



SEA AND INLAND

FISHERIES

REPORT FOR

1979

AN ROINN IASCAIGH AGUS FORAOISEACHTA
(Department of Fisheries and Forestry)

DUBLIN :
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REPORT

OF THE
MINISTER FOR FISHERIES AND FORESTRY

ON THE
SEA AND INLAND FISHERIES

FOR THE YEAR

1979

Alphabetical List of Contents

Part I. SEA FISHERIES.

Paragraph title	Page
An Bord Iascaigh Mhara	9 & 10
Demersal Fishery	6
Engineering	22
European Economic Community	10
Exports	9
Fishery Harbour Works	22
International and other Conferences	24
Legislation	26
Mariculture	8, 9 & 22
Marine Pollution	18
Pelagic Fishery	6
Personnel and Vessels	9
Research and Development	14
Sea Fisheries Protection	10
Shellfish	8
Technology	24
Training of Fishermen	10

Part II. INLAND FISHERIES

	Page
Application of Electricity to Inland Fisheries	36
Arterial Drainage	33 & 34
Artificial Propagation	29
Boards of Conservators	27
Eel Fishing Development	38
Employment in the Industry	28
Engineering	34
Exports of Freshwater Fish	28
Fish Culture Installations	35
Foyle Fisheries Commission	36
Grant Aided Research Projects	33
Inland Fisheries Trust Incorporated	37
Instruments of Capture	28
International and other Conferences	40
Investigation of Fish Movements	35
Legislation	41
Management of State Fisheries	38
Rainbow Trout Farming	36
Re-organisation of Inland Fisheries	27
Research and Development	29
Salmon Research Trust of Ireland Incorporated	39
Water Abstraction	35

PART I.

SEA FISHERIES

In 1979, the total value of sea fish landings continued to rise reaching another record figure of £24.9m exceeding that of 1978 by £2.2m. The biggest increase occurred in the value of landings of demersal fish. The value of such landings at £7.7m represented an increase of £1.9m or 32%. The value of shellfish landings again showed a significant increase of £0.8m or 13%. The weights and values of annual landings of sea fish (excluding shellfish) since 1970 are set out in the following table:—

TABLE 1

Year	Tonnes	£'000
1979	74,600	17,504
1978	82,300	16,095
1977	70,800	13,688
1976	68,800	8,880
1975	65,800	6,763
1974	75,000	6,982
1973	75,200	5,690
1972	75,700	3,900
1971	60,500	2,930
1970	67,300	2,809

Details of quantities and values of the different varieties of sea fish and shellfish landed in 1979 and 1978 are given in Appendix No. 1. The average price per tonne obtained for each variety of sea fish (other than shellfish) from 1971 onwards is shown in Appendix No. 2.

The leading ten fishing ports of 1979 in order of value of fish landed were: Killybegs, Howth, Clogherhead, Castletownbere, Rossaveal/Carraroe, Burtonport, Fenit, Skerries, Galway and Dunmore

East. The most notable change was the rise of Rossaveal/Carraroe from 13th position in 1978 to 5th position in 1979.

DEMERSAL FISHERY

At 21,092 tonnes, the total landings of demersal fish showed an increase of 3,151 tonnes or 18%. Landings of cod increased by 1,576 tonnes or 40% while landings of haddock showed the largest percentage increase of all demersal species increasing by 396 tonnes or 77%. Whiting was the species caught in the greatest quantity and was followed by cod, saithe, plaice, ray/skate in that order. The total value of the demersal fish catch increased by 32% from £5.9m to £7.7m in 1979. Cod was first in terms of cash earnings followed by whiting, plaice, ray/skate, saithe in that order. These five varieties contributed 81% of the total value of demersal fish catch.

Increases in average prices were achieved in most varieties. The overall average price of all demersal fish landed in 1979 was £366 per tonne as compared with £327 per tonne in 1978. This increase was due to higher prices for species such as turbot, hake, sole and brill.

The weights, total value and average value of landings of demersal fish since 1970 are shown in the following table:—

TABLE 2

Year	Quantity	Value	Average Value per tonne
	Tonnes	£'000	£
1979	21,100	7,721	366
1978	17,900	5,862	327
1977	18,900	5,709	302
1976	23,800	4,652	195
1975	20,000	2,881	144
1974	19,500	2,527	129
1973	20,400	2,374	117
1972	17,100	1,568	92
1971	20,700	1,590	77
1970	15,300	1,428	93

PELAGIC FISHERY

The total pelagic catch of 53,493 tonnes was 10,850 tonnes or 17% lower than the figure for 1978. The total value of the catch was £9.8m representing a decrease of 4% on the 1978 figure of £10.2m.

Herrings

Landings of herrings amounted to 27,383 tonnes valued at £7.9m compared with 27,717 tonnes valued at £8.2m in 1978. The average price fell to £287 per tonne as against £295 per tonne in 1978.

The chief landing places for herring were: Killybegs, Rossaveal/Carraroe, Burtonport, Fenit, Howth and Castletownbere.

Exports of fresh, chilled or frozen herrings in 1979 amounted to 9,643 tonnes valued at £5,272,000 as compared with 11,418 tonnes valued at £6,141,000 in 1978. The quantity exported in salted and smoked forms was 8,716 tonnes valued at £5,256,000 as compared with 8,382 tonnes valued at £4,959,000 in 1978. A further 596 tonnes of herring valued at £780,000 was exported in prepared or preserved form. The total herring exports of 18,955 tonnes valued at £11,308,000 represented a decrease of 7% in quantity and 3% in value.

There was keen market demand throughout the year and little difficulty was experienced in disposal of the catch. The Netherlands proved to be the biggest market for herring exports, having purchased 8,517 tonnes valued at £4,557,000. Germany was next having purchased 4,337 tonnes valued at £2,945,000 followed by Great Britain, France and Belgium/Luxembourg.

The following table shows the total quantity, value and average value per tonne of herrings since 1970.

TABLE 3

Year	Quantity	Value	Average Value per tonne
	Tonnes	£000	£
1979	27,400	7,863	287
1978	27,700	8,171	295
1977	23,100	6,033	261
1976	22,000	3,133	142
1975	28,800	3,232	112
1974	39,600	3,950	100
1973	38,900	2,802	72
1972	47,800	2,116	44
1971	31,300	1,163	37
1970	45,500	1,275	28

Sprats

Landings of sprats decreased from 9,119 tonnes in 1978 to 1,892 tonnes in 1979, a decrease of 79% while the value of the catch fell from £342,000 in 1978 to £128,000 in 1979, a decrease of 63%.

Mackerel

Landings of mackerel showed a decrease in 1979, falling from 27,507 tonnes valued at £1,720,000 in 1978 to 24,217 tonnes valued at £1,792,000 in 1979. The average price increased to £74 per tonne as against £63 per tonne in 1978.

The chief landing places for mackerel were Killybegs, Burtonport, Castletownbere, Valentia, Fenit and Rossaveal/Carraroe.

TABLE 4

Year	Quantity	Value	Average Value per tonne
	Tonnes	£000	£
1979	24,217	1,792	74
1978	27,507	1,720	63
1977	22,695	1,748	77
1976	14,394	877	61
1975	13,354	584	44
1974	8,525	365	43
1973	8,314	381	46
1972	4,592	147	32
1971	3,105	118	38
1970	1,051	40	38

SHELLFISH

The value of the shellfish catch at £7.4m showed an increase of £0.8m on the value of the 1978 catch. Landings of Dublin Bay Prawns increased from 3,363 tonnes in 1978 to 4,259 tonnes in 1979 with a consequent increase in value from £1.9m to £3.7m.

The value of shellfish landings over the past ten years are given in the following table:—

TABLE 5

Year		£'000
1979	...	7,334
1978	...	6,526
1977	...	4,936
1976	...	3,886
1975	...	2,374
1974	...	1,754
1973	...	1,773
1972	...	1,417
1971	...	1,308
1970	...	1,102

MARICULTURE (see also under Page 20)

The major impetus in aquaculture in Ireland is on the mariculture side, with particular reference to oysters and mussels.

New legislation introduced in March 1980 has revised and simplified what was a cumbersome legal procedure, and when applications for orders under the old Act have been processed, it will then be possible to designate whole areas as being suitable for mariculture and within

these areas to issue licences to individuals or groups, thus allowing for a more orderly development.

As indicated in the section of this report dealing with E.E.C. aid for restructuring the Inshore Fishing Industry, grants continue to be available from the Community towards the cost of mariculture projects in addition to a national grant payable by An Bord Iascaigh Mhara.

Technical and engineering advice continued to be given to various private developers of salmonid and shellfish rearing stations.

There has been a significant increase in the past few years in the number of applications for oyster/mussel licences, and this is perhaps the best indication of the increasing interest in mariculture in Ireland.

EXPORTS

At £33m exports of fish and fish products, including both sea and fresh water preparations (see Part II of this Report) established a new record. Exports of sea fish and fishery products were valued at £28.7m as against £26.5m for 1978. Details of exports are given in Appendix No. 4.

PERSONNEL AND VESSELS

The number of fishermen engaged full time rose from 2,815 in 1978 to 3,299 in 1979 while the number of part-time fishermen fell from 5,805 in 1978 to 5,412 in 1979. There was an overall increase in the number of vessels engaged in fishing in 1979, the total being 2,965 compared with 2,919 in 1978. A further increase occurred in the number of vessels over 75 gross tons in the fleet, the total being 94 as compared with 86 in 1978. The number of motor fishing vessels over 25 gross tons which are responsible for most of the wetfish catch fell from 378 in 1978 to 351 in 1979 while the number of motor vessels under 25 gross tons rose from 1,082 in 1978 to 1,188 in 1979.

Further details are given in Appendix No. 7.

AN BORD IASCAIGH MHARA

The Board received from the Fisheries Vote for the year ending 31 December 1979, a grant of £6,140,000 in aid of administration and current and capital development. Repayable advances totalling £1,736,000 were also made to the Board from the Central Fund, mainly for the provision of boats and gear.

The scheme of loans and grants and leasing arrangements for the acquisition of sea fishing boats and gear continued in 1979. Under the scheme, the Board assisted Irish fishermen in acquiring 47 new

vessels during the year of which 46 were built in Irish boatyards. Grants were also available from the EEC towards the cost of mariculture projects in addition to the national grant payable by the Board.

The Board's export market development policy continued to concentrate on achieving added value through the expansion of processing activities.

The responsibility for the training of fishermen including the operation of the Greencastle Fishery School was transferred to the Board on 1 September, 1978, and the scheme for the training of boys as fishermen continued in 1979, with 45 trainees undertaking the basic deck-hand course and 16 trainees undertaking the advanced deck-hand course. Courses to enable experienced fishermen to obtain certificates of competency under the Merchant Shipping Acts were held at Valentia, Killybegs, Greencastle, Schull and Wexford during the year, and thirty-five candidates were successful.

Courses in navigation, chartwork and seamanship were held at Valentia, Baltimore, Dingle and Union Hall. Net mending courses were held at Carna, Lettermullen, Crosshaven, Dingle and Cahirciveen. Forty fishermen attended courses in England, and six in Norway.

The Board's Annual Report on its activities in 1979 is published separately.

SEA FISHERIES PROTECTION

Protection of the exclusive fishery limits was maintained by way of regular patrols by Naval Service vessels and aerial surveillance by the Air Corps. Prosecutions were effected against the skippers of 16 foreign vessels and 24 Irish vessels who had been arrested for various infringements of the Fisheries Acts including illegal entry, illegal fishing within the exclusive fishery limits of the State, having undersized fish on board and having illegal nets on board. All of these cases except for one which was tried summarily in the District Court were still sub judice at the end of the year.

The co-operation of the Garda Síochána which was readily available in the conduct of Court cases and general enforcement of fisheries protection measures is acknowledged.

EUROPEAN ECONOMIC COMMUNITY

Common Fisheries Policy

Negotiations on the revision of the Common Fisheries Policy resumed at the Fisheries Council of Ministers Meeting on 19 February, 1979. The EEC Commission's proposals for an internal fisheries regime were examined but no progress was made as the United Kingdom continued to maintain its reservations. The Council did,

however, agree in principle to the extension of the common interim measure for restructuring the inshore fishing industry to 31 December, 1979.

On 26 March 1979, the Council formally adopted a Regulation No. 592/79 giving effect to this agreement. The Regulation provided for investment aid amounting to 15 million EUA (European Units of Account) approximately £9.8 million. Investment projects eligible for consideration were those intended either to develop inshore fishing in regions where fishing possibilities allow, or to develop aquaculture in regions particularly suited to this activity. By continued derogation the measure will especially assist Ireland by grants of up to 50% of the cost of new fishing vessels of specific length and aid for aquaculture projects. On 8 June, 1979 the Commission set up a Scientific and Technical Committee for Fisheries. The Committee is comprised of scientists from all member states who are particularly well qualified on the subject of fishery resources. The Commission will consult it on the measures needed for the protection of fishing grounds, the conservation of the biological resources of the sea and their balanced exploitation. The Committee will thus be able to assist in the drawing up and implementation of a community system for the conservation and management of fishery resources.

At the Council meeting on 25 June, 1979 a further exchange of views took place on a number of measures relating to the internal aspects of a common fisheries policy and in the absence of general agreement on the measures discussed the Council agreed to resume discussions at a further meeting in October. Pending the adoption of permanent community measures member states, in the interim, would conduct their fishing activities so that catches of their vessels would conform to the total allowable catches (TACs) proposed for 1979 by the Commission on the basis of scientific advice. It was envisaged that this interim arrangement would apply until a definitive agreement is reached or until 31 October, 1979, whichever is the earlier. The catches taken during this interim period will be offset against the allocations eventually decided upon for 1979 by the Council.

On 29 October, 1979 the Fisheries Council of Ministers met and resumed discussions. While the Commission's package of proposals for regulations on conservation measures as part of such a revised Common Fisheries Policy was again included on the agenda no substantial advance was made. The Council did, however, agree to the establishment of a high level working party to discuss the Commission proposals on total allowable catches (TACs) for 1980 as well as conservation and control measures. It was intended that the working party would consider the Commission's proposals in the light of the first report of the Commission's Scientific and Technical Committee for Fisheries published on 25 October, 1979 and relevant social and economic considerations.

Agreement was also reached at this Council on the prolongation, until the end of 1979, of the existing interim measures on the conduct of member states' fishing activities in the absence of permanent Com-

unity measures. These interim measures obliged member states to conduct their fishing activities in such a manner that the catches of vessels would conform to the TAC proposed for 1979 by the Commission on the basis of expert scientific advice.

Progress continued at the Council meeting on 3 December, 1979 when, following detailed discussion, the Council stated that it intended to reach agreement as early as possible in 1980 on the formulation of a Common Fisheries Policy. The interim measures would continue to apply until a final agreement is reached by the Council or until 31 March, 1980, whichever is the earlier. Catches of member states would eventually be offset against TAC allocations for 1980 when these are defined. On this question it was agreed that the 1980 TACs would be finalised by the Council before 31 January, 1980 on the basis of Commission proposals and further consideration of relevant scientific, economic and social factors. A uniform Community system for recording and notification of catches which relate to species for which a TAC has been fixed was also agreed in principle by the Council.

Arrangements with Third Countries

Since the extension of our exclusive fishery limits to 200 miles from 1 January, 1977 certain third countries have entered into negotiations with the Community on framework fisheries agreements and of these only Spain, Norway and the Faroe Islands are relevant to the extended Irish zone. Neither Norway nor the Faroes have done any significant fishing in the Irish zone while under interim autonomous arrangements Spanish vessels are effectively prohibited from fishing in a specified area of Irish waters which at no point is less than 50 miles from the Irish coast.

The conclusion of framework fisheries agreements between the Community and the Governments of Canada, Sweden, Senegal, Denmark and the Home Government of the Faroe Islands is pending. The signature of framework fisheries agreements between the Community and the Governments of Norway, Spain, Finland and Guinea-Bissau is also pending. The delay in the conclusion or signature of these agreements arises from United Kingdom reservations linking its approval to substantial progress being made on the internal aspects of the Common Fisheries Policy. The practical effect of these delays on fishing by Ireland are minimal.

In the interim the autonomous temporary arrangements on fishing for Norway and the Faroes not applicable to Ireland continued to operate. As regards Spain the autonomous temporary arrangements were extended to 31 March, 1979. Negotiations between the Community and Spain on an agreement for reciprocal fishing arrangements for 1979 were completed on 9 March, 1979. A regulation No. 586/79 which effected the agreed arrangements was adopted by the Council on 26 March, 1979 and following the opinion of the European Parliament was confirmed by EEC Council Regulation No. 1177/79 of 12 June, 1979. At the Council meeting on 3 December 1979 the United

Kingdom lifted its reservation on the conclusion of the EEC/Canada Agreement and also on the negotiation of a fisheries agreement with the Seychelles and Mauritius. However, the remaining reservations stand.

The Council also agreed to extend the autonomous temporary arrangements applicable to Spain in 1979 for the month of January, 1980 as a special measure pending a final arrangement to apply through 1980. Interim arrangements for Norway and the Faroes will continue to operate through 1980 until consultations on definitive fishing arrangements in 1980 have been concluded and enter into force.

EEC Aid for restructuring the Inshore Fishing Industry

Under the 1979 EEC Scheme of FEOGA (European Agricultural Guidance and Guarantee Fund) grants for the inshore fishing industry, Irish investment projects comprising the construction of eight new fishing vessels and three aquaculture projects were approved by the EEC Commission for grant aid amounting to £2,666,200. The grants to Ireland represent approximately 26% of the total FEOGA Aid allocated for division between the nine member States of the European Community.

Cross Border Herring Study

This study initiated in late 1978 was trilaterally commissioned and financed by the Irish and United Kingdom Governments and the EEC Commission as a cross-border project. Its primary objective is to provide scientific data on the juvenile herring stocks supporting the Mourne herring fishery from which future fisheries management and related socio-economic policies can be formulated.

The Study is being carried out by Fisheries Development Ltd., London at an estimated cost of £130,000 shared on a trilateral basis by the Commission (50%) and the Irish (25%) and United Kingdom (25%) governments.

Substantial progress was made on the study during the course of the year and the consultants expect to finalise and submit their report and recommendations in early 1980.

Study on the Development of the Irish Sea Fishing Industry and its Regional Implications

This study initiated in June, 1978 was jointly commissioned by the Irish Government and the EEC Commission. The purpose of the study is to examine the structure and dimensions of the Irish sea fishing industry, to determine the constraints on its expansion, to define the elements of a programme for optimal use of marine fish resources and to identify priority projects, programmes and policy alternatives. It represents an essential step in the elaboration of an updated fisheries development programme.

The Study is being carried out by the Economic and Social Research Institute at an estimated cost of £80,000 and will be financed on a joint basis by the Irish Government and the Commission.

Progress on the Study continued during 1979 and the Institute expects to have its report and recommendations finalised towards the middle of 1980.

Recognition of a Second Producer's Organisation of Fishermen

On 30 June, 1979 the Minister for Fisheries and Forestry granted recognition to the Killybegs Fishermen's Organisation Ltd., as a producer's organisation in accordance with EEC Regulations. Producers organisations are established on producers' own initiative for the purpose of taking such measures as will ensure that fishing is carried out along rational lines and that conditions for the sale of their products are improved. The new organisation will, along with the Irish Fish Producers Organisation Ltd., operate EEC intervention arrangements for fish products thereby assisting in the stabilisation of prices and guaranteeing as far as possible a fair income to producers by means of the price support arrangements.

RESEARCH AND DEVELOPMENT

PELAGIC FISHERIES

Herring

The low level of the stocks in all our major fisheries, caused by the intensive exploitation and poor recruitment of young herring in recent years, meant that severe catch restrictions were again enforced throughout the year. The sampling programme designed to provide information on the population dynamics of these stocks was continued. The information obtained from these sampling programmes, together with data collected by other nations exploiting the stocks, is used by the Department's herring experts participating in the appropriate Working Group of the International Council for the Exploration of the Sea (ICES) to calculate TACs (total allowable catches). These calculations form the basis of the advice to the EEC and other regulatory bodies formulated by the ICES Advisory Committee on Fisheries Management (ACFM) on which a Department scientist represents Ireland.

The stock in the Celtic Sea remained at a very low level. As a result of a trawl survey carried out in December, a larval survey carried out during the spawning period from October to March, an airborne remote sensing trial using low light level television over the spawning beds and a continuation of the sampling programme, it was concluded that although there may have been some signs of a recovery in the stock it still remained at a dangerously low level.

Prohibition of herring fishing along the northwest coast (i.e. the Donegal fishery) was continued throughout the year. However, the

results of the sampling programme indicated a good influx of young herring into the area during the year and larval surveys carried out by a Scottish research vessel indicated that considerable spawning took place in the area during the autumn of 1979. These factors would indicate that the stock has recovered somewhat in 1979.

The ban on herring fishing within 12 miles off the base lines of counties Louth, Meath and Dublin was continued. This ban was introduced to protect the Mourne stock while spawning in the northern part of this zone and to prevent exploitation of juvenile herring which inhabit these inshore waters. The industrial fishery which exploits these young herring ceased during the year and their subsequent increased abundance was reflected in the results of a trawl survey carried out in the northwestern section of the Irish Sea in July 1979. The survey on the distribution of the larvae and young of the Mourne herring, commissioned in 1978 and funded jointly by the Department of Fisheries and Forestry, the Northern Ireland Department of Agriculture and the Commission of the EEC was completed in late 1979 and will form the basis for the future rational management of the Mourne stock.

The Manx herring fishery in the Irish Sea was continued during the year with slightly lower catches. There are now indications that recruitment of young herring to this fishery has declined in recent years so that it is likely that future catches will be reduced.

The herring fisheries off the west and southwest coasts remained open but subject to TACs. These herring fisheries, because of the closure of all adjacent fisheries, have now assumed considerable importance. This has resulted in increased fishing effort in the area and the reaction of the stocks to the increased exploitation needs to be very carefully monitored.

Sprat

The expansion of the sprat fishery in the Celtic Sea continued during 1979 and a sampling programme together with a larval survey was undertaken. Both these investigations were designed to provide information about the size of the total stock inhabiting the Celtic Sea. The fishery in 1979 spread westwards from Dunmore East and considerable landings were made at some of the west Cork ports.

The cessation of the industrial fishery in the Irish Sea meant that no sprat landings were recorded from that area.

Mackerel

Landings of mackerel increased during 1979 and a sampling programme was carried out mainly on the catches made off Donegal and off west Cork and Kerry. The results of these programmes were, as in herring, used by the Advisory Committee on Fishery Management (ICES) to calculate a TAC for mackerel. Despite the huge increase in catch in recent years, the stock, because of continuing high recruit-

ment, seems capable of maintaining the present high level of exploitation.

Fat Content

The Fisheries Research Centre continues to provide a service in analysing samples of fish for fat content for exporters and people in the trade.

Plankton Studies

Studies of the abundance of fish eggs and larva in the plankton were initiated in 1978 and continued in 1979. The main purpose of these studies at the moment is to obtain information about egg and larval drift paths to nursery grounds and the abundance of the parent population. Studies in 1979 were confined to the Celtic Sea herring and sprat stocks; the calculated abundance and distribution was similar to that obtained in 1978, giving a population estimate of about 20,000 tonnes of sprat.

The herring larval surveys were conducted from October to March—i.e. throughout the entire spawning period. It was found that the main spawning of the Celtic Sea herring now occurs in autumn compared to the period 1960-1975 when the main spawning took place in winter. The larval production of the autumn spawning component during 1979 was approximately 11% higher than in 1978, but very little spawning seems to have taken place during the winter of 1979/80. The results of these surveys are extremely important in estimating stock abundance, particularly in these areas where no fishing is allowed.

DEMERSAL FISHERIES

These fisheries continued to increase in value in 1979, but this is not necessarily an indication of the state of some or all the stocks in Irish waters. There is evidence that with the closure of some Pelagic Fisheries, there has been an increase in the intensity of fishing effort on some of the demersal stocks. The sampling of various stocks, commenced in 1976, was continued in order to monitor the relationship between catch and fishing effort, because increased catches are not necessarily the corollary of increased abundance. The present results of these investigations indicate that continuing expansion of demersal fish catches will lead to over exploitation of certain stocks. The position of some demersal fisheries may be itemised as follows:—

(a) Cod and whiting stocks of the northwest and the Irish Sea (ICES Divisions VIa and VIIa respectively) are being exploited at an excessively high level.

(b) Plaice stocks in the Irish Sea and the Celtic Sea (ICES Divisions VIIa and VIIf and h respectively) are being exploited at an excessively high level.

(c) Black sole stocks in the Irish Sea (ICES Division VIIa) are being fished at optimum intensity.

The total stock of all demersal fish species (including *Nephrops*) in the Irish Sea (ICES Division VIIa) is being fished too intensively and this has resulted in reduced catch rates (i.e. the catch taken by each unit of fishing effort). Total demersal catch rates from mid 1950s to the mid-1960's showed a generally downward trend, and they have declined more steadily since 1967 as total demersal fishing effort continue to rise.

Thus, the earning capability of individual boats, in this area, has declined as fishing effort has increased, due to the poor stock situation.

The most important information supplied by these investigations points to the need for constant monitoring of effects upon stock abundance of increasing catches, so that increases or decreases in landings may be advised, which is the main thrust of the research work being carried on in respect of demersal species.

Forecasting the level of stock abundance changes from year to year is very important to fishermen and therefore, for example, the twice-yearly surveys of the abundance of young plaice in the Irish Sea, which were commenced in 1975, were continued in 1979 using a chartered commercial trawler. The purpose of these survey is to obtain early information about the numerical strength of the plaice "brood" produced from each year's spawning, in order to help in forecasting stock trends and advisable catch sizes.

SHELLFISH

Lobsters and Crawfish

Lobsters and crawfish were the second most valuable species of shellfish exploited in 1979 (combined value £1.94 million), behind *Nephrops* which were valued at £3.74 million. The Lobster Working Group of ICES met in May 1979, and made a number of important recommendations for the conservation, management and protection of this species. Of these, the following were recorded as being essential in the Irish context:—

- (a) The present minimum legal size limit should be enforced strictly.
- (b) This minimum legal size limit should be increased from the present 83 mm to 85 mm, carapace length, as soon as possible.
- (c) Reduce fishing effort from the present level of exploitation to a level which will produce long-term gains to the fishery.
- (d) Catch/effort data (currently not available) should be collected to enable better management of lobster stocks to be developed.

In the case of crawfish, a decline in the numbers caught, by almost 25% over the 1978 level, points to the need for the introduction of a

minimum legal landing size limit for this species. Preliminary investigations of an appropriate size limit were commenced.

An in-depth study of the requirements of a licensing system for lobster, crawfish and crab fishing was made during 1979 and this is currently being examined.

Oysters

The Irish Oyster fisheries in 1978 yielded over £1 million landed value, but this was not maintained in 1979, when the value fell by almost 50%. A feature of wild stocks of this type of shellfish is the fact that they are subject to large fluctuations of production caused by the success or failure of spawning and settlement. Thus, one or more consecutive poor spawning years will affect the numbers of adults available for harvesting, in this type of dramatic fashion.

The Department's staff continued to provide advice on the management and development of oyster fisheries, particularly as regards their improvement, to take into account large fluctuations of natural production.

Mussels

The Department's staff continued to advise upon the management of mussel fisheries, and it is worth recording that their value increased by almost 25% in 1979 over 1978.

Nephrops

Experiments carried out in 1978 were continued in 1979 to investigate the selection of *Nephrops* (Dublin Bay Prawn) by the mesh of trawls. While not fully conclusive, the results suggested that the way in which the net is rigged (and hence its behaviour in the water) is much more critical with regard to *Nephrops* selection than for fish species.

MARINE POLLUTION

Aquatic Environmental Unit

The scientists in the Fisheries Research Centre who make up the Aquatic Environment Unit provided technical advice on applications for the discharge of waste under the terms of the Local Government (Water Pollution) Act 1976, and the dumping of wastes at sea under the terms of the Fisheries Acts. They also participated in meetings of the two intergovernmental Commissions which, by Convention, are responsible for the international control of waste disposal at sea; these are the Convention for the Prevention of Marine Pollution for Land-based Sources (The Paris Commission) and the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (the Oslo Commission), and their technical sub-groups. A

scientist of the Fisheries Research Centre was elected vice-Chairman of the Joint Monitoring Group of the two Commissions.

Environment monitoring

Biological, sedimentological and chemical surveys were carried out on the south and east coasts at intervals throughout the year, in order to assess environmental conditions in areas of waste discharge effluents and on dumping grounds, as well as in other regions away from these activities. The biochemistry laboratory at the Fisheries Research Centre, as well as forming a component of the general environmental research programme, carried out analyses of fish for export in order to ensure they complied with the conditions of the importing country regarding the levels of mercury and other pollutants which may occur in fish tissue. All the analyses carried out showed that any such compounds, where present, were well below the permitted safety levels.

Red Tide

For the fourth year in succession, a "red tide" occurred on the south coast between Youghal, Co. Cork and the Skelligs, Co. Kerry. Red tides are extensive blooms of microscopic algae belonging to the group known as dinoflagellates. The species responsible for the south coast blooms was *Gyrodinium aureolum* and although it is not toxic to humans it can cause mortalities of marine life when its numbers reach the enormous levels which constitute a red tide. (The term refers to the colouring given to the water by a dinoflagellate bloom; depending on the species responsible, this can be an orange, rust-red or peat brown shade). Caged rainbow trout were killed in Dunmanus Bay, and mortalities of littoral and benthic organisms were observed throughout the area of the red tide build-up of the bloom, and its progress and effects once it became established, were monitored in co-operation with scientists working at the Sherkin Island Field Study Centre.

In March 1979, the Department organised a two-day seminar on red tides which was held at the Fisheries Research Centre. The objects of the seminar were to:

- (i) assemble existing information on red tides in Ireland;
- (ii) consider similar occurrences in other European countries;
- (iii) study the causes and assess the predictability of these phenomena;
- (iv) assess the implications of red tides in relation to fisheries, mariculture and public health;
- (v) make proposals for monitoring, contingency plans and research.

Attendance was by invitation, and the audience consisted of marine and fisheries scientists, mariculturists, public health and local authority officials. The speakers were from the Fisheries Research Centre, University College Galway, University College Cork, Sherkin Island

Field Study Centre, Ulster Polytechnic and scientists from Norway and Britain. The proceedings are in press as No. 1 of the new Fisheries Seminar Series.

Betelgeuse Disaster

Following the destruction of the tanker *Betelgeuse* at Whiddy Island, Bantry Bay in January 1979, the Department initiated a number of scientific investigations to assess the effects of the disaster and its aftermath on fish stocks and other marine life in the area, and to ensure that the clean-up proceeded in such a way that damage to the living resources of Bantry Bay was avoided or minimised. One scientist from the Fisheries Research Centre was attached to the Bantry control centre from its inception until mid-March, and others carried out diving surveys in February and August. Extensive investigations of the distribution and abundance of the eggs and young stages of fish and fish food organisms were conducted in January, February, May and August using a chartered fishing vessel; information was also collected on water movements in Bantry Bay. Samples of fish, shellfish and seawater were brought back to the Fisheries Research Centre for chemical analysis.

The scientific evidence collected and evaluated through this programme showed that no biological damage to *stocks* of fish or shellfish was caused by either the disaster or the cleaning up. Damage to fishing *activities*, on the other hand, was severe in that serious disruption of trawling, dredging and drift-netting was caused by floating oil and by burnt or partially burnt oil which had sunk to the bottom. Some tainting of parts of scallops was detected.

The results of the scientific investigations are being prepared for publication.

MARICULTURE

A multiple investigation of the sea around Valentia Island was carried out by the Mariculture unit, the Aquatic Environment Unit and the Diving Team (as in Mulroy Bay in 1978) in order to make a preliminary assessment of the area's potential for the cultivation of oysters, mussels, scallops and salmonids. The information collected indicates that some parts of the area are very suitable for oyster cultivation, and that these would be the most appropriate species on which to base maricultural development there. The native scallop population shows signs of being very heavily fished; re-seeding may be successful, and it is hoped to carry out experimental layings of scallop spat at a future date.

On account of the absence of suitably sheltered sites with sufficient water depths, Valentia does not appear to have any potential for salmonid cages or mussel rafts.

Elsewhere in the south-west, scallop re-seeding experiments were carried out in Lough Ine and in Dunmanus Bay. The settlement of

scallop spat was monitored in Lough Ine (poor), Bantry Bay (moderate, as in previous years), Dunmanus Bay (moderate), Kenmare Bay (light) and Valentia (none up to August).

Following the pilot survey carried out by the Fisheries Research Centre in 1978, a research programme was commenced during 1979 in Mulroy Bay Co. Donegal, to assess in more detail the potential of the North Water for mariculture production. Sea temperature profiles and water transparency observations were made at frequent intervals at three stations. Vertical plankton tows were carried out every 1-4 days from the end of July to mid-August, and weekly from then until 18 September; molluscan bivalve larvae were identified and counted, and other planktonic organisms were recorded according to relative abundance. Following the settlement of scallop spat in early August, various parts of the North Water were investigated by diving to assess the density of the spatfall; the growth rate of these early stages was also investigated.

The 1979 settlement of scallop spat in the North Water of Mulroy Bay was intense; it was much greater than the levels of abundance seen anywhere else in Ireland in 1979 or in any other year. The Department research team gave practical help and advice to local interests who were anxious to avail of the opportunities presented by this unique resource. As part of the Department's research programme, some of the scallop spat were held in trays in the North Water for on-growing, and some were transported to the west and south coasts for growth trials. The research in the North Water will be expanded in 1980.

In Cromane, Co. Kerry, the experimental culture of mussels using the French technique of Bouchot or pole culture gave promising results. Also in Castlemaine Harbour, the results of the Department's research programme indicates that the "wild" mussel population of the area could make more efficient use of the available food, and the management of the resource thereby improved, if the intertidal mussels were to be transplanted to below the low water mark.

Diving Unit

A total of 50 dives were made during the year—18 in Bantry Bay as part of the post-*Betelgeuse* programme (see page 20) and 32 at Valentia during the multi-disciplinary assessment of the mariculture potential of that area (see page 20). The Diving Team in 1979 consisted of three officers of the Fisheries Research Centre, fully equipped for SCUBA diving and supported by a portable compressor, a range of underwater photography apparatus and a 17-ft. dory with twin 25 hp outboard engines. Dry suits enable the team to operate throughout the year.

FISHERY RESEARCH STATIONS

Proposals for the provision of Fishery Research Stations at Ballyglass, Co. Mayo and Kinsale, Co. Cork are being examined. Plans

for the provision of additional accommodation at Dunmore East Fishery Research Station were being considered. The need for a Fish Pathology Unit as an extension to the Fishery Research Centre at Abbotstown was examined.

RARE FISHES

The Fisheries Research Centre continues to provide a service for examining and identifying specimens of rare and unusual fish. Small cash awards are paid to senders of rare species and an annotated list is published annually in the "Irish Naturalists Journal". Suitable specimens are preserved in the National Museum and many of these are on display. Because of the prolonged postal dispute during the year very few interesting specimens were received in 1979.

ENGINEERING

FISHERY HARBOUR WORKS

Major Fishery Harbour Centres

At Killybegs Fishery Harbour expenditure of £107,400 was spent on development works during the year. Preliminary work on the construction of the syncrolift was continued and work commenced on the installation of a weighbridge. Discussions were held with the fishermen and other local interests in Killybegs and agreement was reached on the provision of additional facilities to meet the needs of the expanding fishing fleet. A site was allocated within the Harbour Centre Area to an Irish/Danish company for the erection of a factory to manufacture and repair seine nets. Tenders for the erection of an auction hall were invited but as the response was unsatisfactory it was not possible for the Office of Public Works to place a contract for the project by the end of the year.

At Castletownbere Fishery Harbour Centre expenditure on development works during the year was £383,872. During 1979 the following works were completed or in progress:—

- (1) Order placed with Electricity Supply Board for the provision of a 38 KV supply which is to be available by mid 1981.
- (2) 10 KV supply laid on to Dinish Island.
- (3) First of 3 transformers installed on Dinish Island. Public lighting installed on the jetty, syncrolift and main service road.
- (4) Electricity supply laid on to syncrolift; lifting gear installed and pre-commissioning trials carried out.
- (5) Surface water drainage system substantially completed.
- (6) Contract documents for effluent disposal scheme prepared, and some preliminary works carried out.
- (7) Alignment, grading and kerbing of road network substantially completed and contract documents for road surfacing scheme drawn up.

- (8) Principal water mains laid.
- (9) Filling of industrial sites completed and grading in progress.
- (10) Good progress made by contractors on construction of the fish processing factory which is being built on Dinish Island by Eiranova Fisheries Ltd., an Irish subsidiary of the Spanish firm Pescanova.

Negotiations were in hand for two further fish processing factories and a 50 ton per day fishmeal plant. A site was offered to Department of Posts and Telegraphs for a Rural Automatic Telephone Exchange.

Other Harbours, Ports and Landing Places

At Howth Harbour work commenced in August on the first stage of a major Fishery Harbour Development Scheme which has been designed to provide the fishing fleet with all necessary modern facilities. During the year £1,004,913 was spent on work on the new trawler breakwater, rock drilling and blasting within the new fishery harbour area and reclamation of the foreshore to the west of the west pier. Discussions with local interests at Howth were continued and as a result a number of design changes were introduced in order to minimise the effect of the development on the West Pier and its immediate surroundings. The Howth Harbour Development Liaison Committee which was established by the Minister for Fisheries and Forestry to brief the public of the Department's proposals for the development of the Harbour and to learn of any objections to the Development Scheme held its first meeting in November.

In November the Government authorised the Minister for Fisheries and Forestry to amend the Fishery Harbour Centres Act, 1968 so as to provide for a Fishery Harbour Centre at Rossaveal, County Galway instead of at Galway Harbour. The necessary legislation was in preparation at the end of the year. A meeting was held with Burtonport fishermen during the year to discuss proposals which they had forwarded for the improvement of facilities for the fishing fleet.

At Dunmore East a site was leased to a private company for a fish processing factory, and negotiations were undertaken on the leasing of a further site to a local fishermen's co-operative for cold storage and processing and on the leasing of the boat repair facility to a boat repair and diving firm.

Other Fishery harbour improvement works, grant aided by the Department of Fisheries and Forestry were completed during the year at Portnoo, Co. Donegal, and Scraggane and Fenit, Co. Kerry. A boring survey was also completed at Greencastle in 1979. Fishery harbour works in non-Gaeltacht areas were in progress at the end of the year at Frenchport and Rosspport, Co. Mayo, Cahirciveen, Dromatoor and Oysterbed, Sneem, Co. Kerry, Oilean na gCaorach, Co. Cork and Wicklow Harbour.

Improvement works which were recommended by the Department

of Fisheries and Forestry and financed by Roinn na Gaeltachta were in progress at the end of the year at Bunbeg, Stackamore and outside Burtonport (warning lights), Co. Donegal, Caladh Mhagnuis, Carraigin a tSruitha, Darby's Point (warning lights), and Inver, Gortmelia, Co. Mayo, Baile an Reannaigh, Co. Kerry and Cora Point (Inishman Island), Co. Galway.

TECHNOLOGY

Fish Quality Regulations

The Pelagic (Handling, Storage and Transport) Regulations, and the Shellfish (Handling, Storage and Transport) Regulations came into force during the year. Landings of pelagic fish, shellfish and demersal fish were supervised by the Fish Quality Officers to ensure compliance with the new Regulations in addition to the existing Demersal Fish (Handling, Storage and Transport) Regulations 1967, as amended by the Demersal Fish (Handling, Storage and Transport) Regulations, 1973.

Particular attention was paid to the size and freshness gradings of fish landed at Irish Ports and offered for sale at auctions to ensure compliance with EEC Council Regulation No. 103/76 of January 1976. These Officers were active in certifying that fish withdrawn from the market in respect of which the Producer's Organisation wished to claim EEC Compensation monies, had been properly graded and properly disposed of.

INTERNATIONAL AND OTHER CONFERENCES AND COMMITTEES

During the year Sea Fisheries Division was represented at the following conferences, committees, working groups etc.

Abroad

Statutory Meeting of the International Council for the Exploration of the Sea (ICES) (Warsaw), and the following ICES working groups, symposia and committees:

- Nephrops Working Group (Copenhagen)
- Ad hoc Group on Oil Pollution Incidents (Copenhagen)
- Working Group on the Introduction of non-Indigenous Marine Organisms (Conwy)
- Working Group on the Pathology and Diseases of Marine Organisms (Conwy)
- Symposium on the Early Life History of Fish (Woods Hole, Mass.)

- Working Group on the Distribution of Larval Fish (Woods Hole, Mass.)
- Marine Chemists Working Group (Nantes)
- Mackerel Working Group (Copenhagen)
- Working Group on North Atlantic Salmon (Copenhagen)
- Working Group on Herring Larval Surveys (Copenhagen)
- Herring Assessment Working Group for the Area South of 62°N (Copenhagen)
- Lobster Working Group (Lowestoft)
- Working Group on Marine Pollution Baseline and Monitoring Studies in the North Atlantic (Lisbon)
- Roundfish Working Group (Copenhagen)
- Irish Sea and Bristol Channel Working Group (Copenhagen)
- Automatic Data Processing Working Group (Copenhagen)
- Statistics Committee Liaison Working Group (Copenhagen)
- ICES/EIFAC Working Group on Stocks of the European Eel (Copenhagen)
- Advisory Committee on Fisheries Management (Copenhagen)

- Malacological Society (Manchester)
- Underwater Association (Manchester)
- Shellfish Association (London)
- Institute of Fisheries Management (Nottingham)
- Oslo and Paris Commissions standing scientific committees (various centres)
- EEC Scientific and Technical Committee on Fisheries (Brussels)
- Codex Alimentarius Commission, Bergen, Norway
- West European Fishery Technologists Working Group, Bremerhaven, Germany.

Home

- Scallop Working Group (ICES).
- National Board for Science and Technology (NBST) Environmental Science Advisory Group
- NBST/RIA National Committee on Man and the Biosphere
- NBST/Red Tide Working Group
- Symposium on Technology for the Food Industry

Interdepartmental Environmental Committee
 Dept. of the Environment Technical Committee on Effluent and Water
 Quality Standards.

LEGISLATION

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

PART II

INLAND FISHERIES

Details of the catches of salmon, sea trout and eels in the various fishery districts during 1979 are given in Appendices Nos. 11 to 17 of this report. As usual, the catches made in the Foyle Fisheries Commission area, formerly the Moville Fishery District, are not included but they are referred to in a separate section of this report.

In 1979 the catch of salmon and grilse amounted to 338,558 fish weighing 1,073 tonnes and valued at £5,154,227 compared with 360,389 fish weighing 1,180 tonnes and values at £3,987,286 for 1978. The overall average weight at 3.17 kgs was slightly lower than in 1978. The commercial catch at 1,033 tonnes was lower than the 1978 figure of 1,148 tonnes. The total rod catch amounted to 11,759 fish weighing 39.72 tonnes and valued at £192,705 compared with 1978 when 8,621 fish weighing 31.42 tonnes and valued at £107,352 were caught. The total number of licences of all kinds issued for angling for salmon and sea trout was 12,900 compared with 13,481 in 1978. The salmon catch figures for nets and rods for the years 1977, 1978 and 1979 are given in Appendix No. 12. In 1979 the salmon and grilse catch (by weight) was distributed as follows:—

Drift nets	...	82%
Draft nets	...	12%
Stake nets, snap nets, weirs and other commercial methods	...	2%
Rod and Line	...	4%

The average weight and value of salmon caught by commercial fishing engines during the past three years are given in Appendix No. 11. Details of the catch of sea trout in 1979 in the various fishery districts are given in Appendix No. 13. Very little commercial fishing specifically for sea trout is done in this country and over 50% of the total catch is taken as a by-catch of commercial fishing for salmon. It is difficult therefore to compile accurate statistics.

BOARDS OF CONSERVATORS

Details of receipts and expenditure of boards of conservators for the fishery year ended 30 September, 1979 are given in Appendix No. 18.

RE-ORGANISATION OF INLAND FISHERIES

During the year the Fisheries Bill, 1979 was passed by Seanad Eireann and its Second and Committee stages were passed by Dail Eireann. The purpose of the Bill is to give effect to the main recommendations of the Inland Fisheries Commission by securing the more effective conservation, protection, management and development of

inland fisheries by re-organising and strengthening the existing administrative structure. The Bill provides mainly for the establishment of a Central Fisheries Board and seven regional fisheries boards, representative of all inland fishing interests, to replace the existing 17 boards of conservators and the Inland Fisheries Trust Incorporated.

EMPLOYMENT IN THE INDUSTRY

Exclusive of persons employed on the marketing and transport of fish, a total of some 6,500 persons found either whole-time or part-time employment in inland fisheries during the year. This figure includes 4,550 persons estimated as engaged in netting for salmon, 300 employed full or part-time by boards of conservators on protection of fisheries, 800 engaged in netting and protection work in the Foyle area, about 170 engaged in development work on behalf of Inland Fisheries Trust Inc. and the remainder employed by proprietors of commercial and sport salmon fisheries or by angling associations.

INSTRUMENTS OF CAPTURE

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

EXPORTS OF FRESHWATER FISH

Salmon

The total quantity of salmon exported in fresh, chilled, frozen and salted forms was 667 tonnes compared with 1,061 tonnes in 1978. Total value of these exports fell from £4,190,423 in 1978 to £3,857,650. Details for the two years are as follows:—

	1978		1979	
	Tonnes	£'000	Tonnes	£'000
Fresh, chilled, frozen salmon ...	914	3,519	571	3,245
Smoked salmon ...	147	672	96	613

Of the total quantity of fresh, chilled and frozen salmon exported in 1979, 374 tonnes went to Great Britain, 96 tonnes went to the Six Counties, 34 tonnes to the Netherlands, 32 tonnes to France, 15 tonnes to Spain and 13 tonnes to Belgium/Luxembourg.

The smoked salmon was exported mainly to Great Britain (23 tonnes), the Federal Republic of Germany (17 tonnes), U.S.A. (17 tonnes), Netherlands (13 tonnes) and Belgium/Luxembourg (13 tonnes).

The average export price of fresh, chilled or frozen salmon was £5,679 per tonne as compared with £3,850 per tonne in 1978.

Rainbow Trout

Exports of rainbow trout in 1979 amounted to 72 tonnes valued at £97,000 as compared with 90 tonnes valued at £123,000 in 1978.

Eels

Exports of eels in 1979 amounted to 182 tonnes valued at £392,000, as compared with 99 tonnes valued at £210,000 in 1978.

ARTIFICIAL PROPAGATION

The production and distribution of salmon, sea trout and brown trout ova, fry, fingerlings and smolts produced at the various hatcheries are given in Appendix No. 23.

The total output of ova in the 1978/79 spawning season was as follows:—

Salmon	...	4,476,000
Brown trout	...	2,445,600
Sea trout	...	20,000

RESEARCH AND DEVELOPMENT

Salmon Stocks

The total catch of salmon in 1979 was 1,073 tonnes which was a further decline when compared to the 1978 catch of 1,180 tonnes. Numerically the catch was almost on a par with 1978 despite this decrease in total weight. The total recorded catch in numbers was 338,558 fish in 1979 compared to 360,389 in 1978.

The decline in total weight in 1979 was due to a drop in the average weight of fish landed. The average weight in 1979 was 3.17 kg compared to 3.27 kg in 1978. The decrease in average weight is attributed to an almost complete absence of 2-sea-winter fish (spring fish) as well as a decrease in the average weight of the 1+ sea-winter fish (grilse) caused by the absence from the catch of the late running and heavier grilse. Salmon are subject to significant cyclical fluctuations so that this situation could alter dramatically over the next few years.

There has been a steady reduction in landings of salmon since 1975, the 1979 catch being only 49% of that of 1975. In 1979 commercial salmon fishing was further curtailed in an effort to conserve dwindling stocks. The fishing week was reduced from five days to four days. Drift netting was prohibited up to 14 March and all commercial salmon fishing ceased on 20 July on the west and south coasts and on 13 August on the east coast. Those restrictions resulted in a better escapement into freshwater in 1979 when compared to 1977 and 1978.

The severe weather conditions in the spring of 1979 affected the catches of salmon in the early part of the year and resulted in a

scarcity of the 2 and multi-sea-winter components of the stock. The 1+ sea-winter fish (grilse) component of the stock was two to three weeks later than usual in arriving from the feeding grounds. Daily landings of fish are available from the Donegal coast since 1971. The earliest recorded run was in 1975 when 75% of the fish was landed before June 27. In 1977 and 1978 over 75% of the fish was landed before July 1 and June 30 respectively.

In 1979, July 13 was reached before the bulk of the fish (75%) was landed and there was evidence at the close of the season of a plentiful supply of fish. This resulted in an improved escapement of spawning fish which are so urgently required to rehabilitate our salmon rivers.

The return of salmon offered for sale in the Dublin Wholesale Fish Market is also an indication of the time of arrival of the fish in Irish waters. In 1979 a total of 83,585 fish was handled in the market. This represents a little less than a quarter of the total catch in the country, which is the norm for all years for which catch records are available. In 1979 only 35% of the total was disposed of by the end of June as against 60% to 70% in the same period in previous years. The highest recorded average weight of salmon at 4.8kg was in the month of April and the lowest was 2.7kg in the month of June.

As in previous years drift nets accounted for the major portion (82%) of the catch. Draft nets and other commercial engines showed a reduction in catch when compared with 1978. There was, however, an improvement in the catch by rods which indicates a better escapement into freshwater. Weather conditions were also favourable to rod fishing.

Catch per unit effort is a measure used to calculate the abundance of salmon in commercial fisheries. However in the case of the Irish commercial fishery its use is being carefully studied. The type of gear used (drift and draft nets especially) varies from district to district and from season to season which makes it difficult to determine an ideal and accurate catch per unit effort. The best unit of effort available at present is catch per fishing licence issued. The average number of fish caught by the principal licensed fishing engines in coastal and inshore waters from 1974 is as follows:

Year	Salmon catch per unit (No. of fish)			
	Drift Net	Draft Net	Fixed Engine	Snap Net
1974	429	170	416	70
1975	445	224	483	124
1976	314	132	385	97
1977	296	115	199	63
1978	261	109	180	43
1979	277	74	179	25

The foregoing data shows that in all cases the catch per unit has fallen significantly over the years since 1974 which is considered to be a clear sign of overfishing the resource.

Stock Management

A programme of research with a view to management of salmonid stocks is in progress at the Department's Galway fishery. In 1979 ascending adults and descending smolts were analysed.

A comprehensive survey was carried out on the juvenile salmonid stocks of the nursery streams of the Corrib catchment.

A proportion of the descending smolts was tagged, and a tagging programme of adult salmon taken in drift nets in Galway Bay was also carried out to determine the contribution made by the River Corrib to the drift nets in Galway Bay and distant rivers.

Salmon Migrations

As well as the tagging programme in Galway Bay a total of 338 salmon kelts was tagged in various hatcheries around the country. Returns from these taggings are not expected until 1980. From the 1978/79 tagging of kelts only four were returned as clean fish—three from the River Lee and one tagged at Virginia hatchery and later taken as a clean fish at Rosnaree on the Boyne.

Smolt Migrations

Seven returns were obtained from the 3,627 wild smolts tagged in the Boyne in 1978. With the exception of one taken in Burtonport and one taken at Cromane, all of the remaining recaptures were made by draft nets in the estuary of the River Boyne. There were no returns at the end of 1979 from the 829 tagged smolts reared at Virginia Hatchery. There were however two returns from the 939 hatchery reared smolts from Cong Hatchery on the Corrib, one from the Sligo coast and one from the trap at Cong, at the end of the season.

Survival of hatchery reared salmon smolts

The contribution of hatchery reared smolts to the commercial catch was recorded only from two areas in 1979. In Galway Bay from a total of 11,140 fish examined 4.6% were hatchery reared and out of 4,011 fish from boats fishing out of Killala 1.1% were found to be hatchery reared. The lateness of the run could account for the paucity of hatchery reared smolts in the commercial catch in these areas when compared to 1978.

At the close of 1979 hatchery reared smolts were marked by a magnetic tag which consists of a microscopic piece of coded wire inserted into the nose of the fish. It is hoped that for the future the hatchery reared fish will be identifiable as to hatchery of origin as each group of fish will have a different code.

Foreign salmon tags recovered in Irish waters

Two salmon tagged as smolts in Swedish west coast rivers in April and May 1978 were recaptured in Irish waters. One was recaptured by a drift net in Brandon Bay, Co. Kerry and the other was also taken by a drift net on the North Mayo coast, both in July 1979

Ulcerative Dermal Necrosis (UDN)

UDN was again in evidence in 1979 but was confined to the spawning and brood stock with the exception of the River Lennon and the River Lee. The River Bandon and River Blackwater in Cork were also badly affected in November/December 1979. It seems therefore that this disease has not yet run its course.

SEA TROUT

The work in 1979 continued along the same lines as in previous years. Stock description and assessment concentrated on the commercial fisheries along the east coast. An appraisal of the rod fisheries in Connemara was undertaken from the available records of catch statistics.

RAINBOW TROUT INVESTIGATIONS

The overall production from 12 commercial rainbow trout farms in 1979 was 360 tonnes which represents an increase of 40 tonnes over the 1978 production. Liaison was maintained with rainbow trout farms in 1979. Nephrocalcinosis, a form of kidney disease, was identified in a number of freshwater units in 1979. The presence of nephrocalcinosis renders the fish unsuitable for cage culture in the sea. The cause of the disease has not been identified but indications are that it is either nutritional or associated with the CO₂ content of the water.

EEL RESEARCH AND DEVELOPMENT

Experimental netting using summer fyke nets was carried out to determine the effects of commercial fishing on stocks of yellow eels on and in exploited fisheries. Some further waters were investigated to determine the quantity and quality of eels available for exploitation. A new programme on the sampling of silver eels for size, sex and age composition, started in 1978, was continued in 1979. Silver eels were sampled at various centres on the Shannon and in the Galway Fishery. Fishing for elvers with a view to restocking lakes with depleted eels stocks is under investigation. A comparative study on the stage of maturity of the elvers in the various elver fisheries is in progress.

Migratory silver eels and the ascending elvers were studied at the Department's fishery at Galway.

ENVIRONMENTAL STUDIES

Arterial Drainage and Water Abstraction

The annual population estimates which form part of the investigations to assess the impact of drainage on fish stocks was carried out in 1979 on the Boyne. The salmon stocks still show little sign of recovery despite the fact that in some rivers dredging was completed over 8 years ago. The poor run of adult salmon to the Boyne is also an indication of the slow recovery rate of the system.

A water abstraction scheme proposed for the River Fane was investigated and recommendations were made on the biological effects of the planned abstraction on the coarse fish and the salmonid stocks of the river. A number of minor abstraction schemes was also inspected with a view to assessing the effects on fish stocks.

Pollution

Advice was given to the boards of conservators regarding water pollution problems. Samples of water and fish sent to the Department's Fisheries Research Centre, Abbotstown on behalf of the boards, were analysed.

Heavy Metals

The analysis of samples of fish to determine the level of heavy metals in the various tissues of salmonids was carried out on the River Boyne.

GRANT AIDED RESEARCH PROJECTS

Studentships

Under the Department's scheme studentships in fishery science tenable at Irish Universities for a two or three years course of study are offered each year to graduates.

At the beginning of 1979 five studentships were in progress. During the year two of these were concluded and three were in progress at the close of the year.

Bursaries

For eight weeks during the summer months, undergraduate students were recruited from third level educational institutes to assist the Department's biological staff in their investigations. Six of the students were engaged in freshwater salmonid population estimates. One student sampled the commercial catch of salmon in the Galway and Aran Co-operative Society's premises in Galway and one student was engaged in feeding trials and water quality monitoring at the Department's experimental rearing station at Glenties.

ADVISORY WORK

The Department's biologists continue to advise angling clubs, boards of conservators, local authorities and other state and semi-state bodies on biological matters relating to fisheries. Representatives of the biological staff are members of advisory committees relating to water quality and water regulations.

In accordance with the Department's consultative role in the administration of the Local Government (Water Pollution) Act 1977, applications for licences to discharge pollutants were referred to the Department of Fisheries and Forestry by local authorities for advice which was given.

ENGINEERING

Arterial Drainage

The Department's engineers continued to maintain close contact with their counterparts in the Office of Public Works in relation to arterial drainage and post-drainage activities on the Corrib/Mask, Moy and Maigue systems.

As drainage works are now in progress in the Mask/Carra catchment close liaison was maintained between the Department's Area Engineer and the Engineering Field Drainage Staff of the Office of Public Works (OPW). The Mask/Carra brown trout restocking programme commenced.

Hydrological and hydrometric investigations continued to be carried out by the Office of Public Works on the possible impact of the Mask/Carra drainage scheme on the hatchery and rearing installations at Cong.

Officers of the Department attended a meeting of the Sligo/Leitrim Regional Development Committee to explain the implications of the proposed Bonet Catchment Drainage Scheme and to explain the Department's involvement in pre-drainage survey work and investigations within the catchment with a view to drawing up a restocking and rehabilitation programme for presentation to the Office of Public Works. The Department's involvement in the OPW Cost/Benefit/Analysis for the same catchment was also explained.

The proposed Dunkellin River Catchment Drainage Scheme with particular reference to probable post-drainage conditions in Rahagane Turlough was investigated.

Control of Discharge of Effluents

The Department continued to exercise its licensing function under Section 171 of the Fisheries (Consolidation) Act, 1959. Licences under Section 171 were issued for discharges from a number of industries with appropriate conditions attached. Recommendations on effluent

standards were made in respect of many other discharges to rivers and estuaries. Several problems regarding existing discharges were investigated and appropriate action was taken.

The Department collaborated with An Foras Forbartha in the preparation of a draft water quality management plan for the River Suir.

Investigation of Inland Fish Movement

The smolt trap at Galway Sluice Barrage was operated from 1 April to 16 June. 7,730 salmon smolts were trapped and released during this period. The largest number of smolts trapped in one day was 521 on 25 May. In the same period 36 salmon kelts, 16 sea trout, 34 brown trout, 47 eels, 29 perch, 1 pike and 1 lamprey were trapped and released. All kelts were clean and in good condition.

Water Abstraction

Major water abstraction schemes continued to present problems for inland fisheries conservation and management. The Department's engineers continued to advise local authorities and private firms of provisions to be made in the design and operation of water abstraction schemes so as to prevent damage to fisheries. As in previous years it was necessary to investigate measures that could be implemented to prevent the possibility of damage to fish stocks by the discharge of waste water from water treatment works.

Work on the construction of the Owenboliska impounding dam by Galway County Council reached an advanced stage. This dam incorporates a Denil type fish-pass and smolt gate arrangement which were designed by the Department's engineers.

Two fish-pass designs were drawn up for Galway and Clare Co. Councils for incorporation in the Loughrea and Tulla impoundment dams.

A proposal by Carlow County Council to abstract water from the River Slaney became the subject of a public inquiry at which the Department was represented.

Fish Culture Installations

The Salmon Research Trust of Ireland Inc. continued to be advised on engineering matters relating to fisheries.

A preliminary engineering survey of a private salmon and sea trout trapping, hatching and rearing installation was carried out by the Department with a view to possible leasing for research purposes.

The Department's engineers co-operated in the supervision of the construction of a new private fresh-water salmon smolt rearing unit and also co-operated in a consultancy capacity for a proposed new private land-based salt water commercial salmon rearing unit.

Rainbow Trout Farming

The growing interest in commercial rainbow trout farming continued throughout 1979. Proposals received by the Department were investigated, sites assessed, and advice given. Engineering designs, both outline and detailed, were prepared and supplied where necessary.

Electronic Fish Counters

Existing counters at the sites listed below were maintained. The records are summarised as follows:

River	Site	Total Count 1979	Maximum Count and Date	
			Count	Date
*Bandon	Bandon			
Blackwater	Clondulane	6,372	304	22 Nov.
Boyne	Blackcastle	2,233	68	6 Sept.
Corrib	Galway	2,368	248	24 Aug.
**Inagh	Ennistymon			
Liffey	Islandbridge	791	26	24 July
***Lennon	Ramelton	109		

*Out for repairs until November.

**Installation under repair.

***Installation out of commission from June.

Application of Electricity to Inland Fisheries

Research and development work was continued by the Department's consultant at the Department's field laboratory at Glenties, Co. Donegal, and was concentrated mainly on automatic counting of salmon by the AV method and the blocking and capture of silver eels by electrical means. Collaboration with workers in Britain was maintained through the agency of the fish counter liaison group.

Eel Fishery Development

Further observations of eel trapping operations at the Department's Fishery at Galway were carried out.

Existing eel fishery installations continued to be kept under observation and new site applications for eel fishery authorisations were investigated including applications for the use of fyke nets for the taking of eels.

FOYLE FISHERIES COMMISSION

The Commission is comprised of a senior and a junior member appointed by the Minister for Fisheries and Forestry and a senior and

a junior member appointed by the Department of Agriculture for Northern Ireland. The post of Chairman rotates each year between the two senior members of the Commission. During the year under review it was held by the Belfast senior member.

The Annual Report of the Commission gives detailed information on the Commission's activities during the year.

The spawning count of 3,559 in 1979 was slightly lower than the 1978 figure. The catch of salmon and grilse by commercial engines amounted to 37,003 (115,203 kg) compared with 47,911 (162,279 kg) in the previous year. The rod catch of salmon and grilse was 966 compared with 1,907 for 1978 while the rod catch of sea trout was 4,455 as against 10,570 for the previous year.

The profit arising out of the operation of the Commission's commercial fishery in 1979 amounted to £5,040. The profit yielded in 1978 was £20,160. This marked reduction was due mainly to a reduced catch. Each year the profit realised on the operation of the commercial fishery is credited to the Commission's Accumulated Revenue Account.

During the year under review the Department of Fisheries and Forestry and the Department of Agriculture for Northern Ireland (Fisheries Division) paid subventions totalling £96,238 sterling to the Commission to meet its deficit at 30 September 1979. That deficit was considerably greater than the 1977/78 deficit due mainly to increases in outlay on wages and salaries.

The Commission's Accounts for the year ended 30 September, 1979 and particulars of Regulations made by the Commission in 1979 are included as appendices to its 1979 Annual Report.

INLAND FISHERIES TRUST INCORPORATED

The Annual Report of the Trust for 1979 gives a review of its work during the year. The grant-in-aid paid to the Trust by the Department in the calendar year 1979 amounted to £971,000.

Work continued during the year on the development and improvement of trout fisheries on rivers and lakes. In all, 1,957,800 brown trout consisting of ova, fry, summerlings, fingerlings, spring and autumn yearlings and two year old fish were released into waters to supplement natural spawning. The number of rainbow trout stocked out was 20,424. Further work was carried out on spawning and nursery grounds to improve natural spawning. In controlling predators over 15 tonnes of pike and 19 tonnes of perch were removed from trout waters. Surveys of new waters were carried out to assess their suitability for development as trout or coarse fisheries. Almost 900 new fishing areas were provided on waters at 13 centres to meet increased demand and existing facilities were maintained.

The Trust has reported that the 1979 trout angling season was a

frustrating one for anglers because of a combination of inclement weather conditions, late fly hatches and fuel shortages. In spite of this, a number of Trust lakes were fished by considerably more anglers than in 1978 and trout catches on these lakes improved on last year. Angling on the other Trust lakes was poorer than last year.

Pike fishing was seriously affected early in the season by the bad winter and the cold spring. However in general pike fishing was good. Roach remained steady throughout, bream fishing improved as the season progressed but rudd and tench fishing was poor. The Trust also expressed concern about the spread of roach in our coarse fisheries to the detriment of other species because of the illegal practice of using live fish as bait.

Shore angling surveys were extended along the east coast and in Donegal Bay and four new sea-angling maps will be produced shortly. A deep water survey off the Porcupine Bank observed quality fishing for ray and bream and various other species.

The marine fish tagging programme was continued with the co-operation of charter boat skippers and sea fishing was reported to have been reasonably good along the south and west coasts with catches generally showing an improvement on the previous year.

The Trust continued to identify and remedy the causes of pollution in waters under its control with the co-operation of the Board of Conservators, officers of Agricultural Advisory Services and Local Authorities. The Trust prepared a report on the effects of cultural eutrophication on Lough Sheelin arising out of which rehabilitative measures were initiated by this Department.

MANAGEMENT OF STATE FISHERIES

In 1979, 132 State owned fisheries—in the main vested in the Land Commission—were managed by Fisheries Division. Rents received during the year amounted to £6,001 compared with £5,142 in 1978.

Twenty-five fisheries which fell due for re-letting were advertised during the year.

EEL FISHING DEVELOPMENT

As indicated in the paragraphs dealing with scientific and engineering research work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to interested persons. Thirty four eel fishery authorisations were issued during the year bringing the number of fishing engines operating under such authorisations to 60.

GALWAY SALMON FISHERY

The Galway Fishery which was acquired in 1978 continued to be developed as a commercial and research fishery. The commercial

fishery showed a surplus of approx £51,000 in 1979. A major factor contributing to this highly satisfactory situation was the sale of eels which realised £45,618 while salmon sales were also good and amounted to £33,796. The angling facilities provided at the fishery are also attractive and resulted in an income of £4,299.

The Department is now finalising an overall research and development programme for the fishery which will form the basis for its future management.

THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The Annual Report of the Trust for 1979 gives a detailed account of its work during the year. The Trust continued to make a valuable contribution to our knowledge of the salmon and factors bearing on its future survival as a species.

The Trust is funded jointly by the Department and Messrs. Arthur Guinness Son & Co. Ltd. The grant-in-aid to the Trust by the Department in 1979 amounted to £12,500.

Wild Salmon and grilse

The run of 2-sea-winter fish was poor, only 6 fish being recorded over the year through the traps at the Salmon Research Trust's installations on the Burrishoole River system, compared with the average of 40 fish over the previous five years.

By contrast, there was a marked improvement in the grilse (1-sea-winter) run, where the total of 914 passing through the traps was the highest since 1973. Almost 80% of the run was counted from August onwards and it would appear that the restricted season for commercial netting contributed largely to this improved escapement into fresh-water. The smolt survival rate (a measure of survival in the sea) improved to 9.4% and the survival from female spawner in 1975 to adult offspring in 1979 increased to the level necessary for a self-sustaining population in the Burrishoole river system. However this is not necessarily typical because no commercial netting takes place in the Burrishoole fishery.

The salmon smolt run was numerically low but the production rate from the estimated ova deposition in 1976/77 was good, so that the relatively small number of smolts seems to be due to the reduced spawning stock in 1976.

Wild Sea Trout

As in the case of grilse, there was an improvement in the sea trout run in 1979, with the total run of 2,430 fish recorded through the traps being 35% higher than in 1978. The reasons attributed to this increase are that a larger proportion than usual of the 1978 smolts stayed at sea for 1 + years, not returning as finnock in 1978 and that

the sea-netting restrictions had a conservation effect on sea trout stocks, reducing the "by-catch" exploitation. The sea trout smolt run in 1979 was good (at 5,656) but the proportion of finnock returning from it was estimated at only 26%.

Recaptures of salmon from reared smolts

The returns as grilse from reared smolts released in 1978 improved to 2.5%. This is also attributable in large measure, to the restricted netting season in 1979. One-year-old smolts survived slightly better than 2+ smolts and there was an encouraging result from an experiment in delayed release. Returning grilse were slightly smaller than usual and the sex ratio was maintained at approximately 50:50.

Salmon rearing

Over 12,500 2+ smolts were produced in 1979, when approximately half were released and half were kept for on-rearing in sea-cages. The 1+ smolt total was 25,965, constituting 33% of the original stock of fertilised ova. Only 3,536 were released, the remainder being used for on-rearing in sea cages. Furunculosis recurred in May/June among the yearlings and non-lethal skin condition (papilloma) was observed for the first time, in fresh water. The average size of these smolts was:—

1+	:	15.2cm	:	42g
2+	:	17.0cm	:	65g

Survival of the underyearling stock in 1979 declined to 53% from the fertilised egg stage, due to overcrowding and delayed development during the very cold winter.

Exploitation rates for rod-fishing

The overall exploitation rate of wild stocks of salmon by rod fishing in the Burrishoole system declined in 1979. This was the expected result of the curtailment of the rod fishing season by some six weeks, ending on August 31, instead of October 12. The overall exploitation rate of approximately 10% may be compared with approximately 15% as the average for the past nine years. The exploitation rate for sea trout was also low (despite adequate numbers of fish) due to the rod fishing effort falling off during September and early October, when it was forbidden to take salmon.

INTERNATIONAL AND OTHER CONFERENCES

During the year Inland Fisheries Division were represented at the following conferences, committees and working groups etc.

Abroad

Codex Alimentarius Commission, Bergen, Norway,
West European Fishery Technologists, Working Group, Bremerhaven,
Germany.

Home

Pollution Control Committee of Donegal County Council.
River Erne Joint Protection Committee.
Symposium on Technology for the Food Industry.
Water Pollution Advisory Committee.

LEGISLATION

Particulars of the statutory instruments relating to Inland Fisheries made during the year are included in Appendix No. 22.

PATRICK POWER

Minister for Fisheries and Forestry.

11 November, 1980.

**APPENDICES TO THE REPORT ON SEA AND INLAND
FISHERIES FOR THE YEAR 1979.**

Appendix No.	PAGE
1. Quantity and Value of Sea Fish (excluding Salmon) returned as landed in 1978 and 1979	44
2. Comparisons of the Average Price per metric ton of various kinds of Sea Fish, 1971 to 1979	45
3. Value of Landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded £150,000 in 1979	46
4. Imports and Exports of Fish and Fish Products in 1979 (as compared with 1978)	47
5. Herring Fishing, 1979	48
6. Mackerel Fishing, 1979	48
7. Regional Distribution and Classification of Fishing Craft and of personnel engaged in Fishing in 1979	49
8. Trawling and Seining, 1979	50
9A. Statement of Accounts in respect of Repayable Advances	51
9B. Expenditure on Fisheries 1978/79	52
10. Coastal extent of Fishery Districts and names of the Principal Rivers in each District	53
11. Quantity and Value of all Salmon and Sea Trout taken in 1977, 1978 and 1979 by Instruments of Capture	55
12. Quantity and Value of Salmon taken in 1977, 1978 and 1979 by Fishery Districts	56
13. Quantity and Value of Sea Trout taken in 1977, 1978 and 1979 by Fishery Districts	57
14. Quantity and Value of Eels taken in 1977, 1978 and 1979 by Fishery Districts	58

Appendix No.	PAGE
15. Total Quantity and Value of Salmon, Sea Trout and Eels taken by all engines in 1977, 1978 and 1979 by Fishery Districts	59
16. Number, Quantity and Value of Salmon taken by Single Rod and Line in 1977, 1978 and 1979 by Fishery Districts	60
17. Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1977, 1978 and 1979 by Fishery Districts	61
18. Particulars of Receipts and Expenditure by Boards of Conservators for the year ended 30 September, 1979	62
19. Particulars of Licences issued by Boards of Conservators for the year 1979	63
20. Licence Duties Payable on Fishing Engines ...	64
21. Particulars of Public Inquiries held during 1979 ...	65
22. Abstract of Statutory Instruments made in 1979 ...	67
23. Output and Disposal of Fish Hatchery Produce 1978/79	70
24. Scientific and Other Papers, 1979	72

Appendices 11 to 17 are compiled from returns furnished by licence holders in pursuance of the Statistics (Salmon, Sea Trout and Eels) (No. 2) Order, 1945.

APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed by Irish registered vessels in Irish ports during 1978 and 1979.

SPECIES	Quantity		Value	
	1979	1978	1979	1978
	Tonnes	Tonnes	£'000	£'000
DEMERSAL				
Flat Fish				
Brill	110	113	91	83
Dabs	225	239	48	47
Lemon Sole	149	141	70	58
Megrims	242	179	63	37
Plaice	1,562	1,564	871	812
Sole	201	165	440	344
Turbot	134	130	194	161
Other Flat Fish	48	309	15	23
Round Fish				
Cod	5,519	3,943	2,470	1,600
Haddock	913	517	340	189
Hake	147	187	84	80
Ling	87	69	24	16
Saithe	1,571	1,426	491	430
Whiting	8,309	6,954	1,894	1,509
Dogfish	119	25	13	3
Monkfish	162	104	73	44
Ray/Skate	1,331	1,255	499	383
Other Demersal	263	620	41	43
TOTAL DEMERSAL	21,092	17,940	7,721	5,862
PELAGIC				
Herring	27,383	27,717	7,863	8,171
Sprats	1,892	9,119	128	342
Mackerel	24,217	27,507	1,792	1,720
TOTAL PELAGIC	53,492	64,343	9,783	10,233
TOTAL WETFISH	74,584	82,283	17,504	16,095
CRUSTACEANS				
Crabs	1,464	906	243	173
Crawfish	93	127	483	628
Dublin Bay Prawns	4,259	3,363	3,744	1,944
LOBSTERS	295	310	1,457	1,455
Palaemonid Shrimps	41	67	91	110
TOTAL CRUSTACEANS	6,152	4,773	6,018	4,310
MOLLUSCS				
Escallops	285	696	210	449
Queen Escallops	7	15	2	4
Mussels	2,939	3,018	152	114
Oysters	331	756	541	1,181
Periwinkles	1,190	1,938	326	386
Palourdes	7	19	15	31
Squid	48	67	44	37
Other	22	10	27	14
TOTAL MOLLUSCS	4,829	6,519	1,317	2,216
Sea Urchins	133	114	66	48
TOTAL ALL FISH	85,698	93,689	24,905	22,669

In addition to the above landings into the Republic, 4,095 tonnes of fish and 1.138 tonnes of shellfish valued at £1,716,000 and £429,000 respectively were landed directly into foreign ports or transhipped at sea for export by Irish registered vessels during 1979.

APPENDIX No. 2
Comparison of the Average Price per tonne of various kinds of Sea Fish, 1971-1979.

SPECIES	1971	1972	1973	1974	1975	1976	1977	1978	1979
	£	£	£	£	£	£	£	£	£
Sole	529	624	931	1,006	1,200	1,485	1,732	2,093	2,184
Brill	240	277	354	411	477	515	680	740	826
Turbot	228	275	358	444	510	799	1,145	1,231	1,444
Plaice	184	192	217	247	276	364	457	519	557
Dabs	71	68	93	81	114	143	176	195	215
Megrims	66	62	95	94	114	149	230	206	260
Ray/Skate	121	138	161	191	200	228	262	306	375
Cod	98	116	139	176	173	242	375	406	448
Haddock	53	63	96	111	181	188	327	365	373
Hake	130	125	141	150	176	288	456	428	571
Whiting	40	49	68	70	90	109	205	217	228
Saithe	61	64	82	97	118	142	255	301	312
Herrings	37	44	72	100	112	142	261	295	287
Mackerel	38	32	46	43	44	61	77	63	74
Sprats	11	11	17	19	17	25	33	38	67

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.

APPENDIX No. 3

Value of Landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded £150,000 in 1979.

PORT	TOTAL		DEMERSAL		PELAGIC		SHELLFISH	
	£000	Tonnes	£000	Tonnes	£000	Tonnes	£000	Tonnes
1. Killybegs	5,731	30,159	1,673	4,935	4,028	25,204	30	20
2. Howth	2,659	6,624	1,411	4,242	440	1,688	808	694
3. Clogherhead	1,600	2,436	324	958	*	4	1,276	1,474
4. Castletownbere	1,515	5,941	414	909	683	4,579	418	453
5. Rossaveal/ Carraroe	1,225	3,963	108	375	1,068	3,537	49	51
6. Burtonport	1,159	8,586	192	489	899	8,083	68	14
7. Fenit	1,000	2,167	10	29	669	1,939	321	199
8. Skerries	987	1,958	295	957	35	147	657	854
9. Galway	724	2,248	427	1,408	236	782	61	58
10. Dunmore East	681	2,508	362	1,044	206	1,380	113	84
11. Kilmore Quay	577	1,020	395	775	2	10	180	235
12. Greencastle	433	932	414	900	1	6	18	26
13. Dingle	421	1,171	189	515	172	629	60	27
14. Helvick	394	1,173	188	473	168	663	38	37
15. Belmullet/ Blacksod	357	725	99	233	120	397	138	95
16. Valentia	353	877	111	233	136	591	106	53
17. Schull	327	642	123	298	22	104	182	240
18. Balbriggan	289	486	47	189	*	1	242	296
19. Achill	281	569	124	240	82	312	75	17
20. Union Hall	275	626	117	294	15	142	143	190
21. Dun Laoire	195	390	147	329	2	12	46	49
22. Rosmore/ Roscahill	170	101	—	—	—	—	170	101
23. Roundstone	162	411	2	4	118	387	42	20

* Indicates a value of less than £500.

APPENDIX No. 4

Imports and Exports of Fish and Fishery Products in 1979
(as compared with 1978)

	Quantity		Value	
	1979	1978	1979	1978
	Tonnes	Tonnes	£'000	£'000
I.—IMPORTS				
Fish, fresh, chilled or frozen	4,682	3,536	6,800	4,817
Fish, salted, dried or smoked	1,591	1,558	1,746	1,475
Shellfish, fresh, salted or dried	285	361	1,047	1,020
Prepared or preserved fish ...	1,788	1,918	2,866	2,805
Prepared or preserved shellfish	94	64	262	181
Fishmeal and Fish oils ...	13,511	14,632	3,424	3,980
TOTALS ...	21,951	22,069	16,145	14,278
II.—EXPORTS				
Fish, fresh, chilled or frozen	28,012	25,468	15,360	14,304
Fish, salted, dried or smoked	10,672	10,313	7,150	7,032
Shellfish, fresh, salted or dried	6,092	5,735	8,974	7,398
Prepared or preserved fish ...	760	1,144	940	863
Prepared or preserved shellfish	22	122	41	140
Fishmeal and Fish oils ...	3,676	5,719	760	1,320
Landed directly into foreign ports or transhipped at sea for export, by Irish registered vessels				
I Fish ...	4,095	6,504	1,716	1,619
II Shellfish ...	1,138	195	429	119
TOTALS ...	54,467	55,200	35,370	32,795

APPENDIX No. 5

HERRING FISHING, 1979

Ports at which more than 1,000 tonnes were landed	Total Quantity	Total Value
	Tonnes	£'000
1. Killybegs ...	10,790	2,981
2. Rossaveal/Carraroe ...	3,429	1,059
3. Burtonport ...	1,847	519
4. Fenit ...	1,798	657
5. Howth ...	1,613	433
6. Castletownbere ...	1,421	406

APPENDIX No. 6

MACKEREL FISHING, 1979

Ports at which more than 100 tonnes were landed	Total Quantity	Total Value
	Tonnes	£'000
1. Killybegs ...	14,407	1,046
2. Burtonport ...	6,236	379
3. Castletownbere ...	2,365	228
4. Valentia ...	237	23
5. Fenit ...	141	12
6. Rossaveal/Carraroe ...	108	9

APPENDIX No. 7
REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL ENGAGED
IN FISHING IN 1979

I.C.E.S. Statistical Areas	How Engaged	Men	Total Vessels	MOTOR VESSELS										Boats propelled by outboard engines, sails or oars	
				Gross Tons										18' Keel and upwards	Under 18' Keel
				Over 100	75-99	51-74	26-50	16-25	11-15	10 and under					
AREA VIIA (Omeath to Helvick)	Solely	977	338	10	22	56	57	10	12	12	118	53	—	—	
	Partially Laid-up	551	122	—	—	—	—	—	—	—	14	82	26	—	
Totals		1,528	478	11	22	64	62	12	14	14	132	135	26	—	
AREA VIIG-K (Helvick to Ballyheigue)	Solely	1,013	484	10	7	10	23	9	65	259	259	101	—	—	
	Partially Laid-up	1,152	287	2	—	4	3	—	1	34	34	215	37	—	
Totals		2,165	781	12	7	14	26	10	66	293	293	316	37	—	
AREA VIIB-C (Ballyheigue to Mullaghmore)	Solely	307	89	5	3	7	18	3	6	27	27	18	2	—	
	Partially Laid-up	2,512	974	1	—	—	2	1	2	373	373	461	137	—	
Totals		2,819	1,066	6	3	7	20	4	8	400	400	479	139	—	
AREA VIA (Mullaghmore to Moville)	Solely	1,002	119	23	9	21	31	7	4	23	23	1	—	—	
	Partially Laid-up	1,197	509	1	—	3	5	5	—	206	206	244	49	—	
Totals		2,199	640	24	9	24	40	15	4	230	230	245	49	—	
TOTALS (all areas)	Solely	3,299	1,030	48	41	94	129	29	87	427	427	173	2	—	
	Partially Laid-up	5,412	1,892	5	—	15	5	6	3	627	627	1,002	249	—	
Totals		8,711	2,965	53	41	109	148	41	92	1,055	1,055	1,175	251	—	

APPENDIX No. 8

TRAWLING AND SEINING, 1979

Port or Locality	Number of men engaged	Number of vessels engaged	Tonnage of Motor Vessels			Fishing Period
			Not exceeding 10 tons	Over 10 tons	Over 25 tons	
Clogherhead ...	96	19	—	—	19	All Year
Balbriggan ...	72	15	—	1	14	All Year
Skerries ...	146	28	—	2	26	All Year
Howth ...	185	37	2	1	34	All Year
Dublin ...	6	2	2	—	—	Occasionally
Dun Laoire ...	22	5	—	2	3	All Year
Wicklow ...	5	1	—	—	1	All Year
Arklow ...	44	10	—	—	10	All Year
Courtown ...	22	3	3	—	—	Occasionally
Wexford ...	24	9	6	—	3	All Year
Rosslare ...	5	1	—	—	1	All Year
Carne/St. Helens ...	6	2	2	—	—	Occasionally
Kilmore Quay ...	95	19	—	1	18	All Year
Duncannon ...	19	4	—	—	4	All Year
Ballyhack ...	9	3	2	1	—	Occasionally
Checkpoint ...	6	2	2	—	—	Occasionally
Passage East ...	9	3	3	—	—	Occasionally
Dunmore East ...	48	9	—	—	9	All Year
Helvick ...	12	3	—	—	3	All Year
Youghal ...	15	6	6	—	—	Spring & Autumn
Ballycotton ...	9	3	—	3	—	Spring & Autumn
Cobh ...	4	2	—	2	—	All Year
Kinsale ...	18	7	5	—	2	All Year
Union Hall ...	30	8	—	2	6	All Year
Schull ...	25	5	—	2	3	All Year
Cape Clear ...	5	1	—	—	1	All Year
Goleen/Crookhaven ...	12	6	5	1	—	All Year
Dunmanus ...	2	1	—	1	—	All Year
Castletownbere ...	88	14	—	—	14	All Year
Ballinaskelligs ...	4	1	—	—	1	All Year
Portmagee ...	16	4	—	—	4	All Year
Cahirciveen ...	26	4	—	—	4	All Year
Dingle ...	65	13	—	—	13	All Year
Fenit ...	8	2	—	—	2	Winter
Aran Islands ...	64	11	—	1	10	All Year
Galway ...	16	4	—	—	4	All Year
Rossaveal ...	7	1	—	—	1	All Year
Cleggan ...	4	1	—	—	1	Occasionally
Killala ...	23	6	—	5	1	All Year
Rosses Point ...	7	2	1	—	1	Occasionally
Killybegs ...	279	41	—	1	40	All Year
Burtonport ...	137	23	—	—	23	All Year
Bunbeg ...	8	2	—	1	1	All Year
Magharoarty/Tory/ Innisboffin ...	4	1	—	1	—	Occasionally
Urrus/Dunaff ...	21	5	—	2	3	Occasionally
Buncrana ...	8	2	—	2	—	All Year
Dunfanaghy ...	4	1	—	—	1	All Year
Greencastle ...	88	20	—	1	19	All Year
Teelin ...	36	9	—	9	—	All Year
TOTALS ...	1,864	381	39	42	300	

APPENDIX No. 9A.

STATEMENT OF ACCOUNT IN RESPECT OF REPAYABLE ADVANCES

Advances of £16,706,721 made to An Bord Iascaigh Mhara during the period of twenty-eight years to 31 December, 1979, for provision of boats and gear and other purposes.

Repayments of Principal:

Made to 31 December 1978	...	£1,852,457
Made during year	...	£ 289,999
Principal written off to 31 December 1979	...	£1,544,012
		<hr/>
Balance of Principal outstanding at 31 December 1979		£13,020,253

APPENDIX No. 9B

EXPENDITURE ON FISHERIES FOR THE YEARS ENDED
31 DECEMBER 1978 and 31 DECEMBER 1979

(All figures rounded to nearest £1,000)

	1 Jan. 1979 to 31 Dec. 1979	1 Jan. 1978 to 31 Dec. 1978
1. SEA FISHERIES		
By (a) Department of Fisheries and Forestry (Fisheries Division)		
	£	£
(i) Development	155,000	159,000
(ii) Fishery School	nil	26,000
(iii) Fishery Harbours and other Marine Works	1,679,000	719,000
(b) An Bord Iascaigh Mhara		
(i) Administration and Current De- velopment (grant-in-aid)	3,140,000	3,103,000
(ii) Capital Development (grant-in-aid)	3,000,000	2,628,000
(iii) Repayable Advances* (mainly for boats and gear)	1,736,000	1,411,000
(iv) Repayment of Advances written off	200,000	20,000
(c) Roinn na Gaeltachta Grants for marine works	174,000	168,000
2. INLAND FISHERIES		
By (a) Department of Fisheries and Forestry (Fisheries Division)		
Development	1,453,000	1,123,000
(b) The Inland Fisheries Trust Incorpor- ated (grant-in-aid)	971,000	810,000
(c) The Salmon Research Trust of Ireland Incorporated (grant-in-aid)	13,000	11,000
DEPARTMENT OF FISHERIES AND FORESTRY		
Salaries, Wages and other administrative Expenses for Fisheries Division	1,039,000	882,000
Totals	13,560,000	11,060,000

*A Statement of Account in respect of Repayable Advances is given in
Appendix 9A.

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. Wex- ford.	Slaney Avoca.
No. 3 Waterford	Kiln Bay, east of Bannow Bay, to Helvick Head, Co. Water- ford.	Suir Barrow Nore.
No. 4 Lismore	Helvick Head to Ballycotton Pier, Co. Cork.	Blackwater, Funcheon, Bride, Awbeg.
No. 5 Cork	Ballycotton Pier to Crow Head, Co. Cork.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarrif, Adrigole.
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. 91 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. 92 Connemara	The sea point of the boundary between the townlands of Keeraunagark South and Ban- raghbaun South, Co. Galway, to Slyne Head, Co. Galway.	Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace.
No. 101 Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Errif, Bundor- ragha, Dawros, Carrow- niskey, Bunowen (Louisburgh).
No. 102 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 (Crolly), Clady, Lackagh, Lennon, Crana.
No. 17 ² Dundalk	Carlingford Lough to Clogherhead, Co. Louth.	Fane, Dee, Glyde.
No. 17 ¹ Drogheda	Clogherhead to the most easterly point on Red Island, Skerries, Co. Dublin.	Boyne, Blackwater, 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 all Salmon and Sea Trout taken in 1977, 1978 and 1979 by Instruments of Capture.

SALMON

Instruments	1979	1978	1977	1979	1978	1977
	Kgs	Kgs	Kgs	£	£	£
Total for all engines	1,073,038	1,179,335	1,305,351	5,154,227	3,987,286	4,581,784
Total for rod and line	39,719	31,425	38,505	242,642	107,352	135,153
Total for drift nets	882,933	843,238	981,023	4,182,216	2,840,807	3,443,391
Total for draft nets	129,608	255,636	226,306	628,590	871,969	794,334
Total for stake nets, weirs etc.	20,778	49,036	59,517	100,779	167,158	208,906

SEA TROUT

Instruments	1979	1978	1977	1979	1978	1977
	Kgs	Kgs	Kgs	£	£	£
Total for all engines	28,335	51,620	26,092	70,848	103,240	52,184
Total for rod and line	15,654	36,558	12,382	39,139	73,116	24,764
Total for drift nets	5,685	4,806	9,774	14,215	9,612	19,548
Total for draft nets	6,253	8,913	3,746	15,636	17,826	7,492
Total for stake nets, weirs etc.	743	1,343	190	1,858	2,686	380

APPENDIX No. 12

Quantity and Value of Salmon taken in 1977, 1978 and 1979 by Fishery Districts.

Fishery Districts	*	Quantity			Value		
		1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin	R	475	336	672	2,304	1,120	2,359
	N	220	585	535	1,067	2,078	1,878
Wexford	R	1,445	1,502	2,038	7,008	5,287	7,153
	N	4,334	11,011	14,933	21,020	38,649	52,415
Waterford	R	4,506	4,208	5,328	21,854	14,349	18,702
	N	42,524	96,384	173,824	106,237	328,756	610,122
Lismore	R	3,130	2,451	2,235	15,181	8,358	7,845
	N	61,230	114,615	125,433	296,971	390,837	440,271
Cork	R	3,261	1,413	1,680	15,816	4,734	5,897
	N	176,888	153,930	270,755	857,907	515,665	950,350
Kerry	R	3,664	3,598	3,100	17,770	12,269	10,881
	N	127,721	116,829	81,562	619,447	398,417	286,283
Limerick	R	3,647	1,990	5,113	17,688	6,667	17,947
	N	48,752	76,064	96,948	236,447	254,815	340,288
Galway	R	653	487	1,216	3,167	1,666	4,268
	N	58,518	36,102	38,575	283,813	123,468	135,398
Connemara	R	545	1,022	1,041	2,643	3,495	3,654
	N	7,185	5,966	7,219	34,847	20,404	25,339
Ballinakill	R	1,492	885	1,184	7,236	3,027	4,156
	N	11,722	9,254	7,282	56,847	31,649	25,560
Bangor	R	1,887	2,282	2,387	9,152	7,802	8,378
	N	102,446	73,627	76,748	496,859	251,802	269,385
Ballina	R	7,954	2,786	4,572	88,577	9,529	16,048
	N	118,747	134,368	128,580	575,923	459,538	451,316
Sligo	R	1,743	2,511	2,243	8,454	8,588	7,873
	N	17,630	15,213	10,888	85,505	52,029	38,217
Ballyshannon	R	1,193	2,295	1,900	5,786	7,869	6,669
	N	34,490	85,902	74,094	167,277	293,783	260,070
Letterkenny	R	3,205	3,118	3,128	15,544	10,666	10,979
	N	208,772	201,468	146,198	1,012,544	658,318	513,154
Dundalk	R	282	188	320	1,373	683	1,123
	N	6,639	11,367	6,711	32,199	41,312	23,556
Drogheda	R	637	353	348	3,089	1,243	1,221
	N	5,501	5,225	6,561	26,675	18,414	23,029
TOTALS	...	1,073,038	1,179,335	1,305,351	5,154,227	3,987,286	4,581,784

* 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 1977, 1978 and 1979 by Fishery Districts.

Fishery Districts	*	Quantity			Value		
		1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin	R	531	328	340	1,328	656	680
	N	3,303	1,506	6,379	8,258	3,012	12,758
Wexford	R	381	968	528	953	1,936	1,056
	N	176	1,026	891	440	2,052	1,782
Waterford	R	68	680	392	170	1,360	784
	N	434	842	414	1,086	1,684	828
Lismore	R	143	2,968	934	358	5,936	1,868
	N	50	470	143	125	940	286
Cork	R	544	2,365	769	1,360	4,730	1,538
	N	384	476	677	961	952	1,354
Kerry	R	3,643	4,982	1,890	9,108	9,964	3,780
	N	2,448	1,726	1,610	6,120	3,452	3,220
Limerick	R	374	656	936	935	1,312	1,872
	N	1,255	2,869	676	3,138	5,738	1,352
Galway	R	91	688	874	228	1,376	1,748
	N	427	402	244	1,068	804	488
Connemara	R	3,974	12,468	1,625	9,935	24,936	3,250
	N	550	646	160	1,375	1,292	320
Ballinakill	R	513	3,987	816	1,283	7,974	1,632
	N	306	575	291	765	1,150	582
Bangor	R	1,724	2,878	1,134	4,310	5,756	2,268
	N	575	860	520	1,438	1,720	1,040
Ballina	R	739	756	450	1,848	1,512	900
	N	619	945	378	1,548	1,890	756
Sligo	R	596	305	112	1,490	610	224
	N	382	654	121	955	1,308	242
Ballyshannon	R	569	212	111	1,423	424	222
	N	228	186	419	571	372	838
Letterkenny	R	510	686	861	1,275	1,372	1,722
	N	435	751	544	1,088	1,502	1,088
Dundalk	R	540	986	264	1,350	1,972	528
	N	88	510	192	220	1,020	384
Drogheda	R	714	645	346	1,785	1,290	692
	N	1,021	618	51	2,553	1,236	102
TOTALS	...	28,335	51,620	26,092	70,848	103,240	52,184

* 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 in 1977, 1978 and 1979 by Fishery Districts.

Fishery Districts	Quantity			Value		
	1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin ...	1,016	610	530	2,408	1,287	636
Wexford ...	242	292	4,021	574	616	4,825
Waterford ...	19,044	19,244	1,100	45,134	40,605	1,320
Lismore ...	1,466	659	530	3,474	1,390	636
Kerry ...	1,016	1,003	2,056	2,408	2,116	2,467
Limerick ...	42,411	24,000	38,100	100,514	50,640	68,580
Galway ...	21,335	15,583	24,150	50,564	32,880	43,470
Bangor ...	2,828	—	555	6,702	—	666
Ballina ...	1,032	1,000	8,000	2,446	2,110	9,600
Sligo ...	254	—	4,000	602	—	4,800
Ballyshannon ...	10,064	10,000	10,000	23,852	21,100	12,000
Dundalk ...	5,050	—	5,050	11,969	—	6,060
Drogheda ...	4,048	4,064	10,000	9,594	8,575	12,010
TOTALS ...	109,806	76,455	108,092	260,241	161,319	167,070

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 1977, 1978 and 1979.

Fishery Districts	Total Quantity for District			Total Value for District		
	1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin ...	5,545	3,365	8,456	15,365	8,153	18,311
Wexford ...	6,578	14,799	22,411	29,995	48,540	67,231
Waterford ...	66,576	121,358	181,058	174,481	386,754	631,756
Lismore ...	66,019	121,163	129,275	316,109	407,461	450,906
Cork ...	181,077	158,184	273,881	876,044	526,081	959,139
Kerry ...	138,492	128,138	90,218	654,853	426,218	306,631
Limerick ...	96,439	105,579	141,773	358,722	319,172	430,039
Galway ...	81,024	53,262	65,059	338,840	160,194	185,372
Connemara ...	12,254	20,102	10,045	48,800	50,127	32,563
Ballinacill ...	14,033	14,701	9,573	66,131	43,800	31,930
Bangor ...	109,460	79,647	81,344	518,461	267,080	281,737
Ballina ...	129,091	139,855	141,980	670,342	474,579	478,620
Sligo ...	20,605	18,683	17,364	97,006	62,535	51,356
Ballyshannon ...	46,544	98,595	86,524	198,909	323,548	279,799
Letterkenny ...	212,922	206,023	150,731	1,030,451	671,858	526,943
Dundalk ...	12,599	13,051	12,537	47,111	44,987	31,651
Drogheda ...	11,921	10,905	17,306	43,696	30,758	37,054
TOTALS ...	1,211,179	1,307,410	1,459,535	5,485,316	4,251,845	4,801,038

APPENDIX No. 16

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1977, 1978 and 1979 by Fishery Districts.

Fishery Districts	No. of Fish			Quantity			Value		
	1979	1978	1977	1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin	118	94	168	475	336	672	2,304	1,120	2,359
Wexford	441	422	551	1,445	1,502	2,038	7,008	5,287	7,153
Waterford	1,517	1,023	1,440	4,506	4,208	5,328	21,854	14,349	18,702
Lismore	869	473	721	3,130	2,451	2,235	15,181	8,358	7,845
Cork	790	447	542	3,261	1,413	1,680	15,816	4,734	5,897
Kerry	1,122	1,074	912	3,664	3,598	3,100	17,770	12,269	10,881
Limerick	963	603	1,382	3,647	1,990	5,113	17,688	6,667	17,947
Galway	200	145	380	653	487	1,216	3,167	1,666	4,268
Connemara	167	300	336	545	1,022	1,041	2,643	3,495	3,654
Ballinakill	457	260	370	1,492	885	1,184	7,236	3,027	4,156
Bangor	621	681	746	1,887	2,282	2,387	9,152	7,802	8,378
Ballina	2,289	722	1,475	7,954	2,786	4,572	88,577	9,529	16,048
Sligo	543	700	641	1,743	2,511	2,243	8,454	8,588	7,873
Ballyshannon	411	665	559	1,193	2,295	1,900	5,786	7,869	6,669
Letterkenny	991	881	948	3,205	3,118	3,128	15,544	10,666	10,979
Dundalk	65	46	82	282	188	320	1,373	683	1,123
Drogheda	195	85	87	637	353	348	3,089	1,243	1,221
TOTALS	11,759	8,621	11,340	39,719	31,425	38,505	242,642	107,352	135,153

APPENDIX No. 17

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1977, 1978 and 1979 by Fishery Districts.

Fishery Districts	No. of Fish			Quantity			Value		
	1979	1978	1977	1979 kgs.	1978 kgs.	1977 kgs.	1979 £	1978 £	1977 £
Dublin	480	286	850	531	328	340	1,328	656	680
Wexford	560	1,080	1,320	381	968	528	953	1,936	1,056
Waterford	150	700	980	68	680	392	170	1,360	784
Lismore	420	2,080	1,869	143	2,968	934	358	5,936	1,868
Cork	800	1,735	1,495	544	2,365	769	1,360	4,730	1,538
Kerry	2,677	3,795	2,700	3,643	4,982	1,890	9,108	9,964	3,780
Limerick	550	438	1,560	374	656	936	935	1,312	1,872
Galway	100	446	1,249	91	688	874	228	1,376	1,748
Connemara	11,656	9,879	3,250	3,974	12,468	1,625	9,935	24,936	3,250
Ballinakill	565	3,684	1,020	513	3,987	816	1,283	7,974	1,632
Bangor	1,900	1,948	1,260	1,724	2,878	1,134	4,310	5,756	2,268
Ballina	986	565	750	739	756	450	1,848	1,512	900
Sligo	796	265	160	596	305	112	1,490	610	224
Ballyshannon	836	283	186	569	212	111	1,423	424	222
Letterkenny	750	583	1,230	510	686	861	1,275	1,372	1,722
Dundalk	680	1,020	662	540	986	264	1,350	1,972	528
Drogheda	900	700	866	714	645	346	1,785	1,290	692
TOTALS	24,806	29,487	21,407	15,654	36,558	12,382	39,139	73,116	24,764

APPENDIX No. 18

PARTICULARS OF RECEIPTS AND EXPENDITURE BY BOARDS OF CONSERVATORS
IN THE YEAR ENDED 30 SEPTEMBER 1979

Fishery District	Opening Balance	RECEIPTS			EXPENDITURE			Total Expenditure	Closing Balance
		Licence Duty	Fishery Rate	Grant from Department	Wages	Legal Costs	Travelling and Misc.		
	£	£	£	£	£	£	£	£	
Dundalk	2,593	2,552	1,115	30,733	25,063	2,281	12,320	39,664	- 2,587
Drogheda	1,358	3,811	3,477	72,217	34,484	14,747	46,965	81,999	+ 13,611
Dublin	4,851	5,382	601	44,753	56,284	5,548	23,594	59,496	+ 1,639
Wexford	350	5,470	5,100	24,792	35,988	626	5,483	29,534	+ 6,804
Waterford	2,627	16,214	3,994	90,129	113,363	3,026	29,980	115,077	+ 913
Lismore	1,507	8,639	11,221	39,972	61,676	1,844	17,864	67,029	+ 3,846
Cork	2,327	11,094	1,535	91,701	108,413	4,083	49,551	102,873	+ 7,867
Kerry	2,513	11,397	4,569	84,976	104,375	3,433	24,825	117,943	+ 11,055
Limerick	501	16,414	11,273	77,466	108,178	3,025	33,208	108,451	- 774
Galway	1,566	6,741	17,587	62,653	102,655	15,674	52,810	99,053	+ 2,036
Connemara	2,725	2,265	6,457	18,206	27,423	495	5,059	26,329	+ 1,631
Ballinakill	749	4,901	3,830	19,560	29,315	1,024	4,988	27,620	+ 946
Bangor	424	7,750	4,081	29,676	43,175	1,668	11,159	44,167	- 1,416
Balina	7,644	11,542	10,838	41,615	65,606	1,611	13,855	70,661	+ 2,589
Sligo	1,766	2,829	4,071	16,682	24,940	1,358	7,317	30,361	+ 3,555
Ballyshannon	488	8,813	1,216	43,969	56,030	2,032	12,083	49,603	+ 6,915
Letterkenny	3,015	18,098	4,828	49,588	73,348	834	29,894	92,676	- 16,313
TOTALS	+ 25,074	143,912	95,793	838,688	1,139,505	61,112	380,955	1,162,536	+ 2,043

APPENDIX No. 19

PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1979

Fishery District	Annual (all districts)	Annual (district of issue only)	Late Season (all districts)	Twenty-one day (all districts)	Seven day (all districts)	Late season (district of issue)	Foyle Area (one district)	Foyle Area (all districts)	Special Local Licence (Tidal Waters)		Draft net	Drift net	Pole net	Bag net	Stake net	Head Weir	Box or Crib	Loop net	Snap net	Gap, Eye or Basket for eels	Long line for eels	Oyster Dredge	Eel Trap	Fyke Net
									Rod	Net														
Dundalk	80	80	10	1	6	62	-	-	-	32	-	-	-	-	-	-	-	-	-	12	4	-	-	1
Drogheda	110	134	18	1	7	108	-	-	-	39	-	-	-	-	-	-	-	-	-	3	4	-	9	-
Dublin	374	86	39	-	27	20	-	20	-	6	10	-	-	-	-	-	-	-	-	4	4	-	-	-
Wexford	95	295	41	-	41	201	-	-	-	74	167	-	-	-	-	-	-	-	-	11	-	-	-	-
Waterford	146	778	7	-	28	35	-	-	-	6	110	-	-	1	2	1	-	-	-	11	-	-	-	-
Lismore	169	317	10	-	370	40	-	-	-	10	126	-	-	1	10	-	-	-	-	20	-	-	-	-
Cork	152	359	18	-	90	86	-	-	-	33	126	-	-	-	-	-	-	-	-	118	-	-	-	-
Kerry	129	555	11	-	524	201	-	-	-	76	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Limerick	170	1,204	15	-	78	170	-	-	-	114	78	-	-	-	-	-	-	-	-	71	8	-	-	-
Galway	102	109	75	-	133	53	-	-	-	6	36	-	-	-	-	-	-	-	-	20	8	-	-	-
Connemara	11	15	10	-	72	176	-	-	-	16	29	-	-	-	-	-	-	-	-	2	8	-	-	-
Ballinakill	30	80	18	-	273	162	-	-	-	32	36	-	-	-	-	-	-	-	-	-	2	-	-	-
Bangor	52	115	9	-	74	83	-	-	-	11	24	-	-	-	-	-	-	-	-	-	-	2	-	-
Balina	75	398	17	-	536	241	-	-	-	10	103	-	-	-	-	-	-	-	-	1	11	-	-	-
Sligo	72	204	13	-	32	64	-	-	-	4	10	-	-	-	-	-	-	-	-	1	3	-	-	-
Ballyshannon	67	206	13	-	423	66	22	10	-	92	29	-	-	-	-	-	-	-	-	1	17	-	-	-
Letterkenny	62	558	11	-	133	427	74	3	-	58	161	-	-	-	-	-	-	-	-	-	-	-	2	-
TOTALS	1,896	5,493	284	11	2,847	2,195	96	33	45	39	924	-	5	12	1	52	32	138	128	55	510	21	3	3

APPENDIX No. 20

Licence Duties Payable on Fishing Engines.

	£
On each Salmon Rod—Annual (valid all districts) ...	10.00
Do. Salmon Rod—Late Season (valid all districts) ...	7.00
Do. Salmon Rod—Twenty-one day (valid all districts) ...	5.00
Do. Salmon Rod—Seven day (valid all districts) ...	3.00
Do. Salmon Rod—Annual (valid district of issue only)	5.00
Do. Salmon Rod—Late Season (valid district of issue only)	3.00
Do. Salmon Rod—Foyle area extension (valid all districts)	7.00
Do. Salmon Rod—Foyle area extension (valid district of issue only)	2.00
On each Draft net	30.00
Do. Drift net	50.00
Do. Snap net	12.00
Do. Bag net	30.00
Do. Stake net	50.00
Do. Head Weir	10.00
Do. Box or Crib	20.00
Do. Pole net	5.00
Do. Loop net	2.00
Do. Gap, Eye, Basket or Coghill Net for Eels ...	10.00
Do. Long line for Eels	10.00
Do. Oyster fishing engine	15.00

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

Fishery District	Fyke Net (provisional rates)	Eel Trap	Special Local Licences	
			Rod**	Draft Net
	£	£	£	£
1. Dublin	0.25	—	—	—
2. Wexford	0.25	20.00	—	—
3. Waterford	0.25	—	—	—
7. Kerry	0.25	—	—	—
9. ¹ Galway	2.00	20.00	—	—
10. ² Bangor	—	—	\$5.00	\$40.00
13. Ballyshannon	—	—	*5.00	*40.00
14. ¹ Letterkenny	—	—	†5.00	†40.00
				†40.00
17. ¹ Drogheda	—	20.00	—	—
17. ² Dundalk	—	20.00	—	—

‡ River Lackagh Tidal Water. † River Owenea/Owentocker Tidal Waters.

* River Erne Tidal Waters. § Owenmore/Owenduff Tidal Waters.

Recommended price for Fyke Nets is 25p each or a net of 20 for £5.

Special Local Rod Licences ** may be reduced to £4 for holders of annual (ordinary) or annual (district) licences.

APPENDIX No. 21

PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1979

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
27th February, 1979	The Court-house, Kinsale, Co. Cork	Application by the Kinsale Harbour Commissioners, Harbour Master's Office, Kinsale, Co. Cork for an Oyster Fishery Order in respect of part of the Bandon River and Kinsale Harbour, Co. Cork.	Order granted
5th April, 1979	The Court-house, Bantry, Co. Cork	Application by Bantry Fish-farming Co-operative Society, Limited, The Square, Bantry, Co. Cork for four Oyster Fishery Orders in respect of parts of Bantry Bay, Co. Cork.	Order granted
8th May, 1979 (Adjourned) Reconvened on 20th November, 1979	The Court-house, Donegal Town	Application by the Donegal Shellfish Company Limited, The Cannons, Ballintra, Co. Donegal for two Oyster Fishery Orders and one Mussel Fishery Order in respect of parts of Donegal Bay, Co. Donegal.	One Oyster Fishery Order granted
15th May, 1979	St. John's Hall, Ballyvaughan, Co. Clare.	Application by Mr. Sean Tyrrell, Caretaker's Residence, University Research Station, Carron, Co. Clare for an Oyster Fishery Order in respect of parts of Poul-naclogh Bay and Pouldoody Bay, Co. Clare.	Order granted
17th May, 1979	O'Regan's Hall, Ballydehob, Co. Cork	Application by Roaringwater Limited, "Dunmuire", Wood-view, Douglas Road, Cork for two Oyster Fishery Orders in respect of parts of Roaringwater Bay, Co. Cork.	Orders granted
18th September, 1979	The Court-house, Clifden, Co. Galway	Application by Ardbear Sea Farms, Limited, Ceol Na Mara Faul, Clifden, Co. Galway for an Oyster Fishery Order in respect of part of Ardbear Bay, Co. Galway.	Under consideration

APPENDIX No. 21 (contd.)

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
19th September, 1979	Carney Old National School, Carney, Co. Sligo.	Application by Mr. Daniel J. McHugh, Clooneen, Drumcliffe, Co. Sligo for an Oyster Fishery Order in respect of part of Drumcliffe Bay and Finned Area, Co. Sligo.	Under consideration
25th October, 1979	The Borderline Ballroom, Ardgroom, Bantry, Co. Cork.	Application by Mr. James J. O'Sullivan, Collorus, Lauragh, Killarney, Co. Kerry for Oyster Fishery Orders in respect of parts of Kilmakilloge Harbour, Co. Kerry.	Under consideration
26th October, 1979	St. John's Hall, Ballyvaughan, Co. Clare	Application by Mr. James F. Walsh, Belclare, Tuam, Co. Galway for an Oyster Fishery Order in respect of part of Poulnaclogh Bay, Co. Clare.	Refused
14th November, 1979	The Community Centre, Ballyguin, Brandon, Co. Kerry.	Application by Comharchumann Forbartha Leith Triuigh Teo, Baile Ui Dhuibhne, Brennan, Tra-Li, Co. Chiarai for an Oyster Fishery Order in respect of part of Brandon Bay, Co. Kerry.	Under consideration

APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN 1979

SEA FISHERIES

- (1) Pelagic fish (Handling, Storage and Transport) Regulations, 1979 (S.I. No. 156 of 1979) dated 24th April, 1979, relate to fresh whole pelagic fish intended for sale for human consumption and set out the procedure and requirements for the handling, storage and transport of such fish from the time the fish is landed aboard the fishing vessel until the fish reaches the consumer.
- (2) Shellfish (Handling, Storage and Transport) Regulations, 1979 (S.I. No. 157 of 1979) dated 24th April, 1979 relate to shellfish or pieces of such fish intended for sale for human consumption and set out the procedure and requirements relating to the handling, storage and transport of such fish from the time the fish is landed aboard the fishing vessel until the fish reaches the consumer.
- (3) Sea Fisheries (Conservation and Rational Exploitation) Order, 1979 (S.I. No. 212 of 1979) dated 20th June, 1979 replaces the Sea Fisheries (Conservation and Rational Exploitation) Order, 1978 (S.I. No. 25 of 1978). It continues the ban on herring fishing in the Celtic Sea contained in that Order and extends the area in the North Irish Sea in which fishing for herring is prohibited.
- (4) Sea Fisheries (Conservation and Rational Exploitation) (No. 2) Order, 1979 (S.I. No. 420 of 1979) dated 21st December, 1979, amends the Sea Fisheries (Conservation and Rational Exploitation) Order, 1979 (S.I. No. 212 of 1979) in relation to by-catches of herring taken in the Celtic Sea.
- (5) Sea Fisheries (Conservation and Rational Exploitation) (No. 3) Order, 1979 (S.I. No. 421 of 1979) extends the ban on direct herring fishing off the north-west coast as imposed by the Sea Fisheries (Conservation and Rational Exploitation) (No. 3) Order, 1978 (S.I. No. 187 of 1978) as amended by the Sea Fisheries (Conservation and Rational Exploitation) (No. 6) Order, 1978 (S.I. No. 280 of 1978) and the Sea Fisheries (Conservation and Rational Exploitation) (No. 8) Order, 1978 (S.I. No. 372 of 1978) up to and including 31 December, 1980 including a ban on having herring on board a sea-fishing boat within the defined area.

OYSTER FISHERY ORDERS, MUSSEL FISHERY ORDERS AND BYE-LAWS 1979

- (1) Oyster Fishery (Rosscarbery Bay) Order, 1979 and (Sheep Cove) Order, 1979 dated 26th April, 1979 grants to Mr. Brendan Kingston of West Square, Rosscarbery, Co. Cork certain exclus-

ive rights within the limits of the oyster fishery described in the Schedule to the Order.

- (2) Oyster Fishery (Kinish Harbour) Order, 1979 dated 28th May, 1979 grants to Mr. Matt Murphy, Sherkin Island, Co. Cork certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (3) Oyster Fishery (Kinsale Harbour) Order, 1979 dated 9th July, 1979, grants to Kinsale Harbour Commissioners, Harbour Masters Office, Kinsale, Co. Cork, certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (4) Oyster Fishery (Clew Bay) Order, 1979 dated 23rd July, 1979 grants to the Clew Bay Oyster Co-operative Society Limited, Inniscuttle, Kilmeena, Westport, Co. Mayo, certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (5) Mussel Fishery (Castlemaine Harbour) Order, 1979, dated 20th August, 1979 grants to Castlemaine Harbour Co-operative Society Limited certain exclusive rights within the limits of the mussel fishery described in the Schedule to the Order.
- (6) Oyster Fishery (Dunmanus Bay) Order, 1979 dated 7th September, 1979 grants to West Cork Seafarms Limited, Seaview, Durrus, Bantry, Co. Cork certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (7) Fishery Harbour Centres (Management, Control, Operation and Development) Bye-Laws, 1979 dated 4th October, 1979, prescribes regulations for the management, control, operation and development of the major fishery Harbour Centres under the control of the Minister for Fisheries and Forestry.
- (8) Oyster Fishery (Bantry Bay) Order, 1979, dated 5th December, 1979, grants to Bantry Fish-Farming Co-operative Society Limited, The Square, Bantry, Co. Cork certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.

INLAND FISHERIES

- (1) Salmon and Trout Conservation (Amendment) Bye-law No. 607, 1979, dated 31 January, 1979, removes sea trout from the prohibition on angling prescribed in Article 4(1) of the Salmon and Trout Conservation Bye-law, No. 606, 1978.
- (2) Ballina District Bye-law No. 608, 1979, dated 31 January, 1979, prohibits angling for salmon in the period from 1 February to 16 April each year in part of the River Moy downstream of the Upper Bridge in the town of Ballina to a straight line drawn

from the most north-westerly point of Bartragh Island in a south-easterly direction to the mouth of the Bellawaddy river on the opposite shore of Killala Bay.

- (3) Wexford District Bye-law No. 609, 1979, dated 24 May, 1979,
 - (a) prohibits the use of any kind of fishing net in the River Slaney upstream of Droichead Loch Garman 1959 other than—
 - (i) salmon draft nets;
 - (ii) eel fyke nets;
 - (iii) trawling nets used between sunrise and sunset on week-days (except Saturdays) in the period from 1 October in any year to 16 February in the following year,
 - (b) prohibits the use of fixed engines in the River Slaney downstream of Droichead Loch Garman 1959.
- (4) Ballyshannon District Bye-law No. 610, 1979 dated 8 June, 1979, prohibited fishing for salmon and trout with any fishing engine other than rod and line in the tidal waters of the River Erne and in part of the Abbey River from 12 June, 1979, to 19 July, 1979.
- (5) Control of Fishing for Salmon (Amendment) Order, 1979 (S.I. No. 346 of 1979) dated 17 October, 1979, brings forward to 30 November the closing date for the receipt of completed application forms for commercial salmon fishing licences.
- (6) Elections of Conservators (Postponement) Order, 1979 (S.I. No. 363 of 1979) dated 8 November, 1979, postpones elections of conservators to 1980.

FOYLE AREA

Foyle Area (Pension) (Amendment) Regulations, 1979, dated 30 January, 1979, establish a new pension scheme for the staff of the Foyle Fisheries Commission.

APPENDIX No. 23

OUTPUT AND DISPOSAL OF FISH HATCHERY PRODUCE 1978/79

Hatchery	Output (Ova)			Disposal (000)	River System Stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)		
Fanure, Roscrea (Inland Fisheries Trust)			616	110 Fry 260 Summerlings 61 Fingerlings 184 Spring Yearlings 11 Autumn Yearlings 49 Spring 2 year Olds 1 Adults	Various Trust waters in Cos. Cavan, Westmeath, Long- ford, Roscommon, Sligo and Galway and Angling inter- ests.
Cullian, Mullingar (Inland Fisheries Trust)			1,830	123 Ova 800 Fry 350 Summerlings 3 Fingerlings 72 Spring Yearlings 23 Autumn Yearlings 67 Spring 2 Year Olds	Various Trust waters in Cos. Cavan, Westmeath, Long- ford, Roscommon, Sligo and Galway and Angling inter- ests.
Carriga- drohid (E.S.B.)	1,016			488 Eyed Ova 221 Fingerlings 172 Smolts	Rivers Roughty, Cloonee, Bantry Rivers and Nore and Suir.
Parteen (E.S.B.)	1,350			20 Unfed Fry 750 Fingerlings 202 Smolts	Rivers Annacarriga, Silver Suck, B/ Brosna, Inny, Mul- chair and Tributaries Kilcow, Barron- boy, Anthony, Nenagh, Greedy, Blackwater, Scenify, Kannon, Moreen.
Screebe	7	20		25 Ova	Screebe System.
Cong (Galway Board of Conserv- ators)	270			73 Ova	Corrib System.
Glenties (Dept. of Fisheries & Forestry)	11			11 Ova	Owenea River System.

APPENDIX No. 23 (contd.)

Hatchery	Output (Ova)			Disposal (000)	River System Stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)		
Salmon Research Trust, Furnace	213	—	—	67 Ova 146 Ova	Retained for rearing to Smolts Burrishoole System
Carrowmore Lake Incubating Unit (Bangor Board of Conserv- ators)	36	—	—	9 Ova 27 Ova	Glenamoy river Owenmore River System
Waterville (Kerry Board of Conserv- ators)	123	—	—	113 Ova	Cummeragh, Ceopall and Finglass river systems.
Inistioge (Waterford Board of Conserv- ators)	100	—	—	89 Ova	Barrow and Tribu- taries.
Mallow (Lismore Board of Conserv- ators)	800			600 Ova	Blackwater and its Tributaries.
Virginia (Drogheda Board of Conserv- ators)	550			20 Ova 16 Ova 13 Ova 5 Ova 3 Ova 65 Fingerlings 20 Fingerlings 20 Fingerlings 40 Fingerlings 30 Smolts from 1977/78 Stock	Trimblestown River Stoneyford River Clady River Skane River Murmod River Stoneyford River Trimblestown River Murmod River Retained for rearing to Smolts River Boyne

APPENDIX No. 24

SCIENTIFIC AND OTHER PAPERS

DEPARTMENTAL

A. IRISH FISHERIES INVESTIGATIONS

Series A (Freshwater) No. 17. J. P. O'Connell and J. H. Bracken.
A comparative limnological study of two Irish lakes (Lough Sillan, Co. Cavan and Lough Dan, Co. Wicklow).

B. FISHERY LEAFLETS

No. 98. Mr. J. Browne and Miss J. Doyle. Recaptures of Adult Salmon tagged as smolts at Carrigadroghid.

OTHER PUBLICATIONS

Crowley, M. Mussel Power. Ireland to-day. 948, 4-5.

Grainger, R. Herring abundance off the west of Ireland in relation to oceanographic variation. J. Cons. int. Explor. Mer. 38, 180-188.

Grainger, R. The distribution and abundance of herring larvae to the south of Ireland in 1978/79. *ICES C.M.* 1979, H 48.

Moriarty, C. Biological studies of yellow eels in Ireland. Rapp. P.-v. Reun. Cons. int. Explor. Mer 174, 16-21.

Moriarty, C. and McCarthy, D. T. Eels in the Galway Fishery, Ireland. ICES/EIFAC Working Group on Eels. Charlottenlund, Denmark.

Moriarty, C. and Steinmetz, B. On age determination of eel. Rapp. P.v. Reun. Cons. int. Explor. Mer 174, 70-74.

Parker, M. Red tides in Irish coastal waters. Health Inspectors Association Silver Jubilee year book, 11-13.

Parker, M. and West, B. The natural history of *Neomysis integer* (Leach) in Lough Furnace, Co. Mayo, a brackish lough in the west of Ireland. *Estuarine and coastal marine science* 8, 157-167.

