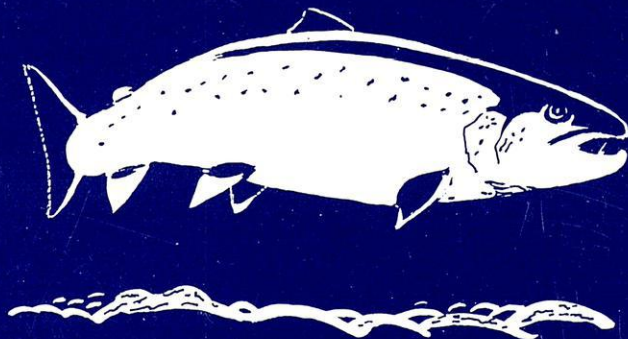




ATLANTIC SALMON TRUST

PROGRESS REPORT

December 1987



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Observers: Mr. K. O'Grady (Ministry of Agriculture, Fisheries and
Food)

Mr. W. Shearer, B.Sc., M.Sc., C.Biol., M.I.Biol.
(Department of Agriculture and Fisheries for
Scotland)

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 of Fiskerforbund and Laksen of Oslo

Sweden and

Scandinavia: Theodor Dalensson, Scandinavian Atlantic Salmon
Group

Spain: Asturian Fishing Association of Oviedo

U.S.A.: Restoration of Atlantic Salmon in America In.

Canada and

U.S.A.: Atlantic Salmon Federation

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FOREWORD

Since I last reported we have attended the Country Fairs at Stratfield Saye and Holkham, and the Game Fair at Chatsworth, with the show caravan. Unfortunately, the caravan was damaged in an accident on its way north from Chatsworth and it was not possible to repair it in time for the Highland Game Fair at Moy. However, our Director, although badly shaken, bravely put in an appearance there. The Trust is greatly indebted to Jean Cormack who spent long hours at Stratfield Saye and Chatsworth, and also represented the Trust at the Royal Welsh Show. Our attendance at these shows has proved to be not only profitable but has also aroused a great deal of public interest.

Our Scientific Panel has recently held a very successful Workshop at Montrose on fish counters. It was attended by over 40 people and a Report will be issued. Future Workshops will include 'Protection of Fisheries' to be held at Lancaster in April 1988, and 'Movement of Adult Fish in Relation to Freshwater Flow and Water Quality' to be held at Bristol in 1989. Blue Books in the pipeline include reports on Ireland, Norway, water quality, and John Browne's Bessinger-Liddell report on the release of smolts.

Our salmon tracking project continues under the very able direction of Dr. Hawkins. Her Majesty, The Queen Mother has shown great interest. Dr. Hawkins reported that she had in fact found two of the tagged fish at Balmoral whilst operating the hand-held aerial. Our Patron, HRH Prince Charles has recently visited the DAFS research site at the Girnock Burn.

Lord Moran, on behalf of the Trust, attended a Symposium on 'Future Atlantic Salmon Management' at Portland, Maine. His report follows on page 10. The Trust is extremely grateful to him.

I regret having to report that a very serious situation has arisen in Norway which has grave implications for all Atlantic salmon producing countries, especially those with salmon farming interests. Our Director has recently visited Norway where he had talks with a number of their fishery scientists. A report follows on page 12. The Trust has alerted all those involved in salmon conservation, including the Ministers concerned.

Eric Earl, the Clerk to the Fishmongers' Company, has been our Secretary since 1974. He retires as Clerk to the Fishmongers' Company in June next year, and is therefore handing over as Secretary to our Treasurer Michael O'Brien. Our new Treasurer is to be Keith Waters. I am sure that we all wish Eric a very happy retirement with plenty of successful fishing.

I offer our congratulations to Sir David Nickson on his well deserved Knighthood.

It was with deep regret that we learned of the death of the Deputy Director, Mr. Alex Prichard, on November 13th, 1987. Our thoughts go out to Mrs. Prichard and her family. Alex was a great asset to the Trust, and he will be sorely missed, not least for his work in Europe and with the Fishing Auction.

I wish you all a happy Christmas and a prosperous New Year.

David Clarke
Chairman

DIRECTOR'S REPORT

As we sharpen our shovels and look out our winter tyres I would like to thank all those who took notice of my appeal in the last Report for continued support. The response has been most satisfactory, the more so when one sees the ever-increasing mound of junk mail that tumbles through the letter box. One very large and wealthy charity sent my wife no less than six Christmas catalogues over two days! I hope that we have not sent any of our readers more than one Progress Report. If we have, please let us know, and, incidentally, please let us know of any change of address.

Now for the salmon scene, which is certainly an exciting one. Due to the initiative of owners, helped by the Atlantic Salmon Conservation Trust, a considerable change of emphasis away from commercial netting is taking place on some of our major Scottish salmon rivers. As has been widely reported, there are now no nets on the River Dee in Aberdeenshire, and this will be followed by a reduction of nets on the Tweed and Don.

Being now firmly based in Scotland, it is inevitable that I am accused of forgetting the salmon of England and Wales. This is far from the case, and a large part of this Report is taken up with reports from the Water Authorities South of the Border. Privatisation of the Water Authorities and the establishment of a National Rivers Authority are firmly in the Government's programme. The Atlantic Salmon Trust's response to the Government's proposals is included in this Report. Future finance for fisheries is the key issue.

I had hoped to be able to include the 1986 figures for salmon and sea trout catches in England and Wales and for Scotland but, alas, they have not been forthcoming. Although provisional figures were made available to ICES as long ago as last March it seems to be impossible for Departments to publish figures within 12 months of the end of a fishing season!

May I wish you all a very merry Christmas and all the best in 1988.

D. J. Mackenzie

'THE FOX AND THE ORCHID'

Falling out of this Report is an order form for a copy of 'The Fox and the Orchid'. This book has the support of the Standing Conference on Countryside Sports, of which the Atlantic Salmon Trust is a member. Written by farmer and journalist Robin Page, it is a personal view of the indelible link between sports and the well-being of the countryside. It is hoped that it will receive as wide a readership as possible.

"The purpose of the book is to explain simply and briefly what is involved in hunting, shooting and fishing, and, more importantly, to show the vital links between country sports and conservation for, contrary to the popular view, they are of great benefit to wildlife and constitute an important element in the traditional British landscape," says Mr. Page.

However, he does not participate in field sports himself. "The reason that I do not hunt, shoot or fish is simply because I like watching birds and animals and have no desire to kill them. However, I do accept that other people have different views and feelings - as the instincts of the hunter are quite natural ones, and I also realise that some killing and 'management' of wildlife populations are inevitable in areas where man and wildlife share the same land.

"On our small family farm we have kept hedgerows and grass meadows because we like them and the wildlife they attract. Elsewhere, however, it has been different. The countryside has in many places been ravaged by the intensification of agriculture and the march of prairie farmers. Yet where a farmer hunts and wants cover for his foxes, or shoots and retains areas suitable for nesting pheasants, there the prairies end and the traditional countryside remains.

"My main purpose in writing 'The Fox and the Orchid' is to show this real but often overlooked link both in the past and, more importantly, the present", he says.

Robin Page lives and works on the small family farm where he was born, and has written regularly for the 'Daily Telegraph' as well as other national newspapers and magazines. In his varied life he has also lived as a tramp, stood for Parliament, and travelled off the beaten track, especially in Africa.

MR. ALEX PRICHARD

Nous avons perdu notre ami Alex Prichard, Vice President de l'AIDSA et Directeur Adjoint de l'Atlantic Salmon Trust, décédé à la suite d'une douloureuse maladie, contre laquelle il a lutté jusqu'à la fin.

Il fait l'admiration de tous par sa détermination et son courage, et ceux qui, comme nous, ont pu travailler avec lui, ont apprécié sa vive intelligence, sa clarté d'esprit et son sens de l'organisation.

C'est en grande partie grâce à lui, que le Symposium de Biarritz sur le saumon atlantique a connu, l'année dernière, un remarquable succès.

C'est aussi, au lendemain de ce succès que la maladie est venue le frapper.

A l'AIDSA sa perte est très douloureusement ressentie par tous, et c'est avec une émotion profonde que nous nous souviendrons de cet homme remarquable, qui alliant à un aspect typiquement britannique, une profonde connaissance de la France et de la langue française.

L'Association Internationale du Saumon Atlantique adresse à l'épouse et aux enfants d'Alex Prichard, aussi qu'à l'Atlantic Salmon Trust l'expression de sa profonde sympathie et de sa fidèle amitié.

Claude Batault,
for AIDSA

(We have lost our friend Alex Prichard, Vice President of AIDSA and Deputy Director of the Atlantic Salmon Trust, after a brave fight against a long illness.

Having worked closely with him, we will never forget his determination and courage, his great ability to deal with problems, his open-mindedness and sense of organisation.

A special tribute must be paid to him for the success of last year's Biarritz Symposium on Atlantic Salmon. He became ill just after this.

At AIDSA we will remember with great sadness this friend who, although typically British, was deeply knowledgeable about France, the French people and the French language.

The Association Internationale de Defense du Saumon Atlantique conveys to Alex's wife and children its deepest sympathy and its friendship.)

Alex, as he was known to everyone in the Trust, brought his outstanding international experience and diplomacy to the salmon conservation field when he became Assistant to the Director in 1982. Although his knowledge of the salmon's biological mysteries was not extensive, Alex had the experience and the ability to quickly absorb the essential details of the Trust's policy. He was very cultured and steeped in the language and lore of France and his bilingual ability enabled him to be a great asset to the Trust when he embarked not only upon establishing good links with the administrators in the EEC and Brussels, but also, and just as importantly, in forging strong ties of common policy with the Association Internationale de Defense du Saumon Atlantique, of which he was elected a Vice President. This relationship blossomed under Alex and culminated in the organisation by the two conservation bodies of the Third International Salmon Symposium, which was held in Biarritz in October 1986. Alex, along with Dr. Mills and a small steering committee from the Trust, planned the Symposium from this side of the Channel. That it ran so smoothly was largely due to Alex's efforts and diplomacy.

Alex continued to impress upon the EEC and the European Parliament the Trust's interest in conserving the Atlantic salmon, and in 1986 he addressed the Fisheries Sub-Committee of the European Parliament on the state of the salmon resources in Britain and France. In view of the fact that international salmon regulation and management is handled by the EEC on behalf of Britain and the other member states of the Community, Alex's interest and ability to bring to the attention of Europe the importance of salmon conservation and the work of the Trust to this end was of paramount importance.

In the administration of the Trust's work, Alex will always be remembered for the organisation of the very successful Postal Fishing Auction each year. Alex's ability to obtain the generous gifts of fishing from owners for auction on behalf of the Trust was very significant and his careful relationship with owner and successful bidder have done much to make the whole scheme a great success.

The Trust will greatly miss Alex and his quiet, highly amusing conversation. In the end both he and his most supportive wife, Carol, were courageous in the extreme.

G. D. F. Hadoke

'THEY'RE FAR TOO FLY FOR ME'

(By Pearson Phillips. Reprinted from 'The Times',
with the permission of the Editor)

They are one of nature's mysteries. No one knows exactly where they come from. They simply arrive, driven by some inner compulsion, to the fresh waters of Britain's rivers, usually returning to the same one each year. Having arrived, they select their spots and get down to the age-old annual task, before returning, exhausted, to who-knows-where once more. I am referring, of course, to salmon fishers.

This newspaper's angling correspondent is not going to like what I have to say about all this. And I am sorry to upset him, because he once did me a great service by teaching me what to do when my waders filled with water. (Lie on my back on the riverbank and stick my feet in the air.) But I have decided that the sport of salmon fishing, royal pastime though it may be, is like one of those dangerous religious movements that attract lost souls and the emotionally insecure. The high priests of the cult do very nicely. But the rest of us do not catch salmon; they have caught us.

I have just had a week of it. The damage to mind and body has been considerable. I cannot straighten the fingers of my right hand, which are stuck in an arthritic, galley-slave clench from thrashing the air with an increasingly heavy rod for six days from dawn until dusk. There is an avenue of pain from torn muscles and frayed ligaments stretching from right shoulder to lower back. There are several small, festering pin-pricks on fingers, hands and face caused by the barbed hooks of salmon flies flung into my flesh by Scottish gales. When the wind dropped, the midges and the clegs took over.

On top of these physical ills there is the heavy sense of failure. Not one fish to show for it. Just memories of the jeering oyster catchers as they watched me tangle with sunken rocks and bankside gorse. To balance the weight of all that there is the lightening of wallet and bank balance. Spending a similar amount in Billingsgate would have ensured salmon in the deep freeze all year. It was the same last time. Lured on by the fatal illusion that one day my fish will come, it will doubtless be the same next time. The first year they said there was too little water. The second year they said there was too much. Some people, I'm told, have been at it for years without catching one.

I blame my milkman. He is, as the obituary writers put it, "skilled with gun and rod". A couple of weeks of what he claims is, the best salmon river in Scotland are at his disposal. He lured me north. Leafing through the estate's heavy sporting ledgers for past years helped, as fishermen put it, to "set the hook". Lord Home of The Hirsell apparently did very nicely. So

did the Earl of this, the Prince of that; the late Major The Hon. Ashley Cooper caught thousands. Surely just one would come my way. But no.

Fish were there in plenty, leaping, splashing and rolling about like porpoises. There was a place of shallow rapids between two pools where they could be seen queueing to surge upstream, like Tube travellers waiting for the escalator. Casting to them diffidently as they sped past made me feel like a busker with a bad act.

The fatal flaw, of course, is that they are not hungry. The salmon eats only in the sea. When it comes into the rivers to spawn it fasts, living off stored energy. So trying to tempt them with a fly is like trying to woo an anorexic with a sausage. We are at the mercy of some unknown factor, generally referred to as "whim". If the salmon feel inclined, they will investigate. What I would like to know is why they should feel more inclined to investigate when they have a peer of the realm or my milkman on the other end of the line than when they are simply dealing with the likes of me.

But there is always someone worse off than yourself. Meeting him made me feel a little better. A fishless week on the Dee had cost him £800. He had moved to the Shin the following week for a similar hefty sum, and still no fish. then he had arrived on our river. The miracle happened. A fish had "the whim" and he landed it. It is an article of the faith that if one fish is "taking", there will be others. So he left his fish on the bank and went after more. But no luck. Eventually he went back to retrieve his prize. He found nothing but some bones and fins. Plus a group of contented, well-fed seagulls.

* * *

SPONSORSHIP

The Trust is looking for sponsorship for the following projects, and if any of our readers have any suggestions as to whom might be approached they are asked to contact the Director.

Education Project - for 6 to 11 year olds in schools.
Approximately £15,000 required, £1,000 obtained.

Pre-Afforestation Drainage - research into effects on salmonids.
£8,250 per annum for two years.

Blue Books - 1. Water Quality
2. Bessinger Liddell Report by John Browne
3. Salmon in Ireland.

£1,000 for each book, to cover cost of printing and honorarium to author.

SYMPOSIUM ON FUTURE ATLANTIC SALMON MANAGEMENT
Held 27th - 29th October at Portland, Maine, USA

(Note by Lord Moran)

I attended this symposium on behalf of the Trust. It was sponsored by some of the principal North Atlantic organisations, both governmental and non-governmental, concerned with Atlantic salmon. Participants included representatives from the US and Canada, Denmark (The Greenland Fisheries and Environmental Research Institute), The Faroes, Norway, Iceland and NASCO, but not from the Republic of Ireland or the European Commission. I found it interesting and useful and it provided a good opportunity to discuss salmon problems with knowledgeable people from different countries. Those of us who took part in the programme contributed written papers and then spoke for 20 minutes. Following each session there were questions from the floor and a discussion.

The symposium began with presentations from some of the scientists on past research, sea mortality, and sea-surface temperature and distribution (salmon apparently concentrate in areas like the Labrador Sea gyre throughout the year, west Greenland in summer and autumn, and near the eastern slope of the Grand Bank in spring, areas which all have sea-surface temperatures of 4 to 8°C). Identification of stocks and future scientific needs were also discussed. We then went on to consider salmon restoration, which is being vigorously pursued in New England - most successfully so far - on the Penobscot River, and the effects of salmon farming. A particularly interesting study by three researchers from Cornell University showed that people in New England were prepared to pay additional taxes to see salmon brought back, even those who were not fishermen. Adverse factors like the effects of agriculture, the relative inefficiency of fish passes and acid rain were also considered. There was a good deal of emphasis on genetic factors.

We then turned to national management policies. We heard about the generally encouraging Canadian experience since the drastic conservation measures introduced in 1984, the position in Norway (where the current very serious problem is the parasite Gyrodactylus salaris) and Iceland, where all seems to be going very well.

When I spoke I stressed the need for us to work closely together on both sides of the Atlantic. I pointed out that in the UK salmon have, until recently, been relatively abundant, and that the first problem for those of us interested in the welfare and survival of the species was to establish that there was a problem - to get it understood that there had been a marked decline which needed to be reversed. This is now accepted. I told them of the progress being made as a result of the Salmon Act of 1986, about the decline in our spring runs and what seemed to be a connection between the scarcity of large, multi-sea-winter fish and the

growth of the huge interceptory fisheries of Greenland and the Faroes, taking together 22% of the total world catch in home waters.

I discussed our main domestic problems - illegal fishing, acidification, the many projected barrages, the population explosion of some predators, water abstraction and pollution - but told then also of the good things such as cleaner rivers, better public awareness, the better attitude of the Government, the steps being taken against acidification, the buy-up of Scottish nets by the Atlantic Salmon Conservation Trust, excellent research and the efforts of private bodies. I made the point which I had already made to Lord Hunter that we should persuade governments and NASCO to quote numbers of salmon, not tonnes, in statistics.

The Prime Minister of the Faroes, Mr. Dam, and his Director of Fisheries both addressed the symposium. I got the impression that if scientists concluded that the yearly spawning escapement or the escapement of multi-sea-winter salmon was inadequate, the Faroes might co-operate in measures to control exploitation. Points made on this at the symposium were that the fisheries of all other countries were restricted to 12 miles out whereas the Faroese were at present allowed to fish throughout their economic zone and the Greenlanders to 40 miles out, and though taking nearly a quarter of the entire world catch, both countries have populations of only some 60,000.

The Chief American NASCO Commissioner, Mr. Peterson, asked for 'fair sharing', and claimed that it was futile for the European Community to oppose this concept. The President of Nasco, Mr. Eiriksson, described the work of NASCO itself.

There was concern about the unreported catch, estimated by NASCO to be 3,500 tonnes a year.

The full Symposium Proceedings will be published next year. Copies can be ordered from the Atlantic Salmon Federation, PO Box 684, Ipswich, MA 01938, USA, price \$US15.00 post-paid, cheques payable to the Atlantic Salmon Symposium.

NORWAY

The Director paid a visit to Trondheim to find out the problems facing the Norwegian wild salmon stocks. There are two main areas of concern, that of acid rain in rivers in the south and the spread of the parasite Gyrodactylus salaris throughout the country.

Acid rain is an old problem and its effects have built up over the last hundred years or so. Gyrodactylus salaris is, however, a much more recent cause for concern, and has now spread to 30 Norwegian rivers where it is wiping out stocks of parr and smolts. It is so serious that on his return the Director wrote to the Fishery Ministers in both Scotland and England and Wales, drawing their attention to the problem. As a result of this the Departments have decided to make Gyrodactylus notifiable under the Diseases of Fish Act 1937. This is a step forward, but it is important that all concerned with the welfare of wild salmon should be aware of the problem. The Trust stresses that up to now Gyrodactylus has not been found in the UK.

A copy of the reply by the Minister of Agriculture, Fisheries and Food, Mr. Gummer, to Mr. Cranley Onslow on 16th November, 1987 is printed below:

"We are aware that the parasite Gyrodactylus salaris is associated with high mortalities among salmon in a number of Norwegian rivers and we have been keeping the position under review. The parasite is transmitted among live salmon in fresh water. Imports of live fish of the salmon family into Great Britain are prohibited under the Diseases of Fish Act 1937 and very strict fish health controls also operate in Northern Ireland. There is no evidence that it can be transmitted through salmon ova, but in any case imports of salmon ova are only permitted under stringent health certification requirements, involving disinfection. Our import controls therefore provide an adequate means of preventing the spread of the parasite to Great Britain.

Evidence so far available is not sufficient to enable us to conclude that mortalities would be caused by the presence of this parasite in British rivers to the same extent as appears to have happened in the conditions existing in Norwegian rivers. Nevertheless, my Rt. Hon. friends and I have concluded that, as a precautionary measure, we should bring this parasite within the control provisions of the Diseases of Fish Act 1937."

FISH FARMING AND THE WILD SALMON

The Trust is concerned that the full implications on the wild stocks of the growth of fish farming throughout the world have not been fully appreciated. The following figures on the growth of fish farming in a few countries show the fantastic rate at which it is expanding:-

	Year	Tonnes
Scotland	1987	15,000
	1988	23,000
	1989	30,000+
British Columbia	1987	1,000
	1988	10,000
	1989	20,000
Norway	1987	50,000
	1988	70,000
	1989	85,000
Ireland	1987	2,000
	1988	5,000
	1989	8,000

Several questions remain unresolved and the Trust is trying to ensure that all those concerned with the wild salmon understand the potential dangers. The genetic problem of escapees and unwanted smolts and parr is being tackled by the Department of Agriculture and Fisheries for Scotland, who are starting to examine the genetic make-up of stocks in some Scottish rivers. Alongside this they are carrying out controlled experiments to determine the survival rate of hatchery-reared parr compared with natural stocks in a river. In the meantime the advice of many scientists remains that fish from fish farms should not be used for restocking unless the parentage is well established and is from the native river.

The problems of disease are well known and obviously the fish farmer is anxious not to allow any disease into his hatchery or cages. However, there are many questions that remain unanswered as to the effect, if any, of sea water cages near to a salmon river or known migratory route, and the effect of cages in freshwater lochs, for example in respect of eutrophication (artificial enrichment) and the possibility of genetic introgression (unwanted cross-breeding). The Trust is not happy that there are sufficient effective planning controls to prevent a gross over-use of freshwater lochs. Again, the situation is not clear and the Trust is taking the matter up with DAFS.

RADIO TRACKING PROJECT - PRELIMINARY OBSERVATIONS ON THE
MOVEMENTS OF SALMON IN THE RIVER TAY

Over the period 29th June to the end of July, 43 grilse and one salmon were radio-tagged at Tay Fishing Company, Inch Fishing Company and Scone Estates fishing stations. The tagging was done to determine how feasible it would be to tag and follow fish on a system as large and complex as the Tay.

Fish were removed from the sweep nets, tagged and subsequently released either opposite the netting station or some distance upstream. Tracking was by the use of a hand-held receiver, remote listening stations and an antenna attached to the wing strut of a light aircraft.

Of the 44 fish tagged, 22 were tracked as far upstream as the Scone Estates netting stations or higher (most of the remainder were recaptured). From the first week of August, 18 fish were being tracked in the middle and lower reaches of the river, with fish distributed as follows: one fish remaining in the Isla just downstream of Coupar Angus (a number having entered the Isla earlier), three fish in the Tay/Tummel system spread from Loch Faskally to Stenton. The remaining tagged stock were spread out from Islamouth to Higher Scone.

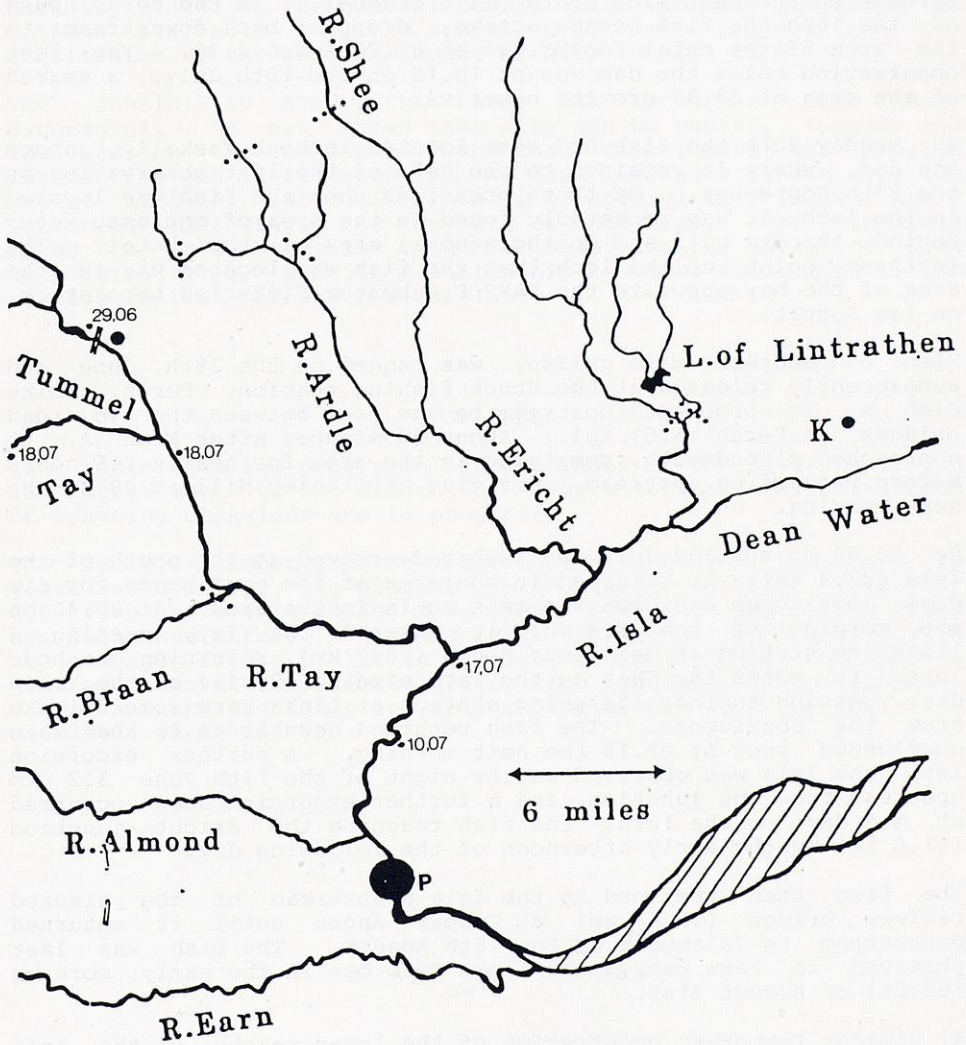
By 27th September, only five of the fish were still detectable. The positions and timing of entry to the river are shown in Figure 1. It seems likely that the loss of contact with the tagged fish resulted from the batteries of the radio-transmitters running down. The particular batch of tags employed were acquired at a reduced price, and were of an early design which has since been superseded.

The movements of two selected fish illustrate aspects of the behaviour shown over the study period. (Note: All distances given are 'true river distance' from the release point.)

Fish A, a male grilse, was tagged on the 29th June at the Stock salmon fishing station, Perth. Upon release at 19.45, immediately after tagging, the fish proceeded upstream to reach the railway bridge in Perth (6.44 km) at 22.30. At 00.20 on the morning of 30th June the fish quickly passed the mouth of the Almond (11.1 km), remaining in the area of the confluence for less than 10 minutes. By 07.25 the fish had reached the Mills at Stanley where it stopped briefly in the top weir until moving on to Cargill by the 2nd July (26.6 km). From the 3rd July to the early morning of the 8th July the fish remained in the area of Islamouth (27.4 km) and Cargill, showing short-range excursions between the mouth of the Isla and the pool immediately above the viaduct.

Subsequently, the grilse proceeded into the middle reaches of the Tay, stopping briefly at the bends at Kircock (30.7 km). From there the fish moved quickly through the middle reaches, passing the Murthly beats (37.7 km) on the 10th July and reaching the area of the Tay/Tummel junction by the 11th (53 km). At 23.30 on the

THE TAY SYSTEM



night of the 13th July the fish passed a listening station just downstream of the dam at Pitlochry (59.5 km). Below the dam the fish remained in the area of the run, some 30 metres from the screens on the east side of the main channel. In the early hours of the 16th the fish became active, dropping back downstream to the area of the metal footbridge at 01.20 and 0.2.30. The last observation below the dam was at 10.15 on the 18th July, a search of the area at 20.30 proving negative.

By Monday 20th the fish had been located in Loch Faskally, above the dam, where it remained to the date of the last observation on the 27th September. On those occasions when the fish was located in the loch, it was repeatedly found in the area of the deep water behind the dam wall and in the general area of the hotel. The furthest point up the loch that the fish was located was in the area of the bay opposite the DAFS Freshwater Fisheries Laboratory, on 1st August.

Fish B, another male grilse, was tagged on the 29th June and subsequently released at the Stock fishing station, Perth. Like Fish A, it proceeded upstream to the pool between the two road bridges in Perth (6.51 km). About 30 minutes after Fish A, it approached Almondmouth, remaining in the area for nearly 2.5 hours before proceeding upstream, arriving at Stanley Mill at 09.30 the next morning.

By 20.00 on the 2nd July the fish had arrived at the mouth of the Isla (27.4 km). It remained in the area of the confluence for six days, moving up and down the main pools in the area. At 00.40 on the morning of the 8th July it entered the Tay, passing a listening station at Meikleour House (28.7 km), returning one hour later to enter the Isla on the late evening (22.45) of the same day, passing another listening station at Links Farm some 2.1 km from the confluence. The fish returned downstream to the main confluence pool by 01.15 the next morning. A further excursion into the Isla was observed on the night of the 11th June 3.2 km upstream from the junction, and a further excursion again occurred at mid-day on the 18th, the fish reaching the Ericht junction (41.8 km) by the early afternoon of the following day.

The fish then remained in the Isla downstream of the disused railway bridge (35.6 km) at Coupar Angus until it returned downstream to Islamouth on the 16th August. The fish was last observed to have passed the Links Farm box in the early morning (03.05) of August 21st.

A similar temporary penetration of the lower reaches of the Isla was shown by a number of tagged fish, one of which finally entered the Ericht, having remained in the area of the Isla/Ericht confluence (41.8 km) for over three days. It was eventually caught by an angler below Blairgowrie.

Future tracking work aimed at observing the passage of tagged fish through obstructions such as the Pitlochry and Clunie dams might best be attempted by tagging MSW salmon earlier in the year. By

the appropriate application of available listening stations, the detailed movements below and, indeed, whilst moving through a fish pass could be monitored for individual fish. Access to areas normally closed to the general public would increase the range of options available for the operation of such a project and the acquisition of the maximum amount of data in each case.

The feasibility study this year has therefore been very successful. It has shown that fish can be caught, tagged and followed on the Tay system, and that experiments can provide interesting and useful results. We have learned a lesson over the choice of tags, and in future will be careful only to use newly battered radio-tags for projects of this kind. The technique seems to have particular value for observing the entry of fish into tributaries, and its relationship to water flow, and to the passage of fish through obstructions.

* * * STOP PRESS * * *

The radio tracking programme has continued on the River Dee, and in recent weeks on the Girnock Burn where further investigations on spawning behaviour are in progress.

The average number of fish entering the Burn over the past 20 years has been 130, the highest ever being 275 in 1967. This year 250 fish have entered and have spread higher up the system than has been seen before. Of this 250, 20% are grilse compared with an average figure of 12% in previous years. There is also a greater proportion of female grilse than previously. An excellent video showing courtship and spawning behaviour will hopefully be available early in 1988.

THE NATIONAL RIVERS AUTHORITY

Government's Proposal for a National Rivers Authority

The Atlantic Salmon Trust welcomes the proposal to establish a national body with responsibility for the quality of water and for the fisheries in England and Wales. This will remove a major defect in the existing structure, in which the Water Authorities are responsible for eliminating pollution, whilst themselves being potential polluters. We note with satisfaction the proposals in the Consultation Paper which are aimed at improving water quality, but regret that so little of the Paper is devoted to the interests of fisheries. A healthy fishery is an indicator of a healthy state of water quality.

Responsibility for the NRA

In our view the division of responsibility for the activities of the Water Authorities between DOE and MAFF is unsound in concept and unsatisfactory in practice. This division of responsibility should not be carried over to the NRA.

Regional Management Structure

The regional management structure, as implied in the Consultation Paper, as distinct from a regional executive structure, would not be satisfactory. The essential element of local knowledge demands local executive authority and additionally, this would minimise bureaucracy in the structure. Each regional RA Board should have a Chairman and the membership should include the Chairman of the Regional Fisheries Committee, together with the Chairmen of other relevant committees and representatives of appropriate outside bodies and of the Regional RA management. The Regional Board should have executive authority and regulatory powers and it should work to and within the policy laid down by the central NRA.

National Rivers Authority

Membership of the NRA should include the Chairmen of the Regional RA's, together with a number of 'non-executive' members. Its terms of reference should include the establishment of a national fisheries policy.

Regional Fisheries Committees

Regional Fisheries Committees have made valuable contributions to the operations of the Water Authorities and they should be retained. The membership should comprise Regional RA staff, representatives of riparian and angling interests, and where appropriate, salmon conservation interests. The Chairman should be acceptable to these interests and should be a member of the Regional Board. The Regional Fisheries Committees should have the authority to appoint supporting local area committees.

Estuaries

In establishing the NRA, the opportunity should be taken to get rid of the division of responsibility for the control and protection of fisheries in those estuaries through which migratory salmonids pass and where responsibility is currently shared between Sea Fisheries Committees and Water Authorities. Authority should rest solely with the Regional RA's, because they will have the major interest.

Boundaries of Regions

In our view, the decision about the boundaries of the River Authority regions is dependent upon the decision about the boundaries of the privatised Water Authorities. We are opposed to the suggestion in the Consultation Paper that areas represented by existing Water Authorities might be merged in establishing the NRA regions. The value of local knowledge would be diluted. It is of paramount importance that the relationship between the Regional RA and the plc should be on a one-to-one basis and if a Water Authority was merged with a neighbour in the privatisation programme, much as we would regret it, we could understand the argument for merging River Authority regions on the same basis.

River Quality Objectives

We welcome the proposal to put the river quality objectives system onto an enforceable basis. The Secretary of State should be empowered to set standards and objectives with a specified timetable within which they are to be achieved. We consider it essential that local fisheries organisations are consulted in setting objectives. We wish to stress the essential need to include a biological assessment in the classification of water quality. The value of chemical tests is strictly limited, because they rely on periodic sampling, which can miss spells of poor quality water, which is injurious to invertebrate organisms, the food on which salmonids depend. Insect life samples water continuously.

Pollution

The Consultation Paper makes no specific mention of pollution from farms, either accidental releases, which cause gross pollution or insidious, less readily apparent pollution. The Regional RA's must have powers to regulate and to prosecute in cases of farm pollution.

Operating Agreements between NRA's and PLC's

We note that the Consultation Paper states that the interests of users in the quality and flow of a river 'might' be maintained by means of operating agreements made between the utilities and the NRA. We consider it to be essential that, where appropriate, the licences issued by the Regional RA's to the plc's should provide for the observance of 'rules' for the regulation of flows from

reservoirs and for abstraction from rivers so as to protect the well-being of fisheries, within the overall constraint of maintaining a supply of water to the public.

Finance

The Consultation Paper suggests that the NRA will be encouraged to recover the maximum possible proportion of the costs of the individual functions set out in paragraph 8.1. The shortfall in recovery of costs is currently met from an environmental service charge levied by the Water Authorities when invoicing their customers. This reflects the value to the public of the activities of the Authorities both in the provision of amenities and in their care for the quality of the environment, in particular the quality of water in our rivers. We see no need to change the principle embodied in this system. The Regional RA should include this in its recovery of costs from the plc, which would be empowered to pass the charge to its customers. We think that this would be a much more satisfactory approach than that suggested in the Consultation Paper, whereby each of the functions listed in paragraph 8.1 would be treated separately as part of a self-financing policy. This would raise the ever-vexed question of the allocation of overheads and administration expenses. Moreover, many employees spend their time in more than one function. The fact that the Water Authorities break out these costs separately is no answer. Value judgments and arbitrary splits are acceptable for figures used as guidelines. They become quite unacceptable when used for charging. Moreover, new charges would have to be raised. Some allowance would have to be made for the damage done to fisheries by impoundment and by abstraction. Stocking with juvenile fish is at best only a partial mitigation. Allowance would also need to be made where a plc uses the river bed as a pipeline between a reservoir and a downstream point of abstraction, thereby saving the plc both operating costs and the cost of servicing the fixed capital of a pipeline.

Whatever method of financing is adopted, the Regional RA's should be authorised to levy rates on owners of fishing rights, instead of these being levied by the local authorities as at present. This could be collected as a precept on local authority rates. At present, local authorities provide no services whatsoever to owners of fishing rights.

The cost of the NRA should be met by a levy on the regional RA's.

Assets

The Regional RA's should own all the assets appertaining to fisheries and monitoring of river quality, for example, weirs, fish passes, boats, hatcheries, gauging stations, water quality monitoring stations, water quality testing laboratories and research equipment. Depreciation charges on these assets should be included in the Regional RA's costs.

Timing

We recommend that the NRA with Regional RA's be established at least a year in advance of privatisation, in order to give the Authority time to settle itself down as an effective organisation.

Research

The size of the research effort should at least be maintained, and the Atlantic Salmon Trust sees good reason for it being increased as part of the effort to "maintain, improve and develop fisheries". Each region should have a research budget, and in our view there should be a central coordinating committee which would look at the total programme, taking into account the work being done on behalf of MAFF and DAFS.

REPORT FROM NORTH WEST WATER AUTHORITY

(By Dr. Chris Harpley, Regional Fisheries Officer)

The Authority's application for a Net Limitation Order for the Haaf Net Fishery on the Solway Firth was recently confirmed by the Minister. This brings some degree of regulation to the only remaining uncontrolled net fishery for salmon in Great Britain. The number of licences permitted was fixed at 165, which will allow bona fide fishermen to continue, but will prevent the abuse of the system by poachers, which has become prevalent in the last few years.

The Minister has also confirmed a byelaw preventing the use of draft nets in the lower Eden. A large number of these ancient rights still exist, and although only one has been exercised in the last couple of years, this highly effective form of netting represented a threat to the recovery of salmon stocks in the river.

Construction has started on the first of three fish passes at weirs on the River Caldew, which is one of the largest tributaries of the River Eden. The Caldew is a productive river which has been inaccessible to migratory fish for many years. It is anticipated that once the passes are completed and the river restocked, the Caldew will make a substantial contribution to the migratory fish stocks of the Eden system. The Authority is spending some £200,000 on this project.

The Authority is also improving its capability for the artificial rearing of migratory fish by means of a joint venture with a Norwegian company which will give it access to the latest techniques and equipment.

NWW's first case under the Salmon Act 1986 was brought in October 1987. The owner of the Broughton Craggs Hotel, Cockermouth, pleaded guilty to receiving salmon in suspicious circumstances and was fined £1,000. The Assistant Chef in the hotel pleaded not guilty and was convicted after trial. He was fined £200. Each defendant was ordered to make a contribution of £100 towards the cost of the prosecution and the court ordered the forfeiture of the fish seized in the incident.

REPORT FROM THE SOUTH WEST WATER AUTHORITY

(By Dr. E. R. Merry, Fisheries Inspector)

Salmon Act 1986

The Salmon Act came into force in January 1987 and the first case was prosecuted for the offence of handling salmon in suspicious circumstances. The defendant pleaded guilty and was fined £150 with £110 costs and forfeiture of three salmon.

The Authority is proposing to make byelaws under the Salmon Act to protect salmon from netting methods in those estuaries for which it has sea fisheries responsibility. The Devon Sea Fisheries Committee will also consider making similar byelaws in those estuaries under its control. There has been close co-operation between the Authority and the Cornwall and Devon Sea Fisheries Committees in making byelaws authorising the placing of prescribed types of fixed nets in certain coastal waters to give substance to the informal but effective agreements operated since 1984.

Net Limitation Order Taw/Torridge

The number of licensed nets now operating in the joint estuary has reached the 14 prescribed by the Order made in 1981 which as part of a package of conservation measures reduced the number of licensed nets from 36.

Weekly Close Time Byelaw Taw/Torridge

In keeping with undertakings made at the time of the Public Inquiry into the above Order, the Authority made a byelaw to reduce from 72 to 60 hours the weekly close time for licensed salmon netting. The Minister confirmed the byelaw in July 1987.

Farm Inspection Campaign

The campaign 'Together we can beat it' reported in the September 1985 Progress Report has been extended from the initial study catchment in North Devon to include parts of the catchments of the Axe, Otter, Exe, Dart, Camel and Tamar. A significant staff resource has been devoted to the campaign, which has had reasonable success in terms of reducing the number of identified polluting discharges from farms.

THAMES SALMON REHABILITATION - THE NEXT STEPS

(By Peter J. Gough, Assistant Fisheries Officer, Thames Water Authority)

The re-appearance of salmon in the River Thames in 1982 marked the end of a 150 year period of absence, and gained the interest of both the domestic and international media. The return of the Thames salmon was not a chance event but the result of a carefully planned seven year feasibility programme. The reasons for the disappearance in the early nineteenth century of the historically important and valuable stock, together with a description of the work commenced in 1979 to reinstate it were given in the December 1986 Atlantic Salmon Trust Progress Report. Average annual releases of 61,000 parr and 14,000 smolts have resulted in our monitoring by means of trapping, electrofishing and angling captures an average of 100 salmon per year from 1982 to 1985 and the record number of 176 in 1986. From our end-of-season electrofishing and broodstock collection we know that many salmon evade our trap at Molesey Weir and the proportions of marked and unmarked fish collected suggest that the total run is around 300 fish per year.

The instigation and monitoring of a run of salmon together with the use of some fish for limited artificial propagation and natural spawning trials has realised the initial objective of the rehabilitation programme. In order to progress and achieve larger runs of salmon, however, a considerably bigger investment is needed. To raise the funds required, the Thames Salmon Trust has been formed as a new charity. At the launch in Fishmongers Hall on 24th March, the Chairman, Sir Geoffrey Johnson Smith, outlined the main aim for an annual run of over 1,000 salmon in the Thames. A run of this size together with progression towards a self-sustaining stock can only be reached by large capital expenditure, initially on a hatchery and on the provision of fish passage facilities at the many obstacles to migration in the river. Detailed appraisals of the requirements on both fronts have begun and considerable progress has been made. A suitable hatchery site has been identified and work is now under way to determine the optimum method of water supply and treatment, and the detailed design of the proposed unit.

Of the 22 main river weirs at which fish passage is considered necessary, two are passable at all times and one (Molesey) has a fish pass on each of its two overfalls. Detailed plans and costings for four other weirs have been prepared. One is incorporated in a weir currently being reconstructed, the other three have been made possible by contributions to the Trust, but there is a long way to go before it will be possible to meet the estimated £280,000 necessary for the provision of adequate passage facilities in the lower half of the Thames.

It is envisaged that larger numbers of parr and smolts will be available for release from 1988 onwards and that this will quickly lead to higher returns of fish. The use of successful returnees and possibly also of genetically suitable fish from other rivers as broodstock is hoped to increase the rate of return of fish. By the time the progeny of such fish return to the Thames they will hopefully encounter fewer barriers to their migration and be able to find suitable spawning areas. The important requirements of habitat and spawning site improvement, or even creation, have not been overlooked and four such projects which should increase site quality and carrying capacity are currently being considered.

Although salmon have successfully spawned within the catchment each year for the last five years it is not thought that the minimal activity observed has significantly contributed to the run of fish. If the work now being planned is realised then it seems likely that salmon will once again be able to complete their life cycle in the Thames.

REPORT FROM THE WELSH WATER AUTHORITY

(By John Gregory, Fisheries Officer)

Sea Fisheries Byelaws

A number of recommendations to curtail the illegal taking of salmon and sea trout under the guise of fishing for sea fish have been drafted for discussion with Sea Fisheries Committees following the introduction of the Salmon Act 1986. The use of set nets in sensitive areas has caused much concern over recent years but the problems are now being greatly eased by the present informal agreements between Sea Fisheries Committees and the Authority.

Handling Salmon

Ten cases of handling salmon in suspicious circumstances are being processed to test Section 32 of the Salmon Act 1986. In these particular cases there is no firm evidence of illegal fishing but every reason to believe that the fish were not taken by bona fide means. These are the first incidents to be considered by Welsh Water under the new 'handling offence'.

Hatcheries

A new hatchery designed for the rearing of salmon and sea trout has been commissioned on the River Mawddach arising from £100,000 compensation following a major fishkill in 1984 and is expected to produce its first stock for local rivers in 1988. Another facility has been constructed by the Glaslyn Angling Association on the River Glaslyn and will be fully managed by members of the Association.

Considerable development of facilities at the former CEBG hatchery at Cynrig on the River Usk is taking place including the construction of purpose-designed smolt release and broodstock holding ponds. The facilities at the hatchery have proven ideal for the microtagging of more than 100,000 salmon parr and smolts in the last two years.

Microtagging

Some 70,000 salmon have been tagged during 1987 including home grown fish at the Maerdy and Cynrig hatcheries and approximately 4,000 smolts from the River Wye.

Results to date have secured 47 tag returns. So far in 1987 more than 30 have been returned from the Irish drift net fishery, one from the Welsh Dee drift nets and one from the rod fishery on the River Taff.

River Conwy Fish Pass

Innovative proposals for the construction of a tunnel through a massive barrier to migrating fish on the Conwy have been agreed with local environmental groups. Detailed plans have been drawn up with the assistance of consultants and it is hoped that construction will be approved and started in 1988.

Radio Tagging

The Authority is about to embark on a major radio and acoustic tracking study of salmon movements in the River Tywi following earlier small scale studies. The study will chart fish movements within the estuary and freshwater particularly as they are affected by dissolved oxygen concentrations and river regulation through reservoir releases.

Ownership of Fishing Rights

The Authority successfully established its title to private salmon fishing rights on the River Wye estuary in the course of a fisheries prosecution at Chepstow Magistrate's Court, proving that such rights have been privately owned since before the Domesday Book.

Prosecutions Database

The development of a computerised database for the processing of some 500 offences each year will help the Authority's legal and fisheries staff achieve positive results from the enormous efforts expended by the bailiffs on anti-poaching and enforcement activities. The system will additionally provide information storage facilities on the records of offenders.

Catch Data 1986

The Table below shows reported rod and net catches for salmon and migratory trout from Welsh rivers during 1986 with comparisons being shown in the figures. It should be noted that these are reported catches, with all the inaccuracies that this implies.

Enforcement

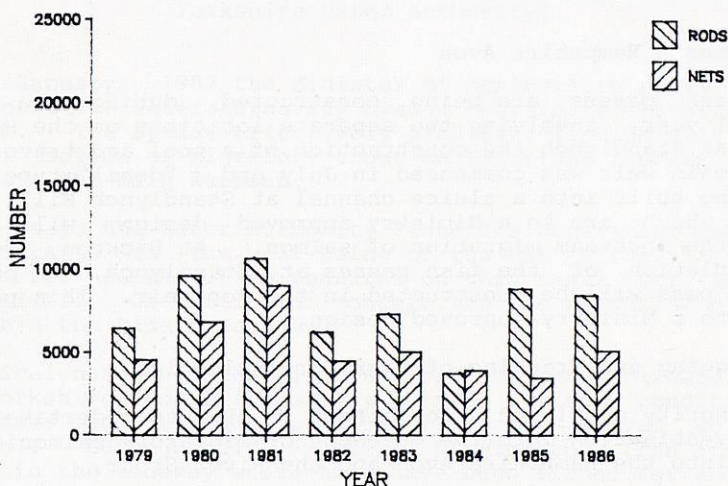
Several new developments have occurred on the illegal fishing scene in recent months.

- a) Two incidents of bailiffs being shot at by poachers have occurred in the West Wales area. Fortunately no-one was injured.
- b) A number of illegal incidents have been recorded on video tape. In one particular instance the recording was to have been used as evidence to support a prosecution but in the event the defendants pleaded guilty, so denying the opportunity of testing the admissibility of such evidence.
- c) One fishery association has felt it necessary to hire a private security firm to protect their fisheries. The initiative was undertaken in full liaison with Welsh Water.

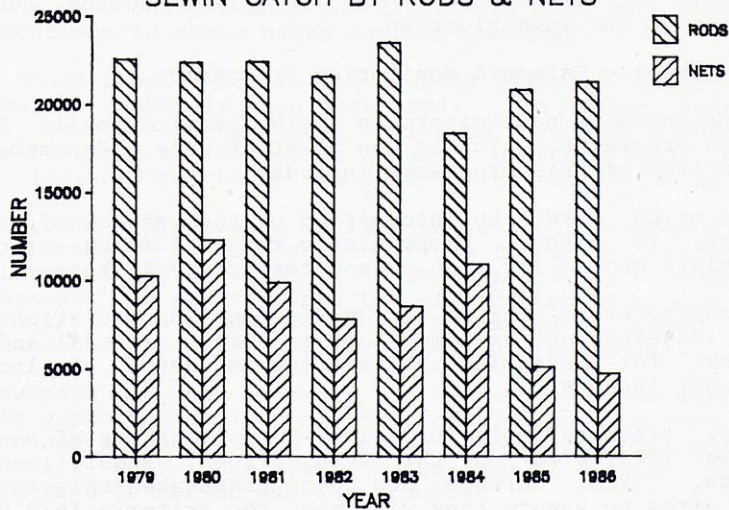
Table 1. Reported Catches of Salmon and Sea Trout in 1986

	Salmon	Sea Trout
Rods	8498	21308
Nets	5098	4712

SALMON CATCH BY RODS & NETS



SEWIN CATCH BY RODS & NETS



REPORT FROM WESSEX WATER AUTHORITY

(By A. J. R. Barber, Fisheries and Recreation Department)

Fish Passes - Hampshire Avon

Three fish passes are being constructed, during the current financial year, involving two separate locations on the Hampshire Avon. At Standlynch the construction of a pool and traverse pass in the main weir was commenced in July and a "denil" type pass is also being built into a sluice channel at Standlynch Mill. These passes, which are to a Ministry approved design, will greatly assist the upstream migration of salmon. At Bickton, following the completion of the fish passes at Standlynch, a pool and traverse pass will be constructed in the Top Weir. This pass will also be to a Ministry approved design.

Radio Tagging and Tracking of Migratory Salmonids

The Authority appointed a Consultant in 1987 to undertake a five year investigation into the movement of migratory salmonids from the sea into the Hampshire Avon and the River Stour.

Fish, if in good condition, are purchased by the Authority from licensed netmen fishing at the mouth of Christchurch Harbour, then fitted with a radio tag and released near to the point of capture. The movement of these fish into and through the river is then monitored by fixed and/or portable receivers. Other parameters such as river flows, etc. are also recorded, enabling an assessment to be made of fish movement in relation to other influences. It is planned to tag 100 salmon during 1987, the second year of the investigation.

National Juvenile Salmonid Monitoring Programme

It is proposed to participate in the National Juvenile Salmonid Monitoring Programme, which is due to start July - September 1988. The objectives of this programme include:

- A. To provide MAFF with information on the state of salmonid stocks, to support proposals to reduce fishing effort and negotiate quotas for high seas interceptory fisheries.
- B. To characterise year-to-year variations in population levels. Such fluctuations are important in both a national and local context for assessing the relative influence of local and national factors.

Currently, sites suitable for a long-term programme of monitoring are being identified on the Avon, Frome, Piddle and Stour catchments. Trial surveys are being undertaken this autumn of selected sites to ensure they will meet the criteria laid down by the Project.

YORKSHIRE RIVER ESK - NEW FISHING RESTRICTIONS

(By Dr. D. J. Shillcock, Amenity, Fisheries & Recreation Manager,
Yorkshire Water Authority)

On 27th January, 1987 the Minister of Agriculture confirmed the latest Yorkshire Water Authority Byelaw relating to fishing on the River Esk. The byelaw effectively prohibits fishing with rod and line for salmon or migratory trout on the tidal reaches of the river above the main harbour.

For many years the Water Authority Fisheries Department and others with interests in the well-being of the Esk fishery had been pressing for conservation measures on this small but important salmon river. Of particular concern was the plight of migratory fish within the tidal reaches.

The physical nature of the River Esk and the local climate of the North Yorkshire Moors frequently lead to low flow conditions in late summer and through to autumn (1987 has proved to be an exception). Subsequently, numbers of migratory fish are often held up in the tideway where they have been fished for and caught before having any opportunity to run the river to the spawning redds. More importantly, they are particularly susceptible to the poacher armed with his snatching rod and treble hooks. The byelaw was therefore proposed as a conservation measure to protect the salmon and sea trout where they were most vulnerable.

At this point, with the fishing season two-thirds gone, the main observable effect of the byelaw has been on those legitimate anglers who previously fished the tideway. They have transferred their attentions to other beats further upstream.

As for those people who are not fishing legally, it seems that they have not entirely been deterred. The Water Authority's Fisheries Inspectors have been active on the river as usual and their observations indicate that a number of known local poachers are still inclined to chance their luck with the snatching tackle.

The difference this season is that those people accosted on the tideway intending to take salmon or sea trout or having taken these fish with rod and line will automatically be charged under the new byelaw. In other words, the prosecution of people fishing illegally is now a much more simple and straightforward process and the detection of offenders is easier for the bailiff.

The byelaw adds one more obstacle to the path of those wishing to unlawfully exploit the river's stocks of fish and one more measure for the conservation of these stocks. Hopefully, this additional pressure will bear some fruit in the form of better and more consistent runs of salmon and sea trout.

Time will tell!

THE SALMON RESEARCH TRUST OF IRELAND

Dr. D. J. Piggins, whom the Atlantic Salmon Trust has been fortunate to have as a member of its Honorary Scientific Advisory Panel for many years, is the Director of the Salmon Research Trust of Ireland. The research programme of the Salmon Research Trust is carried out at the Farran Laboratory, Co. Mayo, and their Annual Reports always provide interesting reading for the salmon conservationist. The latest Report (No. XXXI, 1986) describes the SRT's smolt rearing programme, the objective of which is 'to establish a rearing process that consistently yields a survival rate from egg to smolt so much higher than occurs naturally so that there will still be a substantial net gain, even allowing for the higher mortality at sea of reared as compared with wild smolts'. Although the survival rate at sea is not known, the number of eggs laid down, the number of smolts that migrate and the number of adults that return each year is known, and an estimate can be made of the relative costs and gains of providing more salmon for the system through the production of smolts. Dr. Piggins estimates the production ratios as follows:-

100,000 eggs produce 500 wild smolts which in turn produce about 200 grilse in Irish coastal waters; 30 of these fish may ascend to spawn.

100,000 eggs produce 50,000 reared smolts which in turn can produce 12,500 grilse in Irish coastal waters; 1,250 of these may ascend the river to spawn.

As each reared grilse is the survivor of four smolts which have cost at least 50 pence each to rear, the 12,500 grilse which arrive back at their river will have cost £25,000. (In view of the exploitation rate in Ireland, 85% of this cost, or £21,250, will go to the drift netmen.)

Other interesting information can be found in the Annual Report. For instance, reared fish provided anglers who fish Lochs Furnace and Feeagh with 85% and 50% of their catches, respectively. Microtagging, which has become such an important tool for the salmon scientist, indicated that one smolt which escaped from a sea farm migrated to Greenland as a potential two-sea-winter fish.

One piece of information which is of considerable interest to the Atlantic Salmon Trust is that three times as many salmon were landed in the Kerry area as in the Galway/Limerick area, whereas the previous year the Galway/Limerick catch was six times greater than that of Kerry! The Trust has for some time been drawing attention to the alleged taking of salmon some 60 miles off the Kerry coast by Irish trawlers, with nets which are believed to be as much as 10 miles in length.

With regard to tagging, it has been found that of 4,891 smolts tagged with Carlin tags only 24% of those fish recaptured had retained their tags. Thus this particular marking tool has been proved to be very inaccurate, and it is clear that microtagging

should be used whenever possible on reared and wild smolts. In this way the disposal of captured salmon will be much more accurately gauged.

Some significant results given in the Report can be briefly stated as follows:-

- a) Grilse and salmon spawners survived well to the kelt stage (55%) and 9.2% of the kelts returned for a second spawning. In the old days it was thought that on average only 2.5% of salmon survived to become second spawners.
- b) The microtagging programme showed the exploitation of reared grilse to be very high. It is estimated that 90% of the grilse from S2 smolts and 85% from S1 smolts were caught in the drift nets. 23% of the returning grilse had net marks on them.
- c) Survival rates as far as the coast (before being caught by drift nets) were 25% for S2 grilse and 33% for S1 grilse.

'RETURN OF SALMON TO THE CLYDE'

(Published by the Institute of Fisheries Management)

This publication contains the six papers presented at a conference held in Glasgow in November 1986 to discuss the implications of the return of Atlantic salmon to the River Clyde after an absence of over 100 years. The publication covers a historical perspective of the disappearance of the salmon from the Clyde to its recent return; the legal implications arising from the presence and potential exploitation of the species; the changing scenario among the various freshwater species of fish in the Clyde and Leven systems; the potential of the Clyde as a salmon-producing river; the possibilities for salmon stock augmentation and enhancement; and the function and operation of the newly-formed Clyde Fisheries Management Trust.

The booklet, which includes a summary of the discussions following presentation of the papers and a brief history of salmon in the Clyde, is available from Gordon Struthers, "Torshavn", Lettoch Road, Pitlochry PH16 5AZ, price £1.50 (please enclose 20p stamped and addressed A5 envelope).

GENETICS

The Trust is taking a great interest in the study of the interbreeding of wild and farmed salmon and the possible genetic effects which this may have on the indigenous stock of salmon in a river. It has, in addition to stimulating discussion on the issue, encouraged Government departments to monitor such stocks and to identify the genetic composition of salmon stocks throughout Great Britain, and more particularly in Scotland, where most salmon farms are operated. Earlier this year the Department of Agriculture and Fisheries for Scotland began a study of juvenile fish in various rivers in order to define the genetic differences between them.

The problems connected with interbreeding are now being discussed in international salmon circles. At the latest meeting of the International Council for the Exploration of the Sea (ICES), held last October in Spain, Dr. Derek Mills, who is our observer at ICES, took part in a discussion on the inter-relationships of wild, ranched and farmed salmon. Dr. Mills was largely responsible for highlighting this topic. (See report of the meeting, below.)

Dr. Mills also contributed a paper to ICES on 'The scientific problems associated with possible cage-rearing of salmon smolts in Scottish lochs and hydro-electric reservoirs'. There is an increasing demand for good quality smolts due to the expansion of salmon farming in Scotland, and clean water is of course required. Dr. Mills discussed the biological problems connected with the development of salmon farming, such as the increase of waste food, excreta, and phosphorous resulting from cage rearing of rainbow trout in lochs. He urges those considering granting planning permission for cage rearing schemes to give very careful thought to the possible problems. In his view, "ill-considered planning consent could lead to an irreversible situation with many of Scotland's standing waters becoming sites for intensive smolt-rearing and the wild salmon stocks of neighbouring rivers being exposed to possible deleterious genetic effects".

ICES MEETING IN SANTANDER, SPAIN OCTOBER, 1987

(By Dr. Derek Mills)

It became apparent right from the start of the 75 Statutory Meeting of ICES that there was some concern over the environmental impact of mariculture. The subject was raised at the Open Lecture straight after the General Assembly on the first day. Dr. H. Rosenthal, in his wide-ranging lecture, "The Development and Potential of Mariculture", drew attention to the potential deleterious effects of the industry on the environment and on wild fish stocks.

In the first session of the Mariculture Committee a lot of time and considerable discussion was given to the Report of the Working Group on Introductions and Transfers of Marine Organisms (F:35) in which (p. 24) "ICES (Recommendation 3) expresses continuing concern over the trans-Atlantic and other transfers of Atlantic salmon relative to the genetic and ecological implications of stock mixing and urges that studies be encouraged by member countries to determine means of stock identification and to examine the effects of these movements". And - (Recommendation 5) - "The North Atlantic Salmon Conservation Organisation (NASCO), including its Bilateral Scientific Working Group on Salmonid Introductions and Transfers, should be invited to a one-day joint meeting with the ICES Working Group on Introductions and Transfers of Marine Organisms, in order to consider, co-ordinate and evaluate matters concerning the status, genetics, ecology and pathology of salmonid introductions and transfers in the North Atlantic Ocean.

Discussion then ranged round the "Codes of Practice and Manual of Procedures for Consideration of Introductions and Transfers of Marine and Freshwater Organisms" (F:35A), and genetics was covered fairly adequately (3.2, pp. 6-8). However, I said that the Atlantic Salmon Trust was concerned at the lack of sufficiently effective statutory control over transfers. While statutory control for fish disease was reasonably adequate, there were some gaps in control of transfers and releases of hatchery stock, and I cited examples. The Chairman (Dr. J. E. Stewart, Canada) suggested that we liaise with Dr. Alan Munro (DAFS, Aberdeen) to see what could be done to cover these gaps.

The Report of the ad hoc Study Group on "Environmental Impact of Mariculture" (F:2) was also tabled.

The first session of the Anacat Committee was devoted almost entirely to possible interactions of wild and farmed Atlantic salmon, and of particular interest were papers from Norway (M:14); Faroes (M:21 and M:26); and Ireland (M:6). I again expressed the Trust's concern over the release of poor-grade (S s) parr from smolt-rearing units and the lack of complete statutory control, and both Dr. Shelton and Dr. Munro agreed. I also stressed that while there was some control over environmental quality standards one should not be complacent and there was already evidence (obtained by DAFS) that some lochs, in which cage-rearing occurred, had equalled or exceeded the "excessive" phosphorus loading by as much as a factor of 10. However, some countries, such as Norway and Sweden, claimed that cage-rearing could benefit acidified lakes. I also drew attention to the transfer of fish from Norway to Scotland, and Scotland to England and referred to the likely intermingling of the Celtic and Boreal races in the UK and also the effects on North American stocks from the introduction of European stocks. During the tour of the Ason and Pas rivers later in the Session, concern was expressed by Carlos Leaniz at the effects on wild Spanish salmon stocks of the introduction of eggs from some Scottish rivers, which it appeared had resulted in a larger grilse component.

A meeting of Anacat representatives (which I attended) was also held to consider NASCO acting as a salmon tagging central repository (see Dr. Windsor's letter ref. RES11.007) and CNL (87) 22). There was much discussion for and against NASCO undertaking this work and eventually it was agreed that each country's representative should bring with him to the ICES North Atlantic Salmon Working Group meeting in March a list of tags applied to fish and subsequently released (no information on recapture data was requested). These lists would then be forwarded to NASCO along with ICES' annual report to NASCO. ICES would therefore still remain the main repository for salmon tagging data.

I also took the opportunity of visiting the large fish market in Santander and saw some salmon for sale. These were Norwegian farmed salmon which bore opercular tags attached by the salmon farming company, Leroy Aqua Group AL.

(Note: Copies of the Reports mentioned are available on loan from the Trust.)

ANACAT COMMITTEE

The Anadromous and Catadromous Fish Committee proposes the following topic as one for discussion at the 1988 meeting:-

Long-term fluctuations in the timing and abundance of salmon runs considered in relation to natural and man-made environmental change.

This topic would explore the current knowledge on migratory behaviour of salmon throughout the life history, including time of smolt descent, ocean homing, and changing seasonal patterns of river runs. Consideration should be given to influencing factors, historical evidence, long-term trends, climatic effects, water quality degradation, afforestation, hydropower development and operations, selective process of exploitation, and the implications for spawning escapement and recruitment.

Further, the ANACAT Committee supports a mini-symposium at the 1989 meeting to discuss

Spawning Variability: Implications for the Dynamics and Wellbeing of Stocks.

Contributions to this mini-symposium could involve comparative studies of wild and cultured anadromous fishes as relative contributors to the reproductive potential of fish stocks.

REVIEW OF CURRENT LITERATURE ON SALMON RESEARCH AND DEVELOPMENT

(By Dr. Derek Mills, Department of Forestry and Natural Resources, University of Edinburgh)

Behaviour

1. Mating of anadromous Atlantic salmon, Salmo salar L., with mature male parr. Myers, R.A. and Hutchings, J.A. (1987). Journal of Fish Biology 31,(2): 143-146.

Experiments carried out in a regulated flow channel in Noel Paul's Brook in Newfoundland revealed that sexually mature male parr successfully mated with female anadromous Atlantic salmon in the absence of anadromous males. There was no significant difference between the proportion of eggs fertilised by mature male parr and anadromous males. One of the demographic consequences of these observations is that overfishing could eventually eliminate anadromy in male members of a population.

Ocean Life

1. Atlantic salmon feed in Scottish coastal waters. Fraser, P.J. (1987). Aquaculture and Fisheries Management 18(3): 243-247.

The stomach contents of 256 salmon (53 - 66 cm long) caught in bag nets on the Scottish west coast near Ullapool were examined between June 1983 and July 1986. A total of 61 fish contained fish in the stomach or had faecal pellets containing fish bones in the gut. All recognisable whole fish were sand-eels. Results indicate that feeding salmon were caught up to a certain cut-off point in June or early July, after which all salmon sampled were not feeding.

Smolts

1. The effect of smolt release location on the recaptures of Atlantic salmon (Salmo salar L.) in the River Lanja, Iceland. Einarsson, S.M., Isaksson, A. and Oskarsson, S. (1987). International Council for the Exploration of the Sea, C.M. 1987/M:27.

Smolt release in the estuary gave 5.4% recapture but release 14 km upstream only 1.0%.

Kelts

1. Artificial reconditioning, spawning and survival of Atlantic salmon, Salmo salar L., kelts in salt water and survival of their F progeny. Gray, R.W., Cameron, J.D. and McLennan, A.D. (1987). Aquaculture and Fisheries Management 18(4): 309-326.

Atlantic salmon kelts were successfully reconditioned in salinities of 16‰ and 28‰ using a moist pellet diet. The feeding response and growth of salmon kelts was highest when salinities were maintained at 28‰ during the winter and 16‰ during the summer. Two-sea-winter salmon kelts reconditioned at a slower rate than one-sea-winter salmon kelts. Reconditioned kelts had a fecundity of 2262 eggs kg⁻¹. Survival (F) from the green egg stage to the alevin and smolt stages was 73.5% and 38.8% respectively. The smolt to adult return rate based on unadjusted tag recaptures was 2.2%.

2. An experiment on aquaculture potential of Atlantic salmon, Salmo salar L., kelts in Newfoundland, Canada. Pepper V.A. and Papous, P. (1987). Aquaculture and Fisheries Management 18(4): 327-344.

Post-spawning Atlantic salmon were obtained from a salmon enhancement project. These salmon were overwintered in submerged cages in fresh water, retrieved in the spring and transferred to a marine cage after vaccination for Vibrio anguillarum. Salmon mortality was highest immediately after their retrieval from overwintering cages. Mortality through the duration of the marine cage interval was 0.22% per day. Growth reached a maximum of 1.76% per day. Average final weight reached by reconditioned kelts in the 101 days of marine cage confinement was greater than the average weight of natural repeat spawners in the stock that provided kelts to the aquaculture experiment. Reconditioned salmon were slaughtered in November and marketed both fresh and smoked. The incidence of maturation among slaughtered salmon was less than 2%. Consumer response to reconditioned kelt indicated that flesh colour was inferior but that the product was acceptable.

Salmon Farming

1. Migration of farmed adult salmon with and without olfactory sense released on the Norwegian coast. Hansen, L.P., Døving, K.B. and Jonsson, B. (1987). Journal of Fish Biology 30(6): 713-721.

The dispersal and migration of farmed salmon allowed to escape during the summer was studied. Immature fish migrated to feeding areas in the North Atlantic. Mature fish seemed to enter rivers at random when ready to spawn. Results indicated that the homing behaviour is not a direct consequence of a single imprinting of the smolts, and that there is not a direct genetic link for return to a particular river.

2. Consideration of scientific problems associated with possible cage-rearing of salmon smolts in Scottish lochs and hydro-electric reservoirs. Mills, D.H. (1987). International Council for the Exploration of the Sea, C.M. 1877/M:5.

The problems associated with cage-rearing are environmental and biological. In the first category the production of solid waste and nutrient enrichment are the most important, and of particular concern is the degree of phosphorous loading and its effect on water quality. Biological problems include disease and parasites and the potentially harmful genetic effects resulting from cage escapees and discards subsequently breeding with the local wild population.

3. Possible interaction between wild and reared Atlantic salmon in Norway. Hansen, L.P., Lund, R.A. and Hindar, K. (1987).
International Council for the Exploration of the Sea, C.M. 1987/M:14.

Salmon that escape from fish farms are caught in the sea fisheries and also enter rivers to spawn. They do not select a particular river. It is suggested that reared salmon might affect natural populations in several ways. Of these the disease problem and possible genetical interactions between wild and reared fish are assumed to be the most important.

4. Identification of farmed and artificially reared Atlantic salmon among the catch of the wild salmon fishery of the Faroes. Craik, J.C.A., Harvey, S.M., Jakupsstovu, S.H. and Shearer, W.M. (1987).
International Council for the Exploration of the Sea, C.M. 1987/M:26.

Artificially reared fish were identified among 219 Atlantic salmon taken in the high seas fishery north of the Faroes in December, 1986. Three methods of identification were used - pectoral and dorsal fin abrasion and deformity; scale reading; and muscle pigment analysis based on the detection of the carotenoid canthaxanthin (used in farm diets).

Acid Rain

1. Acidification and Atlantic salmon in Norway. Hesthagen, T. and Mejdell, L. (1987).
International Council for the Exploration of the Sea, C.M. 1987/M:28.

In Norway's southernmost rivers, a decline in Atlantic salmon stocks due to acid deposition became strongly evident at the turn of this century. The highest total rod catches in 10 of these rivers were recorded at 86 tons (1883), and today these stocks have almost disappeared. At present, liming is being carried out to improve the pH levels. Analyses of precipitation and river water in southernmost and western Norway indicate that acidification has stabilised during the 1980's.

REPORT OF THE AUDITORS
TO THE MEMBERS OF THE ATLANTIC SALMON TRUST LIMITED
(A COMPANY LIMITED BY GUARANTEE)

We have audited the financial statements on pages 1 to 4 in accordance with approved auditing standards.

In our opinion, the financial statements, which have been prepared under the historical cost convention, give a true and fair view of the state of affairs of the company at 30 June 1987 and of the income and source and application of funds for the year then ended and comply with the Companies Act 1985.

Mitchell Curran & Co

MITCHELL CURRAN & CO
Chartered Accountants
167 King Street
London W6 9JT

29 October 1987

THE ATLANTIC SALMON TRUST LIMITED

BALANCE SHEET AT 30 JUNE 1987

1986

	<u>ACCUMULATED FUND</u>		
331,271	At 30 June 1986		516,331
100,000	Special Reserve transferred		-
431,271			516,331
	<u>Add:</u>		
42,384	Covenanted and pledged donations:		
3,116	Covenanted donations, including tax recoverable	34,985	
	Pledged donations not under covenant	567	
			35,552
45,500	Gains on disposal of shares and securities		9,815
21,723	Value of donated publicity caravan		3,000
-			564,688
498,494			
	<u>Add (deduct):</u>		
17,837	Excess of expenditure over income for the year (surplus 1986)		(23,012)
516,331	At 30 June 1987		541,686
	<u>DEFERRED SPONSORSHIP GRANTS RECEIVED</u>		
-	Salmon tracking project (Note 1)	15,000	
1,000	"Blue Book" publication	1,000	
			16,000
1,000			
£517,331	<u>TOTAL FUNDS AT 30 JUNE 1987</u>		£557,686
	Represented by the employment of funds, as follows:		
	<u>FIXED ASSETS</u>		
41,831	Scottish Headquarters: freehold property at cost	41,831	
13,254	Other fixed assets at net book value (Note 2)	16,418	
			58,249
55,085			
	<u>QUOTED INVESTMENTS</u>		
406,271	At cost (market value at 30 June 1987 - £640,000)		441,425
	<u>BANK AND CASH BALANCES</u>		
	Schroder Investment Management Limited:		
8,935	General investment deposit account	17,597	
24,546	Hopetoun Auction investment deposit account, including accumulated interest (Note 4)	17,714	
	Midland Bank plc:		
10,000	Ordinary deposit account	10,000	
1,900	Current account	9,983	
26	Petty cash balance	33	
			55,327
45,407			
	<u>THIRD INTERNATIONAL ATLANTIC SALMON SYMPOSIUM</u>		
7,975	Joint deferred expenditure (Note 3)		
	<u>NET CURRENT ASSETS</u>		
336	Stock of Trust poem, at cost	300	
7,270	Income tax repayable on covenants and investment income	5,712	
-	Investment income receivable	3,334	
1,740	Sundry debtors and prepayments	3,974	
			13,320
£ 9,346	<u>Deduct:</u>		
	Covenanted donations received in advance	520	
635	Accrued accountancy fee	2,334	
2,000	Sundry creditors and accrued expenses	7,781	
4,118			10,635
£ 6,753			
			2,685
2,593			
£517,331			£557,686

..... D. CLARKE: CHAIRMAN

..... D. J. MACKENZIE: DIRECTOR

..... M. R. T. O'BRIEN: TREASURER

THE ATLANTIC SALMON TRUST LIMITED
INCOME AND EXPENDITURE ACCOUNT: YEAR ENDED 30 JUNE 1987

1986

GENERAL INCOME

	Income from investments:		
29,826	On quoted shares and securities, including income tax recoverable	33,786	
	Bank deposit interest:		
3,761	On temporary investment of funds	2,159	
1,546	On Hopetoun Auction investment deposit account	2,168	
35,133			38,113
	Income from other activities:		
20,515	Postal Fishing Auction: net proceeds	18,923	
1,331	Profit on sale of Trust poem	214	
393	Royalties from sale of prints	326	
22,239			19,463
£57,372	<u>TOTAL GENERAL INCOME</u>		£57,576

EXPENDITURE

35,694	Direct costs of promoting salmon conservation and enhancement	38,764	
4,405	Progress Report: printing and distribution costs	4,764	
293	Publication of "Blue Books": net cost:	2,796	
	Special projects:		
	Salmon tracking: net cost	7,521	
	University of Stirling	1,000	
	Bessinger-Liddell Fellowship	588	
	Review of scientific literature	500	
	Scientific Advisory Panel	301	
6,723			9,910
376	Donations and grants		787
	Accountancy fee	4,500	
	Less:		
-	Contribution from Fishmongers Company	4,000	
-	Investment advisory fee		500
15,650	General and administration expenses: Scottish Headquarters		1,725
£63,141	<u>TOTAL EXPENDITURE ON GENERAL ACTIVITIES</u>		£75,822
(5,769)	<u>DEFICIT FOR THE YEAR BEFORE DEPRECIATION OF FIXED ASSETS</u>		(18,246)
	Add:		
	Provision for depreciation of fixed assets:		
856	Scottish Headquarters: furniture and office equipment	1,414	
423	Director's motor car	1,249	
-	Publicity caravan	300	
(1,279)			(2,963)
(7,048)			(21,209)
	Deduct:		
24,885	Income from general charitable donations and sponsorships	17,591	
17,837	<u>EXCESS OF EXPENDITURE OVER INCOME ON GENERAL ACTIVITIES (SURPLUS 1986)</u>		(3,618)
	Add:		
-	Net cost of Third International Atlantic Salmon Symposium	19,394	
£17,837	<u>EXCESS OF EXPENDITURE OVER INCOME FOR THE YEAR (SURPLUS 1986)</u>		£(23,012)

THE ATLANTIC SALMON TRUST LIMITED
SOURCE AND APPLICATION OF FUNDS STATEMENT
30 JUNE 1987

SOURCE OF FUNDS

	<u>1987</u>	<u>1986</u>
Increases in Accumulated Fund:		
Covenanted and pledged donations	35,552	45,500
Gains on disposal of shares and securities	9,815	21,723
Donation of publicity caravan at valuation	3,000	-
	<u>48,367</u>	<u>67,223</u>
<u>Add (deduct):</u>		
Net deficit from charitable activities (surplus 1986)	(23,012)	17,837
	<u>25,355</u>	<u>85,060</u>
<u>Add (deduct):</u>		
Adjustments for items not involving the movement of funds:		
Depreciation of fixed assets;		
General	2,963	1,279
Salmon tracking equipment	1,042	-
	<u>4,005</u>	<u>1,279</u>
Donation of publicity caravan	(3,000)	-
	<u>26,360</u>	<u>86,339</u>
Contribution from Dulverton Trust	-	50,000
	<u>26,360</u>	<u>136,339</u>
Deferred grants received: salmon tracking project	15,000	-
<u>TOTAL FUNDS GENERATED FROM ACTIVITIES DURING THE YEAR</u>	<u>£41,360</u>	<u>£136,339</u>

APPLICATION OF FUNDS

Purchase of "Scottish HQ"	-	41,424
Purchase of capital equipment:		
Salmon tracking project	4,169	-
Other fixed assets	-	14,533
	<u>4,169</u>	<u>14,533</u>
Net increase in quoted shares and securities	35,154	86,176
Third International Atlantic Salmon Symposium:		
Deferred expenditures allocated during the year	(7,975)	7,975
Increase (decrease) in investment deposit accounts	1,830	(13,686)
Increase (decrease) in net current assets:		
General (below)	4,848	(83)
Investment income receivable	3,334	-
	<u>8,182</u>	<u>(83)</u>
	<u>£41,360</u>	<u>£136,339</u>

Net current assets

	<u>Increase</u>	<u>Decrease</u>	<u>1986</u>
Stock of poems		(36)	336
Income tax recoverable		(1,558)	426
Sundry debtors and prepayments	2,235		(1,181)
Sundry creditors and accrued expenses		(3,883)	2,093
Cash and bank balances	8,090		(757)
Deferred income: "Blue Book" sponsorship	-	-	(1,000)
	<u>10,325</u>	<u>(5,477)</u>	<u>(83)</u>
		<u>10,325</u>	
<u>As above</u>		<u>£ 4,848</u>	



ATLANTIC SALMON TRUST TIE

Available in blue/black and dark blue, £7.50 each

THE ATLANTIC SALMON TRUST LTD.

DEED OF COVENANT

Please insert
full name and
address in
BLOCK LETTERS

I,
of
.....

HEREBY COVENANT with THE ATLANTIC SALMON TRUST
LTD. that for a period of

(i) years from the date hereof or during
my lifetime whichever period shall be the shorter,
I will pay ANNUALLY to the said Trust for such
charitable purposes of or connected with the Trust
as the Trust shall think fit such a sum as will
after deduction of Income Tax at the basic rate
for the time being in force leave in the hands of

the Trust a sum equivalent to (ii) £.....

(..... pounds) such sum to
be paid from my general fund of taxed income so
that I shall receive no personal or private
benefit in either of the said periods from the
said sum or any part thereof.

IN WITNESS WHEREOF I have hereunto set my hand and
seal this

(iii)day of19..

SIGNED SEALED AND DELIVERED by the said

.....

in the presence of Witness

Address

Occupation

-
- (i) Insert number of years. A covenant must run for a minimum of four years.
- (ii) Enter the ANNUAL amount you wish to subscribe, in figures and words.
- (iii) This date must be the same as or later than the date on which the Deed is signed.
-

The most convenient method of payment is by Banker's Order.
Please complete the form overleaf and send it with your Deed of
Covenant to The Atlantic Salmon Trust, Moulin, Pitlochry,
Perthshire PH16 5JQ.

THE ATLANTIC SALMON TRUST LTD.

BANKER'S ORDER

Subscriber's Bank ToBank Limited
Address & Branch
.....
PLEASE PAY to MIDLAND BANK plc, 20 Eastcheap,
London EC3M 1ED (40-02-31) for the credit of THE
ATLANTIC SALMON TRUST LTD. A/C No. 41013874 the
sum of £ (.....pounds)
on the (i) day of19..
and a like amount on the same day each (ii)
month/quarter/half year/year for a total period
of (iii) years. Total number of
payments
Signed Date
Name in Block Letters
A/C No.
Address
.....

-
- (i) This date must be the same as or later than the date on which the Deed is signed.
- (ii) Please delete and initial the inappropriate words.
- (iii) Insert number of years. A covenant must run for a minimum of four years.
-

PLEASE DO NOT send the Banker's Order direct to your Bank.

ATLANTIC SALMON TRUST PUBLICATIONS

Atlantic Salmon: Planning for the Future (Proceedings of the 3rd International Atlantic Salmon Symposium, Biarritz, 1986)	edited by D. Mills and D. Piggins - provisional price:	35.00
The Biology of the Sea Trout (Summary of a Symposium held at Plas Menai, 24-26 October, 1984)	by E.D. Le Cren	1.50
Salmon Stocks: A Genetic Perspective	by N.P. Wilkins	1.50
Report of a Workshop on Salmon Stock Enhancement	by E.D. 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	by Derek Mills and Gerald Hadoke	0.50
The Atlantic Salmon in Spain	by C.G. de Leaniz, Tony Hawkins, David Hay and J.J. Martinez	1.50

FILMS AND VIDEO CASSETTES AVAILABLE FOR HIRE

"Will There Be a Salmon Tomorrow"	- 16 mm film
"Salar's Last Leap"	- 16 mm film
"The Salmon People"	- Video (VHS)
"Irish Salmon People"	- 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 AST funds is required in return.

