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THE FOYLE FISHERY:

ECONOMIC ASPECTS OF MANAGEMENT

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Lecture in Omagh, 15 October 1975

ECONOMIC EVALUATION OF SALMON FISHING

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The Atlantic salmon has been described by Netboy as "one of the noblest and most honoured (as well as the most harried) fishes known to man. Born in some humble river it tarries there for one to four years and having attained the size of a man's finger it vanishes into the ocean only to return to this same stream a few years later as a full grown adult. It provides sport for kings and its pink flesh is like no other".(1)

When man first inhabited Europe the salmon were plentiful in hundreds of coastal rivers. They were found in all Northern European countries including Western Russia. They occurred in Greenland and in all suitable waters on the North American side of the Atlantic ocean from Ungava Bay in the south to the most northern of the Canadian rivers.

With the growth of population, the spread of agriculture and the coming of the Industrial Revolution, man, increasingly tampered with the salmon's habitat and the leaping fishes could no longer thrive in their traditional haunts. Nowadays they have become increasingly scarce and expensive, having deserted or been forced out of one river after another. To mention but a few, salmon no longer come up the Seine or the Moselle in France, the Douro in Portugal, the Elbe and Weser in Germany, the Kemi and Kokemaki in Finland and many Swedish Baltic rivers. The Vistula's runs have dropped substantially, 100 mercury polluted salmon were taken from the Rhine (once probably the most productive

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(1) Netboy, A. The Atlantic Salmon - A Vanishing Species, Faber and Faber, London, 1967.

river in Europe) in 1972 and in the Thames the last naturally produced salmon is reported to have been caught in 1833. The species has utterly vanished from Portugal, Switzerland, the low countries and is in danger of extinction in France and Spain. In North America, salmon have deserted such major rivers as the Connecticut, Pinobscot, Merrimack and Kennebec not to mention many less famous streams in the maritime provinces of Canada. The Miramichi in New Brunswick, for many years the greatest salmon river in the world, has now less fish than the Foyle. Inshore netting has been abolished in most Canadian rivers and vast sums of money are being spent in transporting salmon upstream past numerous power plants and dams. Still the salmon are slow in returning, and this situation will continue unless some means of controlling the heavy and prolonged drift netting off the Newfoundland bank.

No nation however has frittered away its Atlantic salmon wealth more wantonly than the USA. When the first settlers came, the New England rivers were full of salmon but by 1850 the fish had almost completely disappeared. Power dams, pollution and water control schemes, rather than over fishing were the causes of this distruction. Attempts are now being made to restore the salmon in some rivers but these attempts are almost hopeless. The pollution continues unabated and legislation to prevent the erection of dams is continually being circumvented.

The lesson to be learned from all this is that salmon stocks can easily be destroyed over large areas and if this is allowed to happen, attempts at restoration are almost impossible. The causes of the distruction become entrenched with vested interests which are difficult to dislodge.

Despite the above statements the overall world salmon catch as recorded by FAO has not declined over the years (see Table 1). What seems to have been happening is a redistribution of stocks between different countries. This however should not make us feel complacent. The methods of catching are now far more sophisticated than in the past, and this combined with more prolonged effort means that higher and higher proportions of the available fish are removed each year. Furthermore the statistics on landings are now more complete, so that increased catches in some areas are probably due to better recording rather than to better fishing. The upshot of all this is that the catch figures must be interpreted with caution; the fact that they are remaining fairly stable does not mean that stocks are also stable. The best authorities are of opinion that stocks are declining and unless realistic action is taken, particularly on the high seas, the salmon will eventually be fished to extinction.

Salmon in Ireland

The figures in Table 2 show that for Ireland as a whole, total salmon catches have not declined over the years. Decreases in the Foyle area, particularly since the high runs in the 1960s, have been counterbalanced by high catches in the Republic. Unfortunately however the increased landings in the South have been entirely due to the drift netting; both draft net and angling catches have declined in recent years. These declines as well as those in the Foyle are due in part to the UDN disease, but more particularly to the drift netters, who unless controlled, pose a serious threat to all Irish salmon stocks.

With regard to the Foyle fishery, the table shows that there has been a serious decline in recent years, in all three components of the commercial fishery i.e. drift net, draft net and particularly the Commission's own private fishery catch. Without the revenue from the last source, the Commission must become more and more

Table 1: Atlantic salmon landings in selected years, 1938-1973.

Country	1938	1948	1958	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
	('000 metric tons)															
Canada	4.0	3.0	1.6	1.6	1.7	1.8	2.0	2.2	2.4	2.8	2.1	2.0	2.1	1.8	1.5	2.1
Denmark	0.1	1.0	1.1	1.7	1.5	1.2	1.7	2.0	1.7	2.1	2.5	2.4	2.2	1.8	1.6	1.7
Finland	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.6	0.6	F/0.6	0.4	0.5	F/0.5
France	0.1	ø	ø	ø	ø	ø	ø	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Germany (Fed. Rep.)	0.1	ø	0.2	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Greenland	n.a.	n.a.	n.a.	0.1	0.3	0.5	1.5	0.8	1.2	1.3	0.6	1.3	1.3	1.4	1.4	1.6
Iceland & Faeroe Is.	n.a.	n.a.	n.a.	0.2	0.1	0.2	n.a.	0.0	0.1	0.3	0.2	0.3	0.5	0.4	0.3	0.4
Ireland	0.8	0.9	0.8	0.6	1.3	1.3	1.4	1.3	1.1	1.5	1.4	1.7	1.8	1.5	1.8	1.9
Norway	1.2	1.0	1.2	1.3	1.7	1.8	1.9	1.7	1.6	1.8	1.5	1.5	1.2	1.5	1.8	2.0
Poland	ø	n.a.	0.2	0.1	0.3	0.3	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Sweden	0.2	1.3	0.3	0.6	0.4	0.4	0.6	0.6	0.5	0.5	0.7	0.6	0.6	0.4	0.4	0.7
USSR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.8	0.8	1.0	1.0	0.5	0.6	0.6	0.6	0.9
UK England & Wales	2.0	1.9	2.0	0.0	0.1	0.0	0.1	0.4	0.4	0.1	0.0	0.0	0.0	0.4	0.4	0.5
UK Scotland				1.3	2.1	1.7	1.9	1.3	1.3	1.8	1.3	1.7	1.0	1.2	1.4	1.7
UK Northern Ireland				0.2	0.6	0.5	0.6	0.4	0.4	0.5	0.3	0.3	0.3	0.2	0.2	0.2
Total	9.0	10.0	8.0	8.0	11.0	10.0	13.0	12.3	12.3	14.5	12.6	13.2	12.5	11.8	12.1	14.4

ø negligible
F/ Data estimated or calculated by FAO
n.a. Not available.

Table 2: Salmon landings in Ireland.

Year	Irish Republic					Foyle Fisheries					
	Commercial			Angling	Total	Commercial				Angling	Total
	Drift Nets	Other Nets	Total			Drift Nets	Londonderry Fishing	Other Nets	Total		
	('000) lb					No.					
1955	234.6	780.2	1,014.8	247	1,261	5,133	11,846	34,871	51,850	1,320	53,170
1956	250.7	1,028.3	1,279.0	264	1,443	9,697	9,435	44,228	63,360	3,527	56,840
1957	298.4	1,191.7	1,490.1	309	1,800	10,640	18,978	69,822	99,440	3,390	102,830
1958	286.1	992.4	1,278.5	375	1,654	8,530	15,950	69,140	9,300	3,120	96,740
1959	352.5	2,004.4	1,364.5	260	1,624	8,516	12,065	51,849	72,430	570	73,000
1960	263.5	870.4	1,133.9	230	1,364	13,517	8,955	52,548	75,020	1,500	76,520
1961	218.2	934.0	1,152.2	193	1,346	11,252	8,767	40,681	60,700	1,000	61,700
1962	606.8	1,999.4	2,606.2	258	2,864	38,109	19,744	63,947	121,800	1,060	122,860
1963	687.2	1,807.9	2,495.1	342	2,837	48,230	14,040	61,710	123,980	1,945	125,925
1964	761.6	1,861.1	2,622.6	390	3,013	52,585	16,500	80,450	149,635	4,349	153,984
1965	795.0	1,658.0	2,453.0	416	2,869	28,375	11,590	53,720	93,685	5,100	98,785
1966	744.0	1,280.8	2,024.8	302	2,326	40,850	10,940	56,300	108,090	1,524	109,614
1967	1,015.7	1,437.3	2,453.0	268	2,721	53,270	13,010	61,350	127,640	2,371	130,070
1968	1,040.4	1,410.2	2,450.6	251	2,702	50,530	18,070	53,530	122,130	630	122,760
1969	1,678.5	1,543.1	3,221.6	182	3,404	42,800	12,090	52,010	106,900	434	107,335
1970	1,730.9	1,642.7	3,373.6	137	3,511	55,220	11,010	47,420	113,650	674	114,320
1971	1,651.2	1,507.8	3,159.0	134	3,293	36,240	10,350	37,300	83,910	400	84,310
1972	2,347.1	1,154.9	3,502.0	188	3,690	31,630	6,720	31,180	69,530	850	70,380
1973	2,626.0	1,163.0	3,789.0	206	2,995	25,810	7,735	28,250	61,800	1,018	62,818
1974	3,175.0	1,088.0	4,263.0	129	4,392	33,441	6,991	35,608	76,040	1,967	78,007

Source: Annual Sea and Inland Fisheries Reports of Department of Agriculture and Fisheries, Dublin.
Foyle Fisheries Commission Annual Reports and Communications from G.D.F. Hadoke, Secretary, Foyle Fishery Commission.

dependent on Government subventions. The drop in the Commission's own catch, has, in part, been deliberate. Angling catches had declined seriously after 1967 and the Commission felt that in order to protect stocks it should curtail its own netting and allow more fish up river to spawn. Published figures seem to indicate that this policy has paid off. Angling catches appear to have started to improve again and if this trend continues, the Commission may soon be able to increase its operations. Unfortunately, however, there is some reason to believe that improvement in the angling catch is more apparent than real. The angling figures are based on a postal survey of licence holders and in the past the response rate was very poor (less than 15%). In the last few years, reminders have been sent out to all non-respondents and as a result the response rate has now gone up to about 50 per cent with a consequent increase in the catch figures. The latter figures therefore may not show the correct trend, but despite this I understand that there has been some improvement in the angling. The catch per angling licence has improved in recent years, and this is a good indication.

The apparent improvement in angling catches in 1973 and 1974 must not, however, allow us to become complacent. The high drift net catch, both off Burtonport and the Foyle, pose a threat to Foyle stocks and it is my opinion that these operations should be subjected to more adequate controls. The Governments of both the Republic and Northern Ireland have taken steps in recent years to peg down numbers of net licences according to certain criteria, but much more needs to be done. They should take a lesson from the Canadian experience and be somewhat ruthless in this regard. Nor should they be over-influenced by many of the arguments put forward by the drifters, particularly, where as is often the case, the latter can earn sufficient income from other fishing, and they would not suffer undue losses if their salmon operations were curtailed. Even the regional hardship argument is only partly valid. The offshore catch simply results in reduced incomes and employment for inshore netsmen and for those who provide services to anglers.

There is also little merit in the argument, that expansion of sea netting of salmon is justified as a means of expanding Irish sea fishing on a broader basis for

other species. The total earnings from salmon is small and in the long run the Irish sea fishing industry would be better served by a vessel subsidy programme, training schools and other actions to provide direct incentives for increased activities in salt-water fisheries that can stand increased pressure. Finally, in this connection I would state as my opinion that if the salmon stocks of this island are to be completely safe-guarded, large scale highly organised drift netting would need to be banned entirely. Small scale drift and draft netting if properly controlled as in the past, pose no serious threat. Despite these arguments, however, it will be politically difficult to curb the drift netting, and until such time as this happens, the Foyle management will have to cope as best it can with the situation.

Because of the serious decline in angling catches between 1967 and 1972 it is still feared that escapement is not sufficient to maintain stocks, and some people have suggested that there should be a very severe or even complete ban on netting in the estuary. This however would be a very drastic step and it is doubtful if it would be very beneficial in the long run. The arguments against a complete closure of the net fishery are:

1. Salmon netting provides income for people in depressed areas of Northern Ireland and the abolition of netting would reduce considerably the income of these people. In 1973, the 282 licence holders, other than drift netters, in the public Foyle Fishery caught 28,000 salmon valued at about £144,000. The income from salmon fishing per licence holder was therefore about £500. Even allowing for the fact that there is more than one person per licence this is a substantial income for such people and in its absence the government would have to provide alternative employment which might be difficult to find.

2. The net fishery operated by the Foyle Fishery Commission provides considerable funds which are pooled with other Commission revenue to pay for management and protection of the whole fishery. If all net fishing were to be abolished these funds would have to be provided by the two governments out of general taxation, and there are many who would argue that this would be an unjust tax; that the people who gain from the angling should pay for it. The latter argument could of course be countered in various ways but it can be taken that if all the money for management and protection had to come from public funds, the service provided would not be very good and the angling would probably be worse that it is at present.

3. The strongest argument in favour of a net fishery however is related to the value of salmon as a food fish. If the supply of this food were to be curtailed locally, prices would go so high that it would become absolutely impossible to contain poaching at any acceptable level. Even at present, poaching is taking on fairly serious proportions but if netting were abolished the poachers would take over where the netters left off and the last stage would be worse than the first. On this ground alone, therefore, a policy for the complete banning of netting even if politically possible, could hardly be justified. There are various ways of controlling the net intake without imposing an outright ban.

The degree of control which should be exercised is therefore the crucial question. What proportions should be taken by the Commission's own fishery, by the public drift and draft nets, and allowed up river for angling and spawning? In the ultimate analysis this is a political question and I can do no more than state certain guiding principles and give my own opinions for what they are worth. As Crutchfield says[(2)] (about fishery management), "it is unlikely that a unique optimal solution can be found; thus a cluster of generally acceptable packages of goals, and programmes for their achievement, may well offer a choice to be determined ultimately by political palatability".

Available Packages

If a fishery is regulated so as to maximise the total output of fish over time the management would concentrate on having a relatively large net fishery and a relatively low escapement up river for spawning. In such circumstances the up river angling would be poor. In other words, quality angling demands that more fish be available up stream than are required for optimal spawning escapement. The Foyle Commission must therefore decide whether it should aim at maximising total fish output, go for quality angling, or for an intermediate policy.

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(2) Crutchfield, J.A. - "Economic and Political Objectives in Fishery Management", Transactions of the American Fishery Society, Vol. 1, 102, 1973.

Fishery economists tell us that social and economic benefits, and not fish numbers, are the desired outputs to be maximised, that if the value of a block of fish is greater when taken by anglers than by netsmen, then a smaller catch from a mixed fishery would yield greater total benefits than a larger catch from a mainly net fishery. Also the greater the proportion of fish allowed to reach the rod fishery, the safer the stock.

In our studies of salmon fishing in the Republic we examined this question in some detail by making an economic evaluation of angling and commercial fishing. As the methods of making such evaluations may be of some interest I will describe briefly how we did the studies and the problems encountered, both conceptual and practical.

In the case of the commercial fishing, no great conceptual problems were encountered. The value of the fishing to an individual fisherman is the value of the fish caught less the cost of catching. The value to the state is a somewhat different concept, being the value of the fish less any imports required in catching them. As the imports required in the commercial catching of fish are rather small, the value to the state can usually be taken as the value of the fish.

The economic evaluation of angling is however a more complex question. Certainly, the value of an angling site cannot be approximated by the value of the fish caught, and in many cases the amount spent by anglers is not a good representation either. Strictly speaking the amenity value of a resource is the amount of money which people are willing to pay for the use of it. The difficulty however is to determine the magnitude of this payment. In some cases

the users spend very little in connection with the amenity, but nevertheless it may provide them with great mental and physical relaxation for which many of them would pay highly if they had to, and would object strenously if its existence were threatened.

In this connection, the Netherlands situation is worthy of mention. For some time employers in that country have found it difficult to employ workers unless outdoor recreational facilities are provided. This is particularly true in the densely populated, heavily polluted Rotterdam area. As a result, policy in that country is now strongly oriented towards the provision of recreational facilities in conjunction with all urban employment projects. Money for this is usually provided by private business and industry, but in the period 1960-1969 the Netherlands government itself budgeted some £1.9 million for outdoor recreation. Governments in less densely populated countries are not yet faced with such acute problems, but those who must provide or restore outdoor recreation in urban areas find that the costs of such projects can be enormous. Hence, regardless of the amounts actually spent, by users, potential values based on experience of similar amenities in other countries must always be considered.

Various methods of determining peoples "willingness to pay for an amenity" have been put forward from time to time. The most widely used is that suggested by Clawson[3] in which the costs of visiting a site from different distances are used to derive a demand curve from which the value of the resource can be estimated by assuming different levels of entrance fees.[4]

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(3) Clawson, Marion - "Methods of measuring the demand for the value of outdoor recreation", Resources for the Future Inc. Washington DC, Reprint No, 10, 1959.

(4) O'Connor, et al - "An Economic Evaluation of Irish Salmon Fishing: II The Irish Anglers" - The Economic and Social Research Institute, Paper No. 75, June 1974.

This method works well for resources in remote areas to which people travel long distances. It is not very suitable however for evaluating the value of urban facilities, which can be visited by large crowds at very small cost.

For amenities such as the latter, other methods of evaluation have to be used. One method is to ask people how much they would be willing to pay for the resource if they had to pay. This method usually gives a minimum value since people who are already enjoying a cheap resource are seldom prepared to admit that they would pay high admission or licence fees for it. Another method is to ask people what compensation they would expect if they were asked to give up the amenity. The answer to this question usually gives a maximum value. Once the word compensation is mentioned, people are prepared to ask the maximum.

The true answer lies somewhere between these two extremes, but it is difficult to say where. The difference is usually very wide so that the selection of one intermediate point rather than another could make a big difference to the result. Psychologists are now working on batteries of questions which they hope will elicit fairly good answers, but these newer methods are still undeveloped.

In the South of Ireland, salmon anglers, both home as well as foreign, travel fairly long distances for their fishing and for that reason we used the total expenditure of the anglers as a basis for estimating the value of the angling, while, for the commercial fishermen we used the value of the fish. These figures were however adjusted in various ways to take account of imports, and multiplier effects, but in the final analysis we gave a series of values which could be used for different purposes. One of these estimates showed that the value of salmon angling to the Republic in 1970 was about £1.25 million while that of commercial fishing was put at £1.9 million giving a total for the

industry in that year of about £3.1 million. As this figure included a multiplier effect we considered it to be a maximum value. When the multiplier effect however was omitted the value came to about £2 million which is probably a minimum value.

Having made calculations we used the figures obtained to compare angling and commercial fishing in the national economy. I quote from our conclusions:[5]

> "The relative merits of angling versus all commercial fishermen are difficult to assess. As was shown above, angling is far from being a mere hobby; it is a valuable source of income, employment and export earnings. However, this case must not be overstated. Over-zealous advocates of angling sometimes do this by quoting the value of a salmon to a commercial fisherman as being, perhaps, £2, while to a foreign angler the same fish is worth over £100 (in the sense that the total expenditure by all foreign anglers divided by their catch gives an average of over £100). The fallacy in this argument is in its implications rather than in its facts, for it implies that if one more salmon is let up the river, an extra £100 will be spent by anglers.
>
> Let us assume that commercial catch is at or below the maximum sustainable, and that commercial netting is restricted so that 1,000 salmon are allowed upstream which would otherwise have been caught by netsmen. The figures given in the 1972 Annual Report of the Salmon Research Trust[6] show that in the Burrishoole river system in Co. Mayo, where the total number of ascending salmon is counted, the percentage of the total salmon stock in the system taken by anglers was about 22-24 per cent. If we assume that this is reasonably typical of the State as a whole, then the efficiency rate of angling in Ireland is 20 per cent.
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> This will give a catch of 200 salmon from our initial 1,000. In 1970, we have estimated that 15 per cent of the catch went to visitors and 85 per cent to Irish residents. If we assume that these proportions continue to hold, about 30 salmon of this two hundred will be caught by visitors and 170 by Irish anglers. We have also estimated that the catch for visiting anglers is 1.1 lb per rod/day (= 0.16 salmon, at 7 lb per fish) and the catch of Irish anglers is 1.0 lb per rod/day (= 0.14 salmon, again at 7 lb per fish). Thus, the 200 fish will yield 188 (= 30/.16) rod/days for visitors and 1,214 (= 170/.14) rod/days for Irish anglers. Visitors spend an average of

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(5) Whelan, B.J. et al "An Economic Evaluation of Irish Salmon Fishing, III: The Commercial Fishermen" The Economic and Social Research Institute, Paper No. 78, Dublin 1974.

(6) Salmon Research Trust of Ireland, Annual Report, 1972.

about £7.2 per rod/day while Irish anglers spend about £1.2 per rod/day. This gives a total expenditure of about £2,800 for the 1,000 salmon (= 188 x 7.2 + 1,214 x 1.2), i.e. a value per fish of about £2.81. The commercial value of a salmon in 1970 was about £2.45.

Several qualifications to this illustrative example must be kept in mind. In the first place, it makes many assumptions about the constancy of the various proportions involved. We assume that in the new situation the proportion of Irish to visiting anglers remains constant. This may not be valid if total stocks are considerably above or below their 1970 levels. Furthermore, the efficiency of angling may be somewhat high. Lower rates would lead to a lower figure for value per fish.

Secondly, it should not be forgotten that a certain proportion of the salmon which escape the anglers will survive spawning, and return in later years to provide either income for netsmen or sport for anglers. If all the 1,000 fish are caught by netsmen, this cannot happen.

Thirdly, it cannot be over-emphasised that the above example refers to a situation where adequate numbers are allowed to spawn. If the numbers of fish upstream are below the spawning capacity of the river, then allowing up this 1,000 extra fish will yield not only a return of £2.81 per fish in the current year, but will also yield returns to both anglers and netsmen in future years. The advisability of restrictions on netting in this case is obvious.

A fourth, and final, qualification relates to the responsiveness of numbers of anglers to changes in the stocks of salmon. In the above example, we have assumed that, for each proportionate increase in the numbers of catchable salmon, the rod/day and money spent by anglers will increase in the same proportion. The validity of this assumption* cannot be accurately assessed at the moment.

However, the British National Angling Survey[5] does show that there are half a million game fishermen in Britain, of whom, only about one in ten usually catches salmon, but nearly half of whom would like to catch salmon

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* The economist might term this concept the elasticity of demand for salmon angling with respect to the (expected) success rate. In the example, we have assumed it to be equal to 1. It could just as easily have other values, either greater or less than 1.0. An elasticity of greater than 1.0 would imply that the above value per rod-caught fish of £2.81 is an underestimate, while an elasticity of less than 1 would imply that this value is an overestimate. An attempt was made to assess the elasticity by means of regression analysis, but the results were unsatisfactory.

(5) National Opinion Polls Ltd., National Angling Survey, 1969-1970, London: Natural Environment Research Council, April (1970).

more than any other game fish. This is evidence of a large and unsatisfied demand for salmon angling, and suggests that increases in the salmon stocks in our rivers would be matched by increases in the number of visiting anglers.

The choice between exploitation by angling or by commercial methods is thus far from clearcut. It is further complicated by the fact that, in places, whole communities are dependent on commercial salmon fishing as an important part of their livelihood. Excessively stringent restrictions will hit these communities hard. On the other hand, so would a decline in salmon stocks. Furthermore, advocates of angling argue that angling is a far less "salmon-intensive" way of creating income and employment than is commercial fishing. That is, in a time of heavy pressure on stocks, more income and employment would be provided by angling than by commercial fishing. They also claim, with some justification, that angling should be encouraged because anglers help to protect rivers by reporting poaching and pollution, so benefiting all fishermen.

The argument is sometimes taken even further and a total ban on all commercial fishing is suggested. We feel that this is too extreme a view in the present Irish context, as it would probably lead to considerable wastage of fish which could be harvested without long-term detriment to the stocks, or severe losses in income and employment from angling. The best course would seem to be to strike a balance between the interests of those at various stages in the exploitation sequence. These interests are frequently in conflict, and so this balance will, implicitly or explicitly, involve value judgements. However, the over-riding consideration of policy should be to ensure the survival of our salmon stocks. Ultimately, this must be to the benefit of <u>all</u> salmon fishermen."

The views expressed in this quotation apply even with greater force to the Foyle and there is a strong case for the release of more spawning fish than at present. Ideally this could be achieved by a curtailment of drift netting both in the Letterkenny and Foyle districts, but if this does not prove adequate, closure periods in the estuary will have to be lengthened. Having said this, howver, I must refer to one point which has come to my notice through reading the Foyle Fishery Annual Reports. Some years ago when angling licence fees were increased there was a serious decline in the number of licences purchased, and if this response is an indication of "willingness to pay" then it might be said that Foyle anglers are not prepared to pay as much for their salmon angling as many people would have us think. We must be careful however with this type of interpretation. When people

get used to a certain fee there is a strong resistance to having it increased, particularly if the service provided (in this case the angling) is not too good. Hence the unwillingness to increase licence fee payments may be a reaction to various deeply felt grievances and not a true indication of willingness to pay for the pleasure of salmon angling.

Having said this, however, it should be pointed out that the greatest benefit to this country from angling will come from the overseas visitors. In 1970 the salmon anglers who visited the Republic spent on average £190 each within the State. Of those, visitors from Northern Ireland spent £86, those from Great Britain £195, those from the rest of Europe £234, while those from the rest of the world (mainly USA) spent £364 each. These are impressive figures, which indicate that visiting anglers should be encouraged in every way. Hence if angling in the Foyle and its tributories is to be improved, serious attempts should be made to attract out of State visitors, and precautions taken to ensure that the visitors are properly treated, and not given the worst waters in which to fish.

In conclusion, I should say that if netting in the estuary is to be curtailed the future of the Commission's fishery must be considered. As stated above, the funds from this fishery are an important part of the Commission's total revenue and regardless of what other restrictions are imposed, the take in this fishery, must not (if possible) be allowed to decline much further. This dilemma, however, is one which lies beyond my brief to resolve. But even at its present level of operation, the Londonderry fishery is not able to provide sufficient funds for its needs, particularly for the control of poaching. In future, therefore, both netsmen and anglers will have to help with this operation. I understand from the Foyle Fishery Annual Reports that co-operation in this regard is already forthcoming and I sincerely hope that it can be continued. Indeed if the angling were improved it would be possible to charge higher licence fees, which could be given back to clubs again for the payment of part-time water keepers.

Summary

Drift netting with sophisticated gear poses a serious threat to the Atlantic Salmon in many rivers. Canadian stocks have been seriously reduced by the Newfoundland drift netters. The Foyle is now in danger from its own and the Burtonport drift netters as indicated by the declines in draft net catches in the estuary in recent years.

The obvious solution to the Foyle problem is a firm control of drift netting off the Irish coast. Minor restrictions are not sufficient. The large modern boats, if allowed to operate freely, can cause grave damage to stocks. Despite the drift netting danger, however, it is unlikely to be controlled sufficiently for some time, and until it has done much more obvious damage. Entrenched vested interests will see to that. In the meantime, therefore, the Foyle Fishery will have to make the best of a disimproving situation.

In these circumstances some authorities think that draft netting in the estuary should be drastically if not completely curtailed. In my opinion, the banning of draft netting, even if it could be implemented, would be both undesirable and ineffective for the following reasons:

1. Netting provides some revenue for low income people and its absence would mean increased social welfare payments.

2. Income from the Commission's own netting operations provides most of the revenue for the management of the whole catchment area. If this income were foregone the protection of the fishery would be imperilled.

3. Salmon is a valuable food fish. If netting were prohibited, local prices would increase substantially and the poachers would take over where the netters left off. This would be a most undesirable situation.

Some combination of netting and angling seems therefore to be the only solution, but what combination? If the aim is to maximise the number of fish taken over time, a very small escapement from the nets would suffice for breeding purposes.

This however would give very poor angling and there are many who claim that quality angling gives higher economic and social benefits than netting. Figures from the Republic show that under certain circumstances this is so and indeed if the present Northern troubles could be ended, and the angling improved, the income from salmon angling could be greatly increased. There are thousands of British anglers who would gladly spend their holidays in Ireland, North and South.

It behoves fishery management therefore to try and make a fair division between netsmen and anglers. There is of course no objective or automatic mechanism for doing this. It is really a question of hearing the conflicting arguments and trying to arrive at some acceptable compromise. In all the discussion, however, it should be made clear that the Commission's own netting operations must be the last to be sacrificed. If these go the future of the Foyle Fishery could be in danger.