOD, R. J. and M. FOSTER.* Studies on the Dunmore Herring stock. 2. The otoliths of the Dunmore Herring. *J. Cons. perm int. Explor. Mer.* 30. 222-36.

* Mr. Foster is a former member of the staff of the Department who prepared this paper in association with Mr. Wood whilst still employed in the service of the Department.

Herring Investigations at Dunmore East, etc. 1966/67

DUNMORE EAST

The 1966/67 herring season at Dunmore East commenced on 22nd October, 1966, and terminated on 18th January, 1967. Fifty boats took part in the fishery and landed a total of 47,560 crans, which was an increase of 27,018 crans on the figure for the previous year. The increased landings were due to :

- (1) the good weather which prevailed throughout most of the season (landings were made on 61 days out of a possible 80),
- (2) the increased number of boats using the paired mid-water trawl,
and
- (3) the very good recruitment of three-year-old fish during the 1965/66 season, which strengthened the stocks considerably.

The monthly landings were as follows :—

October	...	...	562	crans
November	...	...	8,070	„
December	...	...	16,707	„
January	...	...	22,221	„
Total			47,560	„

Two types of gear were used throughout the season, viz. paired mid-water trawls and bottom trawls. The number of boats using paired mid-water trawls increased from nine pairs during 1965/66 to fifteen pairs in 1966/67. Landings for the different types of gear were :—

Paired mid-water trawls	...	27,870	crans
Bottom trawls	...	19,690	„
Total	...	47,560	„

The average catch per landing for paired mid-water trawls increased from 52.8 crans (1965/66) to 92.3 crans (1966/67). Fishing by bottom trawls, mainly in Baginbun Bay, was not as successful as in the previous year, and the average catch per landing declined as the figures for the past few seasons show—

Season	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67
Av. Catch/ landing (Crans)	30.5	56.3	27.75	35.0	43.0	35.0

The season opened when shoals of small fish were located off Helvick Head in October, but improved quality fish were subsequently

found in this area (Mine Head—Ram Head, 18-35 fathoms) up to the middle of November. These catches contained a number of spents belonging to an autumn spawning component, which probably spawn in this area earlier in the season. Fishing continued in this area up to 7th December, while poor fishing was also obtained at the same time in Baginbun by boats using bottom trawls. Very good fishing was subsequently obtained in Ballycotton Bay until early January by boats using mid-water gear. After this, nearly all fish were taken in Baginbun Bay until 15th January by boats using both types of gear. At this period bad weather interrupted fishing, and on the resumption boats failed to locate the shoals and the season came to a close.

Samples of herrings were again obtained for biological investigations from October to the end of the season, and 3,140 fish were examined for length, sex, maturity, vertebral count, age and racial type. The dominant age groups were found to be 4, 3 and 2-year-old fish. The 1962/63 year class, which entered as the main recruit brood during the 1965/66 season, dominated the samples as four-year-olds. Recruitment of three-year-old fish was not as high as in the previous year, but the amount of fast growing two-year-old fish which entered was substantial and should further strengthen the available stocks. The monthly age distribution is shown in Table 1. The monthly maturity distributions which are shown in Table 2 show that there is a tendency towards an earlier appearance of spawning (stage VI) fish. The majority of mature fish in November were stage V (full fish) but spawning fish had appeared as early as 1st December. The usual small amount of spents were present throughout the season and were taken principally from catches that came from the Ballycotton area. The vertebral count of these spents had the typical low autumn spawning count of 56.49 compared with the count of the main winter spawning component of 56.87. The otoliths were again divided into three categories following an examination of their first winter ring and classified into three groups “narrow” (n), “wide” (w), and unclassified (u). The overall distribution is shown in Table 3. Mean lengths per age class per maturity stage are also shown in Table 3. Fat content analyses carried out during the season are shown in Table 4.

Other investigations.

In addition to Dunmore East, over 2,000 cran of herrings were landed in Bantry Bay area during 1966. These were composed of landings made by boats using drift nets and bottom trawls at various times during the year. Fish numbering 298 were examined from landings made in Castletownbere during May 1966. Most of these were either virgins or recovering spents, and from an examination of nuclear characteristics it was possible to separate them into two races, viz., an autumn spawning component and a winter spawning component. The autumn spawning component, which comprised 31% of the total, had a vertebral count of 56.45, while the winter spawning component had a count of 56.90. All the virgin fish seemed to be potential recruits to the autumn spawning race. The mean length, vertebral counts and first winter ring distributions are shown in Table 5.

TABLE 1.—Monthly age distribution (Dunmore East)

Month	Age in years										Total
	2	3	4	5	6	7	8	9	10	10+	
October ...	82	12	22	1	2		1				120
November ...	262	350	429	52	105	17	39	26	9	18	1307
December ...	80	293	388	54	79	29	33	52	7	21	1036
January ...	21	124	275	53	74	35	15	58	9	13	677
Oct.—Jan. ...	445	779	1114	160	260	81	88	136	25	52	3140

TABLE 2.—Monthly maturity distribution (Dunmore East)

Month	Stage							Total
	II	III	IV	V	VI	VII	VIII	
October ...	37.4	1.7	15.8	44.3	—	0.8	—	100.0
November ...	14.6	0.3	1.7	73.0	5.9	4.4	0.1	100.0
December ...	4.8	—	0.1	48.7	40.0	6.4	—	100.0
January ...	0.4	—	—	14.0	83.4	2.2	—	100.0
Oct.—Jan. ...	9.1	0.2	1.3	51.1	33.6	4.4	0.3	100.0

TABLE 3.—Mean lengths and mean vertebral counts per age class per maturity stage.
Age in years (Dunmore East)

Maturity Stages	(a) No. of fish (b) Mean length (c) Mean V.C.	2	3	4	5	6	7	8	9	10	10+	Total
		II	(a) 288 (b) 24.6 (c) 56.91	1 23.9 57.00								
III	(a) 6 (b) 24.6 (c) 57.00											6 24.6 57.00
IV	(a) 32 (b) 24.5 (c) 56.78	5 26.2 56.80	6 27.6 56.83									43 25.13 56.79
V	(a) 85 (b) 24.4 (c) 56.98	423 26.6 56.74	682 28.2 56.93	86 29.2 56.97	138 30.0 56.76	39 30.3 57.00	50 30.6 56.80	57 30.5 56.75	14 30.7 56.79	32 30.9 56.88		1,606 28.1 56.86
VI	(a) 27 (b) 24.4 (c) 56.85	311 26.2 56.77	369 28.3 56.94	61 29.2 56.93	113 29.9 56.79	40 30.3 56.90	32 30.2 57.00	73 30.5 56.81	10 30.7 57.00	19 31.0 57.16		1,055 28.1 56.87
VII	(a) 7 (b) 24.2 (c) 56.42	38 26.4 56.55	57 28.2 56.49	13 28.6 56.62	9 29.8 56.44	2 31.7 57.00	6 30.5 57.00	6 30.7 56.83	1 29.8 57.00	1 31.5 57.00		140 27.9 56.56
VIII	(a) 1 (b) 25.6 (c) 56.00											1 25.6 56.00
Total	(a) 445 (b) 24.5 (c) 56.90	779 26.4 56.74	1,114 28.2 56.91	160 29.2 56.93	260 29.9 56.76	81 30.3 56.95	88 30.5 56.89	136 30.5 56.79	25 30.7 56.88	52 31.0 56.98		3,140 27.7 56.85
% 1st W.R. Distribution		96.2.2	77.22.1	82.17.1	66.32.2	89.10.1	90.10—	90.10—	80.16.4	96.4—	92.6.2	83.16.1

TABLE 4.—Fat content of Dunmore East Herrings.

Sampled	Location	M.C%	F.C%
26-10-66	Helvick	64.46	15.54
26-10-66	Helvick	63.24	16.76
9-11-66	S. Mine Hd.	62.58	17.42
10-11-66	S. Mine Hd.	62.80	17.20
14-11-66	E. Mine Hd.	63.52	16.48
15-11-66	E. Mine Hd.	63.86	16.14
21-11-66	Tramore-Helvick	63.59	16.41
22-11-66	Helvick-Mine Hd.	63.20	16.80
23-11-66	S.W. Mine Hd.	61.88	18.12
24-11-66	S.W. Mine Hd.	61.36	18.64
28-11-66	W. Mine Hd.	61.84	18.16
29-11-66	Helvick (Maizy)	67.06	12.96
5-12-66	Hook (Full)	68.16	11.84
5-12-66	Hook (Maizy)	66.58	13.42
6-12-66	Mine Hd.	67.14	12.86
7-12-66	Youghal	59.12	20.88
12-12-66	Hook (Maizy)	71.16	8.84
12-12-66	Hook (Maizy)	69.94	10.06
14-12-66	Youghal (20% spent)	66.54	13.46
3- 1-67	Ballycotton (Maizy)	69.93	10.07
6- 1-67	Baginbun (Maizy)	68.55	11.45
16- 1-67	Baginbun (Maizy)	71.27	8.73

TABLE 5.—Mean lengths, vertebral counts and 1st Winter ring distribution for Winter/Spring and Summer/Autumn Component (Castletownbere)

Winter Spring Component.

Age in Years.

	2	3	4	5	6	7	Total
Nos.		20	176	7	1	2	206
Mean Length		25.7	26.6	28.1	29.2	30.1	26.6
Mean Vest. Count		57.35	56.88	56.43	56.00	56.50	56.90
% distribution of 1st W.R.		65.25.10	85.13.2	86.14.—	—,100.—	100 — —	83.15.2

Summer Autumn Component.

Age in Years.

	2	3	4	5	6	7	Total
Nos.	10	44	33	5			92
Mean Length	22.4	24.5	26.6	28.4			25.2
Mean Vest. Count	56.50	56.43	56.52	56.60			56.45
% distribution of 1st W.R.	100 — —	43.55.2	79.21 —	80.20 —			64.35.1

