



Atlantic Salmon Trust Report

WINTER 2000



The Atlantic Salmon Trust is a voluntary organisation whose primary aim is to help ensure that stocks of wild salmon and sea trout are maintained and improved within the North Atlantic Ocean for the benefit of the adjacent communities.

It seeks to support the improvement and integration of management methods and scientific knowledge, and works for positive action affecting salmon and sea trout to be taken both at public and private levels, on the basis of the best available information.

To achieve this, the Trust:

- advises Government Departments, Members of the Parliaments and Assemblies, and fishery authorities
- promotes and sponsors practical research
- organises workshops to investigate specific problems
- issues regular and special reports and publishes the results of its work

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Welcome

I indicated in last year's Report that we had decided to modernise our principal publications to make them more appealing, both for the benefit of our many supporters and to the wider audience we hope to attract to the activities of the Trust. I therefore welcome you to this new format and hope it will commend itself to you.

Up to now we have published the annual report at the end of each calendar year but are considering producing it in the spring, the aim being to have a fuller and more up-to-date publication available for the summer shows. The half-yearly newsletter will then be published towards the end of each year.

Throughout the summer months there were gratifying reports of greatly improved grilse runs in many rivers, the West Highland rivers being notable exceptions. This was extremely good news and the better marine survival of the 1999 smolts should be sustained over the life of their year class with, we hope, improved spring runs in 2001. There is, however, no room for complacency as numbers overall continue to be a matter for concern.

By far the most welcome and exciting news of the year came at the year end when the Government announced its agreement with the Freshwater Fisheries Review Group recommendations that the phase-out of interceptory mixed stock fisheries should be accelerated and that it would provide funds towards the compensation of netsmen surrendering their licences. Up to £750,000 is to be allocated to match private funding for this purpose with priority being given to buying out the NE coast drift net fisheries. This very significant development would not have happened but for the far-sightedness of Dr. Jack Cunningham, the then Minister of Agriculture, who set up the Review Group in 1998.

The issue of mixed-stock interceptory fisheries in the British Isles has been a very long running saga. Throughout, the Trust has been at the forefront of all the many endeavours to persuade the Governments of the day to end these highly damaging fisheries. Now that there is an end in sight, much work needs to be done to bring the whole matter to fruition. The Trust, together with NASF(UK) and appropriate Government

representatives, will set up an organisation to arrange compensation terms for netsmen willing to surrender their licences. A campaign to raise the necessary private sector funding will be led by NASF(UK) assisted by the Chairman of NASF, Orri Vigfusson, and the Migratory Salmon Foundation.

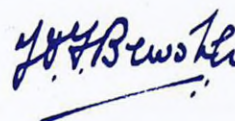
On other fronts, the West Highland Tripartite Working Group continues to make useful progress and two local Area Management Agreements (AMA) have been set up at Loch Laxford and West Loch Tarbert in Harris. Although some doubts understandably remain at certain local levels, it is to be hoped that these can be overcome, and that further AMAs will be established over the coming year. A feasibility study for a central stock restoration facility on the West Highland coast has also recently been commissioned.

The Salmon Conservation (Scotland) Bill was passed on 11th January. The Trust fully supported the general principle of this important Bill, but shared the concerns of the Association of Salmon Fishery Boards and other organisations about some aspects of the drafting. Many of these concerns would appear to have been allayed by amendments and by Ministerial assurances in debate, as described in Andrew Wallace's description of the resulting Act in his article later in this Report. It is now important to work for its provisions to be used in ways that are most beneficial for the maintenance of wild salmon and sea trout stocks, and for the support and improvement of fisheries. This will require both initiative and vigilance on the part of all wild fishery interests.

I would like to take this opportunity to thank all of those who support the Trust in a variety of ways, and especially the members of the Council of Management. A list of new and retiring members is on page 22, together with an expression of appreciation for their services to the Trust.

A particular word of thanks goes to our Director, Deputy Director, Treasurer and Secretary for all their sterling work over the year. The Trust is greatly indebted to all of them.

H.F.O. Bewsher
CHAIRMAN



News



There has been much salmon-related activity in the year 2000 and the first weeks of 2001, and the articles in this section describe the major developments. In late December came the dramatic news that the Government had accepted the proposal, first put forward by

the Atlantic Salmon Trust and the North Atlantic Salmon Fund (UK), that it should contribute to phasing out mixed stock salmon fisheries in English and Welsh waters. In Scotland, the Salmon Conservation Bill was passed in early January.

England and Wales

A Year of Important Issues for Salmon

by Tim Hoggarth, Deputy Director

Salmon and Freshwater Fisheries Review Group Report

The Trust's submission addressing salmonid issues in the Report was sent both to the Ministry of Agriculture Fisheries and Food (MAFF) and to the Review Group. It was but one of some 670 replies which were received by MAFF. On 20th December, the Agriculture Minister announced the principal Government decisions on the Review Group's recommendations. The first item was that Grant-in-Aid would be increased by £3 million a year for 2002 and 2003. This was welcome news, but the overall situation of fisheries finance, as described opposite, is still disturbing. The second piece of news was the dramatic statement of the Government's intention to provide financial

support for the accelerated phase out of mixed stock salmon fisheries, which has been outlined at the beginning of this section. The Minister also promised that proposals for new salmon and freshwater fisheries legislation will be introduced when Parliamentary time permits. A full response, addressing both the Report and individual submissions, will be issued as early as possible in the New Year.

North East Coast Drift Net Catches

To supplement the news of action to accelerate the phase out of mixed stock salmon fisheries, the provisional catch figures for the 2000 North East Coast drift net season are shown opposite, together with figures for the previous five years. Rod catch statistics for 2000 will not be available for some months, so no comparison can be made between the two at this stage.

	2000	1999	1998	1997	1996	1995	Average
Catch	40,059	24,812	17,328	19,241	15,172	48,005	27,436

In 2000: a. 71 licences were exercised
b. The division of the catch was:
Multi Sea Winter 13,314, Grilse 26,745

Environment Agency Fisheries Function Grant in Aid (GIA)

The increase in fisheries grant-in-aid from 2002/2003 has been reported opposite. However, Fisheries Minister Elliot Morley had previously confirmed that, despite representations from the Atlantic Salmon Trust and many others, there was no intention to alter the decision to reduce GIA to the Environment Agency (EA) in 2001/2002 by £1.5 million. The impact is now beginning to be felt in EA Regions, particularly in the field. For example, the South West Region is likely to lose six fisheries posts, and Southern Region will lose at least one.

Fish-Eating Birds

The autumn of 1999 saw the publication of the report of the joint study into predation by fish-eating birds, carried out by the Department of the Environment, Transport and the Regions (DETR), the EA and MAFF. The Moran Committee, representing angling, fishery and fish conservation interests, proposed the establishment of a Government-led working group to consider the actions that should result, and any subsequent research requirements. This initiative was rejected in a disappointing letter sent by MAFF to Lord Moran in the summer. In the meantime, without any consultation with interested Non-Government Organisations, it was announced that the Centre for Environmental Fishery and Aquaculture Science (CEFAS – the MAFF research agency at Lowestoft) had been commissioned to carry out a £200,000 study into fish refuges (primarily applicable to still waters). On 6th September the Deputy Director attended the annual MAFF/DETR meeting to review the operation of the system of licensed shooting of fish-eating birds. He reported that out of 485 licences granted for culling cormorants, only 205 were actually exercised. 31 heron were shot against an approved total of 67, and no goosanders or mergansers were killed. The meeting was advised that Ministers had confirmed that there were no plans to make any changes to the current operation of the licensing system. However, an advisory leaflet, aimed at explaining licensing procedures and

including guidance on how to complete licence applications, has been drafted and will be published in the near future.

Countryside and Rights of Way Bill

This has received Royal Assent. It does not have a significant impact on fisheries, but the main issues of general country interest are listed here for information. They include:

Access Forums These have been put on a statutory footing and have the right to advise on the mapping of land, the new right of access and recreational issues generally. Members will be appointed by the local highway authority or the National Park authority and must be representative of users of local rights of way and owners and occupiers of access land, or land over which local rights of way subsist. It will be a requirement that the number of members is balanced between the two groups.

Restrictions on Access Those exercising the right of access must not:

- Walk within 20 metres of a dwelling or buildings used for housing livestock.
- Use racing gallops between dawn and midday and when being used by racehorses.
- Feed any livestock.
- Without reasonable excuse, interfere with any fence, barrier or other device used to enclose livestock.

Sanctions for Abusers of Access Any person failing to comply with the restrictions on access will be liable to a 72-hour ban from the access land.

Occupiers' Liability Liability has been reduced to exclude risk resulting from any natural feature of the landscape, or any river, stream, ditch or pond whether or not a natural feature, plus the risk of a person suffering injury when passing over, under or through any wall, fence or gate except by proper use of a gate or stile.

Codes of Conduct The Countryside Agency and Countryside Council for Wales will be required to produce and periodically revise a code of conduct for the guidance of persons exercising their right to roam. This is in order to ensure the public are informed of the location and extent of access land and advised with regard to their respective rights and obligations under the Act.

Restrictions on Dogs The Government has brought forward an amendment allowing owners of grouse moors or sheep to exclude dogs from their land "by taking such steps as may be prescribed". The period for which the exclusion applies is up to 5 years for grouse moors, and one period per year for sheep farmers of not more than 6 weeks, where the legislation additionally requires that dogs must be kept on short leads when in the vicinity of stock.

Night Time Access The Government has resisted all moves to date to restrict night access.

Scotland

Salmon & Freshwater Fisheries Management – A Changing Scene?

by Andrew Wallace – Director of the Association of Salmon Fishery Boards

The Millennium year has been a busy one in Scotland for those interested in the management of Scotland's salmon and freshwater fisheries. With the introduction of the Salmon Conservation (Scotland) Bill, which was at the top of the agenda in 2000, and was passed in January 2001, it would be fair to say that the Scottish Parliament has delivered one of its intentions to make more time available to those interested in the finer detail of Scottish public life. Such a Bill would, if it had been possible at all, have taken years to materialise at Westminster.

Running parallel to the Bill, now an Act, has been an extensive consultation: "Protecting and Promoting Scotland's Freshwater Fisheries", which has sought views on some of the problems and opportunities that face Scotland's freshwater fisheries. All the major angling and fisheries management groups have made their own responses, but a new initiative "Angling for Change" (AfC) has, for the first time, brought these organisations together to produce a consensus on what the main problems are and where their solutions might lie. The AfC group consists of all the principal game and coarse angling organisations as well as those interested in the research and in the management of the freshwater resource, and also includes conservation Non Government Organisations (NGOs). The Scottish Executive is

Personalities

Within the Environment Agency, Baroness Young has been appointed as the Chief Executive, and Professor Lynda Warren (who chaired the Salmon & Freshwater Fisheries Review Group) has joined the Board. Tim Hoggarth, our Deputy Director, is now a member of the Southern Region Environment, Fisheries and Recreational Advisory Committee. Ivor Llewelyn moved from his appointment as Head of MAFF Fisheries Division II (Salmon & Freshwater Fisheries) on 24th November. He has been replaced by Chris Ryder. The Moran Committee's long-suffering Secretary, Mark Hatcher, has handed over to Louise Barton of the Salmon & Trout Association. He remains a member of the Committee.

currently considering the responses, a process which will result in the issue of a Green Paper in the summer.

The New Act

The Salmon Conservation (Scotland) Act makes available powers to salmon management organisations such as District Salmon Fishery Boards, and to Ministers, that will put more tools in the salmon management tool box. The Act covers a specific area that relates principally to the control of exploitation by rods and coastal nets. In doing so, it picks up on one of the recommendations of the Salmon Strategy Task Force (SSTF) report of 1996 which identified, as one of its key recommendations, the need for Boards to have access to a greater range of management powers than currently available.

Boards in Scotland have a wide-ranging statutory remit to protect and improve salmon fisheries. Their specific powers, however, have been more confined and relate to: the control of poaching; ensuring free passage of fish up and downstream; control over stocking of fish; and two exploitation control measures in the form of baits and lures regulations, and the ability to alter the close time of a fishery.

The Act contains a range of general enabling powers that will give Boards access to a greater range of exploitation management tools than can currently be applied. These may be applied on all or part of the river for all or part of the season. The way these regulations will be sought and granted will remain



as at present, with Boards applying to the Minister for powers to, for example: 'apply a catch and release or fly only rule for all fish caught before end of May'. This application is then made available to the public and objections or support for the regulation sought. After this process has been completed, the Minister makes a decision on the basis of the case for and against, and the regulation is passed or fails.

Included in these general enabling powers is the ability for Boards to apply statutory controls such as: catch and release, bag limits, control over tackle used, closure of parts of the system, release of fish of a certain sex or size, etc. There is also provision for these regulations to be time-limited. For example, they may be put in place for 5 years after which they expire and a case would then need to be remade to re-impose them.

Although there is potential for such measures to be draconian, it is hoped that these powers will be used by Boards to brace existing voluntary management policies and by Ministers only in the event of emergencies. They are designed to underpin the enormous amount of work currently being conducted by Boards to ensure sensible exploitation of salmon stocks on a voluntary basis. The voluntary approach has worked extremely well in many places such as the Dee, Tweed and Oykel where almost all Spring fish are returned every year in response to serious concerns about spring stocks in these systems. However, in certain areas, the efforts of many can be undermined by the unwillingness of a few and, on the basis that policies should ideally be consistent within each catchment, it was felt necessary

to enable voluntary policies to be given statutory force if required. It goes without saying that persuasion rather than resort to the law is always more likely to win hearts and minds and this has already been clearly demonstrated on many rivers in Scotland.

Running parallel with these regulations is the inclusion of powers for Ministers to step in to apply measures themselves. There has been considerable concern over this aspect, since all wish to avoid the serious unpopularity of sweeping measures, such as those put in place in England and Wales, and emphasise the need to underpin the strengths of the Scottish system which is based very much on local management. However, the local management principle has been clearly endorsed by the Minister in assurances given in debate. It was indicated, not unreasonably, that Ministers should be empowered to make general regulations, such as those to allow Boards to obtain information needed for effective fishery management, and also that they should be able to act on their own initiative where circumstances required, providing the conditions attached to the use of their powers were clearly understood, and subject to consultation with Boards that might be affected.

The Impact of Rod Fishing

Critics of this Bill had argued that exploitation by rods is the least of the salmon's problems. There may be some element of truth in this – and the Minister emphasised that the Bill was only a first step in tackling the range of issues that are affecting stock levels. However, the high rate of exploitation of spring fish by



rods, both in the spring and then later on in the Autumn is undoubtedly a source of concern where spring stocks are seriously depleted. However, there is a more subtle point that needs to be made to put the argument for reduced rod exploitation in context.

In 1999 the Scottish rod catch (retained and released) was 52,533. 1999 was a weak year although it is interesting that even adding this poor year to the time series of rod catch data gives a relatively flat trend over the last 20 years. The final assessment of the 2000 rod catch will be significantly higher. Scotland's rods, as a group, are therefore amongst the highest single exploiters of salmon stocks in the North Atlantic. These catches will be higher than the North East drift net catch, the total Scottish coastal net catch, and the rod catch of all other salmon producing countries, except perhaps Ireland.

Nobody would dispute the argument that salmon caught to the rod are more valuable than other forms of exploitation, nor would they dispute that it is rod generated income that is by far the biggest investor in the resource. However, biologically speaking, we must remember that to the fish it makes not the slightest difference whether it is caught in a Greenland high seas net, by an artfully placed fly or is 'cymagged' up a Highland burn. A dead fish is a dead fish and by being killed it is denied the opportunity to spawn. On stocks that are depleted this may be important, and rod fishermen need to recognise this fact not only for good biological reasons but also for political reasons. In other words, if we are to expect the international salmon

community and organisations with other, perhaps competing, environmental interests to take our arguments seriously, we cannot sustain the position that all other forms of exploitation need to be removed to ensure that we may enjoy the privilege of continuing to fish unrestricted ourselves.

When, and we are getting close to it on many rivers, we have sensible, effective, precautionary exploitation control policies for weak sub-stocks of salmon, then we can, with a completely clear conscience, present solid arguments to policy makers to address many of the other problems besieging the salmon. The issue of predation by seals and sawbill ducks would no doubt be at the top of many people's agenda.

Returning Fish

There is one further caveat to this process. Ten years ago, the idea of returning a sea-bright spring salmon would have been completely inconceivable to almost all of us. On many rivers, some of them substantial names in the salmon fishing world, almost 100% of spring fish have now been released for several years. Last year Scottish rods returned 28% of all fish throughout the season and 38% of all fish before June 1. This year those proportions are likely to rise again. However, we must be aware of why we are doing this and not fall unconditionally into the trap of catch and release zealotry.

The fundamental principle of returning fish should be to ensure that a sustainable stock escapes the fishery. At the level of the fisherman, rod fishing for salmon is not, and never has been a

hunter-gathering exercise, it is a sport. An individual's threshold for an acceptable day's catch can and will vary but there can be no excuse for the sort of freezer filling exercises that still occasionally occur on some rivers at certain times of the year. To engage in such an activity, particularly in the spring, and then complain tirelessly that there are not enough fish around is unacceptable and, above all, illogical.

The blanket EA policy in England and Wales may or may not have been a sensible one to meet the needs of the situation south of the Border, but it would be unsustainable in the North because there are rivers where spring catches are relatively robust and where spring stocks probably could sustain a catch without cause for concern. It is up to each river to determine policy on this issue, apply that policy in whatever way is most appropriate and take a view on how precautionary the approach to the management of the river is to be.

Managers should be applying policies according to circumstances, backed up by advice from both the scientific community and also, importantly, from local observation. Policies have to be sophisticated enough to recognise that some sub-stocks of a river are doing well and can support more exploitation than others.

Added to that it must not be forgotten that these policies can have financial implications, as result of lost rental income, which may ultimately undermine investment in the river. Again circumstances on the ground vary from those in which tenants actually persuade proprietors to adopt catch and release policies, to those in which they swiftly take their business elsewhere.

Looking Ahead

At a further level, we also need to think to the future. Scottish rods are returning spring fish now, not as an absolute gesture to the salmon, but as an investment in that stock of fish which it is hoped will one day yield a return in the form of a harvest when that stock has recovered. Catch and release is a response to a problem, not a religion; once that problem has been solved, policies should change to reflect the changed circumstances. To illustrate the long term change in fortunes of salmon stocks, an extract from a book written in 1952 reveals the comment:

"There are still old boatmen alive today who remember the great Autumn days on Tweed".

The implication of this statement is that in the early 50's such heady days were but a distant memory, with the Autumn run having been replaced by a predominantly early running stock. Another half century on and 80% of the Tweed catch is once again being caught in the last two months of the season. Indeed, even now there are some rivers in Scotland where the spring catch is actually rising and the grilse catch falling. Managers need to make decisions about what is going on and respond accordingly. It is for this reason that fisheries management is best operated at a catchment level.

The Act serves a number of important purposes for Scotland's salmon managers and users. It is another piece in the jigsaw of ever more sophisticated river and stock management. It endorses the local management principle, but allows government to demonstrate that there is a safety net it can resort to if required. And, if sensibly applied, it will underpin a system which is already showing remarkable signs of progress.

However, it is imperative that we keep in the front of our minds the importance of conserving Atlantic salmon to ensure that the species can continue to be harvested and can continue to generate jobs and revenue in areas where economic activity needs careful nurturing. Harvesting a surplus is an essential ingredient of good salmon management and of the sport. The responsibility facing salmon managers in Scotland is to ensure that there is a surplus to harvest.

Salmonid 21C



How Science Can Help Fishery Management

by Ian Gregg – Leader of the Salmonid 21C Steering Group

Salmonids Face Many Problems

Many problems exist today in relation to the management of salmon and trout stocks in the UK and Ireland. Some of the issues (such as climate change and exploitation at sea) are beyond the immediate control of most organisations. But others, such as habitat management, stocking and exploitation levels, can more easily be influenced by owners, fishery managers and anglers. However, there has been insufficient consensus between scientists, fishery managers and the angling public on these matters. The question of stocking has been particularly controversial.

This lack of consensus has wasted time and resource. It has also seriously reduced our ability to influence Government, Local Authorities, Wildlife, Conservation and other organisations to adopt and invest in policies which will improve our rivers and their catchments.

Better Management of Stocks

Salmonid 21C is an initiative to find an improved way of managing wild salmon and trout stocks in the UK and Ireland, based on science and the best data available.

- The first stage of the initiative was a Workshop, held in October 1999, to bring together scientists and fishery

managers to agree a way forward which would have widespread support.

- The second stage was a Conference on 6th and 7th July 2000 at Penrith, at which the conclusions of the Workshop were presented to, and debated by, over 100 scientists, fishery managers, anglers, and organisations representing angling, wildlife and conservation interests. The presentations were given by the leaders of the teams which had developed them:

Nigel Milner	Population Dynamics
Ted Potter	Exploitation Control
John Armstrong	Habitat Requirements
Keith Hendry	Habitat Improvement
Alan Youngson	Genetics
Miram Aprahamian	Stocking
David Solomon	Selection of Options

The papers on which the Workshop and Conference were based are expected to be published in *The Journal of Fisheries Research* during 2001.

The Way Forward

Half of the Conference time was allowed for discussion, and there was a general consensus on the way forward. It was agreed that properly targeted stocking, appropriate exploitation controls and habitat improvement schemes all have important parts to play, depending on the problems which need to be addressed in any particular catchment.

All delegates agreed that better ways of managing and protecting our streams were urgently required. It was accepted that fishery managers and anglers needed the support of wildlife and conservation organisations, the water industry and land users. This could best be achieved by adopting rational management plans based on the best information available.

The Conference provided a strong mandate for the third stage of the initiative – the publication of a magazine, a 17-minute video and a website (all developed by a Media Sub-Group of the Salmonid 21C Steering Group). These are designed to encapsulate the main issues discussed at the Conference and to make anglers more aware of the issues and supportive of sustainable long-term solutions. 46,000 magazines and 12,000 videos are being circulated in the UK and Ireland. The website address is www.salmonid21c.org

A free copy of the video or magazine may be obtained (subject to availability) from:

England and Wales: Customer Services, Head Office of the Environment Agency (Telephone: 01454 624400)

Scotland: The Association of Salmon Fishery Boards (Telephone: 0131 343 2433)

Ireland: Central Fisheries Board (Telephone: 00353 1 837 9206)

Improvements in Land Use Are Needed

A recurring message from the Conference was the need for more information on the state of our rivers and the stocks in them, but the main concern was the need for changes to the Common Agricultural Policy to provide incentives to farmers/land users to produce more conservation which we need, rather than more food which we do not need. Too much of our riverine corridor has been damaged by excessive grazing, chemicals, pesticides and use of sheep dips.

Partnerships Can Achieve Change

The conditions required for fish to flourish are the same as required for the other flora and fauna of the river bank. We need to make everyone aware of the responsibility we all have to preserve this vital part of our wild life heritage, which depends on the river and its banks.

We need more partnerships to improve the riverine corridor. These can soon produce improvements – improvements which are sustainable and improve biodiversity.

North Atlantic Salmon Fund (UK)

Progress on the High Seas – and a New Role for the Fund in Home Waters

by Andrew Whitehead – Secretary, NASF(UK)

The North Atlantic Salmon Fund and the Greenland and Faroes Fisheries

The NASF (UK) Appeal for 2000, in support of the international North Atlantic Salmon Fund (NASF) was launched in February. Due to the continuing reduced levels of expenditure, the Committee set a fund raising target substantially lower than in 1999. This was agreed as £33,000, of which £28,000 was to be sought from Scotland, and £5,000 from England and Wales.

As ever, the response to the Appeal has been both generous and prompt, despite the uncertainty that surrounds the situation in the North Atlantic. The Committee of NASF(UK) is very encouraged by the continuing support it receives from river

boards, associations and clubs, and from private donors.

NASF, led by Orri Vigfusson, continues its efforts in Greenland and the Faroe Islands. Despite formal scientific recommendations for a zero quota for Greenland, the North Atlantic Salmon Conservation Organisation (NASCO) eventually decided to allow a catch for 'home use' only – estimated at about 20 tonnes. NASF still has some reservations about the monitoring of this catch and believes that some 40-50 tonnes may actually have been taken.

Negotiations in the Faroe Islands have concentrated upon a long-term salmon fishing moratorium. NASF and the Faroese fishing vessel associations have proposed such an arrangement to the Faroese and Icelandic Governments. Because the NASCO meeting set no quota, the Faroese Government could, in theory,



allow fishing for any amount it wished. However, it undertook to follow a precautionary approach. Meanwhile, NASF has proposed that no Faroese vessel should apply for a salmon fishing licence. Negotiations are continuing.

Mixed Stock Salmon Fisheries in UK Waters

In June, the paper entitled 'Interceptory Exploitation of Salmon', written by Ian Gregg and endorsed jointly by NASF(UK) and AST, was submitted formally to Ministers in London and Edinburgh. It had previously been put to the Review Group on Salmon and freshwater fisheries in England and Wales, and it was gratifying and reassuring to note that when the Review Group made its report, two of its recommendations followed very closely those made in the Joint Paper. These recommendations supported an accelerated phase out of mixed stock interceptory netting operations, and the need for Government financial support for the payment of fair compensation to netsmen to achieve this.

In October, the Chairmen of AST and NASF(UK) together met Elliot Morley MP, the Fisheries Minister, in London. This was an encouraging discussion, at which Colonel Bewsher and Lord Eglinton rehearsed the key recommendations of the Joint Paper, reminded the Minister of the Review Group's position, and urged upon Mr. Morley the importance of Government support for the early phase out of interceptory nets. The Minister in turn was sympathetic, but reserved his position until the

Government's response to the Review Group Report was complete at the end of the year. On 20th December came the heart-warming news of the success of this initiative.

A meeting between the Chairmen of AST and NASF(UK) and John Home Robertson MSP had to be cancelled, when he was replaced as Scottish Fisheries Minister. A meeting with his successor, Ms. Rhona Brankin MSP, is being arranged.

The New Campaign

NASF(UK) has warmly welcomed the Government's acceptance of the case for accelerating the phase out of mixed stock fisheries in England and Wales, and the undertaking to contribute matching funding of up to £750,000 towards the payment of compensation to netsmen. NASF(UK) is preparing to meet representatives of the netsmen to discuss the compensation terms which will set the target for financing an agreement. Supported in fund-raising by the Migratory Salmon Foundation (a charity set up by Orri Vigfusson), NASF(UK) will lead a major appeal to raise the contributions which will be required from the private sector.

Features



The Atlantic Salmon Trust has been concerned for years about the effect of fish farming on wild salmon and sea trout. It is a subject which is frequently in the news, most recently

in the powerful BBC television documentary “The Price of Salmon”.

Here, two articles describe developments in a positive approach to the issue.

Salmon Farming

Continuing Efforts to Overcome the Problems

by Jeremy Read

Working on a Way Forward

The initiative for a collaborative approach to tackling the collapse of sea trout and salmon stocks in many West Highland rivers is not new. The Atlantic Salmon Trust recognised from the outset that a solution to the problem could not be achieved without action from the salmon farming industry. From its original Workshop, and through the meetings of the Sea Trout and Salmon Working Group that examined the scope of the problem and led to the setting up of the West Coast Fishery Trusts (all of these owing much to John Mackenzie’s insistence, as chairman, that all parties should continue to be involved) the Trust has played a determined part in seeking progress. With the Association of Salmon Fishery Boards (ASFB), the Trust pressed the Scottish Executive to set up a group to bring together representatives of salmon farmers, wild fishery interests and the

Executive, with the aim of resolving the issues of sea lice and other problems, and of promoting measures for the restoration of wild stocks. This was established in 1999 as the Tripartite Working Group (TWG), under the chairmanship of the Fisheries Secretary in the Scottish Executive’s Rural Affairs Department.

As readers of our previous Reports and the Newsletter will be aware, the TWG developed a strategy for co-ordinated stock rotation and fallowing on a whole loch basis, to break the cycle of sea lice infestation. This needs to be supported by limited co-ordinated treatment when appropriate, using new and environmentally compatible in-feed medicines, which are already employed in Norway and elsewhere. The objective of this strategy is to reduce levels of egg-bearing female lice to zero, especially at the time of smolt migration. Despite the impression recently given in a television documentary, the need to achieve this was accepted by all the parties involved, who signed a Concordat to back the strategy.

Area Management Agreements

Implementation of the strategy is planned through a series of Area Management Agreements, to be reached between local wild fishery interests and farms operating in the area. Besides the control of sea lice, these agreements aim to cover a range of aspects affecting the operation of salmon farms and their location, in the interest of achieving and maintaining healthy populations both of wild fish and of sustainably farmed salmon.

At the time of writing, it is hoped that a significant number of further agreements, which are under active discussion, will soon be added to the two agreements that have already been signed. The TWG has appointed a small team to encourage and facilitate this expansion, with the eventual aim of reaching agreements to cover the whole region. The development of these agreements requires the building of understanding and confidence, and an open approach to information. The West Coast Fisheries Trusts, and especially their biologists, have a big part to play in all of this.

Regulation of Fish Farming

It should be recognised that Area Management Agreements are not a substitute for effective regulation. The Trust and the ASFB are strongly urging better harmonisation and implementation in regulating all aspects of fish farming. This would ideally be achieved by the setting up of a single authority charged with this responsibility, although such a course may not be feasible immediately. Action is needed now, in the context of the impending transfer of responsibility for salmon farm planning control from the Crown Estate to local authorities. Consultation on this subject is currently in progress, and it should be taken forward by the Parliamentary enquiry into the salmon farming industry that is shortly to be conducted.

Restoration of Stocks

Because of the sorely depleted state of stocks, it was recognised by the TWG that restorative action would need to be undertaken on many rivers, once conditions for smolt migration had improved. Planning for this needs to begin now. The TWG recommended that the Scottish Executive should develop a mechanism for advising local Boards and evaluating their proposals for stock restoration programmes. The Trust, with the Associations of Salmon Fishery Boards (ASFB) and of West Coast Fishery Trusts (AWCFT), is urging the Scottish Executive to progress this task, and to assemble the necessary biological information on the status of stocks and the effectiveness of different remedial measures.

In the mean time, a feasibility study has been commissioned to investigate one possible measure for use in a restoration campaign. This study is being supported by the Crown Estates, the Highland Council, Highlands and Islands Enterprise, and Scottish Natural Heritage. The ASFB and AWCFT are also represented on the Directing Group for the study, and the Atlantic Salmon Trust is acting as the co-ordinating organisation.

The concept envisages the development of a central facility to support the rearing of broodstock to produce ova for individual rivers. With the current very small runs, conventional methods of collecting returning adults are unlikely to produce adequate numbers of broodstock in each river. The technique under investigation envisages the catching up and rearing of smolts, which would then be grown on to maturity, and stripped. The ova would then be returned to their native rivers for planting out or growing on, as desired locally. This technique could be beyond the resources of many small Boards, hence the proposal for a central facility. The report of this feasibility study, which will be due in April, will contribute to the general preparation for stock restoration work, as described above. It is essential that we look to the future.

New Developments in Genetics

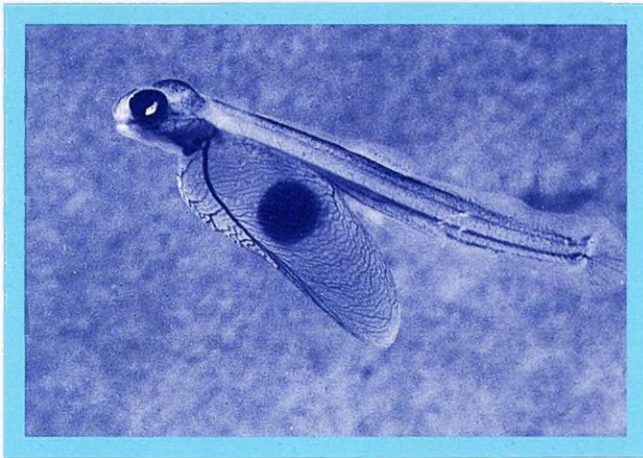
Can Aquaculture Research Benefit Wild Fish?

by John Gilbey – the Marine Laboratory, Aberdeen

Relevance to Wild Fish

The 7th meeting of the International Association for Genetics in Aquaculture, an informal group of geneticists involved in the

study of economically important aquaculture species, was held in Townsville, North Queensland, Australia from 15-22 July 2000. 139 delegates from 27 countries, many of whom were world leaders in their respective fields, attended the event. At the meeting delegates reported on studies involving 33 species of fish (including 8 species of salmonids) and 20 species of shellfish



– studies which employed a wide variety of powerful molecular-genetic techniques and technology.

These developments have great potential as tools to help provide better understanding of *wild* salmon biology and to help in salmon conservation. It was for this reason that the AST, together with the Fisheries Society of the British Isles, helped to fund the costs of attending the event. A detailed report (a summary of which is contained here) was presented to the AST, outlining those techniques which could be of greatest help in the study and conservation of wild fish.

Fingerprinting and Mapping – What Can Be Learned?

Genetic pedigree analysis (i.e. genetic 'fingerprinting'/matching of offspring and parents) provides a powerful tool for the salmon biologist. The AST is already involved with this technology through its studies in the Baddoch Burn and elsewhere. Pedigree analysis, together with the examination and characterisation of salmon populations at various scales, now allows for the detailed examination of population structure and dynamics within and between continents, regions, rivers, tributaries and even microhabitats within the smallest burn. These techniques have great potential to help understand salmon population dynamics in the future.

A large proportion of the conference was concerned with genetic mapping. A detailed Atlantic salmon genetic map will soon be available containing more than three hundred genetic markers and this will help in the identification of genes influencing many important traits. Perhaps the most obvious trait to examine in this way, and one that has already been examined in other salmonids, is that of disease resistance. It is now

possible to identify strains or individuals which possess natural resistance to various pathogens so that, in the event of the spread of a pathogen into the wild, measures such as genetically assisted breeding programmes can be taken to avoid the types of problems seen on many Baltic rivers.

Other traits for which the underlying genetic basis can now be investigated include size and growth rates, proportion of multi-sea-winter fish, return timing (spring, summer etc), spawning success and the tendency to produce precocious parr. Once genetic markers and genes controlling these traits have been identified, breeding crosses could be performed which could help a river system regain or improve on various aspects of its salmon run (e.g. helping regeneration of lost spring runs).

Putting the Technology to Use

Developments in genetic technology now also allow the rapid detection or diagnosis of infective agents. Genetic based assays, such as the one used for the identification of the Infectious Salmon Anaemia virus, allow the biologist to rapidly identify agents of disease. Further, a well-structured sampling programme of wild fish could allow a constant watch to be made on the health of wild stocks and allow rapid reaction should any problems appear.

These new genetic techniques now allow investigations to be performed into Atlantic salmon biology and ecology that would have been impossible just a few years ago. Interactions between populations, families and even individuals can be examined in ever-greater detail and the underlying genetic basis for many important traits can be determined. The commercially driven necessity of optimising hatchery production has provided powerful genetic tools that have the potential to revolutionise our understanding of Atlantic salmon biology and ecology.

Editor's Note: John Gilbey is currently studying for a PhD based jointly at The University of Aberdeen and the Fisheries Research Services Marine Laboratory, Aberdeen. The title of his study is "The genetic bases of growth in Atlantic salmon" and it is concerned with the identification of genes influencing growth and development. John is also interested with the investigation of individual growth rates in wild fish, especially "within family" variations, and is at present working with John Webb of the AST in the examination of growth rates of individuals and families in the Baddoch Burn.

Atlantic Salmon Trust Reports

From its foundation, the Atlantic Salmon Trust has been involved in promoting and funding practical research aimed at improving wild salmon and sea trout stocks. The work is carried out by our own Biologist, and by a

range of organisations to whom the Trust provides support. This section contains reports on recent and current work, and an outline of the funding of the whole range of the Trust's operations.

Biologist's Report

The Trust's Field and Research Biologist Outlines His Work in 2000

by John Webb

Introduction by the Editor:

John Webb has been the Atlantic Salmon Trust's Biologist since 1986.

The Trust employs a biologist in order to:

- *Conduct specific practical salmon research work in its own right, and jointly with other groups and agencies*
- *Have direct access to other current experience of salmon research*
- *Be able to provide information and advice to proprietors, anglers, and salmon and sea trout fishery managers*

John Webb's principal current activities include:

- *Continued analysis and evaluation of the data from the Baddoch Spring Salmon Project (see below, and also in the later description of AST support of projects)*
- *Assistance in the work of the Trust by the provision of scientific advice, based on current research and field experience*
- *Provision of an advisory service offered by the Trust to River Associations, District Salmon Fishery Boards, proprietors, anglers and other interested groups*
- *Preparation of a system of practical guidance to improve collaboration between those concerned with the management, utilisation and regulation of upland river and stream habitats*
- *Liaison with other researchers active in salmon and sea trout studies in the UK and overseas*
- *Assistance with the information and educational activities of the Trust.*

Maximising Progeny Numbers for Natural and Artificial Spawning – The Baddoch Spring Salmon Project

This major project has been the main feature of work over the past five years. Two significant aspects are described here:

The First Adults Return The past eighteen months have seen the first adult fish to be generated by this DNA-based research project returning to their home river. At the present time, particular interest is focused on the survival of the first twenty identified families of experimental fish that began their free-swimming lives as fry in the spring of 1995 and subsequently left the burn as two, three and four-year-old smolts over the period 1997 to 1999.

In Autumn 1999, the first grilse to be generated by the work returned. Four of the twenty grilse that entered the burn at spawning were from four of the experimental groups that emerged as fry in 1995 (Families 2, 3, 15 and 20). In addition, one grilse was the first recorded recapture from the 1996 year class (Family group 5a). The remaining fifteen grilse were a mixture of fish of four and five-year-old fish (ie they hatched in 1993 and 1994) – and therefore not derived from the experimental population.

The new Millennium heralded the return of the first multi-sea winter spring fish to be generated by the programme. The first reported recapture was a seven and a half pound female 2SW spring salmon, caught by an angler fishing below Morphie Dyke on the North Esk in late March. Genetic analysis of DNA extracted from a sample of scales taken soon after capture revealed that the fish was another member of Family group 20 – and a sister of one of the male grilse caught that returned to the burn last year (see above). In the River Dee itself,



only a single fish from the experiment was taken in the middle reaches of the river in April of this year (Family 8) – a reflection perhaps of the effectiveness of the river's ongoing catch and release policy.

By mid-July, four micro tagged Baddoch grilse were reported to have been recaptured. Three were caught by the net fisheries operating in the Montrose Bay and the lower reaches of the North Esk. Two male grilse were taken by the net and coble fishery in the lower reaches of the river on the 6th and 13th July. Genetic analysis revealed that both fish were members of the same Family. The remaining two recaptures were reported on the 4th and 10th of July: a male from a coastal net in Montrose Bay and a female taken by an angler fishing on the Carron Beat on the River Spey. Both fish were subsequently found to be members of same Family.

The timing and pattern of these recaptures are consistent with

the records of recaptures of Baddoch multi-sea winter fish and grilse, collected since trapping and micro tagging began in the late 1980s. Instances of apparent 'straying' into non native rivers by returning salmon and grilse are quite common. Each year, many of the fish tagged as smolts in the upper Dee return to their spawning tributaries. However, small numbers of recaptures are usually reported in a number of coastal/estuary net fisheries and other rivers outwith the district. These kinds of recaptures do not necessarily signify a complete failure of some fish to return to the 'home' river and native spawning areas. Rather, the available evidence suggests that although the homing abilities of most returning adult fish are remarkably efficient, some fish do undertake some limited exploration of other river systems, particularly early in the season. But in most cases (unless they are captured!) the mistakes are probably rectified before the onset of spawning.

Though the numbers of recaptures have been small, they do however serve to demonstrate the capacity of a single year class of salmon eggs to generate fish of both one and two sea winter returns in the same year. The mechanism is very simple. The 2SW fish caught in March left the river in 1998 as a three-year-old smolt, whereas, the smolts that generated the grilse left a year later – in the spring of 1999 as four-year-old smolts. The production of multiple year classes of juvenile migrants from a single year class of eggs is a common and extremely important feature of many salmon populations – particularly in upland tributaries where early running fish are frequently generated.

With the start of the annual close season in late September 2000, attention has turned to the Baddoch fish traps and the numbers and family structure of the adult spawners that come back to their home tributary. At the time of writing a total of 52 fish have returned to spawn.

The Family Structure of Smolt and Autumn Parr Migrations Leaving the Baddoch Burn

The Baddoch DNA project is one of the first attempts to use new and emerging molecular technologies on a large scale on salmon in their natural environment. In contrast to the modest number of samples taken from adult returns to date, the numbers of juvenile samples that have required laboratory analysis have been relatively large. Moreover, in the early stages of the project, the burn contained a number of 'wild' salmon that were not part of

the experimental population. As a result, the autumn parr and spring smolts that left the burn in 1997 and 1998 consisted of a mixture of wild and experimental fish. Extra effort and care has therefore had to be taken to ensure that all of the wild and experimental fish that have been captured simultaneously in the traps are being identified and assigned correctly.

To assign a fin clip to a known family group, each sample requires at least six different procedures. Consequently, the three thousand five hundred fin clips that were gathered during the course of the fieldwork phase of the project have resulted in a considerable laboratory workload. This fact, together with a number of inevitable technical 'teething problems', has served to delay the production of the final data on juvenile production. However, screening of the three thousand five hundred fin-clips removed from parr and smolts that have left the study burn since 1997 is nearing completion. At the present time, final quality control checks are being made on the discriminatory power of the DNA analysis methods that have been used. This is being achieved by checking a selection of archive samples that were taken from all of the founding groups of eggs that were used to generate the experimental juvenile population.

Analysis of the final data set will be focusing on looking at the times at which the different families of smolts and parr left the burn and the timing and patterns of migration in relation to factors such as parental type, stocking position, habitat type and flow. Attention will also focus on whether all of the families are represented equally among the different runs of smolts and parr, or whether particular family groups dominate different annual periods of migrant production. A summary of the first detailed results of this work will be presented in the next Progress Report.

Factors Affecting the Distribution of Spawning by Salmon in Upland Rivers

The distribution of spawning by adults in rivers may have an important influence on the subsequent production of juvenile fish – particularly when spawner numbers are low. Against a background of falling stocks, there is increasing interest in the factors that influence the distribution of eggs by spawning females and subsequent juvenile production.

The first stage of a detailed study on the relationship between

flow and the timing and distribution of spawning in the Girnock Burn has been completed. As an extension to this recent work, the AST is currently funding a joint research project with the Geography Department of the University of Aberdeen to look at hydraulic influences of spawning in other upland systems. (See details of publications below.)

In another smaller study, research is underway to look at what other factors may influence the distribution of spawning. The return of many fish to their native river and the tributary where they spent their juvenile lives is facilitated by homing, whereby the salmon uses its sense of smell to return to its origins. Among wild Atlantic salmon, the ability to 'home' back to natal rearing areas within rivers has been demonstrated to the scale of 5-10km. However, we know very little about the possible role of homing at the finer or so called 'reach' scale (0.1-2km) and to what extent final spawning distributions within spawning streams reflect the spatial limits of their previous juvenile residence history.

Since 1995, the positions of all of the family groups of eggs that have been planted in the Baddoch Burn have been carefully noted. This autumn has seen the return of the first significant group of experimental female adults derived from the egg planting experiment. This provides an unique opportunity to look at the possible relationship between the area of a stream in which family groups of parr lived prior to migrating to sea and their subsequent spawning positions as adults. To look at this question closely, the female origin of all of the redds constructed in the Baddoch this autumn will be established using DNA fingerprinting. Small samples of eggs will be removed from redds for analysis in the laboratory. The resulting pattern will then be compared with the predicted area of the burn in which the adults spent their lives as juveniles.

Atlantic Salmon Trust Advisory Service

The Atlantic Salmon Trust's Advisory Service has now been running for about sixteen months. Over much of this period there has been a gradual increase in requests for information, advice and assistance. Over the period from 1st June 1999 to 1st October 2000 more than three hundred and twenty different enquiries were received and dealt with. Queries have come in from all over the UK – ranging from brown and sea trout management in the Orkney Islands and the Outer Hebrides,

to the problems of juvenile population assessment and stocking on the rivers Taw and Exe in Devon. The most common enquiries include requests for information on sources of reference, research data, general fisheries' management information, specialised contacts and site visits.

Meetings and Presentations

- This year has seen attendance at a number of meetings and public events. These have included the Spey Research Committee, the North East Rivers Project Sustainable Management meeting, a Scottish Environment Protection Agency day course on Farming and Watercourse management, the Scone and Moy game fairs and the Spey Salmon Fishery Board 'Salmon day' at Spey Bay.
- In mid-June, I gave a presentation to the Spey Ghillies' Group on the economics of hatchery rearing and stocking to increase spring salmon catches in larger rivers. A presentation on the same theme was also given at the Spey Salmon Fishery Board's AGM in mid-November.
- In December, I ran training days on the Don and Helmsdale for ghillies, anglers and bailiffs. The main themes were catch and release, live fishing handling and tagging.

Publications

'Flow requirements of spawning Atlantic salmon (*Salmo salar* L.) in an upland stream: implications for Water Resource Management', has been accepted for publication in the Journal of the Chartered Institution of Water and Environment Management. The paper should appear in the early spring of 2001. This work is continuing with the support of the Geography Department of the University of Aberdeen. The new project, supported by the AST, is currently investigating the relationship between flow and the distribution and timing of spawning in other Tay and Dee tributary streams. Attempts are also being made to model the impact in the Girnock Burn of changes in flow due to the impacts of drainage, forestry and climate change.

'Patterns of run timing of adult Atlantic salmon (*Salmo salar* L.) returning to Scottish rivers – some new perspectives and management implications' by John Webb and Ronald Campbell (Tweed Foundation) has been published in the Proceedings of the 5th International Atlantic Salmon Symposium. Copies are available through the AST office.

'Differential distribution of 0-group Atlantic salmon (*Salmo salar* L.) fry from synchronously spawned families in an upland stream revealed by DNA fingerprinting' has been submitted to the Canadian Journal of Fisheries and Aquatic Sciences. A brief summary of this work is described in the December 1999 Progress Report.

'Development, implementation and biological implications of the catch and release policy for early running Atlantic salmon in the Aberdeenshire Dee, 1995-1999' has been submitted for presentation and publication in the Proceedings of the IFM conference on catch and release for Atlantic salmon, to be held in Pitlochry in April 2001.

A short review of a recently produced report by Solomon, Sambrook and Broad on 'Salmon migration and river flow: results of tracking radio tagged salmon in six rivers in South West England', was published in the Journal of Fish Biology, Volume 56, number 6. Pages 1564-1565.

A short paper entitled 'Advancing the professional development of Scottish Fisheries managers and field staff: education and training', has been submitted for consideration by the Association of Salmon Fishery Boards, The Atlantic Salmon Trust and the Institute of Fisheries Management (Scotland). [Editor's note: the principles of this paper will be reflected in the ongoing development of training programmes].

Support of Projects

How the Trust Backs Scientific and Salmon Management Research

The Atlantic Salmon Trust continues to pursue its original task of promoting and supporting practical research, aimed at maintaining and improving wild salmon and sea trout stocks.

The Trust is directly involved in the conduct of the Baddoch Spring Salmon Project, which is a principal activity of John Webb, the Field and Research Biologist, and is described below. The Trust also provides direct support from its own resources for projects conducted by other institutions. These projects are selected by its own Honorary Scientific Advisory Panel. In addition, the Trust manages the financing of projects sponsored by a number of other organisations. A summary of all this activity follows.

Continuing Major Project

Maximising Progeny Numbers from Natural and Artificial Spawning – The Baddoch Spring Salmon Project Annual cost **£25,000**

This is the Trust's principal research project. It is described in detail in the report by John Webb. The project involves the DNA identification of individual "families" of fish in the Baddoch Burn, an upland tributary of the Aberdeenshire Dee, in order to investigate and compare their behaviour, and their survival in fresh and salt water, in relation to their parentage and their stream habitat. It has now progressed from fieldwork to detailed analysis and evaluation, and will result in significant guidance for habitat restoration and stock enhancement work. The fieldwork has been supported for five years by generous sponsorship – in 1999/2000 £20,000 was contributed by the Dulverton Trust and £10,000 by the Fishmongers' Company – but the Atlantic Salmon Trust is now financing the analysis and evaluation work from its own income. This has entailed finding the balance – some £20,000 – in 2000/2001.

Projects Directly Supported by the Trust:

a. In 1999/2000

Flow Dynamics of Water in Redds **£6,000**

This project, now completed, was conducted by Lancaster University over three years. It analysed in detail the way in which water moves over and through different spawning gravels. This has major significance in determining the availability of oxygen to the eggs, which affects their survival and hatching. The work has resulted in the development of a model for the prediction of flow conditions within different substrate types, which will be of value in the planning and conduct of restoration of degraded spawning gravels

DNA Profiling Using Semi-Automated Micro-Satellite Screening **£6,000**

This work, completed at the Fisheries Research Services (FRS) Marine Laboratory, has supported the development of a much improved, faster and cheaper technique for analysis of DNA samples. It greatly assisted the conduct of the Baddoch project described above.

River Eden – Spring Salmon Radio Tracking **£2,500**

The Trust contributed to the cost of an Environment Agency study to determine where spring salmon spawn in the River Eden (Cumbria) system. It was aimed at helping to decide where to target work such as habitat enhancement, abstraction and pollution control, construction of fish passes, and anti-poaching enforcement. This was co-ordinated with similar work on Tweed (see below). The study, which is continuing, demonstrated a high survival of rod-caught fish after release, and identified two particularly productive areas.

River Tweed – Assistance with Purchase of Micro-Tagging Equipment **£1,000**

The aim of this project, which is still in progress, is similar in its purposes to the Eden tracking work described above. It is examining the stock structure of salmon populations in the River Tweed, and the contribution to the fisheries of different parts of the system to fisheries. In particular, it is investigating whether summer and autumn salmon also spawn in the same areas as

spring salmon. The work involves the micro-tagging of smolts and will examine returning adults to determine their stream of origin. The Trust's contribution has helped to finance the purchase of tagging equipment.

Spey Research Trust – Portable Resistivity

Counter Trials £5,000

The project involved the construction, use and validation of an electric resistivity counter that does not need permanent installation. It showed that the technique, especially when used to fill in gaps in the coverage of an acoustic counter, offers a possibility for installing counting facilities in rocky rivers where it is not possible or too expensive to construct the weirs normally required.

Analysis of Sea Trout Growth and Survival on the Welsh Dee £2,500

Eight years' data from fish sampled and tagged at the Chester Weir trap are being analysed for the Environment Agency (EA). The project, which is not yet complete, is investigating growth and survival patterns during that time, in relation to variations in climate and other factors. This has been prompted by concern over sea trout populations in a number of UK rivers, over and above the particular problems of the West Highlands of Scotland.

Peter Liddell Fellowship £2,000

This was a travelling fellowship to investigate current Scandinavian gene bank techniques for the support of threatened populations.

b. In 2000/2001

Maximising Progeny Numbers from Natural and Artificial Spawning – The Baddoch Spring Salmon Project £20,000

This sum is the direct funding provided by the Trust for the support of John Webb on the project in the current financial year.

River Eden – Effect of Water Temperature on Spawning Dates £1,000

This EA study is following up some of the findings of the 1999/2000 project, and previous work by the AST and FRS and is

examining how water temperature can affect the time at which salmon spawn. It is likely to be particularly significant in assessing the effects of a major water abstraction project, which takes place in one of the areas under investigation.

Spawning Flow Requirements in Upland Streams £5,250

This project examines how varying flow rates affect the timing and location of salmon spawning in upland streams. This will have implications for regulating water abstraction and compensation flows, and in determining when and where habitat enhancement to improve spawning will be justified by adequate water flow.

Effects of Climate Change on the Decline of Spring Salmon £4,000

This project is examining a possible factor in the high mortality at sea of early-running MSW salmon. It is investigating the possibility that warmer water temperatures in upper tributaries may have had an adverse effect on the characteristics of the smolt run and the subsequent survival at sea of migrating salmon.

Influence of Environmental Factors on the Production and Survival of Juvenile Salmon in the River Bush £2,000

This grant is helping to support a study which is taking advantage of a long term series of data on environmental conditions, including water flow, for the River Bush in Northern Ireland. It is examining how and when these factors have had an effect on the survival of salmon from egg to smolt, and seeking to determine whether it will be possible to predict future smolt production in the light of observed conditions, such as a very wet spring.

Principal Projects Financed by Other Organisations

a. In 1999/2000

The Shieldaig Project £37,626

Major trapping, electrofishing and habitat survey work on sea trout decline and rehabilitation in a West Highland river. The Programme is financed by the Scottish Executive, Highlands and Islands Enterprise, and other organisations.

The Shildaig Millennium Award £2,202

Educational and information work linked to the Shildaig Project

**Investigation of Salmon Behaviour in
Borland Lifts** £19,276

Examination of actual salmon movement during the operation of Borland lifts at hydroelectric dams in Scotland. It is aimed at the establishment of optimum design and operating regimes. This project has continued in 2000. It is financed by Scottish Hydro Electric.

The Flume Project £6,000

This sum, provided by the Fishmongers' Company, has helped to extend the capability of the Fisheries Research Services research flume channel at Almondbank, which allows study of fish behaviour in controlled but realistic river conditions. Among other results, the flume is providing valuable data on the territorial behaviour of juvenile salmon, which will allow better estimation of the carrying capacity of nursery streams. It is also being used to investigate fish pass design.

b. In 2000/2001

**Investigation of Salmon Behaviour in
Borland Lifts** £20,000

Continued work on the project described above.

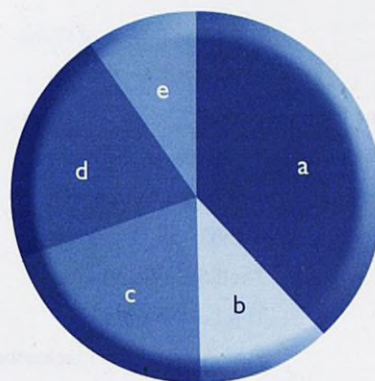
**Feasibility Study for a West Highland Salmonid
Stock Restoration Facility** £20,000

The concept for this facility is described in the article on salmon farming. The study is financed by the Crown Estate, Highland Council, Highlands and Islands Enterprise, and Scottish Natural Heritage. It is being co-ordinated by the Atlantic Salmon Trust.

Financial Report 1999-2000

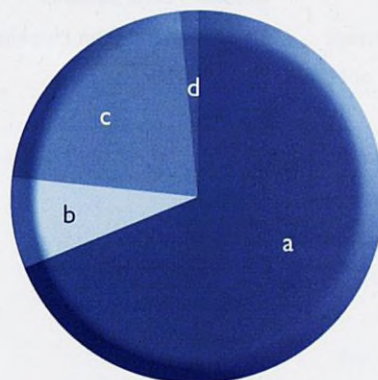
Incoming Resources £

a) Investment Income	70,657
b) Covenanted and Gift Aid Donations	21,722
c) General Donations	36,916
d) Postal Fishing Auction	38,431
e) Other Income	18,028
Total	185,754



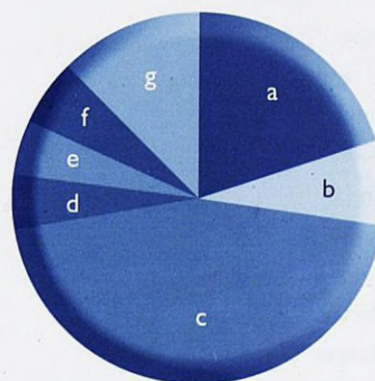
Resources Expended

a) Advancement of salmon conservation	127,737
b) Information and publicity	14,660
c) Management, administration and finance	40,423
d) Transfer to reserves	2,934
Total	185,754



Trust Expenditure on the Advancement of Salmon Conservation

a) Projects financed directly by the Trust	25,500
b) Progress reports and publications	9,392
c) Permanent staff salaries	57,407
d) Office costs	6,105
e) Travel and car expenses	6,064
f) Other direct expenditure	7,342
g) Depreciation	15,927
Total	127,737



Expenditure on Projects Sponsored or Financed by other Organisations

Expenditure managed by the Trust **91,522**

Total Direct and Managed Expenditure **219,259**

Copies of the full accounts may be obtained from the Trust.

AST Council of Management

Patron: HRH The Prince of Wales

Council of Management

President: The Duke of Wellington
Vice Presidents: Sir Ernest Woodroffe
Dr. Wilfred M. Carter
The Lord Nickson
The Lord Moran
Rear Admiral D.J. Mackenzie

Elected Members

Chairman: Colonel H.F.O. Bewsher
Vice Chairman: Major General John Hopkinson
Chairman of HSAP: Dr. D.H. Mills

Mr. Malcolm Borthwick
Mrs. Annie Boyd
Mr. Jonathan Bulmer
Lt. Col. R.A. Campbell
Mr. J.R. Carr
Mr. R.M. Clerk
The Rt. Hon. Dr. Jack Cunningham MP
Mr. Robin Grenville Williams
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Mr. A. Douglas Miller
The Earl of Eglinton & Winton
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The Lord Guernsey
Mr. M. Larby
Mr. John Lovett
Mrs. E. Macdonald Buchanan
Mr. M.D. Martin
Mr. Moc Morgan
The Hon. Sir Charles Morrison
Mr. E. Mountain
Mr. Robin Scott-Dempster
Dr. Richard Shelton
Mr. Hugo Upton
Mrs. Anne Voss Bark
Mr. R. Williamson

Invited Representatives of Other Organisations

ASF (Canada): Mr. J.E. Houghton
ASF (USA): Mr. D.C. O'Brien Jr.
AIDSA: Madame S. Tissier
ASFB: Miss Jean Matterson
Countryside Alliance: Mr. Richard Burge
Fishmongers' Company: Mr John Bennett
Mr. Anthony Duckworth-Chad
RASA: Mr. Richard Buck
S&TA: Mr. T.A.F. Barnes
Spey Trust: (A Representative)

Officers of The Council

Director: Mr. Jeremy Read
Dep. Director/Secretary: Mr. Tim Hoggarth
Treasurer: Mr. John Gray

Annual General Meeting

At the Annual General Meeting in Fishmongers' Hall on 8th December, the following new members were elected to the Council:

Mr. Malcolm Borthwick
Mrs. Annie Boyd
Mr. Robin Grenville Williams
Mr. Michael Hollingbery
Mr. Robert Scott-Dempster
Dr. Richard Shelton
Mr. Hugo Upton

The following members demitted office after serving for six years:

Mrs. Judith Nicol
Mr. Jamie McGrigor MSP
Mr. Charles Pearson
Mr. Hugo Straker
Mr. Donald Turner

and the Hon Mrs. Jean Cormack retired at her own request after 21 years of dedicated service to the Trust. I am most grateful to them all for the valuable contributions they made to the Trust's affairs.

H.F.O. Bewsher
CHAIRMAN

Honorary Scientific Advisory Panel

D.H. Mills, M.Sc., Ph.D., F.I.F.M., F.L.S. (Chairman)

J. Browne, M.Sc. (Still Waters Consultancy)

G.J.A. Kennedy, B.Sc., D. Phil., F.I.F.M. (Department of Agriculture and Rural Development)

E.D. Le Cren, M.A., M.S., F.I.Biol., F.I.F.M.

J. Solbé, M.B.E., D.Sc., C.Biol., F.I.Biol., F.I.F.M. (Unilever Research)

D. Solomon, B.Sc., Ph.D., M.I.Biol., M.I.F.M.

D. Summers, B.Sc., Ph.D., M.I.F.M.

J.L. Webster, B.Sc., Ph.D., C.Biol., M.I.Biol. (Scottish Quality Salmon)

K. Whelan, B.Sc., Ph.D. (Marine Institute of Ireland)

Professor Noel P. Wilkins (Department of Zoology, National University of Ireland)

J. Webb, M.Sc. (AST Field & Research Biologist)

Observers:

N. Milner, B.Sc., Ph.D. (Environment Agency)

A representative of the Scottish Executive Rural Affairs Department

E.C.E. Potter, B.A., M.A. (The Centre for Environment, Fisheries & Aquaculture Science)

International Conservation Organisations with which the Trust is in contact

France: Association Internationale de Défense du Saumon Atlantique

Belgium: Belgian Anglers Club

Spain: Asturian Fishing Association of Oviedo

Germany: Lachs-und Meerforellen-Sozietat

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

Canada and U.S.A: Atlantic Salmon Federation

Ireland: Federation of Irish Salmon & Sea Trout Anglers

Additional Information

Display Caravan – Show Programme 2001

19-20 May	Chatsworth Angling Fair
16-17 June	Welsh Game Fair, Llandeilo
7-8 July	Game Conservancy Scottish Fair, Scone
27-29 July	CLA Game Fair, Woburn Abbey
3-4 August	Highland Field Sports Fair, Moy

Visit the caravan at one of these shows to meet the team, get the latest information on our work, and pick up copies of our publications and posters.

Review of Scientific Literature in 2000

Limitations of space prevent the inclusion in this Progress Report of the annual review of scientific literature on salmon, for which the Trust is again indebted to Dr Peter Hutchinson of NASCO. It will be published on the Trust's website – www.atlanticsalmontrust.org – and copies may be obtained from the Moulin office.

CHATSWORTH ANGLING FAIR

May 19th & 20th • Bakewell Derbyshire

A unique opportunity to meet and talk with some of the world's top Game & Coarse Anglers and try out and buy a wide selection of tackle in the gracious surroundings of Chatsworth on the River Derwent.



Demonstrations on the river • River Walk • Fly Casting Competitions • Tuition • Fly Tying Marquee • Bring & Buy Tackle • Antique Tackle Roadshow & Valuations • Fish Cooking Demonstrations • Over 150 Trade Stands and Rural Crafts

Chatsworth House and Garden open at reduced price.

Advance ticket sales: £6 each if cheque & SAE received before May 9th at the latest. Cheques payable to: Chatsworth Angling Fair and sent to: The Ford House, Binham, Fakenham, Norfolk NR21 0DJ. Tickets can also be purchased on the gate on arrival at £7 each. Children aged 14 and under and car parking free.

Gates open: 8.00am-5.30pm • All dogs welcome • Please wear sensible footwear

Further information (office hours): 01263 711736

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GAME
CONSERVANCY
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Scottish Fair 2001

Scone Palace, Perth

Sat. 7th July & Sun. 8th July

09.30 - 18.00hrs

Adults £10 • Children 5-15 £1

Free Parking



More information from the GCSF Office www.scottishfair.com

Tel: 01620 850577 Fax: 01620 850240 Email: gcscottishfair@talk21.com

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