



ATLANTIC SALMON TRUST

PROGRESS REPORT

September 1985



The Atlantic Salmon Trust
The Cottage, Druimuan House, Killiecrankie
Pitlochry, Perthshire PH16 5LG
Telephone: Pitlochry (0796) 3439

Patron: HRH The Prince of Wales

GENERAL COUNCIL

President: *The Duke of Wellington
Vice President: *Vice-Admiral Sir Hugh Mackenzie
Chairman: *Mr. David Clarke
Vice-Chairmen: *Mr. D. W. Nickson
 *Sir Ernest Woodroffe

Members: Major the Hon. J. Ashley-Cooper
 Mr. John Bennett
 The Rt. Hon The Lord Biddulph
 *Mr. Gordon Bielby (representing the
 Water Authorities Association)
 Mr. R. A. Buck
 *Dr. W. M. Carter
 Lady Cleminson
 Captain A. A. Compton Farquharson of Invercauld
 *The Hon. Mrs. Jean Cormack
 Mr. J. F. Cullman 3rd
 *The Hon. E. D. G. Davies
 Mr. R. J. Deterding
 Mr. J. Golding
 *Mr. N. W. Graesser
 *Mr. G. D. F. Hadoke
 Sir Stephen Hammick
 Dr. G. Harris
 *Mr. S. P. L. Johnson
 The Rt. Hon. The Viscount Leverhulme
 Mr. D. E. Longe
 Lord Lovat
 *Major Colin Mackenzie
 *Dr. D. H. Mills
 *Mr. I. Mitchell
 *Lord Moran
 *Mr. Moc Morgan
 Mr. A. Oglesby
 Mr. Cranley D. Onslow
 Mr. I. G. Rolland
 Mr. J. R. W. Stansfeld
 Dr. Leslie Stewart
 Mr. Philip Tallents
 *Mr. W. A. C. Thomson
 Mr. Michael G. T. Webster
 *A representative of the British Field
 Sports Society
 A representative of the Spey Fishing Trust

Director: *Rear Admiral D. J. Mackenzie
Deputy Director: *Mr. Alex. Prichard
Secretary: *Mr. E. Earl
Treasurer: *Mr. M. O'Brien

*Members of Committee of Management

The "Salmon" on the covers is by courtesy of
Charles Jardine

HONORARY SCIENTIFIC ADVISORY PANEL

Sir Ernest Woodroffe, Ph.D., F.Inst.P., F.I.Chem.E. (Chairman)
Mr. I. R. H. Allan, M.A.
Professor R. W. Edwards, B.Sc., D.Sc., F.I.Biol., F.I.W.P.C., F.I.F.M.
(University of Wales Institute of Science & Technology)
Mr. G. D. F. Hadoke, M.A., M.Sc.(Econ.), F.I.F.M.
Dr. M. M. Halliday, Ph.D., (Joseph Johnston & Sons Ltd.)
Dr. Graeme Harris, Ph.D., (Welsh Water Authority)
Dr. G. J. A. Kennedy, Ph.D., (Department of Agriculture for
Northern Ireland)
Mr. E. D. Le Cren, M.A., M.S., F.I.Biol.
Dr. D. H. Mills, Ph.D. (Department of Forestry & Natural Resources,
Edinburgh University)
Mr. I. Mitchell, B.Sc., (Tay Salmon Fisheries Co. Ltd.)
Dr. D. J. Piggins, Ph.D., B.Sc., (Salmon Research Trust of Ireland Inc.)
Miss E. Twomey, M.Sc. (Department of Fisheries & Forestry, Dublin)

Observers: Mr. B. Stott (Ministry of Agriculture, Fisheries & Food)
Mr. W. Shearer (Department of Agriculture & Fisheries
for Scotland)
Dr. D. Solomon (Ministry of Agriculture, Fisheries & Food,
Lowestoft)

INTERNATIONAL CONSERVATION ORGANISATIONS

WITH WHICH THE TRUST IS IN CONTACT

France: Association Internationale de Defense du
Saumon Atlantique
Belgium: Belgian Anglers Club
Ireland: Irish Game Fish Protection Federation
Norway: Jeger og Fiskerforbund and Laksen of Oslo
Sweden and Theodor Dalensson, Scandinavian
Scandinavia: Atlantic Salmon Group
Spain: Asturian Fishing Association of Oviedo
U.S.A.: Restoration of Atlantic Salmon in America Inc.
Canada and
U.S.A.: Atlantic Salmon Federation

This is the first Progress Report to be published since Gerry Hadoke retired and John Mackenzie succeeded him as Director of the Trust. I speak for all the Management Committee when I say how grateful we are to John Mackenzie for all his hard work and the extremely efficient way that he has taken over the reins. I am delighted to report that Gerry Hadoke is continuing to work for the Trust in a part time capacity.

The Scientific Panel, under the Chairmanship of Sir Ernest Woodroffe, has published a number of 'Blue Books' during the year. I am delighted to report that, not only have they been very well received, but also that they are in great demand.

The Trust moved to temporary accommodation in Scotland last December. Due to a munificent gift from a supporter, the Trust has been enabled to purchase a permanent home at Moulin near Pitlochry. It is intended to move in before the end of the year. The gift will also enable the Trust to instal a computer. It is intended to computerise all the vast mass of information the Trust possesses.

Our Deputy Director, Alec Prichard, has been active in the EEC, particularly in France. It is particularly pleasing to note that he has been appointed Vice President of L'Association Internationale de Defense du Saumon Atlantique, thus cementing our close relationship with the French.

Our Patron, HRH Prince Charles, has taken a great interest in the work of the Trust. We are all very grateful for his help and encouragement.

Finally I would thank all our many supporters, not only for their financial support, but also for much hard work and help.

David Clarke
Chairman

THE ATLANTIC SALMON TRUST LTD.

SUMMARY OF ACTIVITIES

The Trust as a registered Charity has continued to act as a focal point for the collection and dissemination of new knowledge and facts about Atlantic Salmon.

At the end of 1984 the Trust moved to Scotland and established a temporary headquarters at Killiecrankie near Pitlochry. Negotiations are now in hand for the purchase of a property in Pitlochry and it is hoped to move finally into the Trust's own home in December 1985.

David Nickson has become a Vice-Chairman and the Management Committee has been strengthened by the addition of Lord Moran and Mr. Bill Thomson, Chairman of the Tweed Commissioners.

Gerry Hadoke retired as the Director and Rear Admiral John Mackenzie succeeded him in December 1984. Alex. Prichard has been made a Deputy Director with special responsibility for Europe, the Postal Fishing Auction and for general liaison with the Water Authorities and Conservation Organisations in England.

The Trust has published three Blue Books during the year. Dr. Solomon's Bessinger-Liddell Memorial Fellowship "Salmonid Enhancement in North America"; the "Report of a Workshop on Salmon Stock Enhancement" by David Le Cren; and "Salmon Stocks: A Genetic Perspective" by N. P. Wilkins. A further Blue Book on the Sea-Trout Workshop is at present being prepared.

The Trust has decided to sponsor an International Conference in Biarritz in October 1986 and this will be titled "Atlantic Salmon: Planning for the Future" and the theme will be Legal and Illegal Salmon Exploitation in the home waters of salmon producing Countries.

On the home front the Trust has continued to press for the banning of Drift Netting around the coasts of England, Wales and Northern Ireland. Drift Netting is not allowed off the Scottish coast. The Trust is disappointed that there has been no progress in the introduction of a salmon sales tagging scheme and notes that Ministers hope to make an announcement "soon"! The Trust firmly believes that if the will was there the scheme could be made to work. Any dealer licence scheme is very much a second best.

The Trust has, along with The Salmon & Trout Association, been granted observer status to NASCO. There are limitations on what can be done but at least it is a foot in the door. NASCO must be seen to grow in stature and needs all the support that can be given to it.

The Trust is, as in the past, indebted to the Fishmongers' Company for the assistance and advice given even though we are now several hundred miles apart.

COVENANTS

Everyone's attention is drawn to the last page of this Report where there is a tear-out Covenant Form. As will be well known, this is a very beneficial method of giving especially for the higher rate tax payer.

PUBLICATIONS

Salmon Stocks: A Genetic Perspective	by N.P. Wilkins	£1.50
Report of a Workshop on Salmon Stock Enhancement	by E.David Le Cren	1.50
Salmonid Enhancement in North America	by D.J. Solomon	2.00
Salmon in Iceland	by Thor Gudjonsson and Derek Mills	1.00
A Report on a Visit to the Faroes	by Derek Mills and Noel Smart	1.00
Problems and Solutions in the Management of Open Seas Fisheries for Atlantic Salmon	by Derek Mills	1.00
Scotland's King of Fish	by Derek Mills	1.85
Atlantic Salmon Facts		

FILMS AND VIDEO CASSETTES AVAILABLE FOR HIRE

"Will there be a Salmon Tomorrow"	- 16mm Film and Video (VHS)
"The Salmon People"	- Video (VHS)
"Irish Salmon Harvest"	- Video (VHS)
"Managing Ireland's Salmon"	- Video (VHS)

Films and Videos may be obtained from the Trust for private showing by Clubs, Fishery Managers etc. A donation to A.S.T. funds is required in return!

ESTABLISHMENT OF A PERMANENT OFFICE IN SCOTLAND

The Trust has negotiated the purchase of a four roomed terraced house in Moulin on the outskirts of Pitlochry, as its headquarters. Planning permission for change of use has been obtained and refurbishment is under way. The office will move in December 1985. The telephone number will be the same as at present and the address much simplified to "Atlantic Salmon Trust, Moulin, Pitlochry, Perthshire PH16 5JQ. The new office consists of four

good sized rooms and the usual offices. It is intended to furnish the offices with new furniture which will last for many years. Up to now the Trust's offices have existed on very second-hand furniture and rather broken-down chairs! It is intended to purchase a desk top computer and advice is being sought as to the best and simplest. Once the move has been made there will be time and space to sort out the mass of publications that have been accumulated over the years. It is intended to employ, for a short time, a library student or similar person to catalogue the Trust's papers. Once catalogued they can be put onto a computer and thus very much ease the task of reference to past papers and correspondence. By the Spring of next year we should be in a position to give a much improved service of information to all concerned.

HOPETOUN SALE

As was reported in the last Progress Report, Christies very kindly organised a Sale of fishing, shootings and stalking rights and objet d'art on behalf of the Trust, at Hopetoun House on Friday 22nd March 1985. Lord Home of the Hirsell addressed the company before the Sale started. The Trust is most grateful to all those who donated to the Sale and to all those who bought. In particular, the Trust would like to thank Christies for their organisation and generosity. Her Majesty Queen Elizabeth The Queen Mother and His Royal Highness The Prince of Wales were among those who generously gave to the Sale. Mr. Ted Hughes, The Poet Laureate, donated a Poem and a note concerning this appears elsewhere in this Progress Report.

The evening was a great success and resulted in over £23,000 being donated to the Trust. Up to half the funds raised will be used to publicise the Trust's aims, in particular with regard to the abolition of Drift Netting, and the reorganisation of the District Salmon Fishery Boards in Scotland. The remainder will be used for further research as outlined in the Trust's Aims and Objectives.

POSTAL FISHING AUCTIONS

Since 1982 the Trust has organised an annual Auction of fishings through postal tender as a fund-raising exercise, and during the period under review the catalogue was duly produced and about 1,000 copies distributed to members of the public. There were 96 Lots on offer and a total of some £10,000 was raised. This was a satisfactory achievement, particularly since the great majority of the fishing was in the rivers of England and Wales, and the Trust is deeply grateful both to the donors and to the generous bidders. This annual event has proved a great success with the public. It is a very pleasant exercise in that not only does the Trust derive publicity as well as financial benefit, but the successful bidders have both the satisfaction of acquiring fishing on beats to which they might not otherwise have access whilst at the same time contributing funds to what they believe to be a good cause. By the same token, riparian owners are often ready to give a day or so's fishing more willingly than they would donate an equivalent amount in cash. A similar Auction for the 1986 season is at present being organised.

THE TRUST IN EUROPE

Because of the international life cycle of the salmon, the Trust has always recognised the need to consult with other salmon producing countries on problems of conservation and enhancement of stocks. Over the past few years the Trust has been active in enlisting the support of like-minded groups in other European countries and in international organisations concerned with conservation, both in general and of the Atlantic salmon in particular.

For many years, members of the Board of Management of the Atlantic Salmon Trust have been co-opted as Directors of the Association Internationale de Defense du Saumon Atlantique (AIDSA) which is the Trust's opposite number in France and whose objectives are very similar to those of the Trust. For the past three years the Trust's Deputy Director has been an active member of the Board of Management of the AIDSA and was elected Vice-President during the period under review. The Trust has offered help to its French opposite number and has received useful information and support in international bodies from French colleagues. The position of the Atlantic salmon in France is a difficult one, but the AIDSA is making very considerable efforts to restore the stocks to rivers which, in the past, were famous for their salmon populations, and headway is being made, though slowly. The French do not suffer from the same difficulties as the British, where most of the trouble lies with the poachers and the drift netmen. In France, the rivers have been spoliated by the random extraction of sand and gravel from spawning grounds and from the construction of large numbers of micro hydro electric generating stations without adequate fish passes, but these problems are now indentified and steps are being taken at the highest level to put them right.

The Trust has, of course, very close contacts with scientists and fisheries managers in the Republic of Ireland and, indeed, the Irish are represented on the Trust's Honorary Scientific Panel.

The other principal salmon producing country, Norway, is one with which we have good contacts, and the Trust follows closely the moves in that country to put an end to the drift net fishery. The Trust also has contacts with Spain and Sweden who provide information on catches, but this is of a spasmodic nature and it is the intention to systematise all the European contacts with the object of building up a corpus of comprehensive statistical information of salmon catches throughout Europe. In addition it would greatly strengthen the position of all conservation organisations if they could be brought together to speak with a single voice.

In addition to contacts with individual countries, the Trust has established working relations with a number of international bodies interested in the Atlantic salmon. The Trust has Observer status on ICES and has now acquired similar status with the North Atlantic Salmon Conservation Organisation (NASCO) which has its headquarters in Edinburgh. This status will provide the Trust with the opportunity of making known its views on all matters concerned with the Atlantic salmon through the EEC delegation to NASCO

It should be understood that Her Majesty's Government, as such, is not a member of NASCO, but the EEC Commission speaks for the British Government as well as all other Member States of the European Economic Community. The Director and the Deputy Director of the Trust have contacts with and have put forward detailed proposals to senior officials involved with fisheries policy at the EEC headquarters in Brussels where they receive a very sympathetic hearing. The Trust has also established links with the Council of Europe and has been granted Observer status on the European Committee for the Conservation of Nature and Natural Resources. The Trust may therefore send whoever they feel most appropriate to represent their interests at the meetings of this Committee, and the representative is at liberty both to present papers and to speak on fishery matters. The Council of Europe is a particularly important forum from the Trust's point of view both because of its special concern with conservation matters and because its membership, including as it does the Scandinavian countries, is wider than that of the EEC.

In great part due to initiatives taken by the Trust, the European Parliament has taken up the cause of the Atlantic salmon, and representatives of the Trust are afforded the opportunity of exchanging views with members of the Fisheries Sub-Committee of the European Parliament. The Trust is able to advise and influence speakers in debates in the Parliament at Strasbourg and in Brussels.

The Trust is also a member of FACE, which is the Federation of EEC Hunting Organisations, and through this organisation has been able to make valuable contacts with influential bodies on the European continent concerned with the conservation of wild life.

The importance of developing contacts in Europe lies in great part in the influence which the European organisations may bring to bear on public opinion in the salmon producing and harvesting countries and, through public opinion, on the policies of the Governments responsible for regulating the conservation and management of Atlantic salmon stocks. The Trust is concerned with the strategic, long range issues and not with the management of individual river systems which should be left in the hands of the people on the spot, and the Trust feels that through informing opinion on a Europe wide basis it is fulfilling its role of serving the best interest of stock conservation and enhancement wherever the salmon may be.

THIRD INTERNATIONAL ATLANTIC SALMON SYMPOSIUM

The Trust has decided to co-sponsor with the Association Internationale de Defense du Saumon Atlantique (AIDSA) the Third International Atlantic Salmon Symposium which will take place in Biarritz, France, in October 1986. This Symposium will be organised in association with the Atlantic Salmon Federation of North America. The title of the Symposium is: Atlantic Salmon: Planning for the Future, and the theme will be the legal and illegal salmon exploitation in the home waters of salmon producing countries. The Trust has set up a Steering Committee under the Chairmanship of Dr. Derek Mills to organise the Symposium, and arrangements are under way to invite speakers and to make all other arrangements necessary for the three-day meeting. It is hoped that the best people

available in their fields will contribute to the Symposium and that the scientific content will be of the highest quality. The Trust has very much in mind, in organising this Symposium, the need to provide the best possible information on which sensible salmon conservation policies may be adopted by the salmon producing countries of the North Atlantic.

DRIFT NET FISHERIES

Background: The Ministry of Agriculture Fisheries and Food and the Department of Agriculture and Fisheries for Scotland have for some time complained that the salmon conservation bodies have failed to present a united front on any of the current issues. The A.S.T. decided to call a meeting in Edinburgh of those organisations interested in conserving salmon, in order to find the lowest common denominator on which all could agree. At the meeting it was unanimously decided that an approach to Ministers should be made calling for a complete ban on Drift Netting off the coasts of England, Wales and Northern Ireland.

NASCO

The North Atlantic Salmon Conservation Organisation at their recent meeting in Edinburgh, 3rd - 7th June, failed to agree on catch quotas for the Greenland and Faroese High Seas Fisheries. The Greenland and Faroese delegation made it clear that they looked to the salmon producing countries to "put their own house in order" and to reduce the ever increasing catches in drift nets, of fish returning to their native rivers. The UK is represented in NASCO by the EEC and the Trust has been warning Ministers for some time that pressure will come on to reduce our own "interceptary fisheries" It is understood that since the NASCO meeting a bilateral agreement for one year only has agreed a quota for Faroese Fishery of 550 tonnes for 1986 only. This represents a reduction of 75 tonnes.

Drift Netting

Drift netting is a traditional method of fishing which, until the advent of monofilament nets, caught a moderate number of fish per year.

N. E. Coast Drift Netting Catches

Average declared catches	1950 - 59	2162
	1970 - 79	48140
	1984 catch	77220

MAFF Answer to Questions on Drift Netting

All the answers given by MAFF on the N.E.Coast Drift Netting appear to be based on a 1982 Report from Lowestoft Marine Laboratory by Messrs. Potter and Swain. The conclusions of this Report which is based on the 1977 figures show that "probably more than 94% of these fish are returning to Scottish waters". It also states that the total effect of these fisheries on all catches on the Scottish east coast rivers between the Tweed and Ugie in 1977 was approximately 6.4%.

It is of interest that in 1977 the total catch in the N.E. Drift Net Fishery was 52,886

The A.S.T. is convinced that the time has come for Drift Net Fishing to be banned. The non catch fishing mortality in Drift Nets has been reported as being in excess of 25%, the larger fish suffering less than the smaller ones. The damage to fish that drop out is seen only too often by fishermen in the rivers where fish are caught with net marks on them. The damage to fish caught in the Drift Nets often makes them unfit for smoking due to internal bleeding.

Sea birds are caught in the nets and sea mammals have also been reported as being killed.

The A.S.T. has no wish to put people out of work but many more people are having their livelihood threatened in Scotland where the poor catches both by rod and net are having a drastic effect on the salmon fishing industry as a whole. The N.E. Fishery is taking far more than its fair share and so indeed are the drift nets around Ireland.

Recent answers to questions in the House of Commons are of interest.

1. " Mr. Onslow asked the Minister of Agriculture, Fisheries and Food what has led him to conclude that the catch from the north-east drift net fishery does not represent a threat to Scottish salmon stocks.

Mr. MacGregor: my fisheries scientists, in a report published in 1982, estimated that the effect of the north-east drift net fishery on the number of salmon caught on Scottish east coast rivers from the Tweed to the Ugie was approximately 6.4% while the effect on total salmon stocks in those rivers would have been less. Continuing work by the scientists has provided no evidence to suggest that the north-east fishery represents a threat to Scottish salmon stocks.

2. Mr. Cranley Onslow: To ask the Secretary of State for Scotland, what is his latest estimate of the effect of the north east drift net fishery on the rod and net catches of salmon, grilse and sea trout in: (a) the Rivers Tweed, Forth and Tay and (b) the Rivers South Esk, North Esk, Dee, Don, Ugie and Ythan; and how this is affecting the runs and stocks of migratory salmonids in each of these rivers.

Mr. John Mackay: The Department of Agriculture and Fisheries for Scotland estimate that the reported north east fishery catch for 1983 of 77,277 fish included the following numbers of salmon and grilse returning to rivers in the stated districts -

	<u>Districts</u>	<u>Numbers</u>
a)	Tweed, Forth and Tay	61,800
b)	South Esk, North Esk, Dee, Don, Ugie and Ythan	13,700

If one assumes an average rate of exploitation by all methods of about 25%, the drift net fishery caused reductions in catches in the Scottish rivers of 15,500 and 3,400 respectively. A substantial proportion of the balance would have escaped upriver to enhance the spawning stock."

DRIFT NETTING IN NORWAY

The Norwegian Directorate for Wildlife and Freshwater Fish has made recommendations to the Ministry of Environment in Norway on fishing as follows:-

- a) Fishing with drift nets outside the base line shall be discontinued with effect from 5th August 1987. The present licences must be extended for three years for those who qualify to hold a licence.
- b) Fishing with fixed gear in the sea shall be subject to a licencing scheme not later than would affect the 1988 season. The annual close time should be extended to 1st June.
- c) A ban should be imposed on the use of monofilament (monofil, monotwine, multimono etc.) in bound gear for catching salmon with effect from 1988 season.
- d) The fishing for salmon in water courses shall be stopped on about 20th August with effect for the 1988 season.
- e) The fishing for sea-trout and sea-char in water courses is permitted until about 5th September on special conditions with effect from the 1988 season.

These are proposed measures and it is not known whether or not they will be approved. It is interesting to see that the Norwegians are considering taking steps to ban drift netting.

THE BEST WORKER IN EUROPE

The best worker in Europe
Is only six inch long
You thought he'd be a bigger chap?
Wait till you hear my song, my dears,
Wait till you hear my song.
No Union cries his Yea or Nay
He works for all, both night and day,
With neither subsidy nor pay.

He comes out of a heap of stones
Like some old-fashioned elf.
And all he asks is plain water,
Such as you drink yourself, my dears,
Such as you drink yourself.
Two years toiling secretly,
Prepares his gear, without a sigh
To rest his head or close his eye.

And then one day he's off to sea,
And only six inch long.
Into the Black Hole, under the Ocean,
Rows himself along, my dears,
He rows himself along.
To Hell with Russian, Viking, Hun!
This great-hearted simpleton
Takes the whole Atlantic on.

These three verses are from the nine-verse poem, "The Best Worker in Europe" by the Poet Laureate, Ted Hughes. The Manuscript was sold by Christies at Hopetoun House Auction for the A.S.T. and made £1300.

The first publication of the full poem will be in the form of a handsome booklet, hand-printed on fine hand-made paper, and illustrated by Charles Jardine who also illustrated the catalogue of the Auction at Hopetoun House.

This edition will be limited to 156 numbered copies, each one signed by the Author and the Artist,

150 copies at £25

6 copies, each containing an extra verse hand-written by the Author at £50

All proceeds will go to the A.S.T. This booklet will be available before Christmas, from the offices of the A.S.T.

NOTE: Where order and cheque are received by A.S.T. before November 19th of this year, the Author will inscribe the copy with a name and dedication, according to request.

As mentioned in the last Progress Report the Trust has made arrangement with the Institute of Fisheries Management for the annual award of a Fellowship of £400 to candidates seeking work experience. The first candidate has been selected and is undergoing this experience now.

The first period of four weeks will be spent at a commercial salmon fishery in Scotland under the general supervision of Mr. Jonathon Stansfeld. A second period of six weeks will be spent at a fishery technical unit in Wales under the supervision of Dr. Nigel Milner.

The work will provide experience of most aspects of Atlantic salmon fisheries management including freshwater smolt rearing, sea-cage rearing, netting operation in the sea and estuarial waters in the district of the Esk Salmon fishery Board, the administration of angling, nets and fishing permits and the marketing of wild and farmed salmon. There will be an opportunity to become familiar with the North Esk research programme which includes the use of fish counters and fish traps. An insight into the fisheries administration and fisheries management problems of the Montrose area will be obtained by working with the staff of the District Fishery Board. Similar experience will be obtained by working with the Welsh Water Authority staff in North Wales. Here current projects include the construction of fish passes and the creation of pools relating to land drainage work. At the technical unit the student will participate in investigation in progress including acidification studies. There will be an emphasis on practical aspects of fish population census methods including electrofishing and netting of the Welsh rivers and lakes.

The Award is intended only to cover out of pocket expenses such as accommodation and travel, and the applicants would be expected to be paid by their employer.

SALMON STATISTICS

The demand for better salmon statistics goes on and the Trust welcomes the efforts of the Department of Agriculture and Fisheries for Scotland to speed up the publication of the catch statistics. The figures for 1983 were published in March 1985 and the Director is assured that the 1984 figures will be published before the end of 1985. The statistics for England and Wales for 1983 were published by MAFF Fisheries Laboratory, Lowestoft. It is understood that a summary of the previous years is at present being correlated and will shortly be produced.

Tables showing the nominal catch of salmon in home waters from 1960 to 1983 are published by kind permission of the General Secretary to ICES.

The Trust regrets that few District Salmon Fishery Boards in Scotland have followed the example of the Spey Board in publishing more detailed catch statistics. River bank rumours do not do any good for the fishing industry generally!

Table 1.

Nominal catch of SALMON in home waters (in tonnes round fresh weight) 1960 - 1983

Year	France		Engl. & Wales		Scotland**		Ireland***		Northern Ireland***/+	
	T	T	S	G	T	S	G	T	T	
1960	50-100	283	927	509	1,436	-	-	743	139	
1961	50-100	232	772	424	1,196	-	-	707	132	
1962	50-100	318	808	932	1,740	-	-	1,459	356	
1963	50-100	325	1,168	530	1,698	-	-	1,458	306	
1964	50-100	307	913	1,001	1,914	-	-	1,617	377	
1965	50-100	320	835	728	1,563	-	-	1,457	281	
1966	50-100	387	788	836	1,624	-	-	1,238	287	
1967	50-100	420	857	1,276	2,133	-	-	1,463	449	
1968	50-100	282	783	780	1,563	-	-	1,413	312	
1969	50-100	377	539	1,408	1,947	-	-	1,730	267	
1970	50-100	527	503	826	1,329	-	-	1,787	297	
1971	50-100	426	496	923	1,419	-	-	1,639	234	
1972	34	442	588	1,105	1,693	200	1,604	1,804	210	
1973	12	450	661	1,303	1,964	244	1,686	1,930	182	
1974	13	383	578	1,063	1,631	170	1,958	1,128	184	
1975	25	447	669	892	1,561	274	1,942	1,216	164	
1976	9	208	328	682	1,010	109	1,452	1,561	113	
1977	19	345	369	762	1,131	145	1,227	1,372	110	
1978	20	349	781	542	1,323	147	1,082	1,230	148	
1979	10	261	598	478	1,075	105	922	1,097	99	
1980	30	360	851	283	1,134	202	745	947	122	
1981	20	493	843	389	1,233	164	521	685	101	
1982	20	286	596	496	1,092	63	930	993	132	
1983	16	432	672	549	1,221	150	1,506	1,666	187	
1984*	25	348	503	490	993	NA	NA	887	78	

* Provisional figures

** Salmon & Grilse figures for 1962 - 77 corrected for grilse error

*** Catch on River Foyle allocated 50% Ireland & 50% N. Ireland

+ Not including angling catch (mainly grilse)

S = Salmon (two or more sea winter fish)

G = Grilse (one sea winter fish)

T = S + G

continued

Table 1 (continued)

Year	Norway++			Sweden (West Coast)	Fin- land	USSR+++	Iceland
	S	G	T	T	T	T	T
1960	-	-	1,659	40	-	1,100	100
1961	-	-	1,533	27	-	790	127
1962	-	-	1,935	45	-	710	125
1963	-	-	1,786	23	-	480	145
1964	-	-	2,147	36	-	590	135
1965	-	-	2,000	40	-	590	133
1966	-	-	1,791	36	-	570	106
1967	-	-	1,980	25	-	883	146
1968	-	-	1,514	20	-	827	162
1969	801	582	1,383	22	-	360	133
1970	815	356	1,171	20	-	448	195
1971	771	436	1,207	18	-	417	204
1972	1,064	514	1,568	18	32	462	250
1973	1,220	506	1,726	23	50	772	256
1974	1,149	484	1,633	32	76	709	225
1975	1,038	499	1,537	26	76	811	266
1976	1,063	467	1,530	20	66	NA	225
1977	1,018	470	1,488	10	59	NA	230
1978	668	382	1,050	10	37	NA	291
1979	1,150	681	1,831	12	26	430	225
1980	1,352	478	1,830	17	34	631	249
1981	1,189	467	1,656	26	44	450	163
1982	985	363	1,348	25	54	311	147
1983	957	593	1,550	NA	57	436	198
1984*	994	626	1,620	NA	44	354	152

* Provisional figures

++ Before 1966 sea trout and sea char included (5% total)

+++ USSR catch mainly salmon (2 or more sea winter fish)

S = Salmon (two or more sea winter fish)

G = Grilse (one sea winter fish)

T = S + G

Continued

Table 1. (continued)

Year	Canada xx)			USA	Total*** all Countries
	S	G	T	T	T
1960	-	-	1,636	<2	7,212
1961	-	-	1,583	<2	6,403
1962	-	-	1,719	<2	8,483
1963	-	-	1,861	<2	8,148
1964	-	-	2,069	<2	9,268
1965	-	-	2,116	<2	8,576
1966	-	-	2,369	<2	8,475
1967	-	-	2,863	<2	10,417
1968	-	-	2,111	<2	8,279
1969	-	-	2,202	<2	8,496
1970	1,562	761	2,323	<2	8,173
1971	1,482	510	1,992	<2	7,631
1972	1,201	558	1,759	<2	8,273
1973	1,651	783	2,434	2.7	9,802
1974	1,589	950	2,539	0.9	9,553
1975	1,573	912	2,485	1.7	9,614
1976	1,721	785	2,506	0.8	7,188
1977	1,883	662	2,545	2.4	7,311
1978	1,225	320	1,545	4.1	6,007
1979	705	582	1,287	2.5	6,356
1980	1,763	917	2,680	5.5	8,040
1981	1,619	818	2,437	6.0	7,314
1982	1,082	716	1,798	6.4	6,212
1983	903	530	1,434	1.3	7,188
1984*	632	475	1,107	2.0	5,610

* Provisional figures

xx) Includes estimates of local sales and by-catch

*** French catch taken as 75 tonnes from 1960 - 71
and USA catch as 1 tonne from 1960 - 71

S = Salmon (two or more sea winter fish)

G = Grilse (one sea winter fish)

T = S + G

"THE SEASON OF 1984" (by kind permission of the Nith Fishings Improvement Association)

An extract from the 1984 Report of the Nith Fishings Improvement Association is printed below. This shows that 1984 was not universally bad!

"The fact that no two seasons ever follow exactly the same pattern was exemplified in 1984. the general trend was much the same, but accentuated, with Spring and Summer salmon and herling more scarce than ever. The customary mid-season drought was much more severe and went on without respite from April until September, resulting in the lowest water level most of us have ever witnessed and the poorest sea trout fishing for many years.

The Autumn rains came as usual, if reluctantly at first, and continued almost unabated until November 30. There was a heavy run of salmon (the fact that until fairly late in the season they were unwilling, for some obscure reason, to reveal their presence, belied the real situation), a large proportion were in perfect condition, even until the last fishing day, when clean-run fish were caught in considerable numbers. U.D.N. did eventually appear, but was certainly less virulent than during the previous November. Neither did fallen leaves cause their usual problems, because they never came down in the dense masses which can render fishing highly frustrating at best and, at worst, quite impossible.

So, in spite of the barren Spring and the untoward conditions in Summer, Nith continued to enhance its reputation as an Autumn salmon river. This is also reflected in the growing number of visitors, especially from the South, who are encountered on every beat which offers permits. We are glad to say that many of them did not go back home empty-handed.

Salmon returns were up by as much as 32% on the 1983 figure and Spring and Summer salmon together accounted for only 5½% of the 1984 total, which means that 94½% of the fish were caught in the months of September, October and November (the Spring produced 29, Summer 63 and Autumn a colossal 1541). November with 499 salmon and 59 grilse, was easily the best ever (the previous highest catch was 310 in 1964, when Nith was just about at its peak). November is invariably a dour month, characterised by a preponderance of gravid fish and a high incidence of disease, but in 1984 sport was as outstanding as it was unexpected.

Grilse again arrived late (this is now becoming an established pattern) and, apparently, in substantial numbers. The catch of 664 was the best since 1980 and represented an increase of 48% when compared to 1983.

A marked decrease in sea trout returns was inevitable. It was difficult to determine the size of the run because the river became so low in July and August that fishing was extremely difficult and many rods simply gave up. Less fishing naturally means fewer fish caught, and although the return of 2456 was only about half of that of the previous year, and the lowest since 1957,

the very adverse conditions should be taken into account. It could well be that just as many sea trout entered the river as in a normal Summer.

Herling fishing seems to deteriorate each season. The fish that do appear tend to be small and to remain in the lower reaches. When one recollects the massive shoals of only a few years ago it is difficult to understand what has happened, especially since sea trout catches (discounting 1984) have shown a general improvement since the early seventies.

Although it might be said that brown trout, compared to red fish, are of little significance to the majority of Nith anglers, there are those who enjoy this type of fishing and do well on beats which are regularly stocked, and even on some which aren't. It would appear that throughout the river as a whole there are, nowadays, more good-sized browns of between one and two pounds, probably due to reduced numbers of salmon fry and parr and therefore better feeding. At the same time many anglers noted with delight the large numbers of healthy smolts which were migrating in April and May. We look forward to their safe return!

THE HONORARY SCIENTIFIC PANEL

The Honorary Scientific Panel met at the Water Authorities Association offices in London on 27th June

United Kingdom Economic Evaluation The Panel heard that the study is now under way, funded by MAFF, and is being conducted at Exeter University by Professor McInerney.

Spey Project Mr. Shearer reported and told the Panel that the Spring fish brood stock had now been impounded. Later in the year late running grilse will be caught and held until ripe for stripping. A search for suitable burns was in progress and traps had been designed so that the burns can be stocked with fry of known parentage. The Spey Research Trust is most grateful to the Trust and the HIDB for their generous support. Sufficient funds are now available for the initial study period.

The Third International Atlantic Salmon Symposium Planning Committee Dr. Mills briefed the Panel on the Biarritz Symposium.

The DAFS/Aberdeen Project The project was discussed at length. Subsequently it was agreed that Sir Ernest Woodroffe and Dr. Hawkins should meet to discuss the project. Such a meeting has now taken place and a further report will be made in the next Progress Report.

Project for Examining River Stocks in Relation to their age and Structure This project has been proposed by Dr. Kennedy and some of the members of the Panel had already commented on it. After discussion it was decided that the Trust was not in a position to saddle itself with such a long-term project as was envisaged. Mr. Shearer said that ICES had agreed that there should be an index on specially investigated rivers and that this decision might to a certain extent meet Dr. Kennedy's requirement.

Economic Evaluation of Juvenile Salmonid Habitat Dr. Kennedy said that he had been discussing with members of his Department proposals for the study of the economic value of the salmonid nursery areas in Northern Ireland. The Chairman said that he felt that this was an important subject because it would offer guide lines to persons seeking compensation for the loss of stock or habitat following pollution. As a result of discussion it was decided that the Trust should see if a pamphlet could be produced with guide lines which could be used to get the message across to everyone concerned including the Courts.

Information on Local Restocking Exercises A letter from Dr. Kennedy suggesting that the Trust might have a role to play in collecting all the information about restocking work presently carried out by the Fishery Authorities. It was pointed out that in Scotland there were few restrictions imposed on anyone wishing to restock rivers whereas in England and Wales the authority of the Water Authorities and MAFF was required. Thus it would be difficult to correlate the required information for Scotland. The Republic of Ireland publish this information as does MAFF in the 1983 salmon statistics for England and Wales.

Mitigation of Damage to Salmon Fisheries - Proposed Workshop It was agreed that the Workshop should take place at Plas Menai in the Spring of 1986.

Bessinger-Liddell Memorial Salmon Fellowship The Panel considered whether any change should be made in the existing arrangements for this Fellowship which the Trust awarded every alternate year and which was worth \$6000. The Panel did not feel that the award of a joint Fellowship each year was a good idea and thought that the Trust should remain responsible for awarding the Fellowship each alternate year.

Meeting with Fish Farming Scientists, Academics and Managers A discussion took place concerning the meeting held last November under the Chairmanship of Sir Ernest Woodroffe, to consider the effect on wild salmon stocks of the discarding of surplus stocks from salmon farms. As a result of that meeting it was agreed that the Trust should attempt to draw up guide lines. After discussion, Mr. Ian Allan offered to undertake the work and this was accepted. After the guide lines have been drawn up a further discussion will be held with the Salmon Growers Association.

Publication of Blue Books Satisfaction was expressed by members of the Panel with regard to the issue of the two recent Blue Books on Stock Enhancement, and Salmon Genetics. The draft of Mr. Le Cren's Report on the Sea Trout Workshop was being considered at the moment and future publications on the Norwegian Salmon Fisheries and the North East of England Drift Net Fisheries were awaited with interest. The Director undertook to widen the distribution of the recently published books. A discussion took place on the suggestion that a new Blue Book on "The significance of Water Quality for the Conservation of Salmon and Sea Trout" would be a good idea.

Drift Netting The Committee of Management had asked the Scientific Panel to draw up a memorandum on the subject of damage to salmon by drift nets. Dr. Solomon said that there had been some confusion about damage to salmon by both mono-filament nets and hemp nets and MAFF were due to publish a Report on this subject in a few months time. The Panel decided to postpone any action pending the publication of MAFF's paper.

THE WORK OF DAFS by Dr. R.G.J. Shelton, Freshwater Fisheries Laboratory, Pitlochry,

The fisheries research programme of DAFS currently includes an investigation, mainly based on the Aberdeenshire Dee, of local genetic differences between salmon populations. The work will involve the sampling of tissue enzymes as expressions of particular genes and direct investigation of DNA structure using restriction endo-nucleases. The objectives of the work are to investigate the concept of the "homing unit" as a component of population structure. This project forms a small part of a widely-based research programme which has as its overall objectives the assessment of the current status of the Scottish fisheries for salmonid fishes and the populations on which they depend and the recording and quantification of the input and effects of air and water-borne pollutants on the Scottish freshwater environment. The specific objectives of the current research programme are as follows.

1. To monitor Scottish homewater salmonid fisheries by a comprehensive system of catch recording and sampling and, by tagging experiments, to measure homewater exploitation rates by netmen and anglers.
2. To study the dynamics of selected exploited populations of salmonid fishes by sampling and automated counting to elucidate the relationship between egg deposition and smolt production and the natural and fishery-induced causes of mortality which may impinge upon both.
3. To study the ecological processes which control the production of juvenile salmonid fishes and to use these data to estimate total Scottish smolt production and advise on methods by which it may be enhanced.
4. To examine the extrinsic and intrinsic factors which control the processes of smolting and maturation in salmonid fishes so that fluctuations in the timing and population structure of the fisheries may be interpreted in terms of the underlying mechanisms in the freshwater and marine phases.
5. To operate a pilot-scale salmon ranch to study the technical feasibility of ranching as a method of cultivation and to use ranched and adjacent populations of wild smolts in an investigation of the early marine life phase of Atlantic salmon.

6 To measure the occurrence, transport and accumulation of organic pollutants in the freshwater and marine environments, to assess their effect on the environment of freshwater and migratory fish and on the suitability of such fish for food.

7. To investigate the causes and effects of specific pollution incidents resulting from the deliberate and accidental input of pollutant and nutrient chemicals over acute and chronic timescales.

8. To investigate the effects of acid deposition and forestry practices on the chemistry and biology of vulnerable Scottish freshwater habitats.

A NEW TREATY TO MANAGE NORTH ATLANTIC SALMON STOCKS A Paper by Dr. Malcolm Windsor, Secretary, North Atlantic Salmon Conservation Organisation (NASCO)

1. INTRODUCTION

1.1 The Organisation (NASCO), which is just setting up in Edinburgh, has come into being because of the existence of a new Treaty - the Convention for the Conservation of Salmon in the North Atlantic Ocean. This treaty was adopted at a diplomatic conference in Reykjavik in 1982 and, well within two years, six countries had ratified the treaty. Within a further 6 months two more countries had ratified. Thus in a very short period of time the treaty had been through the legislature of eight countries. The EEC is a signatory (and indeed is the depository for the treaty) so the interests of the UK, Ireland and France are represented in the EEC delegation.

1.2 The full list of members is:

Canada

EEC

Denmark in respect of Faroe Islands and in respect
of Greenland

Finland

Iceland

Norway

Sweden

USA

At our first annual meeting we also received observers representing Spain and the USSR. If these countries join we shall then have as members virtually every nation in the North Atlantic with salmon interests. In itself I think that this is an achievement. It demonstrates that the North Atlantic nations can move quickly to sign a treaty which enables them to co-operate on the management of a valuable and unique resource.

1.3 The Atlantic Salmon (*Salmo Salar*) is of course the only native salmon of the North Atlantic and is distributed on the western side from the Ungava Bay to the Connecticut River and, on the eastern side, from Portugal to the Arctic coast of Russia and in the Baltic. The salmon can be managed only by a considerable degree of international cooperation and that is why the convention exists.

2. ECONOMIC CONSIDERATIONS

2.1 It would be useful to be able to outline the economic worth of the resource in every North Atlantic country but this is difficult even for, say, Scotland. All that can be said here is that the salmon is a highly prized food resource and that it adds value to every river which it enters. According to a recent report by the Scottish branch of the Royal Institute of Chartered Surveyors, the capital value of salmon fishings is in the region of £3,500 per fish. More difficult to assess are the other economic inputs from the tourism which is generated by the fishing and also by non-fishing visitors, from vessels, processing facilities and gear. Overall hotel, transport, restaurant, fishing gear, and many other service industries all gain from the salmon. This is true of most of the North Atlantic countries and in many instances this secondary value of salmon will far exceed its primary value as a food.

3. THE NEW CONVENTION

3.1 The Convention starts by:

- recognizing that salmon originating in the rivers of different states intermingle in certain parts of the North Atlantic Ocean.
- and taking into account international law, the provisions on stocks in the Draft Convention of the Third United Nations Conference on the law of the sea.

It then states the desire of the parties:

- a) to promote the acquisition, analysis and dissemination of scientific information pertaining to salmon stocks in the North Atlantic Ocean;
- b) to promote the conservation, restoration, enhancement and rational management of salmon stocks through international cooperation.

3.2 The Convention applies to the salmon stocks which migrate beyond areas of fisheries jurisdiction of coastal states of the Atlantic Ocean north of 36°N latitude and throughout their migratory range. It prohibits the fishing of salmon beyond areas of fisheries jurisdiction of coastal states and prohibits it within areas of fisheries jurisdiction beyond 12 nautical miles except in West Greenland (40 nautical miles) and within the area of fisheries jurisdiction of the Faroe Islands.

3.3 The treaty divides the North Atlantic into three areas each covered by a Regional Commission:

- a) North American Commission
- b) West Greenland Commission
- c) North East Atlantic Commission

The Commissions provide the forum for consultation and cooperation between the members, they propose regulatory measures and they make recommendations to the Council concerning the undertaking of scientific research. The Council is committed to obtaining the best available information including advice from the International Council for the Exploration of the Sea.

3.4 In exercising its functions a Commission have to take into account:

- a) measures taken and other factors both inside and outside the Commissions area that affect stocks;
- b) the effects of States of origin to implement and enforce measures for the conservation, restoration, enhancement and rational management of salmon stocks in their rivers and areas of fisheries jurisdiction;
- c) The extent to which salmon stocks feed in the area of jurisdiction of the respective Parties;
- d) The relative effects of harvesting salmon at different stages of their migration route;
- e) the contribution of Parties other than states of origin to the conservation of salmon which migrate into their areas of jurisdiction by limiting their catches;
- f) the interests of communities which are particularly dependent on salmon fishery.

Thus the Commissions have a complex task which involves scientific advice, statistics, community interests, and diplomacy.

3.5 The Treaty states that the Headquarters of the new organisation shall be in Edinburgh 'or such other place as the Council shall decide'. It is in Edinburgh that the international headquarters of this small organisation is now open.

4. THE FIRST YEAR

4.1 It is not often that a new treaty is signed by eight North Atlantic countries and we might ask what has been accomplished in the first year?

4.2 It will perhaps be obvious that a complex range of interactions are covered by the treaty. For example:

- a) The US has spent millions of dollars rehabilitating its salmon rivers and releasing smolts. It seeks to use the treaty to ensure that an undue proportion of these fish are not intercepted by Canada (near which the US fish pass on their migratory route) and Greenland (where the fish feed).
- b) Canada in turn will seek to use the treaty to ensure that an undue proportion of fish of Canadian origin are not taken in Greenland.
- c) The Faroe Islands and Greenland will seek to ensure that their rights to the fish are safeguarded since the fish feed and grow in their waters. They

will seek to protect the communities dependent on salmon.

- d) In Iceland, Scotland, England, Ireland, France, Norway, Finland and Sweden there will be concern that the Faroe Islands and Greenland do not intercept an undue proportion of the fish which originate in these states.
- e) There are moreover wide economic, sociological and cultural perspectives from which the fisheries are viewed by the Parties. The Faroe Islands and Greenland will view the resource principally as commercial fisheries on which they are particularly dependent. The US on the other hand has no commercial fisheries and the fishery exists entirely for sport and recreation.

4.3 Nevertheless, in spite of these complexities, even in the first year some initial progress has been made:

- a) For the first time in history eight of the countries concerned have sat at the same table to consider their interests and their differences on this resource.
- b) The Council has defined the major scientific questions which will require answering in order for it to carry out its tasks.
- c) These questions have been put to ICES and stimulated a detailed and comprehensive response in the form of scientific advice together with a definition of areas of ignorance.
- d) Two of the Regional Commissions issued regulatory measures in 1984. The West Greenland Commission reduced the Total Allowable Catch off Greenland by 27%. This quota had stood for 13 years as the result of a bi-lateral agreement.
- e) The rights of both originating states and the 'grazing' rights of intercepting fisheries have been discussed and considered.
- f) States have agreed to exchange information on the laws, regulations and programmes within their territories.
- g) States may reconsider their internal management plans in the light of the new convention.
- h) A small organisation has been set up to operate the treaty.

4.4 Recently the 1985 round of negotiations have been held. It did not prove possible for any of the regional Commissions to agree regulatory measures. The negotiations revealed that there is much groundwork to do in developing the basic principles on which the resource can be shared. Until these initial stages have

been accomplished there will no doubt be some difficulties in agreeing regulatory measures. Nevertheless, one of the most interesting and unique of the natural resources in the North Atlantic now has an international treaty dedicated solely to its conservation and rational management. For this we must give great credit to the foresight of those in the countries concerned who worked hard to create the treaty and to persuade their governments to accede to it. It opens a new chapter in the long and distinguished legal history of salmon.

POLLUTION FROM FARMS IN THE SOUTH WEST - Report by Dr. E.R.Merry

There has been growing concern in the South West about the effect of farm wastes on the rivers and streams in the area.

The number of fish kills caused by farm drainage in recent years has increased greatly compared with the 1960s and early 1970s.

In one incident in 1982 20 miles of the Axe were affected. In 1983 50,000 fish were killed in two separate incidents in the Torridge.

There has been a deterioration in river water quality in recent years.

Salmonid spawning areas have been rendered useless so that even cattle will not drink.

Surveys have shown salmonid fry to be absent from large areas in headwaters where they were previously widespread and abundant.

There are more than 15,000 farms in the South West so in the Spring of 1984 a pilot scheme was started, to deal with small parts of the Taw, Torridge, Axe and Otter catchments with known farm drainage problems. The scheme was implemented with the full support and co-operation of agricultural interests (CLA, NFU, ADAS and FWAG) and is based on a series of three visits by fisheries field staff to every farm in the target areas with the theme of information and persuasion.

The purpose of the first visit is to explain to the farmer the problems caused by polluting farm discharges to water supply, stock watering, fisheries and environmental quality. Farming practice and drainage systems are checked, details recorded and, if necessary, advice is to be given on simple remedial measures. Immediate action is taken in cases of severe pollution but in all cases farmers are advised to seek expert technical help from ADAS.

An explanatory leaflet with the theme 'Pollution - together we can beat it' is given to each farmer and a second visit arranged. Second visits are timed to allow advice to be given by ADAS and to check on any improvements.

Third visits are to be made and where it is found that no remedial action has been taken and pollution is being caused, offenders will be considered for prosecution.

694 farms were visited and classified according to whether they were polluting, at risk of polluting or satisfactory.

Problems were typically concerned with the proper disposal of 'dirty' water and storage of effluent. Separation of clean and foul drainage required minimum expenditure to effect improvement but better storage and treatment of effluent required substantial investment in plant and structures. In spite of this and other financial constraints, wardens have reported the installation of 35 new treatment systems.

First and second visits have been made to all farms. Between the first and second visits the number polluting fell from 75 (11%) to 38 (5%); those at risk from 156 (22%) to 111 (16%) and those causing no concern rose from 463 (67%) to 545 (79%)

The programme of visits is continuing and although quantitative water quality and ecological assessments were not made, experienced staff have reported visible improvements in water quality and positive benefits in terms of immediate river quality recovery.

A sustained local publicity campaign accompanied the scheme making use of press, television and radio as well as talks to farming groups.

Using local wardens to inform and persuade farmers has been effective in terms of results and is considered to be the right way of approaching what is a community problem.

The target areas are, however, very small compared with the total area known to present similar problems and the number of farms visited is but a small proportion of the 15,000 in the region.

Local farming communities are becoming aware of the damage that pollution from farms can cause; improvements have been made but continued improvement will require good management coupled with monitoring.

REVIEW OF CURRENT LITERATURE ON SALMON RESEARCH AND DEVELOPMENT

a) Stock Recruitment

- (1) The influence of spawning stock on production and yield of Atlantic Salmon, Salmo salar L., in Canadian rivers. E.M.P. Chadwick., Aquaculture and Fisheries Management, 1985 16, 1, 11-119

Stock recruitment relationships were examined on 7 rivers. On all rivers, egg deposition, or some other index of spawning, explained 46 - 87% of the variation in recruitment. On one river, approximately 2.3% of eggs survive about 5 years of river life to become smolts, over 17.4% of smolts survive to become one-sea-winter adults, and 6% of smolts return as adults to their natal river. Generally, one salmon produces nine, and any increases in egg deposition due to reduced harvests would result in an eight-fold increase in yield one generation later. There are no data to indicate that maximum yield has been reached on any Canadian river.

- (ii) A survey of the salmon and trout stocks of the Tweed Basin.

D.H.Mills and A.Tomison, Report of the Tweed Foundation, 1985

The Tweed and 47 of its tributaries were sampled at 89 sites during the summer of 1984. Bearing in mind the limitations of the data, it was possible to obtain a general impression of major changes in the fish populations since the previous surveys carried out in 1970 and 1977.

The major change has been a decline in the size of the salmon populations in at least some areas of upper and middle Tweed and Teviot, with the almost complete absence of this species from areas where either they were known to be present in the past or where they might have been expected to be present.

A number of recommendations are suggested for stock enhancement.

(b) Behaviour

- (i) Accelerated photoperiod advances seasonal cycle of seawater adaptation in juvenile Baltic salmon, Salmo salar L. W.C.Clarke, H. Lundqvist and L.-O.Eriksson. Journal of Fish Biology, 26, 29-35, 1985

Two-summer-old Baltic salmon parr were brought to the laboratory and reared at 11°C from February until early June under a simulated natural photoperiod and an accelerated photoperiod cycle in which the summer solstice was advanced by 2 months. The pattern of development of the ability to adapt to sea water was assessed by means of a periodic 24th challenge test with 25% seawater. Both the increase in seawater adaptability and its decline occurred earlier under accelerated photoperiod. The synchronisation of the smolting cycle is discussed in relation to the environmental ones provided by photoperiod.

(c) Physiology

- (i) Survival of eggs and alevins of Atlantic salmon (Salmo salar) in relation to the chemistry of interstitial water in Redds in some acidic streams of Atlantic Canada. G.L.Lacroix. Canadian Journal of Fisheries and Aquatic Sciences, 42, 292-299 1985

Eggs of Atlantic salmon were incubated in spawning areas of 5 streams of mean pH 4.6 - 6.5. Hatching success (36.6 - 88.7%) for eggs planted after fertilization in the natural substrate of 4 acidic streams was highly correlated with the pH (4.5 - 5.0) of interstitial water, and the LL50 (median lethal level); the concentration of poison lethal to one half of a test population of fish etc. was about pH 4.7. Dissolved oxygen concentration ($>6.0\text{mgL}^{-1}$) in the interstitial water in these streams were probably not limiting to embryos before hatching. In a near-neutral stream (pH 6.5) the comparatively lower hatching success (5.6 - 77.0%) was significantly correlated with minimum dissolved oxygen concentration ($1.4 - 9.2\text{mg L}^{-1}$) in the interstitial water, and the mean survival of embryos was very low (16.2%) at oxygen concentrations $<6.0\text{mg L}^{-1}$.

(d) Disease

(i) Control of bacterial kidney disease in Atlantic salmon, Salmo salar L., by dietary modification. S.P. Lall, W.D. Paterson, J.A. Hines and N.J.Adams. Journal of Fish Diseases, 8, 113-124, 1985

The effects of dietary treatments were investigated as a prophylactic measure to minimise the occurrence of severity of bacterial kidney disease (BKD) infections in Atlantic salmon at Margaree Fish Culture Station, Nova Scotia, Canada. Six diets containing various levels of calcium, magnesium, zinc, iron, copper, manganese, cobalt and iodine in addition to one commercial diet were fed to post-yearling Atlantic salmon in two consecutive experiments. Natural infection was utilised to examine the effects of each diet on the prevalence of BKD. Diet containing high levels of iodine (4.5 mg/kg feed) and fluorine (4.5 mg/kg) reduced BKD prevalence rate to 3% and 5% respectively compared with 95% and 38% with commercial feed.

(e) Parasitism

(i) Guidelines regarding the salmon parasite Gyrodactylus salaris. Plans of action for combating the parasite in the rivers round Isfjord, in the Rauma district. T. Haukebø. (Translation from the Norwegian by Mrs. I Logan) Memo from the Chief Administrative Officer for Møre and Romsdal, County Buildings, 6400 MOLDE, Norway, 1983.

A comprehensive account of the external skin parasite, Gyrodactylus, infecting young salmon in many Norwegian rivers. It was first noticed in Sweden in the 1950s and in Norway since 1975, and in the last ten years has spread rapidly in the latter country. Various recommendations are suggested for its control, particularly rotenone. Arguments for and against rotenone control are considered.

(f) Angling

(i) The interpretation of anglers' records (trout and sea trout, Salmo trutta L., and salmon, Salmo salar L.) I. Small and D.Y. Downham, Aquaculture and Fisheries Management, 16, 2, 151-170 1985.

This paper collates the results for five surveys which were made to determine the average catch of anglers not making a return at game fisheries. This pilot study shows that the average catch per licence/permit may be estimated from the average and the proportion of unprompted returns. Typical values for the United Kingdom waters are tabulated for recent seasons.

The following article by DABCHICK is reproduced by courtesy of The Editor of the Field where it first appeared.

NO BAR NOW TO A BAN ON DRIFT NETTING

Total agreement is never more significant than when it concerns salmon. Despite recognition by all interests of the need for national action for salmon protection, dissent over what the action would be has hitherto been routine. It is difficult to recall any fraction of the issue, however limited, on which there has been unanimity. Now it has happened.

At a meeting in Edinburgh all significant United Kingdom salmon organisations supported a resolution calling on the Government to ban salmon drift-netting off the coasts of England, Wales and Northern Ireland. Such netting was prohibited off Scottish coasts 23 years ago and the ban has proved workable. Despite continued lessening of the salmon population, repeated calls for legislative action and the admission in 1979 that further protection was necessary, the Government has been unwilling - or, in terms of political evasion, unable to find Parliamentary time - to take action.

The impression is that a succession of weak junior ministers at Westminster has failed to motivate an entrenched and reluctant bureaucracy sufficiently to overcome their superiors' inertia. Meanwhile deterioration has continued in a resource of great value and it has latterly accelerated. The many millions of pounds at stake in investment and income are attributable either directly to salmon fishing in general or indirectly to the tourist industry dependant on salmon fishing's recreational side.

The long-demonstrated neglect of a wasting asset, which is also a threatened species, has eventually impelled this unanimity among its defenders and brought them influential allies. The participants in the Edinburgh meeting are of interest. They included in addition to all British salmon conservation bodies whether statutory, commercial or recreational, the World Wildlife Fund and the Royal Society for the Protection of Birds.

The presence of the latter two bodies, neither having a prima facie commitment to salmon conservation or exploitation, indicates the threat to other fauna posed by the methods used over the past 25 years to catch salmon. Nylon monofilament nets are invisible under water and their catches of all life forms consequently higher. Their abrasive effect on creatures which become enmeshed is especially damaging.

These are not all fish. The RSPB is particularly concerned about sea-birds which prey under water, including diving ducks, auks, puffins and gannets. The WWF is equally concerned about the deaths the nets cause to birds and marine animals. Government inaction is being watched with widening anxiety.

The Edinburgh meeting, chaired by the Duke of Wellington, one of the delegation from the Atlantic Salmon Trust, began by facing realities. The long-advocated salmon-tagging scheme was at last recognised as being more trouble than it would be worth, and now rests where it belongs - presumably in the waste-paper basket. Its weakness was that it attacked the consequences of the salmon shortages not the cause. It also wasted much time postponing pressure for more effective measures such as that now called for.

A further reality is that in the population dynamics of Atlantic salmon the power-houses are Scotland, Ireland and potentially Norway if the Norwegians likewise ban drift-netting. English and Welsh salmon resources are minor, and satellite to Scotland. Unless the health of Scottish salmon fisheries is maintained, all British salmon fishing will be doomed and Atlantic salmon in jeopardy everywhere.

One effect of a drift net ban for all Britain would be the ending of the north-east English coast fishery by vessels licenced by the Northumbrian and the Yorkshire Water Authorities. The catches declared to these authorities are reported as above 60,000 salmon annually and the Ministry of Agriculture estimated that 95% of these are intercepted on passage to the estuaries of Eastern Scotland.

There is a further consideration. In the same week the North Atlantic Salmon Conservation Organisation also met in Edinburgh. This is the international body which co-ordinates the salmon policies of Europe and North America. Its functions include negotiating the all-important abstraction quotas from the Atlantic salmon's sea-feeding grounds off Greenland and the Faroes.

The Greenlanders and the Faroese agreed to limit their catches conditionally on other salmon nations also restraining excessive catching. They have honoured the agreement but say in effect that they are unwilling to cut their quota further in line with diminishing stocks so long as EEC nations, including Britain, take no action. This reluctance inevitably acts to the disadvantage of America and Canada where restrictions have been applied.

It is a discreditable stance for Britain, when pressed by America, to have to reply to President Reagan in his own idiom, when he has in fact done something constructive: 'We ain't done nothing yet'. The words have rung all too true for years.

STOP PRESS

From January 1st 1986

our address is

ATLANTIC SALMON TRUST

MOULIN

PITLOCHRY

PERTSHIRE PH16 5JQ

Tel. No. (0796) 3439

