



FISHERIES ANNUAL REPORT

OF THE MINISTER FOR
THE MARINE FOR 1985





FISHERIES

REPORT FOR 1985

ROINN NA MARA
(Department of the Marine)

BAILE ÁTHA CLIATH
ARNA FHOILSIÚ AG OIFIG AN tSOLÁTHAIR

Le ceannach díreach ón
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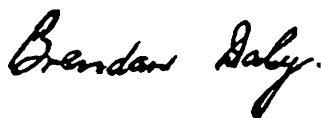
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REAMHRA

Gheofar sa Tuarascail seo cuntas ar obair mo Roinne in ndáil le hiascach sa bliain 1985. Gheofar ann freisin cuntas staitistiúil ar iascach sa Stát agus achoimre ar ghníomhaíochtaí Chomhphobal Eacnamaíochta na hEorpa i 1985 faoi mar a theann siad i bhfeidhm ar thionscal iascaireachta na hEireann.

FOREWORD

This Report gives an account of the work of my Department in relation to fisheries during the year 1985. It also gives a statistical account of the fisheries in the State and a summary of the activities of the European Economic Community during 1985 as they affect the Irish fishing industry.



BRENDAN DALY

Minister for the Marine

1. SEA FISHERIES

LANDINGS OF SEA FISH

In 1985 the total value of all sea-fish (excluding salmon) landings by Irish registered vessels amounted to IR£59.9m an increase of IR£6.8m or 12.8% on 1984 of which amount IR£51.8m relates to landings at Irish ports.

The total volume of sea-fish (excluding salmon) landings amounted to 222,217 tonnes of which 187,749 tonnes were landed at Irish ports.

The weights and values of annual landings of sea-fish (excluding salmon) at Irish ports by Irish registered vessels since 1976 are set out in the following table.

Year	Tonnes	IR£'000
1985	187,749	51,764
1984	164,224	44,842
1983	170,233	45,432
1982	194,842	43,809
1981	176,577	35,444
1980	134,886	28,866
1979	85,697	24,905
1978	93,689	22,669
1977	82,488	18,689
1976	80,663	12,864

The leading ten fishing ports of 1985 in order of value of fish landed were Killybegs, Howth, Castletownbere, Rossaveal, Dunmore East, Greencastle, Clogherhead, Burtonport, Kilmore Quay and Valentia.

Demersal Fishery

In 1985 the total landings of demersal fish amounted to 41,799 tonnes. Landings of dogfish showed the largest percentage increase in volume of all demersal species increasing by 1,752 tonnes or 28.1%. Whiting was the species caught in the greatest quantity and was

followed by dogfish, cod, haddock and plaice in that order. The total value of the demersal fish catch increased by 24.75% from IR£19.0 m in 1984 to IR£23.7 m in 1985. Cod was the first in terms of cash earnings followed by whiting, haddock, plaice and dogfish. These five varieties contributed 60% of the total value of the demersal catch. The overall average price of all demersal fish in 1985 was IR£567 compared with IR£505 per tonne in 1984. The total quantity, value and average value per tonne of landings of demersal fish for each year since 1976 is shown in the following table.

Year	Quantity Tonnes	Value IR£'000	Average Value Per Tonne IR£
1985	41,799	23,685	567
1984	37,596	18,984	505
1983	36,011	17,069	474
1982	34,916	13,908	398
1981	35,916	11,948	333
1980	27,231	8,398	308
1979	21,100	7,721	366
1978	17,900	5,862	327
1977	18,900	5,709	302
1976	23,800	4,652	195

Pelagic Fishery

The total pelagic catch for 1985 was 122,951 tonnes. The total value of the catch was IR£13.8m representing an increase of IR£1.3m or 10.7% on the figure for 1984.

Herring

Landings of herring amounted to 31,716 tonnes valued at IR£4.3m. The average price was IR£136 compared with IR£142 in 1984.

Exports of fresh and chilled or frozen herring in 1985 amounted to 12,138 tonnes valued at IR£3.9m as compared with 16,916 tonnes valued at IR£5.2m in 1984. The quantity exported in salted or smoked form was 10,802 tonnes valued at IR£5m as compared with 11,513 tonnes valued at IR£5.8m in 1984. The total herring exports of 22,940 tonnes valued at IR£8.9m represents a decrease of 23% in quantity and 33% in value over the 1984 exports.

The Federal Republic of Germany continued to be the largest market for herring having purchased 5,643 tonnes valued at IR£3.8m. France was next, having purchased 4,539 tonnes valued at IR£1.9m followed by the United Kingdom with purchases of 3,251 tonnes valued at IR£734,000. Poland, the U.S.S.R and the Netherlands purchased 3,448, 2,147 and 1,174 tonnes valued at IR£525,000, IR£365,000 and IR£490,000 respectively.

The following table shows the total quantity and value together with the average value per tonne of herring for each year since 1976.

Year	Quantity Tonnes	Value IR£'000	Average Value Per Tonne IR£
1985	31,716	4,315	136
1984	31,622	4,498	142
1983	32,025	5,229	163
1982	29,700	5,233	176
1981	29,600	5,046	170
1980	36,800	9,395	255
1979	27,400	7,863	287
1978	27,700	8,171	295
1977	23,100	6,033	261
1976	22,000	3,133	142

Sprats

Landings of sprats showed a decline from 4,655 tonnes in 1984 to 3,964 tonnes in 1985 a decrease of 14.8% while the value of the catch declined from IR£437,000 in 1984 to IR£374,000 in 1985 a decrease of 14.5%.

The following table shows the total quantity, value and average value per tonne of sprats for each year since 1976.

Year	Quantity Tonnes	Value IR£'000	Average Value Per Tonne IR£
1985	3,964	374	94
1984	4,655	437	94
1983	5,511	489	89
1982	4,109	302	74
1981	4,984	313	63
1980	9,350	705	75
1979	1,892	128	68
1978	9,119	342	38
1977	6,055	199	33
1976	8,576	218	25

Mackerel

Landings of mackerel amounted to 60,699 tonnes valued at IR£7.8m compared with 53,211 tonnes valued at IR£6.1m in 1984. The average price per tonne was IR£129 as compared with IR£115 in 1984. The chief landing places for mackerel were Killybegs, Rathmullen and Castletownbere.

Exports of fresh and chilled or frozen mackerel in 1985 amounted to 82,582 tonnes valued at IR£31.5m as compared with 59,720 tonnes valued at IR£21.5m in 1984. The total mackerel exports of 83,094 tonnes valued at IR£32m represents an increase of 38% on the 1984 quantity and 47% on the 1984 value.

Nigeria and Egypt were among the biggest non-EEC markets for mackerel — exported in a whole frozen state — with purchases of 31,027 tonnes valued at IR£15m and 14,070 tonnes valued at IR£3.7m respectively. The United Kingdom, the Netherlands, France and the Federal Republic of Germany were the biggest buyers within the European Community with the United Kingdom purchasing 9,804 tonnes valued at IR£2m, the Netherlands purchasing 8,412 tonnes valued at IR£2m, France purchasing 7,526 tonnes valued at IR£2.7m and the Federal Republic of Germany purchasing 5,588 tonnes valued at IR£2.6m.

The following table shows the total quantity, value and average value per tonne of mackerel landings for each year since 1976.

Year	Quantity Tonnes	Value IR£'000	Average Value Per Tonne IR£
1985	60,699	7,848	129
1984	53,211	6,139	115
1983	65,537	8,542	130
1982	110,363	12,456	113
1981	93,802	9,893	105
1980	50,791	4,226	83
1979	24,217	1,792	74
1978	27,507	1,720	63
1977	22,695	1,748	77
1976	14,394	877	61

Shellfish

The value of the shellfish catch at IR£14.3m showed an increase of IR£0.9m on the value of the 1984 catch. Landings of mussels decreased from 12,639 tonnes in 1984 to 10,358 tonnes in 1985 with a consequent decrease in value from IR£13.5m to IR£12.4m. Dublin Bay prawn landings increased from 3,987 tonnes in 1984 to 4,702 tonnes in 1985 with a consequent increase in value from IR£4.4m to IR£5m.

The value of shellfish landings for the last ten years is indicated in the following table:

Year	IR£'000
1985	14,294
1984	13,407
1983	12,229
1982	11,909
1981	8,243
1980	6,143
1979	7,334
1978	6,526
1977	4,936
1976	3,886

IMPORTS AND EXPORTS OF FISH

Exports

At IR£103m exports of fish products including both sea and fresh water preparations continued to establish new records. The comparative figure for 1984 was IR£89m. Following is a short summary of fish exports:—

	<u>Quantity (mt)</u>	<u>IR£'000</u>
Fresh, frozen or salted fish and shellfish	149,514	90,911
Prepared or preserved fish and shellfish	1,887	2,829
Fishmeal	8,851	5,301
Foreign landings (including transhipped at sea)	34,468	8,119
	<u>189,251</u>	<u>102,860</u>

Imports

The value of fish and fish products imported into Ireland in 1985 decreased by 36% from IR£32m in 1984 to IR£20m. Following is a summary of fish imports:—

	<u>Quantity (mt)</u>	<u>IR£'000</u>
Fresh, frozen or salted	16,386	12,006
Prepared or preserved fish and shellfish	1,530	3,443
Fishmeal	13,182	4,993
	<u>31,098</u>	<u>20,442</u>

Further details are supplied in Appendix No. 4.

MARICULTURE

The general interest shown in mariculture as a new fishing industry continued to grow in 1985 with particular emphasis on salmon farming. A growing interest was also noted in the farming of clams, oysters, scallops and mussels. Grants, of IR£281,321 made available for both pilot and commercial projects, were paid out through the Mariculture Grant Scheme operated by An Bord Iascaigh Mhara.

Advice and assistance is provided both by this Department and B.I.M. Further details of the various research programmes carried out by the Department in this regard can be read in the chapter on Scientific Research and Development, further on in this report.

Designation of Fishery Areas

A start has been made with the implementation of the designation

process provided for under section 54 of the Fisheries Act, 1980. Two areas in County Mayo, Achill Sound and Blacksod Bay, were designated in 1985. Considerable progress was also made on the designation of other areas and a schedule of further areas to be designated is being drawn up.

AN BORD IASCAIGH MHARA

The Board received a grant from the Fisheries Vote for the year ended 31 December 1985 of IR£6.88m for administration costs and capital development. Repayable advances totalling IR£3.17m were also made to the Board from the Central Fund, mainly for the provision of boats and gear.

The Board's Annual Report on its activities in 1985 is published separately.

PERSONNEL AND VESSELS

In 1985 there were 3096 vessels in operation compared with 3135 vessels in 1984. This slight decrease in numbers was mainly attributable to decreases in the smaller vessel categories with boats in the 18 foot keel and over class dropping by 24 and numbers in the 10 and under G.R.T. class dropping by 9. Vessels in the 18 foot keel and under category remained unchanged at 212 boats. Vessels in the 100 and over, 51-74 and 16-25 G.R.T. classes decreased by 4, 4 and 3 boats respectively. However, slight increases occurred in the 75-99, 26-50 and 11-15 G.R.T. classes with vessel numbers increasing by 1, 1 and 3 boats respectively.

There was a comparative small decrease in the number of fishermen engaged in the industry in 1985. The number of fishermen engaged in part-time fishing activity decreased from 4574 in 1984 to 4516 in 1985. There was, however, an increase in the numbers engaged fulltime in fishing with numbers rising from 3232 men in 1984 to 3262 in 1985. The net decrease in numbers of fishermen in 1985 was due to the reduction of smaller category vessels in operation during 1985.

SEA FISHERIES PROTECTION

Regular patrols by the Naval Service and the Air Corps resulted in sixty seven vessels being detained for suspected breaches of European Community and national sea fishery control measures. Forty-nine skippers were fined a total of IR£1.575m; five were released for lack of evidence and thirteen cases remained before the courts at the end of the year.

The Minister for the Marine takes this opportunity to thank the Naval Service, Air Corps and the Garda Síochana for their continued co-operation in the enforcement of Fisheries Protection Legislation.

ENGINEERING FISHERY HARBOUR WORKS

Designated Fishery Harbour Centres

Expenditure at Castletownbere Fishery Harbour Centre on development work during the year was £110,000. This included expenditure on modifications to the syncrolift, the completion of toilets, stores and garage and the purchase of a harbour launch. Ancillary works to the boatyard were in progress at the end of the year. Expenditure at Howth Harbour on development work amounted to £780,000. This development work included grant aid towards landscaping, tarmacadam surfacing of the West Pier, the continuation of the completion of the boatyard and payments towards the installation of the syncrolift and associated engineering works.

Other Harbours, Ports and Landing Places

Fishery harbour improvement works, grant aided by the Department, were completed during the year at Ballysaggart, Portevlin, Rathmullen and Portmore in Co. Donegal, at Belderrig, Killala, Inch Island and Bone Rock in Co. Mayo as well as Roundstone, Co. Galway, Clogherhead, Co. Louth and at Slade and Cahore, Co. Wexford.

Fishery harbour works in non-Gaeltacht areas were in progress at the end of the year at Schull, Co. Cork, Caherciveen, Scraggane Pier and Brandan Pier, Co. Kerry, at Doonbeg, Co. Clare and at Duncannon and Blackwater, Co. Wexford.

Improvement works which were recommended by the Department of the Marine and financed by Roinn na Gaeltachta were completed during 1985 at Kilonan, Bearna and Carna in County Galway, at Leac Dubh, Gweedore, Burtonport and Inisboffin in County Donegal and at Inver, Gort Melia, County Mayo, while works were in progress at Arranmore, Co. Donegal, Rinroe, Co. Mayo and Dingle, Co. Kerry.

FISH QUALITY CONTROL

During the year, landings of fish were supervised by Fish Quality Officers to ensure compliance with the Demersal (Handling, Storage and Transport) Regulations, 1979, the Pelagic (Handling, Storage and Transport) Regulations, 1979, the Shellfish (Handling, Storage and Transport) Regulations, 1979 and with the EEC common marketing standards for fresh or chilled fish. These standards, which relate to size and freshness categorization, are laid down by EEC Council Regulation Nos. 103/76 and 3166/82. All fish offered for sale for human consumption within the Community must comply with the provisions of these Regulations.

2. EUROPEAN ECONOMIC COMMUNITY

COMMON FISHERIES POLICY

The signing of the Treaty of Accession of Spain and Portugal to the E.E.C. in 1985 was of particular significance for the fisheries sector with the main features of interest being as follows:—

- (a) There will be a ten year transitional period in which no Spanish vessels will have access to the "Irish Box".
- (b) Access will be given to 93 Spanish vessels under licence, from date of accession, in Ireland's 50-200 mile zone.
- (c) Spain's access to resources will be limited to quotas for hake, monkfish, megrim, horse mackerel, blue whiting, nephrops, pollock and to non-TAC species.
- (d) The Spanish northern fleet, which operates in community waters, will be reduced with the aid of E.E.C. grants.
- (e) Spanish fishing will be subject to all of the Community's technical conservation measures under the surveillance of the E.E.C. fisheries inspectorate.
- (f) Common organisation of the market will apply, with some new species eligible for financial aid for withdrawal from the market. A new private storage aid scheme is to be introduced for fresh nephrops (Dublin Bay prawns) and crabs.

Regulations adopted in 1985 during Councils of Fisheries Ministers (including those of 27 September, 4 November, 16, 17 and 20 December, 1985) were as follows:—

- (1) a regulation outlining measures applicable to vessels of the ten Member States in the waters of Spain and Portugal, and to vessels from Spain and Portugal in the waters of the ten Member States;
- (2) a regulation laying down measures in respect of operators who do not comply with certain provisions in the Act of Accession;
- (3) a regulation fixing the total allowable catches (TAC's) and quotas for 1986;

- (4) a regulation reducing the size of the zone in the Irish Sea in which herring fishing is suspended each year for a limited period;
- (5) Fishery Agreements with Norway, Sweden, Faroe Islands, Greenland and French Guyana;
- (6) a regulation extending, for one year, existing Structures Regulations for Fisheries;
- (7) amendments to the Control and Technical Conservation Measures Regulations;
- (8) a regulation granting structural aid for re-structuring of the sardine-canning industry;
- (9) a regulation laying down general rules for the granting of a special carry-over premium for Mediterranean sardines and anchovies;
- (10) a regulation granting compensatory indemnities in respect of sardines;
- (11) a regulation outlining common marketing standards for edible crabs, nephrops and certain fresh or chilled fish.

EUROPEAN AGRICULTURAL GUIDANCE AND GUARANTEE FUND (FEOGA)

Guarantee Section

The prices for the 1985 marketing year came into effect on 1 January, 1985.

The following table shows approximate price increases for the quality grades of most interest to Irish fishermen.

Species covered by Community price support system	Percentage increase (%)
Spur Dogfish	1
Spotted Dogfish	1
Cod	6
Saithe	3
Haddock	5
Whiting	5
Ling	1
Mackerel	1
Herring	0
Hake	3
Plaice	3 First Period 4 Second Period

E.E.C. subvention for withdrawals in 1985 amounted to IR£1.199m in respect of fish which failed to meet the minimum intervention price.

Guidance Section

In 1985, the E.E.C. Commission decided to grant-aid projects involving the construction and modernisation of inshore fishing vessels and the construction of aquaculture establishments as part of the common measure for restructuring the Community's inshore fishing industry. The grants awarded to Ireland amounted to IR£1.522m in relation to the construction of 5 new fishing vessels, modernisation of 18 existing vessels and the support of 11 aquaculture projects.

3. SEA FISHERIES SCIENTIFIC RESEARCH AND DEVELOPMENT

Investigations continued throughout 1985 on fish stocks in Irish waters. These investigations form the basis for assessment of various stocks which are then used to provide for the management of the fisheries. The following chapters outline the numerous surveys and studies carried out and the results achieved. For scientific purposes sea fisheries are divided into management divisions as indicated on the map shown.

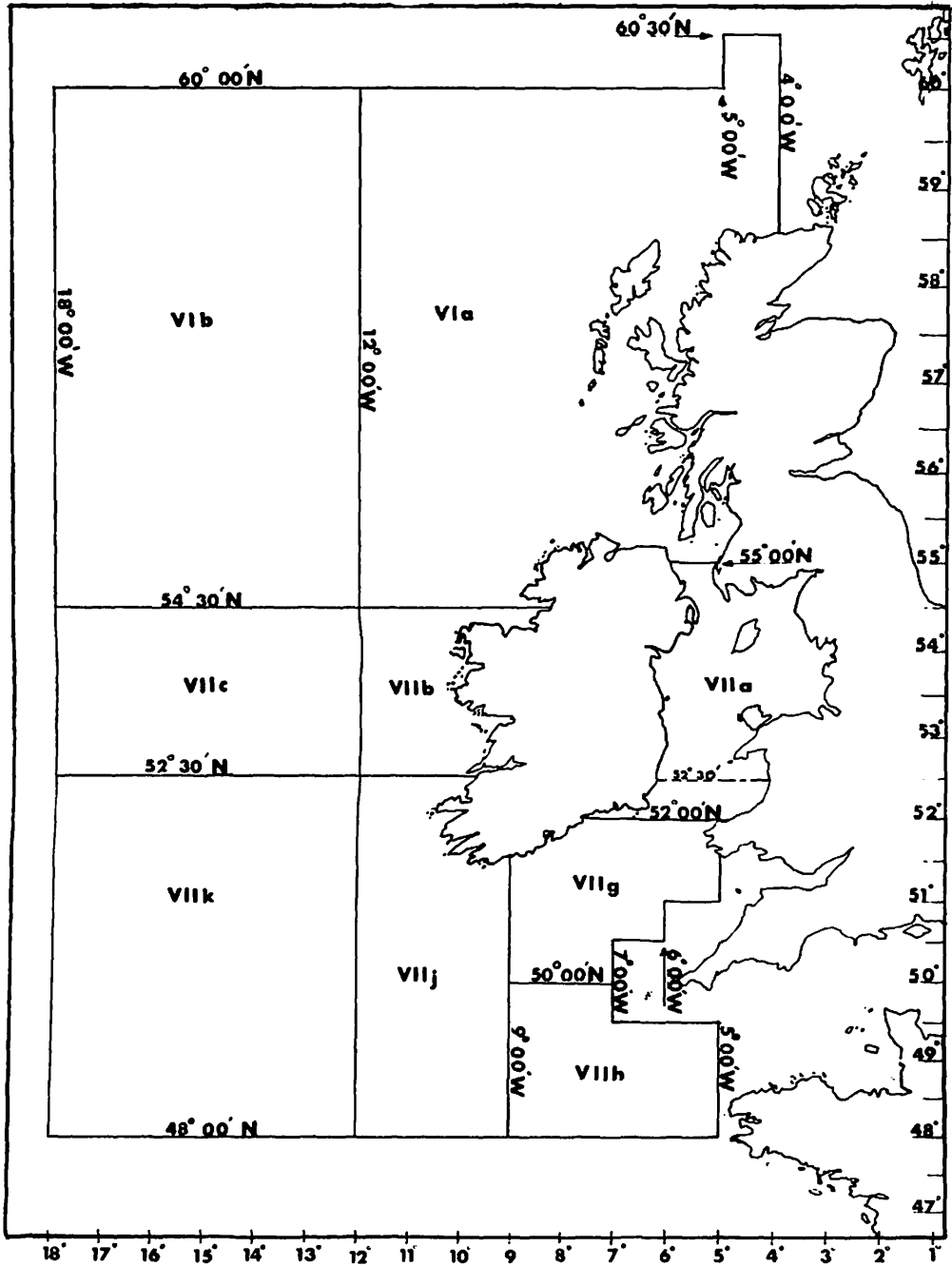
DEMERSAL FISH

(a) *Cod, haddock and whiting*

- (i) Division VIa *(South). During the first three quarters of 1985, 10,818 fish were sampled from this Division.
- (ii) Division VIb. This Division is a source of haddock and as expected is becoming increasingly important to Irish fishermen. The fishery takes place in quarters 2 and 3 of the year. The assistance of co-operatives and fish merchants made it possible to initiate a sampling programme.
- (iii) Divisions VIIb,c. Approximately 3930 fish were sampled from this Division. For these three species Divisions VIIb,c is effectively an extension of Division VIa.
- (iv) Division VIIa (Irish Sea). A total of 11,935 fish, including discards, were sampled during the first nine months of 1985. In addition, about 7,000 cod and whiting were sampled during the May and September groundfish surveys carried out at sea. In a few years time, these surveys will provide predictions of recruitment for these fisheries.

(b) *Plaice*

- (i) Division VIIa (Irish Sea). A total of 5,418 plaice were sampled from commercial landings during the first three quarters of 1985, and in addition, surveys were carried out at sea during May and September, when some 2,620 plaice were examined.



These surveys play an important role as estimators of recruitment of plaice stocks.

(c) *Hake, megrim and monkfish*

- (i) Divisions VIa, VIIb, VIIj and VIIg. In recent years, these three species have assumed considerable importance in the catches and therefore a programme of sampling was initiated in 1985. This work commenced during the second quarter and continued to the end of the third quarter, by which time 2,420 fish had been examined. The age structure of any fish population is an essential key to assessing its productivity. In the case of megrim and monkfish especially, determination of age by examination of the rings appearing on otoliths (earstones) was a new departure. The age determinations made in 1985 will require to be checked by comparative readings with other laboratories, where workers have more experience with these species, to introduce confidence into the results.

PELAGIC FISH

(a) *Herring*

- (i) Celtic Sea (parts of Divisions VIIa, g and h)/VIIj. Larval surveys and young herring surveys were carried out in 1985 and sampling of commercial catches was continued. This work shows that a number of very strong year classes have entered the fishery in recent years, resulting in a rapid increase in the total stock size, to the point where it is now estimated to be at its highest since the late fifties. This fishery was closed from 10th November to 3rd December and from 24th December to end of year and the resulting decrease in fishing effort has contributed to the stock recovery. However, another factor has become apparent, namely, that the two major components of this stock, the winter spawners and the spring spawners, are recovering their strength at different rates. The autumn spawners are recovering more slowly than the spring spawners. The studies conducted on this stock will enable a long term fishing plan for its rational exploitation and conservation to be drawn up to sustain the annual yield.
- (ii) Divisions VIa (South) and VIIb. Sampling of commercial catches in 1985 were continued throughout the year. These indicate that this stock is on the decline, and this is corroborated by fishermen, who have reported scarcity. This decline is contrary to earlier expectations, and it will require to be monitored carefully over the next few years.
- (iii) Division VIIa (Irish Sea). A young herring survey was carried out in February 1985, and commercial sampling in August. Both these studies indicate that the forecasted recovery of this stock is taking place. However, that recovery could be

jeopardised if there is a significant increase in the present level of fishing effort.

(b) *Mackerel*

For management purposes and by International Agreement, the mackerel stock is now regarded as one unit in all Divisions of VI and VII as well as the north-western, north-eastern, central and southern North Sea. The location of the mackerel fishery in the period January to April and November/December, was again mainly to the north-west of Scotland and this confirms that a dramatic change has taken place in its overwintering quarters in recent years. Commercial samples and a young mackerel survey (carried out in November 1985) indicate that the 1984 year class is a particularly strong one, much more abundant than the year classes born in 1982 and 1983. If the annual catch for the next fishing seasons is held at the recommended level, the decline of this stock could be halted. In an effort to sustain the stock, the fishery was closed from April to October 1985.

(c) *Sprat*

Division VIIj. The commercial fishery was intensively sampled from October to December 1985. Samples were analysed to determine numbers per kilo, length range, mean length and weight, and fat content. Numbers per kilo are important for trading purposes, and accordingly were determined in four categories, namely, more than 70; 60-69; 50-59 and less than 50 per kilo. The examination of sprat stomachs is of equal importance for trade because if there are even traces of food in the gut, such sprat are unacceptable to importing countries. Results of this work were supplied to Irish exporters on a regular basis.

(d) *Horse mackerel*

Division VII. An experimental fishery was undertaken in the summer of 1985, and limited commercial catch took place in the following September.

SHELLFISH

Nephrops (Dublin Bay Prawn)

(a) Study results to provide management advice.

- (i) Division VIIa. During 1985, a total of 25,600 nephrops were examined from this Division, to determine the total numbers and length distribution of this species caught, landed and discarded. The average size of individual nephrops in Division VIIa remains undesirably small, and is due to growth over-fishing. This species cannot be aged reliably at present. However, as the incoming data increase and comprehensive catch-landings-discards records are amassed, a more detailed assessment of the stock will be possible.

- (ii) Divisions VIIj and VIIb. Sampling of the commercial catches from the developing nephrops fishery in the Porcupine Bank region was continued, mainly in July 1985.
- (b) Result of research to acquire data on growth and mortality by tagging.
 - (i) Division VIIa. Binary coded magnetic micro tagging, developed for salmon research, has been adapted for lobsters. In 1984 the first ever attempt to use this technique on nephrops was initiated by the Department of the Marine (Fisheries Research Centre). Building on that experience the techniques were refined very considerably in 1985, so that 7,000 individuals were tagged and released in June. Examination of catches in 1986 are expected to yield results.
- (c) Result of survey to estimate the biomass of the breeding stock of nephrops in Division VIIa.
 - (i) Division VIIa. A cruise was undertaken in April/May 1985 covering 72 stations in this Division. Sampling of larvae was concentrated upon those areas where they were expected, and found, to be most numerous. This cruise formed one in a series of four others carried out by scientists from the Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory at Lowestoft, England. Larvae were found to be well-distributed off the Irish coast and the majority of them were in Stage I of development off the coast of Louth and Down. Further south considerable numbers of larvae were found in approximately equal proportions of Stage I and II of development. East of the Isle of Man spawning had hardly commenced and only three Stage I larvae were located. The Irish/UK larvae studies are an important contribution to determining the biomass of breeding stock in Division VIIa.
- (d) Result of experiments to maximise long term value of commercial nephrops catches and minimise the by-catch of undersized whiting.
 - (i) Division VIIa. Two experiments were carried out involving the use of a separator trawl and a comparison of the catches made using a 60 and a 70 mm mesh. The former was undertaken in August/September, and the latter in December, 1985.

Separator trawl. Three vessels were provided with double ended cod ends and the skippers fished as they would have done with a single cod end. In all three cases, 93% of the nephrops landed were taken in the lower cod end, and 89% or more of the whiting taken in the upper cod end. The results of experimental fishing with double cod ends are encouraging.

60 mm and 70 mm mesh trawls. Two vessels fished along parallel course, one using 60 mm the other 70 mm meshes and both shooting and hauling their nets simultaneously. An observer on each boat noted the respective catches. This experiment revealed a number of points.

- Changing from 60 mm to 70 mm results in a reduction of unsorted Nephrops catch by about 60%.
- At the same time, discards were reduced by about 80%.
- The actual number of nephrops, retained for sale, fell by about 40%.

The most important result here, clearly, is the massive reduction of discards, so that with 70 mm, this large quantity of individuals remained alive and well on the sea bed, and thus continued to form an important part of the live biomass. This should lead to a decline in growth overfishing.

MARICULTURE

(a) *Molluscs*

- (i) *Escallops*. The objective of the scallop culture programme is to establish means by which this species can be reproduced by assisted propagation, and on-grown to a size suitable for intensive farming or for ranching purposes, i.e. to reconstitute or augment natural populations. The experimental site at Rossmore in Cork Harbour offers excellent land based pond facilities as well as laboratory space ashore where practical experiments may be analysed. This work was commenced in 1985 and the target date for its completion is 1988. Escallops from Bantry Bay were transferred to Cork Harbour in May 1985. Using thermal shock treatment they were induced to spawn. The resulting fertilised eggs were successfully developed and placed in trays as larvae. As soon as these larvae became early shelled, they were successfully transferred to a large based pond. Early spawned juvenile escallops, i.e. not later than May, are essential for profitable escallops culture for both intensive and extensive farming.
- (ii) *Escallop populations* Natural populations of escallops at various coastal locations were examined and determined with the objective of providing management advice. A phenomenon of wild scallop stocks is their natural fluctuations of successful and unsuccessful year classes. The mechanisms governing year class success or failure must be understood, if rational exploitation is to be maintained.
- (iii) *Green crab predation* The objective of this research is to assess the rate of natural predation on oysters by the green crab (*Carcinus maenas*) and coincidentally to determine the productivity of green crab which above a size of 80 mm carapace length are marketable.
 - (a) *Green crab populations* The spatial and size distributions of these crabs were determined in Cork Harbour, Tralee Bay, Clarinbridge and Clew Bay, which are all areas

of oyster culture. In these initial experiments, large quantities of green crab were trapped (using crushed mussel as bait) in modified lobster/crawfish traps. The results were quite dramatic and because these crabs predate heavily upon oysters, farmers concerned were convinced that they must adopt annual green crab control measures in order to maximise the output from their farmed oysters.

(b) *Starfish predation* The starfish *Luridia* may feed actively upon other species of starfish, but it also seems possible that at times it develops a preference for feeding upon juvenile scallops. This research is being continued.

(iv) *Technical advice on oysters and clams* Trial oyster layings at Fountainstown, Cork Harbour and Oysterhaven (Co. Cork) were examined, analysed and advice given with the objective of maximising output. Advice was also given to the large co-operative extensive oyster farming enterprises in Tralee and Clew Bays.

A total of 15,000 hatchery reared Manila clams were planted in Youghal Harbour. Their growth and development is being monitored.

(v) *Mussels* Raft cultivation of mussels was introduced to Irish coastal waters by the Department's scientific staff, in the mid 1960s. Much progress with this type of farming has followed, including the introduction and use of rope culture. Refinements of mussel farming techniques continue. In 1985, the main emphasis was directed to the better use of naturally settled mussels, by transferring them from their coastal niches to stocking nets suspended in the upper layers of suitable growing areas. Their consequent growth pattern was monitored. Naturally settled mussels were removed from:—

- exposed rocks where the mussels had a mean length of 15 mm, and probably were quite old;
- semi-exposed intertidal flats, where their mean length was 32 mm; and
- sheltered sub-tidal areas where their mean length was 60 mm.

These three categories when transferred to suspended stocking nets demonstrated that:—

- rock settled mussel grew at the fastest rate;
- intertidal mussels grew much faster than those taken from sub-tidal areas.

The experiments are being continued at Bantry, Clew and Mulroy Bays.

It is interesting to note that rock mussels, which are so widely distributed around the entire coast, are capable of reaching market size just seven months after transfer to suspended stocking nets. Remaining attached to their original rock settlement these mussels might never reach market size and certainly would never attain marketable quality.

(vi) *Interaction between Mariculture and the Marine Environment*

The objectives of this research are:

- to investigate detrital effects of fin-fish culture on the marine environment in semi-enclosed coastal waters, and
- to investigate the possible correlation of environmental variables with bivalve molluscan abundance and in particular with scallop settlement.

Data were collected from Mulroy and Bellacragher Bays and Lough Swilly; and this included regular sampling for marine phytoplankton blooms. To date the results indicate that even where bottom currents are as low as 1.5 cm/second, the effects of fallout from fin cages is very localised. So far as the success of bivalve larval settlement is concerned, 1985 was noticeably a poor year, particularly in Mulroy Bay, where for example, for the 3rd year in a row no scallop juveniles could be located. Using Pacific oysters (*C. gigas*) suspended in stocking nets 3 m below the surface in the North Weir of Mulroy Bay, it was found that after suspension for 3 months, these oysters demonstrated classical symptoms of shell abnormality associated with the anti-fouling paint known as organo-tin (TBT). Samples of scallops examined from Mulroy Bay in 1984 were found to have levels of TBT varying from 1.60 to 2.08 microgrammes per litre. The use of this anti-fouling paint is growing in popularity with boat owners. As a pesticide it is too effective because it seems that few aquatic forms of life remain unaffected by it, including commercially valuable species and the food source upon which they depend. A report on "Evidence of TBT in oysters from Baltimore, Co. Cork" (a well known yachting centre) was published in 1985.

(vii) *Effects of unusual marine algae on Mariculture Activities.*

The objectives of this study are to monitor seasonal changes in phytoplankton composition and abundance in coastal waters, in order to:—

- provide early warnings of potential problems for fish farmers;
- advise fish and shellfish farmers and relevant authorities; and
- certify shellfish export.

Collection of phytoplankton samples provided by fish and shellfish farmers commenced in March 1985, and was later supplemented with the assistance of Local Authorities and Health Board staffs. A total of 1600 samples were processed up to mid-October 1985. This was a larger number than had been planned, but the increase was made necessary by the appearance of flagellate "X" an as yet unnamed phytoplankton which can be an extremely dangerous threat to fin-fish farmers. The levels of flagellate "X" were determined for Bantry, Mulroy, Bellacragher and Ardbear Bays and Valentia. The summer of 1985 was a notably poor one and toxic phytoplankton do not appear to thrive under such conditions. On the other hand, in a warm storm free summer, the threat which they pose for shellfish and fin-fish farmers is very great. Given that an early warning system is available, such farmers can take evasive action to lessen the effect of these blooms upon their stocks.

In spite of the poor conditions for phytoplankton blooming in 1985, important discoveries were made:—

- High numbers of *G. aureolum* were located off Valentia. This has implications for further investment in fish projects in the south west.
- Potentially dangerous levels of *G. tamaransis* (the real 'red tide') were found in Cork Harbour. This bloom was tested for paralytic shellfish poisoning, but fortunately it proved to be of a non-toxic strain.
- A bloom of *O. luteus* was one of the major causes of a 75% kill of farmed salmonids in Ardbear Bay.
- Flagellate "X". This organism was found in sub-bloom levels in Bellacragher and Mulroy Bays, and in these cases early warning enabled the farmers to take evasive action.
- No outbreaks of diarrhetic shellfish poisoning occurred in 1985.

(viii) *Data Processing* The acquisition of micro-computerisation in 1985, together with appropriate software packages, means that data concerned with shellfish, fin-fish farming, sediment metrology, water current movements etc. have become much more effectively utilised and that as these data banks improve and increase, advice on many aspects of aquaculture will become more widely and quickly available.

MARINE POLLUTION

There is a growing trend in international markets towards assessing the wholesomeness of molluscan shellfish on the basis of the quality of the water in which they have been grown, rather than relying on purification to ensure that they are safe to eat. In response to this, the

Department, in 1985 initiated a programme of monitoring the bacteriological status of water and molluscs at eleven sites around the country, where mussels and oysters are grown. This programme will be continued and expanded with a view to forming the basis of a new system of health certification acceptable to important export markets in Europe.

ENVIRONMENTAL QUALITY

- (i) *Oslo/Paris Commission on marine pollution control.* The five areas monitored were: R. Boyne estuary, Dublin Bay; Waterford Harbour; Cork Harbour and R. Shannon estuary. From these areas, samples of mussels, sediments and sea water were collected for estimation of total dissolved metals, mercury, cadmium and PCBs.
- (ii) *ICES Co-operative Baseline Studies.* The objective of this work is to determine baseline concentrations of selected contaminants in fish and shellfish as part of an international North Atlantic projective. Samples of cod, plaice, herring and mussels are collected from Howth, Dunmore East, Cork, Castletownbere, Rossaveel and Killybegs. These are analysed for cadmium, copper, zinc as well as organohalogens such as PCB, HCH, HCB and DDTs. Besides keeping a watch on the status of these undesirable substances, it is necessary, for home and export markets to ensure that they are present at levels below those determined as suitable for human consumption.
- (iii) *Quality of shellfish and shellfish waters.* There are two objectives in this study, namely
 - implementation of the EEC Shellfish Directive; and
 - monitoring with a view to designation of more shellfish producing areas.

To these ends, physico-chemical data were obtained quarterly from Mulroy Bay, Killary Harbour and Clarinbridge. In March 1985, similar physico-chemical data from water and shellfish were obtained from Tralee Bay, Carrigwohill (Cork Harbour), Cromane, Clew Bay and Wexford Harbour. The contaminants concerned in this work include Mercury, Cadmium, Copper, Lead, Zinc and also various organochlorines.
- (iv) *Dumping Ground monitoring.* The objective of this study is to investigate and determine the environmental impact of licensed marine dumping operations in implementation of the Dumping-at-Sea Act of 1981. The licensed dumping areas are Dublin Bay, site off Cork Harbour and the Shannon Estuary. The content of this work includes total metal analyses of sediments, nutrient aggregation and granulometry. Reports for the period 1982 to 1986 are in the course of compilation.

(v) *Special study of polychlorinated bi-phenyls (PCBs)*. PCBs are one of the many organohalogens which are appearing in industrial wastes. In order to ensure that standard methodology has been adopted for the measurement of this group of contaminants international inter-calibration studies are being carried out with the purpose of certification of fish oils and other material for acceptable levels.

An accidental spill of PCBs into the R. Nore was monitored, and the results of the analyses arising from this are being compiled. This will enable an assessment to be made of their presence and/or persistence in the river sediments, and the role they play in its water quality.

(vi) *Methodology development*. Aquatic environmental studies generate an enormous quantity of varied and interactive data. It is difficult, tedious and slow to deal with them by manual manipulation. The acquisition of advanced micro-computerisation at the Laboratory in 1985, has vastly increased the potential for extensive and rapid evaluation of data.

(vii) *FRC/NEB Co-operation*. The Department is cooperating with the Nuclear Energy Board by providing it with samples of fish and shellfish for determination of levels of radioactive nuclides.

FOREIGN RESEARCH VESSEL CRUISES

Scientific staff of the Fisheries Research Centre worked on board the French research vessel *Thalasa* which surveyed the distribution of bottom living fish (commercial fish, crustaceans and molluscs) on the Porcupine bank and on the Norwegian purse seiner *Nybo*, with Norwegian scientists, tagging mackerel off the west coast of Ireland.

STUDENT BURSARIES

The long standing programme of employing third level students for periods of eight weeks during the summer continued during 1985. Thirteen undergraduates from Irish Universities and Regional Colleges of Technology participated in ten marine research programmes: three on algae bloom investigations; two on demersal fish research and one each on mariculture research in Mulroy Bay, Co. Donegal, mussel culture research, investigation of chemical problems associated with the aquatic environment, assessment of the impact of fin fish cage culture operation on an adjacent environment, population dynamics of herring, relationships between mesh size catch and fuel consumption in the nephrops fishery, tagging and recapture of nephrops and catch obtained in nephrops fishery on Porcupine Bank Grounds.

4. INLAND FISHERIES

CATCHES OF SALMON, SEA TROUT AND EELS

Details of the catches of salmon, sea trout and eels in the various Fisheries Regions during 1985 are given in appendices Nos. 9 to 15 of this Report. As in previous years the catches in the Foyle Fisheries Commission area are not included but are referred to in a separate section of this Report.

In 1985 the catch of salmon and grilse amounted to 474,397 fish weighing 1493 tonnes and valued at IR£7.7m compared with 262,996 fish weighing 839 tonnes and valued at IR£4.6m for 1984. The overall average weight at 3.15 kg was slightly higher than in 1984. The commercial catch of 1441 tonnes was considerably higher than the 1984 figure of 803 tonnes. The rod catch amounted to 15,280 fish weighing 52 tonnes and valued at IR£270,210 compared with 1984 when 9,813 fish weighing 36.25 tonnes and valued at IR£199,783 were caught.

The distribution (by weight) of the salmon and grilse catch in 1985 was as follows:

Drift nets	85%
Draft nets	9%
Stake nets, snap nets, weirs and other commercial methods	3%
Rod and line	3%

The main grilse run occurred from mid-June to mid-July. In the Donegal drift net area the greatest portion of the catch was taken before the end of June. However, in North Mayo the larger proportion was taken in the month of June. As in previous years the bulk of the fish (34.2%) were taken in the drift nets off Donegal. The next highest drift net catch came from the South Western region (25.4%) and thereafter from the Southern region (21.3%).

The total number of licences of all kinds issued for angling for salmon and sea trout was 16,062 compared with 15,227 in 1984.

The salmon catch figures for nets and rods for the years 1983, 1984 and 1985 are given in Appendix No. 10. The weight and value of salmon and sea trout caught by all methods during the past three years are given in Appendix No. 9. 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.

THE CENTRAL AND REGIONAL FISHERIES BOARDS

The Central Fisheries Board and the seven Regional Fisheries Boards which were established in 1980 are responsible for the protection and development of inland fisheries and for the development of angling.

The annual report of the Central Board gives details of the activities of the Central and Regional Fisheries Boards during the year.

Negotiations between management and staff regarding the introduction of a Staff Scheme for the field grades of the Central and Regional Fisheries Boards, as provided for under Section 32 of the Fisheries Act, 1980, were completed and the Scheme came into operation with retrospective effect from 25th April, 1984. This scheme provides for common grades, remunerations and conditions of service for the field staff of all the Fisheries Boards. It also provides for the redeployment of field staff working on the development of brown trout and coarse fish to the relevant Regional Boards and this redeployment was carried out in respect of the Eastern, South-Western, Western, North-Western and the Northern Boards.

INTERNATIONAL SALMON CONVENTION

The second annual meeting on the North Atlantic Salmon Conservation Organisation (NASCO) was held in June 1985 at the organisation's headquarters in Edinburgh. NASCO consists of a Council and three regional Commissions as follows:—

Council — Canada, EEC, Faroes Islands, Iceland, Finland,
Norway, Sweden, U.S.A.

North American Commission — U.S.A., Canada.

West Greenland Commission — U.S.A., Canada, EEC.

North East Atlantic Commission — EEC, Faroes Islands, Iceland,
Norway, Sweden.

Prior to 1984 quotas for salmon catches were fixed within the EEC for Greenland and the Faroes Islands. Since 1984 NASCO has been fixing such quotas. In 1985 the quota fixed for the Faroes Islands was 550 tonnes. No quota was fixed for the Greenland catch as they did not fill the quotas in the two previous years. However, in 1985 the Greenland catch was 852 tonnes which compared favourably with the 870 tonnes taken in 1984.

FISHERIES PROTECTION AND CONSERVATION

Protection

The level of illegal fishing and the continuing incidence of violence offered by some fishermen to fisheries protection staff continues to give cause for concern. The many statutory conservation measures viz. licensing, close seasons, weekend close time, type, length and depth of fishing nets and methods of fishing etc. are intended to ensure adequate stocks for the future. The fishery laws are enforced by the Fisheries Boards.

In addition to the work of the Boards, the Department of Defence supplied two minesweepers in 1985 during the salmon fishing season to enforce the salmon fishery laws at sea. Aerial patrols were also provided by the Department of Defence.

85% of all fish caught were taken by drift nets and there is a need to ensure a more equitable distribution of the catch amongst all fishing interests.

Conservation

During 1985 the Department continued to monitor the situation in connection with fishery conservation measures and appropriate legislation was enacted as considered necessary.

A list of all statutory instruments made in 1985 is given in Appendix No. 19.

MANAGEMENT OF STATE FISHERIES

In 1985, 133 State run fisheries — in the main vested in the Land Commission — were managed by Fisheries Division. Rents received during the year amounted to £9,953.

Thirty-nine fisheries which fell due for re-letting in 1986 were advertised in November, 1985.

EMPLOYMENT IN THE INDUSTRY

Exclusive of persons employed on the marketing and transport of fish, a total of 6,220 found either wholetime or part-time employment in inland fisheries during the year. This figure includes 4,400 estimated as being engaged in netting for salmon, 220 engaged in eel fishing, 400 employed by the Central and Regional Fisheries Boards on protection and development of fisheries, 750 engaged in netting and protection work in the Foyle area, 450 in the provision of ancillary services for inland fisheries and the remainder employed by proprietors of commercial and sport fisheries.

INSTRUMENTS OF CAPTURE

The number of the various types of licences issued in each fishery district and the rates of licence duty are given in Appendices Nos. 17 and 18.

WATER POLLUTION CONTROL

The Department continued to exercise an advisory role in regard to the issue by local authorities of licences under the Local Government (Water Pollution) Act, 1977. During the year 181 applications for licences were processed by the Department's Licence Vetting Committee.

The Department consulted the Central and Regional Fisheries Boards and the Departments of the Environment and Agriculture about the fisheries interests as regards water pollution matters.

The Department is represented on the Water Pollution Advisory Council.

Fish kills reported by the Regional Fisheries Boards in 1985 were evaluated as were similar incidents in 1983 and 1984. Trout was the species most widely involved and the suspected agency of kill was oxygen depletion resulting from agricultural activities. The small number of kills (37), compared with other years, was attributed to weather conditions and particularly to high rainfall in 1985. Contrary to expectation, the average numbers of fish killed per incident were higher and the channel lengths affected were twice as long as in 1983 and 1984. Whether these findings represent a new pattern of water pollution is not known as the small sample size and the variations in rainfall during the peak pollution months make it difficult to reach reliable conclusions.

An investigation into PCB (Polychlorinated Biphenyls) levels was carried out on the sediment and fish of the River Breaghagh (a tributary of the River Nore adjacent to Kilkenny) and on the main River Nore as far south as Thomastown. The problem arose when a transformer containing PCB leaked into the river in 1980.

PCB was still present both in fish tissues and sediment in the River Breaghagh and also in the sediment and fish in the River Nore downstream of its confluence with the River Breaghagh. The results were not surprising in view of the long life of organochlorine compounds.

WATER QUALITY MANAGEMENT PLANS

The Department continued to collaborate with Regional Development Organisations and An Foras Forbartha in the preparation of draft water quality management plans.

ARTERIAL DRAINAGE

Drainage schemes were in progress in the catchments of the Maigue, Corrib/Mask, Bonet, Boyle/Lung and Monaghan Blackwater during 1985. The Boyne Drainage Scheme was completed in 1985.

In accordance with the Arterial Drainage Act 1945 close liaison was maintained between the Department and the Office of Public Works in relation to fisheries rehabilitation works so that the adverse effects of drainage on fisheries would be minimised and to ensure that the drainage works are carried out in such a way as to cause the least possible damage to fish life.

Rehabilitation works were carried out by the Central and Regional Fisheries Boards and financed by the Office of Public Works. The Fisheries Boards work closely with the Department in the drawing up and implementation of post drainage rehabilitation works on all rivers. The Boards also maintain close contact at local level with Office of Public Work officials on the timing and extent of post drainage maintenance works.

A management plan for amelioration of the effects of drainage on the Boyne catchment is being carried out. This plan proposes landscaping, revegetation, creation of berms, upstream structures and restocking. It is proposed to carry out the amelioration works over the next few years. The Stoneyford got priority in 1985.

The River Bonet, which is being dredged also is receiving attention. The effect of silt on salmon spawning redds situated downstream of the dredged section was investigated. Mortality of salmon ova varied from 18.12% to 17.58% in redds subjected to siltation whereas in redds unaffected by drainage the mortality was 8.14%.

During the months of June and July a survey was undertaken of the spawning stretches of the feeder streams to Loughs Sheelin and Ennell and the Little Brosna river at Roscrea. The purpose of the survey was (a) to investigate the composition of the sediment in a spawning stretch and (b) to determine the depth to which brown trout excavate their redds. The composition of the sediments of the four different stretches was determined. Coarse and very coarse gravel (16-22 mm) were the dominant grades in all strata but there was a decline from 55% in the upstream stratum to 36% in the bottom stratum. Medium (8-15 mm) and fine (4-7 mm) sediments were distributed almost evenly through the strata. Fine sand and clay were absent from the upper strata but steadily increased through the three lower strata. During sampling it was noted that the lower strata was highly compacted. It was deduced from this observation and from analysis of the lower strata that the ova of brown trout are seldom deposited more than 18 cm below the river bed. The sites were again investigated in November and December when the trout had spawned. It was found that the majority of eggs

were deposited in the fine and medium gravel in the centre of the core and very few eggs were found in the upper or lower strata.

The purpose of these investigations was to provide practical advice to the Office of Public Works on the most suitable media for the rehabilitation of spawning grounds following on drainage.

WATER ABSTRACTION SCHEMES

Water abstraction schemes especially those for public water supply purposes are kept under careful scrutiny by the Department. The impact of such schemes on lake levels, river flows, fish migration, stock levels and angling conditions is assessed, and measures to mitigate adverse effects are devised and recommended to the relevant Local Authority.

In 1985 the Department was consulted about water abstraction schemes on the following rivers and lakes — River Fane, Glyde and Dee, Slaney, Linquan, Owgarriff, Newport, Feale, Liffey, Eske, Gweedore and Loughs Muckno, Inchiquin, Derg, Cutra, Derrynasallagh, Doolough, Sillogue Well, Owenboliska, Rea, Carrowmore and Gill.

An investigation was carried out on the impact on fish stocks of the proposed abstraction of water from small tributary streams in the head waters of the River Slaney in the Glen of Imaal. The results of the biological survey indicated that the nursery area for salmon upstream of Seskin Bridge was very sparse. The population of juvenile salmon ranged from 0.005m^{-2} to 0.02m^{-2} . Trout stocks were good but very small in size. The streams at the intake point were only drains and should be assessed only in terms of reduction in nursery area in the downstream reaches of the river. In the region of Seskin Bridge habitat loss was calculated at 2.9% and further downstream of its confluence with the River Slaney the loss was estimated at less than 1.3%. However there could be short term impacts in extreme drought conditions for 6km of this river including important spawning and nursery areas.

The proposal to abstract water from the River Smearlagh, a tributary of the River Feale, and the main channel of the River Feale upstream of Abbeyfeale was examined. An assessment of the juvenile salmon and trout stocks of the Smearlagh was carried out in 1975 and 1976. A survey of the benthic community was also undertaken to determine species abundance and diversity. The results of the survey which incorporated all habitat types in the sub-catchment showed that it was an excellent spawning and juvenile salmonid nursery area as well as having excellent holding water for angling. The proposal to construct a high dam 3km from the confluence of the Smearlagh and the Feale will have serious implications for the Smearlagh fishery.

Since there was only limited information available on the main Feale where a similar impoundment is to be constructed the Kerry County Council were advised to have an environmental impact assessment carried out in accordance with EEC directive ENV 92.

In order to assess the effects of the lowering of the dam at Leixlip Reservoir for maintenance the fish stocks of the reservoir consisting of roach, bream, and roach bream hybrids were investigated. The work in 1985 was confined to a study of their growth and feeding behaviour. The growth of roach and roach bream hybrids was slow when compared with observations made elsewhere. The cyprinids in Leixlip would appear to be largely dependent on small plants and on animals, on sticks, stones and plant stems. This may account for their slow growth rate because of the large proportion of material of no nutritional value. Studies on roach demonstrate that populations which feed on animal matter are faster growers than those dependent on plant material.

IMPORTS AND EXPORTS OF LIVE AND DEAD FRESHWATER FISH

The Department continued to issue import licences for live and dead freshwater fish in accordance with the Fisheries Acts. Stringent conditions are attached to each licence. Export licences for salmon and trout are also issued by this Department. All licensing requirements are designed to ensure the disease free status and quality of imports and exports.

Licences were issued for the importation of about 350,000 goldfish for the pet trade and samples of these fish were screened for disease.

Licences were issued to fish farmers for the importation of 1,883,000 eyed salmon ova from Scotland and Norway.

ARTIFICIAL PROPAGATION

Appendix 21 gives particulars of eyed ova produced at the various hatcheries during the 1984/5 season and also particulars of restocking carried out from these hatcheries in 1985.

The total numbers of eyed ova produced at the various hatcheries in respect of salmon, sea trout and brown trout during 1984/85 season were as follows:—

Salmon	2,943,000
Brown Trout	2,925,000
Sea Trout	113,000

EEL FISHING DEVELOPMENT

As indicated in the following paragraphs dealing with research and development, work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to persons interested. Forty-eight eel fishery authorisations were issued during the year. The overall number of fishing engines under such authorisation remained at sixty-nine.

5. INLAND FISHERIES RESEARCH AND DEVELOPMENT

SALMON STOCKS

The salmon catch in 1985 (1493 tonnes) represented an almost twofold increase compared to 1984 (839 tonnes). The catch was in excess of the 5-year (1980-84) average of 962 tonnes and the ten year (1975-1984) average of 1205 tonnes. The increase in catch was attributed to a better than average survival of smolts in the sea and this was borne out in the return of tagged smolts to the coastal and inshore fishery.

Stock Composition

1+ sea winter fish were the dominant age group. Analysis of scale samples from the Donegal drift net fisheries indicated that 94.4% and 98.6% in the months of June and July were 1+ sea winter fish. The results of scale reading from North Mayo gave similar results. In the total catch for the season including riverine catches it can be concluded that approximately 10% of the stock is composed of multi sea winter fish. There is evidence of an increase of previous spawners in recent years. In the months of April and May in the River Corrib 3.6% and 1.4% were previously spawned fish and in the River Crana 2.6% of the sample were found to be previous spawners. There was a big fall off on previous spawners in most rivers during the period when UDN was severe. This condition was reflected in a high mortality of fish after spawning and this in turn affected the proportion of previous spawners in the catch.

The average weight of rod caught fish was 3.41 kg; drift nets 3.13 kg and the draft nets 3.11 kg. Indications are that the drift nets are taking the larger component of the summer fish. This was borne out by the difference in weight which was in evidence in salmon sampled from a draft net in the Cork Blackwater and in the south coast drift net fishery in the months of June and July. The average weight of salmon in the draft net fishery in June and July was 2.47 and 2.67 kg

respectively whereas in the drift net fishery the average weight was 2.96 kg for June and 2.75 kg for July.

The following is the average weight (kg) of fish taken in the major drift net fisheries in the months of June and July.

Area	June	July
Donegal	3.20	3.36
North Mayo	2.95	3.33
Dingle	2.75	3.16
South Coast	2.96	3.75

Distribution of Catch

The data available from salmon catch statistics is not suitable for calculating catch per unit effort (CPUE) which is the accepted method of estimating stock abundance. For the commercial salmon fishery a catch per licence issued is used to give some indication of abundance from year to year. The Table under gives the 5-year averages from 1974 to 1983 and the annual average for 1984 and 1985. It is noted that there is an increase all over in the present year except for snap nets and this is reflected in the high level of catch reported elsewhere.

Salmon catch per licence (No. of fish)

Year	Drift nets	Draft nets	Fixed engines	Snap nets
1974-78	349	150	333	77
1979-83	286	75	265	26
1984	243	80	236	42
1985	488	80	274	33

Escapement of Salmon

The stock of salmon in a river is based on catch and escapement. In view of the fact that the majority of the salmon were taken at sea in the drift net fishery it is not possible to estimate stock abundance based on a river by river basis. We have therefore to rely on counter data from rivers where the total escapement of salmon on their inward migration is recorded.

In the River Shannon there are two counts available covering the two arms of the river at Parteen and Ardnacrusha. The Mulcaire River is excluded as its mouth is situated downstream of the Parteen Counter. The 5-year average 1979-83 together with the count for 1984 and 1985 are given hereunder.

Year	Ardnacrusha	Parteen	Burrishoole	Erne	Clady
1979-83	1800	1390	628	553	222
1984	1443	854	281	601	395
1985	2303	793	529	701	278

From the data presented it can be seen that there was an increase in escapement on the Shannon, the Burrishoole and the River Erne, but there was a decline in the escapement into the River Clady in 1985 when compared to 1984 but it was above the 5-year average 1979-83.

Counters are also in place on the Boyne, Blackwater and Liffey and the counts are shown below:—

River	Location	Total Count	Maximum Count and Date	
			Count	Date
*Blackwater	Clondulane	14,562	666	16.11.85
**Boyne	Navan	226	14	29.6.85
Liffey	Islandbridge	2,202	91	6.7.85

*Tunnel out of order up to 27/3/85

**Blocker out of order, also trapping from 17/9/85

Contributions of hatchery reared fish to the drift net catch

The adult catch was examined for fin clipped fish. The adipose fin is removed from the vast majority of the reared fish. Its absence is indicated in the Table below as the numbers and percentage of fin clipped fish found in the catch sampled from the various drift net areas demonstrate.

Area	No. examined	With fin clips	% with fin clips
Donegal	73,767	961	1.30
Mayo	32,670	949	2.90
Galway/Limerick	13,286	1,531	11.52
Kerry	20,985	786	3.75
West Cork	6,267	185	2.95
South coast	23,422	389	1.66

Tagging Experiments

The coded wire tagging programme which is in progress since 1979 was continued in 1985. The purpose of the tagging programme is to obtain information on the optimum survival rate that can be obtained by releasing smolts at a variety of places and times. It also gives information on the performance of stocks from different rearing

stations in terms of survival at sea, exploitation by drift nets and eventual return to natal rivers.

Indications are that there was a successful survival of reared grilse in the sea in the 1985 season. The highest return (5.5%) was obtained from the Burrishoole fishery. In the Corrib system the maximum survival of reared smolts was 2.8% (cf 1.3% in 1984). A still better return of wild smolts estimated at 4.2% (cf 2.23% in 1984) was obtained from the Corrib.

The coded wire tagging programme provides worthwhile information on the exploitation of salmon of Irish origin in the high seas fisheries in the Faroes and off the coast of Greenland. In the Faroes there was a return of 18 coded wire tags. Using mathematical raising factors these recaptures were calculated to represent 312 fish out of a total catch of 150,000 salmon. The majority of the tagged fish were located in the discards (fish <60cm) which amounted to 14% of the landings in the 1984/85 season. There were 31 tagged fish of Irish origin in the Greenland catch. Using similar calculations this was taken to represent 563 fish out of a total catch of 311,000 salmon.

Juvenile Salmon Surveys

During September 1985 the Crana River was electrofished to assess the numbers of juvenile salmonids before fish stocked in 1985 will return in 1986. Suitable sites for further stocking were also investigated. Water conditions were very high during the investigation period and the highest 0+ salmon densities recorded were 0.5 per m^{-2} in the main channel.

The tributaries of the Screebe fishery were electrofished in October to produce a population model for the wild fish in that fishery. The entire salmon nursery area in this river is confined to one tributary upstream of L. Shindilla. This river gave 0+ salmon densities of 1.1 per m^{-2} though 1+ salmon were present but in very low densities.

SEA TROUT

Various aspects of the biology and exploitation of sea trout were investigated in 1985 with the object of providing a clearer understanding of their production and a more comprehensive account of their yield. The results of these investigations are summarised in the Sea Trout Year series of leaflets, produced annually. The methods used in these are a reasonable basis for predicting the nature of the catch in future years. The wet year of 1985 yielded good catches to the rod and to commercial engines. Only small numbers of sea trout were captured by drift net fisheries. The wet angling season is thought to have provided productive fishing conditions contributing largely to a 22% increase over the previous year's landings of sea trout in selected fisheries. However, the overall returns reflected a marginal increase on the 1984 catch.

Specimen sea trout were registered in greater numbers than expected. The majority had a total (i.e. freshwater and marine) age of eight years and fish of this cohort had been recorded in very strong numbers as 1+ trout in 1980. Thus specimen sea trout in 1985 are thought to represent a strong year class rather than any other kind of disturbance of the established cyclical pattern of occurrence of these trout.

Following a decline in stocks in the late 1970s climatic criteria used as indicators of conditions favourable to trout production appear to have altered direction and a recovery would seem to be underway. Accompanying the lengthening of growing season, an increase in the numbers of sea run trout appears to be taking place although stocks are still very low. Sufficient data has been collected from the Currane fishery in Co. Kerry to enable a comparison with the Burrishoole in Co. Mayo and similarities between stock structures in both is demonstrated.

EEL RESEARCH AND DEVELOPMENT

The unusually cold and wet weather experienced from June to September was associated with poor catches both of yellow and of silver eels. In the case of yellow eels, it appears that the low temperatures caused a reduction in the intensity of feeding activity with a resultant fall in catch per unit of effort. The low catch of silver eels may have resulted from fewer eels than usual undergoing metamorphosis or may possibly be associated with an early migration induced by the high rainfall in August. In Meelick Bay, Lough Derg, where experimental monitoring has been established for five years, relatively large numbers of silver eels were caught in August, a month before commercial fishing normally begins.

Catches of elvers for overland transport were also low. As in 1983 and 1984 similar poor recruitment was observed at nearly all the elver fisheries in Europe. This continues to cause concern and is being monitored by the European Inland Fisheries Commission Working Party on Eels. However, the possibility of poor recruitment being a recurring phenomenon rather than one which can be ascribed to short term causes remains. Periods of as long as five years in which elver supply was low have been recorded in the past.

A review of data collected at the Electricity Supply Board's trap for young eels at Parteen Weir on the River Shannon over the past 12 years was completed. The results showed great variation between years in time of arrival, intensity of migration and in the sizes of eels migrating. The majority of migrants have spent one winter in freshwater, but eels of as much as 10 years of age and 50cm in lengths were observed. Migration normally begins at the end of May, earlier in exceptionally warm and later in cold seasons. Older eels migrate throughout the season while the movements of younger individuals

take place mainly in July. The data obtained will be used in determining the cost benefit of overland transport of the young eels.

Exploratory fishing in three small Connemara lakes yielded poor catches but gave evidence of the existence of stocks adequate for profitable exploitation on a limited scale.

Elver traps were installed at the sluice barrage on the River Corrib at Galway to capture elvers for release in productive areas of the Corrib system.

Fyke net sampling took place in Lough Neagh, by arrangement with the Northern Ireland Ministry of Agriculture and with the assistance of personnel of the Lough Neagh Fishermen's Co-operative. The preliminary results indicated that the stocks in Lough Neagh were being efficiently managed.

The size of the catch suggested that the waters of the Shannon and Corrib Systems, among others, carried larger stocks of eel than had previously been supposed and that exploitation on a greater scale than currently practised could be desirable. At least one further season's work will be required to confirm this theory.

RAINBOW TROUT AND SALMONID CULTURE

Production of rainbow trout in freshwater was approximately 600 tonnes which is similar to that of 1984. While many enquiries were received from potential rainbow trout farmers, no new farms were established. Proposed fish farm sites were investigated and advice provided. By the end of the year a number of farms were examining the potential for salmon smolt production to meet the increasing demand for smolts from the marine farm sector.

The main research efforts were directed towards an examination of the effects of fall-out from cages in enclosed sea lochs. The effects are extremely localised in poorly flushed sites.

Monitoring for marine algal blooms continued. One fish kill occurred due to bloom of *O. luteus* which is the first time a bloom of this species has been identified in this country.

FISH DISEASES

Ulcerative Dermal Necrosis

The worst affected area was in County Donegal where large numbers of dead salmon were seen in the rivers Drowes, Lennon and Lackagh. Small numbers of diseased salmon were reported in the Ballina and Sligo districts. Throughout the year diseased fish were reported in the River Liffey. Late in the year the disease appeared in the Cork and Kerry districts.

GRANT-AIDED RESEARCH PROJECTS

Studentships

There were six post-graduate studies being carried out under the Department's studentship scheme namely:—

1. The ecology of marine shore crytofauna (U.C.C.).
2. The ecology and activity pattern of roach (*rutilus*) in the Corrib catchment (U.C.G.).
3. The use of mitochondrial DNA as a marker for fish species (U.C.G.).
4. A study of the chemistry of sediments and associated biota in selected areas of inshore coastal water (T.C.D.).
5. Studies of roach population of Lough Neagh (N.U.U.).
6. Predation and invertebrate community structure in running water (U.C.C.).

Bursaries

Thirteen undergraduate students were employed on seven freshwater projects for a period of 8 weeks during the summer vacation to assist the Department's staff on the collection and processing of material. The students were recruited by interview from 3rd level colleges.

The projects undertaken by these students were as follows:—

1. Eel research.
2. Effects of ultraviolet radiation on farmed fish.
3. Sampling of adult salmon.
4. Juvenile salmon in the Corrib.
5. Cyprinid census on Leixlip Reservoir.
6. Sea trout census in Currane Fishery, Waterville, Co. Kerry.
7. Assessing impact of fin fish cage culture operations on an adjacent environment.

INVESTIGATION OF INLAND FISH MOVEMENTS

Adverse flow conditions forced a curtailment of the annual smolt trapping and counting operations on the Corrib at Galway. A limited operation was carried out from 24 April to 10 May during which period 7,939 smolts were trapped and released.

The numbers peaked at 1,450 on 8 May. During the operation 11 kelts, 2 eels and 7 perch were trapped and released.

Fish Passes

In response to requests from the various Regional Boards, fish pass designs were prepared for a number of locations. Designs were also prepared in connection with head-weirs for water abstraction schemes, and one pass was built on such a scheme at Tinahely. A fish pass was constructed in the race way at the Erriff fishery as an adjunct to the fish trapping and counting system. Maintenance works were organised on a number of passes.

Small Hydro-Electric Schemes

There is still a considerable level of interest in the development of small hydro-electric schemes and some 30 proposals were examined during the year in the light of protection of the fishery interest.

GENERAL

The Department continued to advise the Central and Regional Fisheries Boards, the Salmon Research Trust of Ireland Inc. and the Foyle Fisheries Commission as required on technical matters. Officers of the Department supervised maintenance and improvement works as necessary.

FOYLE FISHERIES COMMISSION

The Foyle Fisheries Commission is a statutory North-South body established to conserve, protect and improve the fisheries of the Foyle area. Its main activities are:—

- implementing it's own Regulations, e.g. on fishing engines, licences, net sizes, close seasons, etc. (particulars of Regulations made in 1985 are given in Appendix No. 20);
- operating the Commission's commercial fishery.
- monitoring water quality and pollution.

The Commission is made up of four Commissioners, two (one senior and one junior) appointed by the Minister for The Marine and two (one senior and one junior) appointed by the Department of Agriculture for Northern Ireland. The post of Chairman alternates between the two senior Commissioners and was held in 1985 by the senior Commissioner from Northern Ireland. The Commission's office is in Derry; it also has an office in Ballybofey.

The following are details of redd counts and catches of salmon and sea trout in the Foyle area in 1984 and 1985:—

	1985	1984
Spawning count of redds	4,717	2,677
Catch of salmon and grilse by commercial engines		
No. of fish	40,521	29,532
Weight (kg)	135,889	84,731
Rod catch of salmon and grilse (nos.)	1,814	379
Rod catch of sea trout	4,838	3,588

THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The annual report of the Trust for 1985 gives a detailed account of its work during the year.

The work of the Trust is directed by a Committee of Management consisting of seven members — two nominated by the Minister for the Marine, three by Arthur Guinness & Son PLC and two elective members.

Originally the activities of the Trust were financed jointly by the Department and Messrs Guinness. In 1984 Guinness intimated their intention to cease their involvement on 31st December 1989. Their financial commitments for the period 1985-1989 are being met by the transfer to the Trust of a number of capital assets including the smolt rearing operations of Curraun Fisheries Ltd., a subsidiary of Guinness. The transfer of the smolt unit took effect on 1st July 1984. The transfer of the other assets viz. three bungalows, took effect on 1st January 1985.

At the end of 1989 a decision will be made by the Department in consultation with the Department of Finance on the future of the Trust.

6. ATTENDANCE AT INTERNATIONAL AND OTHER CONFERENCES

During the year, the Department was represented at the following conferences, committees and working groups etc:—

Abroad

European Economic Community Commission and Council Meetings — Brussels and Luxembourg.

Organisation for Economic Co-operation and Development Fisheries Committee — Paris, France.

International Council for the Exploration of the Sea (ICES) — Copenhagen, Denmark.

ICES Working Group on Atlantic Salmon — Copenhagen, Denmark.

Special Study Group on the Norwegian Sea and Faroes Salmon Fishery — Copenhagen.

EIFAC Working Party on Eels — Perpignon, France.

The Fourth British Freshwater Fisheries Conference — Liverpool.

Second annual meeting of North Atlantic Salmon Conservation Organisation (NASCO) — Edinburgh, Scotland.

EIFAC Symposium on Habitat Modification and Freshwater Fisheries — Aarhus, Denmark.

ICES Working group on introduction and transfers of marine organisms — Gothenburg, Sweden.

Home

Foyle Fisheries Commission.

Meeting of Freshwater Research Workers, Mullingar.

National Committee for Biology.

Water Resources Advisory Committee of An Foras Forbartha.

I.A.A. Disease Diagnostic Board.

Pollution Control Committee, Donegal County Council.

Working Party on Manual on Farm Development and its Environmental Impact.

Joint Working Group on Applied Agricultural Meteorology.

Irish Specimen Fish Committee.

River Erne Joint Protection Committee.

Water Pollution Advisory Council.

7. EXPENDITURE

Expenditure on Fisheries for the years ended 31 December 1984
and 31 December 1985.

	1 Jan-31 Dec 1985	1 Jan-31 Dec 1984
	(IR£)	(IR£)
1. SEA FISHERIES		
A. By Department of the Marine (Fisheries Division):		
(i) Development	307,000	296,000
(ii) Fishery Harbours and other marine works	1,360,000	1,080,000
B. By An Bord Iascaigh Mhara		
(i) Administration and Current Development (grant-in-aid)	4,846,000	5,371,000
(ii) Capital Development (grant-in-aid)	2,032,000	2,174,000
(iii) Repayable Advances	3,172,000	2,792,000
(iv) Repayment of Advances written off	1,000,000	680,000
C. Roinn na Gaeltachta Grants for Marine Works	273,000	318,000
2. INLAND FISHERIES		
A. By Department of the Marine (Fisheries Division)	5,481,000	4,772,000
B. By the Salmon Research Trust of Ireland Incorporated (grant-in-aid)	70,000	57,000
3. DEPARTMENT OF THE MARINE		
General administrative expenses for Fisheries Division	2,706,000	2,459,000
TOTALS	21,247,000	19,999,000

8. APPENDICES

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APPENDIX NO. 1

Quantity and Value of Sea Fish (excluding salmon) returned as landed by Irish registered vessels in Irish registered vessels in Irish Ports during 1984 and 1985.

Species	Quantity (tonnes)		Value (IR £'000)	
	1985	1984	1985	1984
DEMERSAL				
Flat Fish				
Brill	121	110	248	196
Dabs	483	442	122	101
Lemon Sole	326	335	287	219
Megrim	1,377	1,310	876	647
Plaice	3,043	2,420	2,190	1,756
Sole	348	313	1,197	1,035
Turbot	178	208	598	608
Other Flat Fish	181	106	109	50
Round Fish				
Cod	6,522	5,464	5,162	3,585
Haddock	3,472	3,766	2,276	1,806
Hake	1,050	1,066	1,284	1,010
Ling	489	468	223	187
Saithe	2,220	2,351	1,013	1,004
Whiting	9,111	8,813	2,543	2,503
Blue Whiting	543	—	16	—
Other Demersal				
Dogfish	7,987	6,235	2,090	1,297
Monkfish	1,648	1,854	1,851	1,741
Ray/Skate	2,553	2,112	1,442	1,033
Other Demersal	148	223	158	206
TOTAL DEMERSAL	41,800	37,596	23,685	18,984
PELAGIC				
Herring	31,716	31,622	4,315	4,498
Horse Mackerel	26,571	13,920	1,250	1,377
Mackerel	60,699	53,211	7,848	6,139
Sprat	3,964	4,655	374	437
TOTAL PELAGIC	122,950	103,408	13,787	12,451
TOTAL WETFISH	164,750	141,004	37,472	31,435
CRUSTACEANS				
Crabs	4,108	3,704	1,376	1,145
Crawfish	73	85	796	743
Dublin Bay Prawns	4,703	3,987	5,000	4,353
Lobsters	300	398	2,811	3,025
Palaemonid Shrimp	104	75	438	265
TOTAL CRUSTACEANS	9,288	8,249	10,421	9,531
MOLLUSCS				
Escallops	388	321	451	446
Queen Escallops	73	27	28	15
Mussels	10,358	12,640	1,240	1,351
Oysters	317	371	615	732
Periwinkles	2,150	1,902	903	716
Palourdes	15	7	58	22
Squid	247	263	455	437
Other Molluscs	86	17	22	21
TOTAL MOLLUSCS	13,634	15,548	3,772	3,740
SEA URCHINS	77	113	99	136
TOTAL ALL FISH	187,749	164,914	51,764	44,842

In addition to the above landings into the Republic, 34,397 tonnes of fish and 71 tonnes of shellfish valued at IR£8,008,386 and IR£111,218 respectively were landed directly into foreign ports or transhipped at sea for export by Irish registered vessels during 1985.

APPENDIX NO. 2

Comparison of the Average Price per tonne of various kinds of Sea Fish 1977-1985.

SPECIES	1977	1978	1979	1980	1981	1982	1983	1984	1985
	£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£
Sole	1,732	2,093	2,184	2,192	2,565	2,759	2,932	3,304	3,437
Brill	680	740	826	866	1,145	1,423	1,661	1,790	2,054
Turbot	1,145	1,231	1,444	1,389	1,781	2,314	2,643	2,929	3,362
Plaice	457	519	557	514	575	690	740	726	720
Dabs	176	195	215	193	166	173	221	230	253
Megrims	230	206	260	229	322	269	390	494	637
Ray/Skate	262	306	375	372	428	466	504	489	565
Cod	375	406	448	375	411	482	578	656	791
Haddock	327	365	373	291	258	296	383	480	656
Hake	456	428	571	499	674	764	936	947	1,223
Whiting	205	217	228	167	177	182	251	284	279
Saithe	255	301	312	297	293	335	347	427	456
Herring	261	295	287	255	170	176	163	142	136
Mackerel	77	63	74	83	105	113	130	115	129
Sprats	33	38	67	75	63	74	89	94	94

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

TOP PORTS

Value and Quantity of landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded IR£200,000 in 1985.

The values shown are in IR£'000 and the quantities in Tonnes.

PORT	TOTAL		DEMERSAL		PELAGIC		SHELLFISH	
	IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes	IR£'000	Tonnes
1. Killibegs	11,953	94,193	2,433	4,693	9,459	89,464	61	36
2. Howth	4,053	7,285	3,748	6,827	64	275	241	183
3. Castletownbere	3,787	7,558	2,771	3,619	471	3,483	545	456
4. Rossvale	3,362	9,350	983	1,572	884	6,120	1,495	1,658
5. Dunmore East	2,983	8,268	1,779	2,733	624	4,978	580	557
6. Greencastle	2,749	4,985	2,702	4,954	*	1	47	30
7. Clogherhead	1,673	2,443	559	1,185	16	116	1,098	1,142
8. Burroport	1,622	4,344	1,360	3,074	133	1,059	129	211
9. Kilmore Quay	1,468	2,171	1,003	1,656	6	49	459	466
10. Valentia	1,276	1,499	842	1,070	39	207	395	222
11. Skerries	1,210	1,710	460	938	4	31	746	741
12. Dingle	1,063	2,261	710	1,764	45	295	308	202
13. Rathmullen	839	6,872	—	—	824	6,852	15	20
14. Cobh	627	4,113	132	152	470	3,952	25	9
15. Union Hall	578	886	210	367	42	333	326	186
16. Helwick	550	892	415	708	16	105	119	79
17. Bantry	549	952	5	25	*	\$	544	927
18. Kinsale	544	2,960	161	255	275	2,628	108	77
19. Cromane	528	5,880	4	3	—	—	524	5,877
20. Moville	494	1,083	424	790	25	207	45	86
21. Arklow	382	639	330	514	5	37	47	88
22. Castlegregory	367	294	8	10	*	\$	359	284
23. Balbriggan	365	535	178	338	*	\$	187	194
24. Carna/Cill Chiarain	356	387	50	167	—	—	306	220
25. Malin Head	340	665	—	—	—	—	340	665
26. Baltimore	337	841	126	174	75	586	136	81
27. Belmullet/Blacksod	319	297	—	—	—	—	319	297
28. Childen/Cleggan	314	190	104	162	—	—	210	28
29. Achill	307	371	157	279	—	—	150	92
30. Rosslare	277	474	253	448	2	12	22	14
31. Fenit	264	217	23	37	15	71	226	109
32. Wexford	249	3,090	6	6	—	—	243	3,084
33. Duncannon	240	594	177	250	14	116	49	228
34. Galway	225	218	118	172	*	\$	107	46
35. Porturlin/Portacloy	217	302	118	144	—	—	99	158
36. Ballycotton	215	402	144	199	21	148	50	55

*Indicates value less than IR£500.
\$Indicates landing less than 500Kg.

APPENDIX NO. 4

Imports and Exports of Fish and Fishery Products in 1985
(as compared with 1984)

	Quantity		Value	
	1985	1984	1985	1984
	Tonnes	Tonnes	IR£'000	IR£'000
I.—IMPORTS				
Fish: Fresh, chilled	12,336	15,324	3,607	3,802
Fish: Frozen	1,887	1,824	3,154	3,114
Fish: Salted, Dried or Smoked	1,261	1,230	1,958	1,906
Shellfish: Fresh, Salted or Dried	902	664	3,287	2,323
Prepared or preserved fish	1,298	7,234	2,799	17,393
Prepared or preserved shellfish	232	200	644	547
Fishmeal and fish oils	13,182	6,720	4,993	3,083
TOTALS	31,098	33,196	20,442	32,168
II.—EXPORTS				
Fish: Fresh, chilled	36,852	27,199	22,039	16,438
Fish: Frozen	85,940	76,500	38,886	30,734
Fish: Salted, Dried or Smoked	12,309	12,551	8,932	9,101
Shellfish: Fresh, Salted or Dried	14,413	16,230	21,134	19,626
Prepared or preserved fish	1,271	1,479	1,813	1,966
Prepared or preserved shellfish	616	749	1,016	1,240
Fishmeal and fish oils	3,382	3,260	921	1,055
Landed directly by Irish registered vessels into foreign ports				
Fish	8,780	15,468	5,190	5,699
Shellfish	71	66	111	116
TOTALS	163,634	153,502	100,042	85,975

In addition to direct landings into foreign ports 25,617 tonnes of mackerel valued at IR£2,817,870 were transhipped at sea by Irish registered vessels giving a final total for exports of IR£103m.

APPENDIX NO. 5

Herring Fishing 1985

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
Dunmore East	4,123	523
Cobh	3,261	404
Rossaveal	5,624	822
Killybegs	12,343	1,660

APPENDIX NO. 6

Mackerel Fishing 1985

Ports at which more than 1,000 tonnes were landed	Total Quantity Tonnes	Total Value IR£'000
Castletownbere	1,973	267
Killybegs	50,608	6,556
Rathmullen	6,181	742

APPENDIX NO. 7
Regional Distribution and Classification of Fishing Craft and of Personnel Engaged in Fishing in 1985.

ICES Statistical Areas	How Engaged	Men	Total Vessels	Motor Vessels						Boats propelled by outboard engines, sails, oars etc.		
				Gross Tons						18' Keel and upwards	18' Keel and under	
				Over 100	75-99	51-74	26-50	16-25	11-15			10 and under
Area VII A (Omeath to Helwick)	Solely Partially Laid-up	929 502 —	323 178 16	18 — 2	15 — 1	41 — 4	74 — 3	11 — 2	7 — 1	117 52 3	40 86 —	— 40 —
Totals		1,431	517	20	16	45	77	13	8	172	126	40
Area VII GH (Ardmore to Clonakilty)	Solely Partially Laid-up	242 148 —	101 77 2	— — —	— — —	— — —	6 — —	5 — 2	5 — —	29 5 —	47 57 —	7 15 —
Totals		390	180	—	—	—	6	7	5	34	104	22
Area VII JK (Union Hall to Ballyduff)	Solely Partially Laid-up	1,008 677 —	443 175 14	18 — 2	8 — —	19 — 2	21 — 6	5 — 1	29 — 1	223 30 2	118 115 —	2 30 —
Totals		1,685	632	20	8	21	27	6	30	255	233	32
Area VIII BC (Kilrush to Mullaghmore)	Solely Partially Laid-up	344 1,875 —	101 862 36	6 — 3	5 1 —	7 1 2	16 5 2	7 4 1	7 12 2	39 292 26	10 451 —	4 96 —
Totals		2,219	999	9	6	10	23	12	21	357	461	100
Area VI A (Bundoran to Moville)	Solely Partially Laid-up	739 1,314 —	148 610 10	29 — 3	5 — —	27 — 1	46 3 1	16 1 —	4 4 —	2 239 5	19 345 —	— 18 —
Totals		2,053	768	32	5	28	50	17	8	246	364	18
Totals (All Areas)	Solely Partially Laid-up	3,262 4,516 —	1,116 1,902 78	71 — 10	34 1 1	95 1 9	163 8 12	44 5 6	52 16 4	410 618 36	234 1,054 —	13 199 —
Totals		7,778	3,096	81	36	105	183	55	72	1,064	1,288	212

For comparison purposes with previous years the I.C.E.S. Areas VII GH and VIII JK together would equate with the former I.C.E.S. Area VI IJK.

APPENDIX NO. 8

Coastal Extent of Fisheries Regions and Names of the Principal Rivers in each Region.

Fisheries Region	Coastal Extent of Region	Principal Rivers
Eastern	Carlingford Lough, Co. Louth to Kiln Bay, Co. Wexford and sea-wards to a line twelve miles from baselines.	Fane, Dee, Clyde, Boyne, Blackwater, Deel, Liffey, Vartry, Slaney, Avoca.
Southern	Kiln Bay, Co. Wexford to Ballycotton Pier, Co. Cork and sea-wards to a line twelve miles from baselines.	Suir, Barrow, Nore, Blackwater, Funcheon, Bride, Awbeg.
South-Western	Ballycotton Pier, Co. Cork to Kerry Head, Co. Kerry and sea-wards to a line twelve miles from baselines.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coombola, Glengariff, Adrigole, Roughty, Sheen, Finnihy, Blackwater, Sneem, Laune, Flesk, Maine, Caragh, Currane, Cumberagh, Inny.
Shannon	Kerry Head, Co. Kerry to Hag's Head, Co. Clare and sea-wards to a line twelve miles from baselines.	Shannon, Deel, Fergus, Mulcaire, Little and Upper Brosna, Inny, Mague, Feale.
Western	Hag's Head, Co. Clare to Pigeon Point, Co. Mayo and sea-wards to a line twelve miles from baselines.	Corrib, Claregalway, Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace, Culfin, Errif, Bundorragh, Dawross, Carrowniskey, Bunowen, (Louisburgh).
North-Western	Pigeon Point, Co. Mayo to Mullaghmore Head, Co. Sligo and sea-wards to a line twelve miles from baselines.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy, Moy, Cloonaghmore, (Palmerstown), Easkey, Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
Northern	Mullaghmore Head, Co. Sligo to Rossan Point, Co. Donegal and sea-wards to a line twelve miles from baselines.	Erne, Bundrowes, Bunduff, Eske, Eaney, Water, Oily Glen, Owenea, Gweebarra, Gweedore, (Crolly), Clody, Lackagh, Lennon, Crana.

APPENDIX NO. 9

Quantity and Value of Salmon and Sea Trout taken in 1983, 1984 and 1985 by Instruments of Capture.

SALMON

Instruments	Quantity (Kg)			Value (IR£)		
	1985	1984	1983	1985	1984	1983
Total for rod and line	52,164	36,248	49,555	270,209	199,366	218,488
Total for drift nets	1,266,983	624,947	1,254,219	6,562,972	3,437,211	5,529,852
Total for draft nets	131,365	130,025	172,099	680,470	715,140	758,784
Total for stake nets, weirs etc.	42,672	47,563	38,671	221,041	261,599	170,500
Total for all engines	1,493,184	838,783	1,514,544	7,734,692	4,613,316	6,677,624

SEA TROUT

Instruments	Quantity (Kg)			Value (IR£)		
	1985	1984	1983	1985	1984	1983
Total for rod and line	13,285	8,844	10,877	43,840	35,113	35,958
Total for drift nets	2,472	5,873	4,317	8,157	23,316	14,272
Total for draft nets	6,507	9,474	6,430	21,473	37,611	21,257
Total for stake nets, weirs etc.	10	328	415	33	1,302	1,371
Total for all engines	22,274	24,519	22,039	73,503	97,342	72,858

APPENDIX NO. 10

Quantity and Value of Salmon taken in 1983, 1984 and 1985 by Fisheries Region

REGION	*	Quantity (kg)			Value (IR£)		
		1985	1984	1983	1985	1984	1983
Eastern							
Dundalk District	R	2,899	802	462	15,017	4,411	2,037
	N	7,928	8,278	2,589	41,067	45,529	11,415
Drogheda District	R	1,018	897	1,392	5,273	4,934	6,137
	N	10,394	15,641	16,087	53,841	86,026	70,928
Dublin District	R	819	694	455	4,242	3,817	2,006
	N	729	231	10	3,776	1,271	44
Wexford District	R	4,606	4,834	3,084	23,859	26,587	13,597
	N	12,297	17,601	4,178	63,698	96,806	18,421
TOTAL	R	9,342	7,227	5,393	48,391	39,749	23,777
	N	31,348	41,751	22,864	162,382	229,632	100,808
Southern							
Waterford District	R	7,386	1,521	3,641	38,259	8,366	16,053
	N	191,219	97,990	86,779	990,514	538,945	382,609
Lismore District	R	1,318	1,467	1,648	6,827	8,069	7,266
	N	86,034	43,402	61,504	445,656	238,711	271,171
TOTAL	R	8,704	2,988	5,289	45,086	16,435	23,319
	N	277,253	141,392	148,283	1,436,170	777,656	653,780
South Western							
Cork District	R	372	319	1,651	1,927	1,755	7,279
	N	183,746	43,579	101,286	951,804	239,685	446,570
Kerry District	R	3,028	4,254	6,576	15,685	23,397	28,994
	N	148,597	91,569	176,330	769,732	503,630	777,439
TOTAL	R	3,400	4,573	8,227	17,612	25,152	36,273
	N	332,343	135,148	277,616	1,721,536	743,315	1,224,009
Shannon							
Limerick District	R	2,272	1,030	4,658	11,769	5,665	20,537
	N	37,761	17,182	42,518	195,602	94,501	187,462
TOTAL	R	2,272	1,030	4,658	11,769	5,665	20,537
	N	37,761	17,182	42,518	195,602	94,501	187,462
Western							
Galway District	R	4,335	2,373	1,939	22,455	13,052	8,549
	N	21,985	30,199	71,608	113,882	166,095	315,720
Connemara District	R	968	1,306	1,635	5,014	7,183	7,209
	N	17,092	26,972	18,075	88,536	148,346	79,692
Ballinakill District	R	3,079	2,112	1,832	15,949	11,616	8,077
	N	15,349	4,281	9,176	79,508	23,546	40,457
TOTAL	R	8,382	5,791	5,406	43,418	31,851	23,835
	N	54,426	61,452	98,859	281,926	337,987	435,869
North-Western							
Bangor District	R	2,881	1,747	3,080	14,924	9,609	13,580
	N	63,611	13,641	102,461	329,505	75,026	451,751
Ballina District	R	7,123	4,189	4,939	36,897	23,040	21,776
	N	143,850	58,173	106,384	745,143	319,952	469,047
Sligo District	R	4,761	2,384	5,309	24,662	13,112	23,407
	N	9,969	11,309	18,403	51,639	62,200	81,139
TOTAL	R	14,765	8,320	13,328	76,483	45,761	58,763
	N	217,430	83,123	227,248	1,126,287	457,178	1,001,937
Northern							
Ballyshannon District	R	397	2,098	2,604	2,056	11,539	11,481
	N	34,043	22,779	36,857	176,343	125,285	162,502
Letterkenny District	R	4,902	4,221	4,650	25,392	23,216	20,502
	N	456,416	299,708	610,744	2,364,235	1,648,394	2,692,770
TOTAL	R	5,299	6,319	7,254	27,448	34,755	31,983
	N	490,459	322,487	647,601	2,540,578	1,773,679	2,855,272
GRAND TOTAL		1,493,184	838,783	1,514,544	7,734,688	4,613,316	6,677,624

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

APPENDIX NO. 11

Quantity and Value of Sea Trout taken in 1983, 1984 and 1985 by Fisheries Region

REGION	*	Quantity (kg)			Value (IR£)		
		1985	1984	1983	1985	1984	1983
Eastern							
Dundalk District	R	1,093	1,079	1,056	3,607	4,284	3,491
	N	622	689	559	2,053	2,735	1,848
Drogheda District	R	211	476	798	1,926	1,890	2,638
	N	830	764	1,480	2,739	3,033	4,892
Dublin District	R	108	47	52	356	187	172
	N	2,845	6,289	3,040	9,388	24,967	10,050
Wexford District	R	—	511	427	—	2,029	1,411
	N	1,293	920	849	4,267	3,652	2,807
TOTAL	R	1,412	2,113	2,333	5,889	8,390	5,889
	N	5,590	8,662	5,928	18,447	34,387	19,597
Southern							
Waterford District	R	—	46	—	—	183	—
	N	—	279	1,040	—	1,108	3,438
Lismore District	R	—	—	—	—	—	—
	N	—	347	704	—	1,378	2,327
TOTAL	R	—	46	—	—	183	—
	N	—	626	1,744	—	2,486	5,765
South Western							
Cork District	R	—	—	81	—	—	268
	N	416	615	203	1,373	2,442	671
Kerry District	R	20	248	1,926	66	985	6,367
	N	110	1,834	1,259	363	7,281	4,162
TOTAL	R	20	248	2,007	66	985	6,635
	N	526	2,449	1,462	1,736	9,723	4,833
Shannon Limerick District	R	—	—	156	—	—	516
	N	273	544	49	901	2,160	162
TOTAL	R	—	—	156	—	—	516
	N	273	544	49	901	2,160	162
Western							
Galway District	R	148	—	23	488	—	76
	N	—	—	—	—	—	—
Connemara District	R	6,780	3,569	3,838	22,374	14,169	12,688
	N	878	18	105	2,897	71	347
Ballinakill District	R	2,669	1,225	1,082	8,808	4,863	3,577
	N	675	499	—	2,227	1,981	—
TOTAL	R	9,597	4,794	4,943	31,670	19,032	16,341
	N	1,553	517	105	5,124	2,052	347
North-Western							
Bangor District	R	932	705	541	3,076	2,799	1,789
	N	—	—	—	—	—	—
Ballina District	R	—	181	96	—	719	317
	N	182	17	—	601	67	—
Sligo District	R	122	74	51	403	294	169
	N	—	60	37	—	238	122
TOTAL	R	1,054	960	688	3,479	3,812	2,275
	N	182	77	37	601	305	122
Northern							
Ballyshannon District	R	33	17	105	109	67	347
	N	678	2,031	1,590	2,237	8,063	5,257
Letterkenny District	R	1,069	666	645	3,528	2,644	2,132
	N	187	769	247	617	3,053	817
TOTAL	R	1,102	683	750	3,637	2,711	2,479
	N	865	2,800	1,837	2,854	11,116	6,074
GRAND TOTAL		22,174	24,519	22,039	74,404	97,342	72,858

*R indicates capture of single rod and line.

N by means of nets, weirs, etc.

APPENDIX NO. 12

Quantity and Value of Eels taken in 1983, 1984 and 1985 by Fisheries Regions

REGION	Quantity (kg)			Value (IR£)		
	1985	1984	1983	1985	1984	1983
Eastern						
Dundalk District	1,064	946	908	2,437	2,517	1,198
Drogheda District	—	304	762	—	473	1,094
Dublin District	—	1,360	453	—	2,000	651
Wexford District	4,117	2,814	15,000	11,568	7,274	15,000
TOTAL	5,181	5,424	17,123	14,005	12,264	17,943
Southern						
Waterford District	1,054	2,120	4,839	82,911	6,011	9,491
Lismore District	—	—	694	—	—	694
TOTAL	1,054	2,120	5,533	82,911	6,011	10,185
South Western						
Kerry District	—	1	—	—	3	—
Cork District	256	—	—	677	—	—
TOTAL	256	1	—	677	3	—
Shannon						
Limerick District	44,853	41,546	61,570	184,479	159,706	194,438
TOTAL	44,853	41,546	61,570	184,479	159,706	194,438
Western						
Galway District	19,852	23,664	23,905	57,574	61,659	49,177
TOTAL	19,852	23,664	23,905	57,574	61,659	49,177
North-Western						
Bangor District	375	—	308	476	—	600
Ballina District	6,083	3,069	5,391	12,499	4,676	8,640
Sligo District	103	771	540	343	1,500	1,200
TOTAL	6,561	3,840	6,239	13,318	6,176	10,440
Northern						
Ballyshannon District	9,490	11,985	2,476	17,584	10,305	3,460
Letterkenny District	54	127	—	957	192	—
TOTAL	9,544	12,112	2,476	18,541	10,497	3,460
GRAND TOTAL	87,301	88,707	116,846	371,505	256,316	285,643

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

APPENDIX NO. 13

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all Engines in 1983, 1984 and 1985 by Fisheries Regions

REGION	Total Quantity per Region (kg)			Total Value per Region (IR£)		
	1985	1984	1983	1985	1984	1983
Eastern						
Dundalk District	13,606	11,794	5,574	64,181	59,476	19,989
Drogheda District	12,553	18,082	20,519	62,879	96,356	85,689
Dublin District	4,501	8,621	4,010	17,762	32,242	12,923
Wexford District	22,313	26,680	23,538	103,392	136,348	51,236
TOTAL	52,973	65,177	53,641	248,214	324,422	169,837
Southern						
Waterford District	199,659	101,956	96,299	1,111,684	554,613	411,591
Lismore District	87,352	45,216	64,550	452,483	248,158	281,458
TOTAL	287,011	147,172	160,849	1,564,167	802,771	693,049
South Western						
Cork District	184,790	44,513	103,221	955,781	243,882	454,788
Kerry District	151,755	97,906	186,091	785,846	535,296	816,962
TOTAL	336,545	142,419	289,312	1,741,627	779,178	1,271,750
Shannon						
Limerick District	85,159	60,302	108,951	392,751	262,032	403,115
TOTAL	85,159	60,302	108,951	392,751	262,032	403,115
Western						
Galway District	46,320	56,236	97,475	194,399	240,806	373,522
Connemara Dist.	25,718	31,865	23,653	118,821	169,769	99,936
Ballinakill Dist.	21,772	8,117	12,090	106,492	42,006	52,111
TOTAL	93,810	96,218	133,218	419,712	452,581	525,569
North-Western						
Bangor District	67,799	16,093	106,390	347,981	87,434	467,720
Ballina District	157,238	65,629	116,810	795,140	348,454	499,780
Sligo District	14,955	14,598	24,340	77,047	77,344	106,037
TOTAL	239,992	96,320	247,540	1,220,168	513,232	1,073,537
Northern						
Ballyshannon Dist.	44,641	38,910	43,632	198,329	155,259	183,047
Letterkenny Dist.	462,628	305,491	616,286	2,394,729	1,677,499	2,716,221
TOTAL	507,269	344,401	659,918	2,593,058	1,832,758	2,899,268
GRAND TOTAL	1,602,759	952,009	1,653,429	8,179,697	4,966,974	7,036,125

APPENDIX NO. 14

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1983, 1984 and 1985 by Fisheries Regions

REGION	No. of Fish			Quantity (kg)			Value (IR£)		
	1985	1984	1983	1985	1984	1983	1985	1984	1983
Eastern									
Dundalk District	657	199	95	2,899	802	462	15,017	4,411	2,037
Drogheda District	205	182	284	1,018	897	1,392	5,273	4,934	6,137
Dublin District	224	153	103	819	694	455	4,242	3,817	2,006
Wexford District	1,069	1,122	680	4,606	4,834	3,084	23,859	26,587	13,597
TOTAL	2,155	1,656	1,162	9,342	7,227	5,393	48,391	39,749	23,777
Southern									
Waterford District	1,850	377	939	7,386	1,521	3,641	38,259	8,366	16,053
Lismore District	410	427	541	1,318	1,467	1,648	6,827	8,069	7,266
TOTAL	2,260	804	1,480	8,704	2,988	5,289	45,086	16,435	23,319
South Western									
Cork District	85	82	531	372	319	1,651	1,927	1,755	7,279
Kerry District	849	1,086	2,038	3,028	4,254	6,576	15,685	23,397	28,994
TOTAL	934	1,168	2,569	3,400	4,573	8,227	17,612	25,152	36,273
Shannon									
Limerick District	763	239	1,343	2,272	1,030	4,658	11,769	5,665	20,537
TOTAL	763	239	1,343	2,272	1,030	4,658	11,769	5,665	20,537
Western									
Galway District	1,206	465	482	4,335	2,373	1,939	22,455	13,051	8,549
Connemara District	254	320	424	968	1,306	1,635	5,014	7,183	7,209
Ballinakill District	849	414	490	3,079	2,112	1,832	15,949	11,616	8,077
TOTAL	2,309	1,199	1,396	8,382	5,791	5,406	43,418	31,850	23,835
North-Western									
Bangor District	860	562	958	2,881	1,747	3,080	14,924	9,608	13,580
Ballina District	2,401	1,285	1,489	7,123	4,189	4,939	36,897	23,040	21,776
Sligo District	1,705	783	1,715	4,761	2,384	5,309	24,662	13,112	23,407
TOTAL	4,966	2,630	4,162	14,765	8,320	13,328	76,483	45,760	58,763
Northern									
Ballyshannon District	115	581	661	397	2,098	2,604	2,056	11,539	11,481
Letterkenny District	1,778	1,536	1,459	4,902	4,221	4,650	25,392	23,216	20,502
TOTAL	1,893	2,117	2,120	5,299	6,319	7,254	27,448	34,755	31,983
GRAND TOTAL	15,280	9,813	14,232	52,164	36,248	49,555	270,207	199,366	218,487

APPENDIX NO. 15

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1983, 1984 and 1985 by Fisheries Regions

REGION	No. of Fish			Quantity (kg)			Value (IR£)		
	1985	1984	1983	1985	1984	1983	1985	1984	1983
Eastern									
Dundalk District	2,269	1,830	2,060	1,093	1,079	1,056	3,607	4,284	3,491
Drogheda District	805	1,117	2,119	311	476	798	1,026	1,890	2,638
Dublin District	200	85	80	108	47	52	356	187	172
Wexford District	—	1,656	1,326	—	511	427	—	2,029	1,412
TOTAL	3,274	4,688	5,585	1,512	2,113	2,333	4,989	8,390	7,713
Southern									
Waterford District	—	102	—	—	46	—	—	183	—
Lismore District	—	—	—	—	—	—	—	—	—
TOTAL	—	102	—	—	46	—	—	183	—
South Western									
Cork District	—	—	237	—	—	81	—	—	268
Kerry District	34	399	2,849	20	248	1,926	66	985	6,367
TOTAL	34	399	3,086	20	248	2,007	66	985	6,635
Shannon									
Limerick District	—	—	529	—	—	156	—	—	516
TOTAL	—	—	529	—	—	156	—	—	516
Western									
Galway District	423	—	57	148	—	23	488	—	76
Connemara District	12,859	6,963	9,196	6,780	3,569	3,838	22,374	14,169	12,688
Ballinakill District	6,907	2,935	2,946	2,669	1,225	1,082	8,808	4,863	3,577
TOTAL	20,189	9,898	12,199	9,597	4,794	4,943	31,670	19,032	16,341
North-Western									
Bangor District	2,413	1,554	1,095	932	705	541	3,076	2,799	1,789
Ballina District	—	381	250	—	181	96	—	719	317
Sligo District	136	130	138	122	74	51	403	294	169
TOTAL	2,549	2,065	1,483	1,054	960	688	3,479	3,812	2,275
Northern									
Ballyshannon District	75	38	243	33	17	105	109	67	347
Letterkenny District	2,704	1,688	2,032	1,069	666	645	3,528	2,644	2,132
TOTAL	2,779	1,726	2,275	1,102	683	750	3,637	2,711	2,479
GRAND TOTAL	28,825	18,878	25,157	13,285	8,844	10,877	43,841	35,113	35,959

APPENDIX NO. 16

Particulars of Receipts and Expenditure by the Central and Regional Boards for the year ended 31st December 1985

Board	RECEIPTS						EXPENDITURE						
	Opening balance	Licence Duty	Fishery Rates	Sale of Fish	Exchange Receipts	Misc. Receipts	Total Receipts	Salaries Wages	Travelling & Subsistence	Purchases of Vehicles & Boats & Equipment	Misc. Expenditure	Total Expenditure	Closing Balance
	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£	IR£
Central	-28,508	—	—	143,102	1,544,500	156,863	1,844,465	1,370,581	59,832	24,401	382,682	1,837,496	-21,539
Eastern	-12,426	61,407	14,841	5,053	443,500	11,660	536,461	345,448	53,944	11,294	112,640	523,326	+709
Southern	+52,927.01	56,471.95	19,744.83	—	419,000	52,531.86	547,748.64	358,075.96	38,847.14	36,609.15	139,852.50	573,384.75	+27,290.90
South Western	-21,347.64	43,723.50	12,516.09	14,479.15	525,000	35,500.44	631,219.18	423,603.52	28,228.51	72,093.44	100,389.12	624,314.59	-14,443.05
Shannon	+37,690.43	35,920.50	9,996.47	353.50	280,000	35,641.75	361,912.22	194,608.58	8,723.35	14,455	176,892.51	394,679.44	+4,923.21
Western	-19,407	39,662	45,568	5,657	584,000	9,820	684,707	467,511	68,581	59,127	98,524	693,743	-28,443
North Western	-6,213.69	54,024.66	47,013.47	2,814.50	481,000	16,059.95	600,912.58	409,023.07	13,872.91	36,811.21	142,433.38	602,140.57	-7,441.68
Northern	+2,282	61,745	22,131	3,751	549,500	47,863	684,490	470,875	28,329	29,884	153,808	682,896	+3,876

APPENDIX NO. 17

Particulars of Licences sold by Regional Fisheries Boards for year 1985

	A	O	R	B	P	S	I	C	D	N	U	E	F	G	H	J	K	L	M	V	Special		
																					Rod	Net	
Board	£17	£113	£6	£8	£6	£11.50	£5	£75	£132	£34.50	£11.50	£75	£132	£25	£51	£30	£34.50	£34.50	£57.50	£34.50			
Eastern	1,042	104	46	1,154	380			183	15						6		9	5	2	22			
Southern	266	9	281	1,608	104			12	219				3		2			0	1	9			
South-Western	348	44	242	1,052	215			86	117	65										3			
Shannon	233	32	33	1,109	150			95	81								96	4		3			
Western	161	145	448	450	543		0	21	92	182					5		29	7	2	11			
North-Western	272	76	368	1,446	747	0	0	16	115	187					7		17	7	2				25
Northern	365	60	335	1,215	613	2	51	113	188	0					2			22	3				75
TOTAL	2,687	470	1,753	8,034	2,952	2	51	526	827	434		3	3	1	23	32	170	45	10	48			48

APPENDIX NO. 18

Licence Duties Payable on Fishing Engines

	IR£
On each Salmon Rod — Annual (valid all districts)	17.00
„ „ „ „ — Late Season (valid all districts)	11.50
„ „ „ „ — Seven day (valid all districts)	6.00
„ „ „ „ — Annual (valid district of issue only)	8.00
„ „ „ „ — Late Season (valid district of issue only)	6.00
„ „ „ „ — Foyle Area extension (valid all districts)	11.50
„ „ „ „ — Foyle Area extension (valid district of issue only)	5.00
On each Drift Net	132.00
„ „ Draft Net	75.00
„ „ Snap Net	30.00
„ „ Bag Net	75.00
„ „ Stake Net	132.00
„ „ Head Weir	25.00
„ „ Box or Crib	51.00
„ „ Pole Net	11.50
„ „ Loop Net	5.00
„ „ Gap, Eye, Basket or Coghill Net for Eels	34.50
„ „ Longline for Eels	34.50
„ „ Eel Trap	57.50
„ „ Oyster Dredge	34.50
„ „ Fyke Net for train of 20 or less plus IR£1.70 for each net thereafter	34.50
Special Local Licences	
Rod	8.00
Draft Net	101.00

Special Local Rod Licences may be reduced by IR£6 for holders of annual (ordinary) or annual (district) licences.

APPENDIX NO. 19

Abstract of Statutory Instruments made in 1985 relating to Inland Fisheries

Title of Instrument	Date	Effect
Inland Fisheries:		
1. Shannon Fisheries Region Bye-Law No. 642, 1985.	9 January 1985	Prohibits fishing for salmon by drift net in the waters of the Shannon Estuary between a line from Loop Head, Co. Clare, to Kerry Head, Co. Kerry, and a line from Kilcredaun Point in Co. Clare to Kilconly Point, Co. Kerry.
2. Special Tidal Waters (Special Local Licences) Order, 1985 (S.I. No. 26 of 1985)	5 February 1985	Prescribes the special local licence duties payable for fishing engines used in special tidal waters.
3. Northern Fisheries Region (River Erne) Bye-Law No. 643, 1985.	26 February 1985	Prohibited fishing for salmon or trout with a draft net in the tidal waters of the River Erne or its tributary the Abbey River from 1 March to 6 a.m. on 10 June 1985, and from 6 a.m. on 8 July to 6 a.m. on 25 July, 1985.
4. Owenduff River (Angling) Bye-law No. 644, 1985	14 March 1985	Prohibits angling with rod and line with any lure other than artificial fly in the waters of the rivers Owenduff and Tarsagh-aunmore and their tributaries upstream of the weir which is 120 metres downstream of Srahnamanragh Bridge.
5. River Erne (Special Local Licences) (Amendment) Order, 1985 (S.I. No. 177 of 1985)	7 June 1985	Provided that the special local licence duty payable in 1985 for a draft net for use in the special tidal waters of the River Erne was £75.
6. Shannon Fisheries Region (River Feale) Bye-Law No. 645, 1985.	5 July 1985	Prohibits the following in relation to the River Feale: (a) fishing with rod and line between lines 40 metres upstream and 60 metres downstream of Scartleigh Weir. (b) using any fishing engine other than rod and line between lines 45.72 metres downstream and 60 metres downstream of Scartleigh Weir. (c) the possession of any fishing rod, net or other engine in or near any part of the River referred to in (a) and (b).

Title of Instrument	Date	Effect
<p>7. Salmon and Trout Conservation Bye-law No. 646, 1985.</p>	<p>24 July 1985</p>	<p>1. Deferred the commencement of the annual close season in 1985 to</p> <p>(a) 1 August in Fishery Districts Nos. 5, 7, 8,9(1), 9(2), 10(1), 10(2), 11, 12, 13 and 14(1).</p> <p>(b) 8 August in Fishery Districts Nos. 3 and 4.</p> <p>(c) 20 August in Fishery Districts Nos. 1, 2, 17(1) and 17(2).</p> <p>2. Prohibited drift netting for salmon in 1985 during the period</p> <p>(a) 6 a.m. on 25 July to 31 July in the Fishery Districts listed in 1(a).</p> <p>(b) 6 a.m. on 1 August to 7 August in the Fishery Districts listed in 1(b).</p> <p>(c) 13 to 19 August in Fishery Districts No. 1.</p>
<p>Foyle Area:</p>		
<p>1. Foyle Area (Licensing of Fishing Engines) (Amendment) Regulations, 1985</p>	<p>4 Feb. 1985</p>	<p>Prescribed increased licence fees for each type of net used and game fishing licence issued in the Area.</p>
<p>2. Foyle Area (Control of Netting) (Amendment) Regulations, 1985</p>	<p>17 April 1985</p>	<p>Deferred to 1 June 1986 the coming into operation of provisions of the Foyle Area (Control of Netting) (Amendment) Regulations, 1983 which would have the effect of banning the use of 2 types of net, i.e. multi-strand monofilament and single throw monopy (or Japanese netting).</p>
<p>3. Foyle Area (Control of Netting) (Amendment No. 2) Regulations, 1985</p>	<p>20 Nov. 1985</p>	<p>Provides for the amendment of the Foyle Area (Control of Netting) Regulations, 1983 to make certain provisions as regards the operation of a drift or draft net fishing licence in the absence of the person named in the licence.</p>
<p>4. Foyle Area (Licensing of Fishing Engines) (Amendment No. 2) Regulations, 1985</p>	<p>20 Nov. 1985</p>	<p>Provides for the amendment of the Foyle Area (Licensing of Fishing Engines) Regulations in relation to applications for licences for fishing engines.</p>

APPENDIX NO. 20

Abstract of Statutory Instruments, 1985 Relating to Sea Fisheries

1. Castletownbere Fishery Harbour Centre (Fish Auction Charges) Order, 1985 (S.I. No. 56 of 1985) signed on 4 March 1985 sets out revised fees payable to the Minister by persons auctioning fish at Castletownbere Fishery Harbour Centre.
2. Castletownbere Fishery Harbour Centre (Rates and Charges) Order, 1985 (S.I. No. 57 of 1985) signed on 4 March 1985 specifies revised rates and charges to be paid to the Minister by persons using the facilities of that Centre.
3. Killybegs Fishery Harbour Centre (Rates and Charges) Order, 1985 (S.I. No. 58 of 1985) signed on 4 March 1985 sets down revised charges to be paid to the Minister by persons using the facilities of Killybegs Fishery Harbour Centre.
4. Rossaveal Fishery Harbour Centre (Rates and Charges) Order, 1985 (S.I. No. 59 of 1985) signed on 4 March 1985 lays down revised charges to be paid to the Minister by persons using the Rossaveal Fishery Harbour Centre.
5. Aquaculture (Achill Sound) Order, 1985 (S.I. No. 116 of 1985) signed on 28 March 1985 designates a specified area of Achill Sound, Co. Mayo within which it shall be lawful to engage in aquaculture subject to a licence granted by the Minister.
6. Mackerel (Prohibition on Fishing) Order, 1985 (S.I. No. 124 of 1985) signed on 3 May 1985, prohibited mackerel fishing by Irish registered vessels with effect from 7 May 1985.
7. Sea Fisheries (Conservation and Rational Exploitation) (Amendment) Order, 1985 (S.I. No. 162 of 1985) signed on 10 June 1985 amends the Sea Fisheries (Conservation and Rational Exploitation) Order, 1984 (S.I. No. 87 of 1984) as regards procedures to be adopted for determining the mesh size of fishing nets. It also makes any infringement of Commission Regulation (EEC) 3440/84 (on attachments of devices to nets) an offence in so far as that regulation relates to the State.
8. Sea Fisheries (Control of Catches) Order, 1985 (S.I. No. 163 of 1985) signed on 10 June 1985 requires that the skippers of all Community vessels over 17 metres in registered length (or over 10 metres where the duration of fishing operations is in excess of 24 hours) operating within the exclusive fishery limits of the State and Irish vessels, whether operating within those limits or otherwise, complete a daily log of all fishing operations. In addition skippers of all vessels over 10 metres in registered length are obliged to submit a landing/transshipment declaration to their national authorities, giving the quantities and species involved on the occasion of each landing or transshipment.
9. Sea Fishing (Enforcement of European Community Quotas) Order, 1985 (S.I. No. 172 of 1985) signed on 10 June 1985 makes any infringement of Council Regulation (EEC) No. 1/85 of 19th December 1984 (which fixes

total allowable catches and quotas for certain fish stocks for 1985 and specifies conditions under which these catches may be fished) an offence in so far as that Regulation relates either to the exclusive fishery limits of the State or to an Irish Sea-Fishing boat.

10. Celtic Sea Herring (Licensing) Order, 1985 (S.I. No. 308 of 1985) signed on 3 September 1985 prohibits fishing for herring in the Celtic Sea by Irish Sea-Fishing boats from October 1985 except under and in accordance with a licence issued by the Minister.
11. Fisheries (Control of Fish Processing Vessels) Order, 1985 (S.I. No. 309 of 1985) signed on 3 September 1985 prohibits the taking on board of fish by fish processing vessels operating in Irish waters except under and in accordance with a licence issued by the Minister.
12. Herring (Prohibition on Fishing in the Irish Sea) Order, 1985 (S.I. No. 328 of 1985) signed on 25 September, 1985 prohibits fishing for, transshipping, or having on board herring by Irish Sea-Fishing boats in ICES Division VII (a) north of latitude 52°30' from 1 October, 1985.
13. Celtic Sea (Prohibition on Herring Fishing) Order, 1985 (S.I. No. 329 of 1985) signed on 25 September, 1985. This Order prohibits weekend fishing for herring in the Celtic Sea by Irish Sea-Fishing boats.
14. Mackerel (Prohibition on Fishing) (Revocation) Order, 1985 (S.I. No. 332 of 1985) signed on 3 October, 1985 opens the Mackerel fishery for Irish vessels from 14 October, 1985.
15. Herring (Prohibition on fishing in the Celtic Sea) Order, 1985 (S.I. No. 361 of 1985) signed on 6 November, 1985 has the effect of closing the Celtic Sea Herring Fishery for Irish vessels from 10 November, 1985.
16. Sole (Prohibition on Fishing in the Irish Sea) Order, 1985 (S.I. No. 362 of 1985) signed on 6 November, 1985 prohibits fishing for, landing, transshipping or having on board sole by Irish Sea-Fishing boats in ICES Division VII (a) from 8 November, 1985.
17. Sea Fisheries (Conservation and Management of Fishery Resources) Order, 1985 (S.I. No. 364 of 1985) signed on 7 November 1985 makes any infringement of EEC Council Regulations laying down for 1985 certain measures for the conservation and management of fishing resources applicable to the vessels of Sweden, Norway, the Faroe Islands and Spain an offence in so far as those Regulations relate to the exclusive fishery limits of the State.
18. Herring (Prohibition of Fishing in the Celtic Sea) (Revocation) Order, 1985 (S.I. No. 385 of 1985) signed on 27 November, 1985 re-opens the Celtic Sea Herring Fishery for licensed Irish vessels with effect from 3 December, 1985.
19. Mackerel (Prohibition on Fishing) (No. 2) Order, 1985 (S.I. No. 403 of 1985) signed on 9 December, 1985 closes the Mackerel fishery for Irish Sea-Fishing boats from 10 December, 1985.

20. Mackerel (Prohibition on Fishing) (No. 2) Order, 1985 (Revocation) Order, 1985 (S.I. No. 432 of 1985) signed on 19 December, 1985 has the effect of re-opening the Mackerel fishery for Irish vessels with effect from 1 January, 1986.
21. Herring (Prohibition on fishing in the Celtic Sea) (No. 2) Order, 1985 (S.I. No. 433 of 1985) signed on 19 December 1985 prohibits fishing for, transshipping or having on board herring by Irish registered fishing boats south of the line of latitude 52°30' North from 24 December, 1985.

APPENDIX NO. 21

Artificial Propagation

Hatchery	Eyed ova produced during 1984/5 season			Particulars of hatchery produce planted/released/stocked out	
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	Amount and Description (000)	River Systems
Glenties	78			78 salmon ova	Owenga
Inistioge	88			13 unfed salmon fry 52 unfed salmon fry 15 unfed salmon fry	Barrow Nore Suir
Mallow	558			507 unfed salmon fry	Blackwater
Salmon Research Trust	57			17 one year salmon smolts 10 two year salmon smolts	Burrishoole
Virginia	133			40 fingerlings 3 parr	Kells Blackwater Fane
Carrowmore Lake	7			6 eyed ova	Altnabrocky
Carrigadroichead	264			135 salmon smolts	Lee
Erne	469	3	3	65 salmon smolts 2 salmon parr	Erne Abbey
Parteen	834		98	72 salmon fry 226 salmon fingerlings 33 pre smolts 217 smolts 43 trout fingerlings 5 eyed trout ova 34 eyed trout ova	Shannon trib. Shannon trib. Shannon trib. Shannon trib. Erne Poulaphuca
Cong	385			100 eyed salmon ova 12 salmon parr 12 salmon parr 10 salmon parr 11 salmon parr 90 salmon parr 56 (Brown Trout) yearling	Clare Gowla Delphi Kylemar Carrowniskey Corrib Corrib
Oughter Ard			300	60 (Brown Trout) unfed fry	Corrib
Fanure			824	60 (trout) eyed ova 162 (trout) fry 9 (trout) summerlings 163 (trout) fingerlings 4 (trout) Spring yearlings 3 (trout) Autumn yearlings 35 (trout) 2 year olds 1 (trout) Adult	Various Central Board waters in Counties Cavan, Westmeath, Longford, Roscommon and Mayo angling interests
Cullion (Mullingar)			1700	50 (trout) eyed ova 1359 (trout) fry 20 (trout) summerlings 231 (trout) fingerlings 14 (trout) spring yearlings 1 (trout) Autumn yearling 28 (trout) 2 year olds	Various Central Board waters in Counties Cavan, Westmeath, Longford, Roscommon and Mayo and waters stocked by local angling interests.

APPENDIX NO. 21

Hatchery	Eyed ova produced during 1984/5 season			Particulars of hatchery produce planted/released/stocked out	
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	Amount and Description (000)	River Systems
Island Bridge	20			17 unfed salmon fry	Liffey
Screebe	48	86		40 salmon parr 75 seatrout smolts	Screebe Screebe

APPENDIX NO. 22

Scientific and Other Papers

DEPARTMENTAL

B. FISHERY LEAFLETS

- 125 C. Moriarty Impact of eel fyke netting on other fisheries.
- 127 E. Fahy The Sea Trout Year 1984.
- 128 E. Fahy Fish kills in Ireland — an analysis of incidents in 1983 and 1984.
- 129 E. McArdle Length — Weight Relationships, Fat Content
E. Barnwall and Parasitic Infestation of Irish Mackerel.
and F. Nolan
- 130 E. Fahy Capture of sea-trout by illegal means in the Western Region (some observations for discussion).

OTHER PUBLICATIONS

- J. Browne 'The data available for analysis on the Irish Salmon Stock' NERC/Institute of Terrestrial Ecology symposium No. 15.
The Status of the Atlantic Salmon in Scotland. EDS: Jenkins, D and Shearer, W. Banchory Research Station 13 and 14 February 1985.
- J. Browne Contribution of reared fish to the national catch in Ireland. Atlantic Salmon Trust Workshop on Stock Enhancement (31 pp).
- J. Browne and P. Gallagher The relationship between annual Atlantic juvenile salmon population estimates and direct estimates of subsequent smolt runs (1980-84) in the Corrib system, Ireland ICES CM 1985/M:3.
- E. Fahy Landings to the Killorglin fishery, Co. Kerry 1869-1965 Salmon Net 17: 38-46.
- E. Fahy Consequences of marine feeding on the growth of sea trout. Sea trout workshop, Wales October 1984.
- E. Fahy Protecting finnock as a sea trout conservation measure. Salmon and Trout Magazine 230: 66-69.
- E. Fahy Cyclic fluctuations in the abundance of trout *Salmo trutta* L. Arch. Hydrobiol Suppl. 70(3): 404-428.
- E. Fahy Child of the tides: a sea trout handbook. Dublin: Glendale Press (188 pp).

- E. Fahy and R. Rudd The use of weight-length relationships in sea trout stocks Salmon and Trout Magazine 228: 56-63.
- E. Fahy and W.P. Warren Long lived sea trout, sea run ferox? Salmon and Trout Magazine 227: 72-75.
- R.D. Fluskey and E. Fahy Observation on the consequences for fisheries of workings associated with river crossings by a gas pipeline. A report for An Bord Gais Eireann (25 pp).
- J.P. Hillis and R.J.R. Grainger Discarding of Nephrops and Whiting in the Irish Nephrops Fishery in Division VIIA. ICES CM 1985/K: 48.
- J.P. Hillis Preliminary results of micro-wire tagging experiments Nephrops ICES CM 1985/K: 49.
- J.P. Hillis Some observations on the separation of Nephrops from whiting and other fish by separator trawls ICES CM 1985/B: 47.
- D. Minchin Lutraria Angustior Philippi (Mollusca: Lamelibranchia) in Irish waters. Irish Naturalists Journal 21 10 : p. 454.
- C. Moriarty Riverine migration of young eels *Anguilla anguilla* L. EIFAC working party on Eel, Perpignan, 1985 (26 pp).
- C. Moriarty Observations on the eels of Meelick Bay, Lough Derg, 1981-84 EIFAC working party on Eel, Perpignan, 1985 (14 pp).
- C. Moriarity Report on elver immigration to 1985. EIFAC working party on eel, Perpignan, 1985 (6 pp).
- M. Mulrooney and E. Fahy Hybridisation among three cyprinid species in a County Dublin reservoir. Irish Naturalists Journal 21 11: 470-472.
- E.C.E. Potter and J. Browne Use of coded wire microtags on juvenile Atlantic salmon (*Salmo Salar* L) ICES CM 1986/M: 27.
- E. Twomey Evaluation of promoting natural propagation versus restocking. Atlantic Salmon Trust Workshop on Stock Enhancement (16 pp).