



Atlantic Salmon Trust  
Summer Journal 2006



Research  
Restore  
Sustain



## WHAT IS THE TRUST?

- Founded in 1967, the Trust is an Atlantic-wide UK based organisation which champions the wild salmon and sea trout – it does not represent any body, only the fish themselves
- Works for the conservation and restoration of wild salmon and sea trout stocks to a level which allows sustainable exploitation
- Is an independent, registered Charity, with a small staff, which receives no Government funding

## WHAT DOES THE TRUST DO?

- Conducts and supports marine and freshwater research
- Gives practical advice on the management of fisheries and rivers
- Gives independent advice to governments, international and national authorities and to commercial enterprises
- Co-ordinates activities with other conservation, environmental, fishery, heritage and wildlife agencies and organisations
- Holds and supports seminars and workshops to investigate specific issues
- Publishes high quality reports and booklets to inform and educate

## WHAT ARE THE TRUST'S CURRENT ACTIVITIES AND PRIORITIES?

Promoting, taking part in or supporting:

- Research into the survival of salmon at sea
  - Restoration of wild salmon and sea trout stocks, especially on the West Coast of Scotland and the Islands
  - Reduction of interceptory nets
  - Implementation of fish farming codes of practice
  - Reduction of mammal and bird predation
  - Improving river habitats and water quality
- Improving all aspects of our education, information and communications roles.  
Playing a proactive part in all management committees and legislative fora.

*Patron*  
HRH The Prince of Wales

*President*  
The Duke of Westminster

*Chairman*  
Sir Robert Clerk

*Vice Chairman*  
Lord Guernsey

*Research Director*  
Dr. Richard Shelton

*Executive Director*  
Major General Seymour Monro

*Deputy Director & Company Secretary*  
Neil McKerrow

*Deputy Director*  
Tim Hoggarth

*Field and Research Biologist*  
John Webb

*Office Administration*  
Jenny Sample

*PR Consultant*  
Andrew Graham-Stewart

Moulin, Pitlochry  
Perthshire PH16 5JQ  
Tel. 01796 473439  
Fax. 01796 473554

E-mail. [director@atlanticsalmontrust.org](mailto:director@atlanticsalmontrust.org),  
[neilmckerrow@atlanticsalmontrust.org](mailto:neilmckerrow@atlanticsalmontrust.org),  
[jenny@atlanticsalmontrust.org](mailto:jenny@atlanticsalmontrust.org), [j.webb@marlab.ac.uk](mailto:j.webb@marlab.ac.uk),  
or [tim-hoggarth@countryside-alliance.org](mailto:tim-hoggarth@countryside-alliance.org)  
[www.atlanticsalmontrust.org](http://www.atlanticsalmontrust.org)  
Registered Charity No. 252742

# HIGHLAND FIELD SPORTS FAIR 2006



Telephone:  
01463 232618

Website:  
[www.moyfieldsportsfair.co.uk](http://www.moyfieldsportsfair.co.uk)

Email:  
[field.sportsfair@virgin.net](mailto:field.sportsfair@virgin.net)

*Attractions include*

Fishermans Corner • Clay Pigeon  
Shooting • Rifle Shooting •  
Gundog Test • Archery • Fly Casting •  
Trade Stands • Falconry Display



Moy Hall, Inverness  
Friday 4th & Saturday 5th August 2006  
10am - 6pm





## Contents

From the Chairman 2-3

### Trust News

England and Wales 4-5

Scotland, Ireland and International 6-7

Research 8-13

### Articles

Acid waters correction on Wye:

the pHISH project 14-17

A tale of two rivers 19-21

Rivers of the Kola 22-23

A Journey's Beginning 24-25

Return of the springers 26-28

Catch and release – The importance of good technique 29-31

Experiment to determine the fate of salmon escaping from fish farms 32-33

Fishy Dishes 34-35

### Trust Notice Board

Scalereadings including

Trust Publications and Shop 37-39

Book and DVD Reviews 40

Fundraising and Gift Aid Form 41-43

Governance 44

### JOURNAL DATES

Winter Edition:

Contributions by 1st December

Published late January

Summer Edition:

Contributions by 1st May

Published late June

Photographs:

#### Covers:

Front cover: Gilbert van Ryckervorsel

Back cover: Leaping the Falls of Shin – Andrew Semple

#### Other photographs:

Judith Brown, Andrew Graham-Stewart,

David Hay, Adam Holland, Stephen Marsh-Smith,

Sergei Prusov, Jeremy Read and John Webb.

The Journal is again full of reports on activities which seek to learn more about fish and how to manage our fisheries ever better.

From legislation to detailed research in burns, it is all here.

Much is positive and above all there have been encouraging tales already from many rivers this year.

However, there are still many areas where the not-so-good news continues, much as it has been for many years. So the research must go on whether at sea or in the rivers, the debates with governments and other interested parties must go on whether about aquaculture or drift nets, and the advice and assistance to owners, managers, anglers, ghillies and biologists must continue too.

As we have increased our support to research and restoration activities, so more people have supported the Trust – and for that we are most grateful. There is as ever much still to be done, do help if you can.

Enjoy being on the water wherever you are.

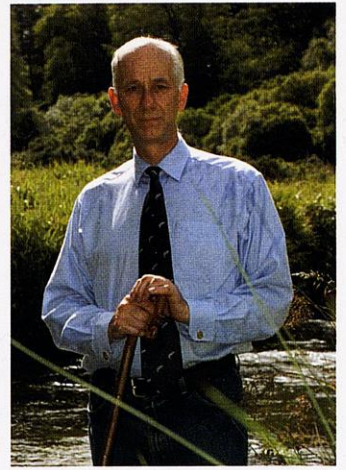
Seymour Monroe, Editor

Please note that articles do not necessarily reflect the Trust's views. Advice and guidance is always available from the Trust's staff.



# From the Chairman

In the last Financial Year, 2005-2006, the Atlantic Salmon Trust spent more on research and restoration projects than ever before – over £50,000.



Robert Clerk

The Trust's activity levels during the Winter months always seem to be as high as those in the Summer; but of course the balance of effort moves indoors. We review the progress of projects from last year, award grants towards new projects for this coming year and beyond and play our part in the myriad of fisheries management or research fora.

In the last Financial Year, 2005-2006, the Atlantic Salmon Trust spent more on research and restoration projects than ever before – over £50,000. Significantly, we initiated our Marine Project with two research cruises which were reported on in the Winter edition of the Journal and which are now the main element of a new DVD produced by the Trust: "At Sea with the Atlantic Salmon".

Frustratingly, the Trust is unlikely to be able to repeat such research cruises this year because it has not been possible to get time on research vessels to coincide with the northward journey of post smolts. Nevertheless, our investigations into the lives of salmon at sea will continue in other

ways. We are confident that 2007 will be a more fruitful year for this key priority.

Our Honorary Scientific Advisory Panel has recommended grants to half a dozen important research projects this coming year, and our Research Director, Dick Shelton, and our Field & Research Biologist, John Webb, will be very involved in scientific seminars, in practical field work and in giving advice.

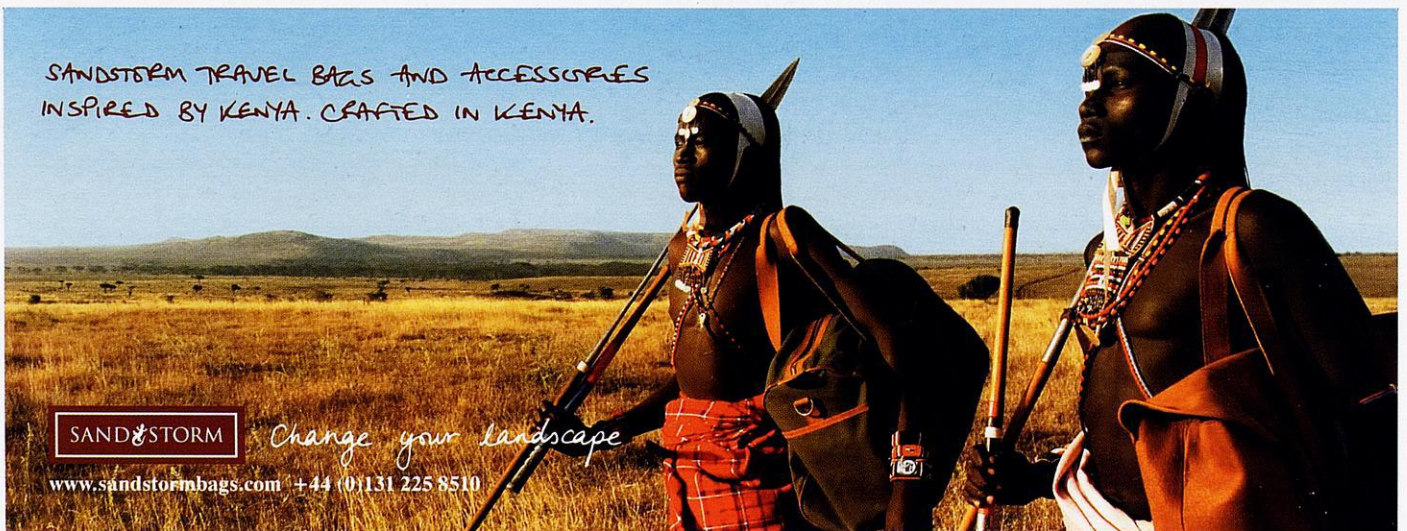
On the fisheries management side, I want to highlight two issues – the Aquaculture & Freshwater Fisheries Bill (Scotland) and Sheep Dip – which are covered in greater detail later in the Journal. The draft Bill has now been through its consultation stage, and will be published and introduced into the Scottish Parliament in June and possibly enacted by March 2007. This is the product of much hard work by many individuals and organisations which will deliver better legislation in many areas, not least regulatory controls in the aquaculture industry to reinforce its own Codes of Good Practice. This legislation will not introduce radical changes to the

present arrangements for management of salmon fisheries in Scotland, currently based on District Salmon Fishery Boards, but it is likely that there will be changes here, after consultation, in the not too distant future.

The Trust welcomed the decision by the UK Veterinary Medicines Directorate to suspend the marketing authorisations for Cypermethrin which is used in sheep dips and other agricultural activities. The Trust, and notably the Deputy Director Tim Hoggarth, played a major part in achieving this decision. The Salmon & Trout Association and Anglers Conservation Association, along with others, also played a key role, thus demonstrating just what may be achieved when organisations act in concert on issues.

All this effort in research and towards the restoration of salmon and sea trout comes with a price tag. The majority of the Trust's expenditure is in support of research projects, on staff time directly related to work on rivers and fishery management; on the production of material to inform and

SANDSTORM TRAVEL BAGS AND ACCESSORIES  
INSPIRED BY KENYA. CRAFTED IN KENYA.



SANDSTORM

Change your landscape

www.sandstormbags.com +44 (0)131 225 8510



We are extremely grateful to those who support us in whatever way – in making a Gift Aid donation, gifting listed shares, leaving a legacy, contributing to our annual Postal Auction or advertising in this Journal.

educate – this Journal, our Website and the new DVD for example – and in responding to many consultation documents that come our way. Administrative costs really are kept to a minimum.

We are regularly told that our work is authoritative and worthwhile and that it is vital that we continue to do what we do – all those things which are identified inside the front cover of this Journal and in our leaflets. To do this we need the support of those who believe that what we are doing is important, and particularly those who may benefit from our endeavours towards the restoration of sustainable stocks of fish.

We are extremely grateful to those who support us in whatever way – in making a Gift Aid donation, gifting listed shares, leaving a legacy, contributing to our annual Postal Auction or advertising in this Journal. I list some examples of costs:

**£10,000**

major research project on salmon genetics or predator/wild fish interaction

or

the cost of design, printing and distribution of one issue of the 'Journal'

**£5,000**

smaller research project on river restoration or the effects of fish farming

or

the cost of producing 5000 copies of 'Atlantic Salmon Facts', a 'blue book'

**£1,000**

funding a Seminar report

or

the costs of the Trust's Field and Research Biologist's time on training and practical advice for 2-3 days.

We wish to increase our activities, but to do so will require continued and further financial support. If you are able to help in some way please do contact the Trust's office.

2007 is the Trust's 40th Anniversary year and we are already planning two joint seminars, one with The North Atlantic Salmon Conservation Organisation (NASCO) and one with the Game Conservancy Trust (GCT). Details will be published in due course. We are also planning to hold a dinner in the Spring and to publish a booklet on the Trust's achievements in its first 40 years. All of these events will concentrate on our key priorities and will raise the profile of our work, in turn providing a focus for further fund raising.

NASCO has recently become one of those organisations – listed at the back of the Journal – who are invited to send a representative to our Members' meetings. This strengthened link is most appropriate as the AST played its part in the founding of NASCO 21 years ago. The Trust's Marine Project contributes to NASCO's SALSEA Programme and of course NASCO's President, Ken Whelan, is also a member of our Honorary Scientific Advisory Panel (HSAP). The GCT became a represented organisation last year and both it and NASCO also send representatives to our HSAP.

I want to mention some Board and staff developments. John Gray, who has been an outstanding Financial Director for some nine years, is handing that portfolio over to Neil McKerrow. Neil joined us in April after nine years as Bursar at Sedbergh and prior to that was a Queen's Own Highlander

and Managing Director of Glenmorangie. Neil also assumes the mantle of Company Secretary from Tim Hoggarth and is Seymour Monro's Deputy in Scotland. Tim will leave us in the Autumn and we have recently been fortunate to enlist Ivor Llewelyn to take over Tim's England & Wales responsibilities. Ivor has been a very senior civil servant involved for most of his time in the fisheries area and thus brings vast experience and knowledge to our team. James Carr, who has served on our Board since 2001, has just been elected Chairman of the Salmon & Trout Association which will further strengthen these links; our congratulations to James.

Finally, I want to offer our congratulations to three people who have been made MBEs this year: Michael Martin, a former AST Board member, for his outstanding services to fisheries in the West Country; to Jane Wright for all her tremendous work for the West Coast Fisheries Trusts; and to Prudi Hoggarth, Tim's wife, for her voluntary work in the community in Wiltshire. She has been a crucial member of our game fair team for the past 8 years.

By all accounts there has been a good run of Spring salmon in many rivers this year which is most encouraging; I wish everyone a good, enjoyable season and I hope many of you will feel able to support us in our activities.





# England and Wales

Sheep dip... We fully recognise the need for sustainable and viable sheep farming but consider it only right and proper to continue to press for a balance between the interests of fisheries and agriculture.

Tim Hoggarth, Deputy Director

## Sheep Dip

We very much welcomed the decision by the Veterinary Medicines Directorate to suspend the marketing authorisations for Cypermethrin. This followed concerted lobbying by the Trust in conjunction with the Salmon & Trout Association and the Anglers Conservation Association. It was significant that the Environment Agency also had a large part to play in this process, particularly as a result of their recognition of the seriousness of the situation in Wales.

However, this is by no means the end of the battle and we have yet to see the formal response by sheep farmers to the decision. It must be realised that they are more than likely to develop an equal and opposite reaction to our own. We fully recognise the need for sustainable and viable sheep farming but consider it only right and proper to continue to press for a balance between the interests of fisheries and agriculture. Unfortunately the possibility of being successful when pressing for a withdrawal of Cypermethrin is unlikely because it has other agricultural usages. We also have to recognise that plume dipping could continue using Organo-phosphates. The Trust believes that the way ahead is to:

- Continue to exert pressure for a permanent ban.
- Establish an effective and enforceable regulatory and supervisory regime to oversee the suspension.
- To encourage the Environment Agency to clarify its position in public that there are alternative approaches such as good

husbandry and the use of injectibles.

- To seek a better understanding by farming communities of the consequences of using all chemicals in their management techniques.

## Water Resources

**Catchment Abstraction Management Schemes.** These are developed by the Environment Agency and the Trust comments on those with relevance to migratory waters. Whilst potentially they are a step forward in water resource management, sadly they tend to be no more than a box ticking exercise where fisheries interests are concerned. There is a clear need to review their methodology especially with regard to assessing historical water flows against average flows in the light of global warming and drought events and the overall effects of groundwater extraction. The Trust will continue to use its role as a consultee stakeholder to produce tangible rather than theoretical results in order to safeguard the aquatic needs of fisheries.

**Water Framework Directive.** Our current concerns relate to the status of fisheries in the proposals and the apparent imbalance between the emphasis given to fisheries and water resources by the Environment Agency. For example, each river basin area has a management panel with 15 seats. Fisheries interests are neither guaranteed nor necessarily allocated a seat on the panels. The role played by riparian owners in the management and maintenance of rivers also tends to be ignored. It is more than relevant that Test and Itchin owners, who spent some £3M on their rivers last year, a figure which does not include

unpaid and voluntary work, have been excluded from consultations.

## Future Legislation

We are now in the consultative loop for the drafting of a fisheries Bill. Baroness Young, Chief Executive of the Environment Agency is confident that we will get a Bill, probably in this year's Queen's Speech. However, the problem is that of convincing Ministers and DEFRA that it should have a sufficiently high priority to be included in the Government's business programme.

## CEFAS Annual Assessment of Salmon Stocks and Fisheries for 2005

The report runs to 87 close typed pages of assessments, statistics and tables. However, the most interesting elements of this very comprehensive and useful report are summarised below:

- **Licences.** Rods were up from 20,662 to 23,123. Short-term licences were down from 10,272 to 9,949. Nets were down from 346 to 345. The offshore North East drift net fishery summary recorded the issue of 16 licences.
- **Catch.** That by rods, including released fish, was down from 27,332 to 19,467. The assessment attributes this to relatively poor fishing conditions rather than reduced runs. Indeed, a number of adult counts indicated runs were on the increase with the Itchin and Wye recording their best runs since 1997. Only the Thames, Frome and Caldey appeared to be down. Releases were





10,737 fish representing 55% of the total landed. Nets were up from 16,580 to 16,811 fish. 16 Licensees netted in the NE fisheries and, together with local T and J netsmen, accounted for approximately 50% of the total catch in England and Wales.

- **Poaching.** Unreported and illegal catches were estimated to be around 29 tonnes.
- **Composition of Catches.** Rods: Grilse 75%, MSW salmon 25% (an increase of 6% for MSW compared with 2004).

Nets: Small salmon 64%. Large salmon 36% (down 3%).

- **Origin.** 75% of salmon netted in the NE were estimated to be returning to Scottish rivers.
- **Spawning Escapement.** This was deemed to be above the conservation limit in 48% of rivers which is down from 64% in 2004.

### Personalities

- We offer our congratulations to James Carr, a member of our Board, on his election as Chairman of the Salmon & Trout Association.
- Sadly we have to record the death of Terry Mansbridge on 20th April. The Trust had worked closely with Terry on the Moran Committee and the Fisheries and Angling Conservation Trust and welcomed his work in producing a guide to the management and control of cormorants. He will be sadly missed.



# 15th INTERNATIONAL SALMONID CONFERENCE

## SALMONIDS IN THE 21st CENTURY

17 - 20th OCTOBER 2006 | BALTIC CENTRE | NEWCASTLE - GATESHEAD

### The outline programme:

- 17th & 18th October 2006 - Presentations & scientific papers
- 19th & 20th October 2006 - Escorted field visits to rivers Tyne, Tweed and Eden
- 17th October - Association of Rivers Trusts' Annual Awards Dinner for 2006

Further conference details are at:

[www.associationofriverstrusts.org.uk/salmonid\\_conf](http://www.associationofriverstrusts.org.uk/salmonid_conf)

We recommend book marking this link, as all details will be posted here as they become available

or e-mail:

[info@associationofriverstrusts.org.uk](mailto:info@associationofriverstrusts.org.uk)

or telephone:

Arin Rickard (ART Director): 00 44 (0) 1208 851369



Association of Rivers Trusts  
where there's water there's life



# Scotland, Ireland and International

## Aquaculture ... the Minister has given agreement to the SE to fund the TWG for the next two years.

Seymour Monro, Executive Director

### Legislation

The consultation phase of the Scottish Executive's Aquaculture and Freshwater Fisheries Bill has now been completed and responses will be published in late May. The Bill should be introduced into Parliament in late June and enacted by March 2007. The AST has been fully involved in the Steering Group which has discussed the freshwater element of the Bill and also in the Highlands & Islands Aquaculture Forum which has tackled the aquaculture issues.

The consultation phase also asked for views on how the management of fisheries might be organised in the future. The funding of any new authority will clearly be a key issue. Management structures, however, are not dealt with in the Bill but will be the subject of debate in the Fisheries Forum and its Steering Group in years to come.

### Aquaculture

In the last Journal, mention was made of the two reviews into the effectiveness of the Tripartite Working Group process (SE, aquaculture industry and wild fish interests) during its first three years in being. As a result of the generally positive recommendations of the two reviews, the Minister has given agreement to the SE to fund the TWG for the next two years.

Separately, Scottish Natural Heritage has agreed to fund one third of the costs of our Field & Research Biologist, John Webb, in his role as Restoration Support Co-ordinator for the TWG Restoration Sub Group which the AST Executive Director chairs. Furthermore FRS will continue to support John through the provision of

office and transport facilities at the Marine Laboratory, Aberdeen. This core group – SNH, FRS and AST – of the Restoration Sub Group now meets frequently and intends to improve the guidance and support given to all those involved in restoration activities on the West Coast – the Trust's equal top priority alongside marine research.

The aquaculture industry's key representative body is now the 'Scottish Salmon Producers' Organisation' (SSPO). The new Chairman of SSPO is Michael Gibson and the Chief Executive is Sid Patten.

Taken together, the combined effect of the industry's recently published 'Code of Good Practice for Scottish Finfish Aquaculture', the proposed new regulations in the Aquaculture & Freshwater Fisheries Bill and the improvements to the TWG process at all levels, should be to increase the chances of implementing the TWG's Concordat published in June 2000. Notably this declared that the TWG's remit was: *'to develop and promote the implementation of measures for the restoration and maintenance of healthy stocks of wild and farmed fish' and 'to develop and promote the initiation of measures for the regeneration of wild salmon and sea trout stocks'.*

We have much to do.

### *Gyrodactylus salaris* (Gs)

The Task Force report, with recommendations for preventative measures and contingency plans should the unthinkable happen, is due out this month – June. We will play our part in publicising

preventative measures and assisting in any way we can.

The Gs threat is as deadly and present as ever and we must all do what we can to educate and warn people and to ensure the right precautions are taken by people before going near a river if they have come from a Gs infected area abroad. The Trust has copies of the leaflet 'Keep Fish Disease Out' available free to those who would like copies.

### Irish Drift Netting

This short report comes from Niall Greene, an AST member and Chairman of the 'Stop Salmon Drift Nets Now' campaign:

**Irish Government decisions about the future management of salmon stocks have generated some controversy but seem to point almost without doubt to the ending of mixed stock netting at the end of the 2006 season.**

In announcements made on 24 March the Government reaffirmed a commitment made at ministerial level last year, to adhere strictly to the advice of the Standing Scientific Committee of the National Salmon Commission from March 2007. The announcement went on to recognise that this commitment and the adoption of a precautionary approach would have severe implications for the commercial salmon fishing sector. The Government has appointed a three person commission with the specific (and only) mission of assessing the level of hardship that will be caused by the new regime and of making recommendations on compensation and how it is to be funded.



It is important to emphasise that these were Cabinet, and not just departmental, decisions.

Strict adherence to the scientific advice in 2006 would have spelled the end of drift netting so it is reasonable to assume that the advice will be no less stringent in 2007. The only remaining question is, therefore, whether the Government will follow through in an election year. The approach of the *Stop Now* campaign, supported by virtually all of the game angling associations, owners and tourist interests, has been to take the Government at its word, to keep on repeating and reinforcing the inescapable

consequences of following the scientific advice but to remain very vigilant about any signs of backsliding.

If there is any backsliding then the Government will be faced with the ire of the angling community and of public opinion more generally and even more international opprobrium than that to which they are now subjected. But, even more significantly, they will bring down on themselves the wrath of the EU Commission to whom the Government last year made a commitment that they would manage the fishery in accordance with the requirements of the Habitats Directive – a commitment which they

arguably have not kept in 2006 and a fact which has probably not gone unnoticed in Brussels.

## NASCO

The Deputy Director attended the NASCO meetings in Ivalo, Finland in early June. There has been increased contact with NASCO, largely because of the AST's Marine Project and its leading place in NASCO's 'Salmon at Sea' programme – SALSEA. As the Chairman has highlighted, the Trust is delighted that NASCO, now mature at 21 years old, is an AST 'represented organisation' and will attend our Members' meetings and HSAP meetings.

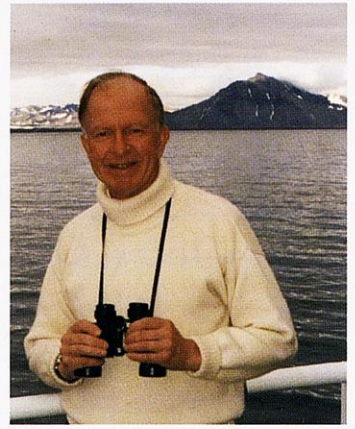


*Mouth of the Naver, looking from Torrisdale Bay, up Strath Naver*



# Research

... the Honorary Scientific Advisory Panel gave approval in April in principle to five awards for 2006 totalling some £20,000.



Dr. Richard Shelton, Research Director

## Research projects supported in 2005/2006

Although the Honorary Scientific Advisory Panel gave approval in April in principle to five awards for 2006 totalling some £20,000, a definitive final total cannot yet be given because some of the awards are conditional on the results either of site visits by Panel members or of the outcomes of applications to other grant giving bodies. Reports of progress with current projects, 2005/2006, are given below.

### Targeted Electro-fishing on the Cumberland Eden (Eden Rivers Trust)

- (i) *Examining the effect of erosion and shading on salmonid populations using the RARE model combined with quantitative electro-fishing surveys.*

The aim of this project was to look at habitat features identified using the RARE (Rapid Assessment of River Environments) model and examine what effects they have

on salmonid distribution and numbers. Combining all factors will allow identification of which of them is most influential and hence allow the Eden Rivers Trust to best direct habitat restoration work.

The RARE model (using aerial images of the river and its banks, slope data, land use information, and soil data) is used to gather data on erosion type (fluvial and erosion due to livestock), level of shading and connectivity (potential risk of diffuse pollution). These data are then analysed in relation to salmonid numbers gathered through electro-fishing surveys.

Over-shading as found in the River Eden (75-90% shade) does not appear to have a detrimental impact on fry or parr numbers either for salmon or trout. Lack of cover; on the other hand, (areas where there was no shading) was associated with the lowest numbers of salmonids. The Eden catchment has very few areas of completely tunnelled vegetation so, even in areas with 90% shade, some light is reaching the river. The optimum shading for salmon appears

to be approximately 25% shade for fry and 75-90% shade for parr. Creating cover for salmonids (either by tree planting or instream vegetation planting) could be more beneficial to fish numbers than a widespread coppicing campaign.

Erosion caused by agricultural stock, on one or both banks, resulted in a reduction in the number of fry and parr found. Fluvial erosion also resulted in reduced fry and parr numbers but to a lesser extent than erosion due to livestock. The Eden Rivers Trust will continue to direct fencing and buffer strip projects to areas subject to erosion caused by livestock.

As expected, instream substrate dominated by cobbles and pebbles was associated with the highest numbers of salmonid fry. Larger boulder and cobble dominated substrate gave the highest number of salmonid parr. Areas of silt and mud or bedrock had the lowest numbers for both species and life stages.

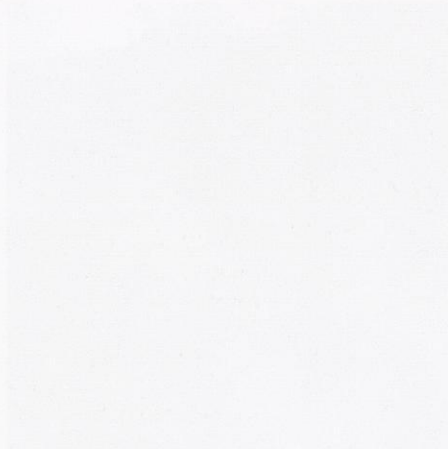
The higher the risk of surface hydrological connectivity (run-off) predicted from the RARE model, the lower the number of salmonids seen. This association could be an effect of diffuse pollution. There were also fewer salmonids in areas with a low predicted connectivity, perhaps because of the effect poor nutrient input has on production.

Combining all factors (erosion, connectivity, shading and substrate) has allowed the Eden Rivers Trust to identify areas where instream habitat is apparently good but numbers of salmonids are still low. These areas can now be targeted for further investigations so that effective mitigation measures can be put in place.



Electro-fishing on the Eden





(ii) *Examining the effect of large scale flooding on salmonid populations using semi-quantitative electro-fishing surveys.*

In January 2005, the River Eden experienced a huge flood event ( the largest since 1882). However, different rivers within the catchment were affected differently. The aim of this project was to examine the varying flood return periods with the salmonid numbers in the river in comparison to the previous three years' data.

On a catchment, sub-catchment and river scale, salmon fry numbers had not decreased in comparison to previous years indicating that the flood had little/no impact on survival of the salmon eggs whilst buried in the redds. In fact, 2005 salmon fry numbers were up on 2002 and 2004 numbers although this could have been expected due to high numbers of adult fish and consequently a high egg deposition rate.

2005 had the lowest mean and median number of trout fry on a catchment scale with three out of five sub-catchments also yielding the lowest trout fry numbers in 2005. Just less than half of the becks had their lowest fry numbers in 2005. However, comparing the fry numbers in becks for which we had flow data, against flood return values gave no significant correlation between reduction in fry numbers and size of flood return. Further investigation into the decline in trout fry numbers is needed, including examining why 2003 had such a high yield of trout fry. Could it have been due to the fact that 2003 was a really dry summer? Trout bury their eggs at a shallower depth than salmon and so there

is a greater chance of washout during high flows, however; their decreased numbers in 2005 could also be a result of a continued decline over the past years due to other factors such as water quality.

The floods seem to have loosened areas of concreted river bed which should make these areas more suitable for spawning. Flooding causes washing of gravels removing sediments trapped in between so, although the short-term effect may be detrimental to invertebrate and trout eggs, the long-term impact may be beneficial as there will be reduced sedimentation between gravels. There will also have been a movement of gravels which will create new pool areas (good resting areas for adult fish especially trout).

*Judith Brown*

### **Explaining the Losses of Salmon Eggs in Streams (FRS and Aberdeen University)**

During 2005, both parr and bottom fauna were collected before spawning time.

The bottom fauna were collected in five duplicate species sets of potential egg predators. The samples were consigned to the University of Stirling for gas chromatography of fatty acids and to the University of Aberdeen for nitrogen isotope analysis. The results of the analyses are awaited.

The sampled parr were used to create a calibration set that will relate the number of eggs consumed to the changes in



*Eden fry*

composition that we hope to see, taking account of the fishes' body sizes. Parr were housed over a 10-day egg-feeding period in individual fish-proof (and egg-proof) compartments. All parr that were offered eggs ate them all. Some parr offered the maximum test number of 15 eggs ate them all without delay but (perhaps unsurprisingly) would eat no more after this point. This suggests an effective limit to potential consumption around this value which will help the later interpretation.

The fish were individually marked to permit later recognition before being liberated in mid-November into an enclosed stream area to continue feeding naturally and to digest and assimilate the eggs they had eaten. A sub-set of 50% of the fish was re-captured in early December. As hoped, all the eggs had been digested and assimilated by this time.

This initial calibration set of parr and additional sets of unconstrained parr sampled near and distant from spawning places in the upper Tay have been consigned for specialist analyses. Individual parr were homogenised and divided into three matching samples of mixed body tissue for fatty acid or isotope analysis or as a reserve in case anything goes amiss in the laboratory. The results of these analyses are awaited.

It remains to re-sample the second calibration set from the enclosed stream, and to sample unconstrained fish and bottom fauna, again. This will be done in late March. Sample preparation and laboratory analysis will follow.

*Alan Youngson*



# Research (continued)



Orkney burn

## Identification of Orkney sea trout Burns – a Baseline Survey (SULA Diving, Stromness, Orkney)

### (i) Introduction

The Orkney Islands are characterised by an extensive network of lochs and burns which support productive populations of trout, *Salmo trutta*. Loch fishing for brown trout is extremely popular and draws a large number of visiting anglers to Orkney each year. Sea trout fishing can also be very productive but is more demanding in terms of local knowledge and as such is mainly practised by locals. Both fisheries are unusual in that they are open access and free.

Recent concerns over the state of Orkney's sea trout populations led the Orkney Trout Fishing Association, with support from Scottish Natural Heritage and the Crown Estate Commissioners, to initiate a programme of electro-fishing surveys in 2004 annually to monitor numbers of juvenile brown trout in burns which drain directly to the sea and which are thought to sustain sea trout populations. This project has collected information from ten sea burns and monitors sites in these burns annually. Work by Malcolm Thomson has succeeded in collecting data from an additional six burns. However, of a potential 65 burns on the Orkney Mainland and South Ronaldsay alone, a significant number of burns remain unsurveyed. There is, therefore, a need to undertake a more extensive baseline survey of all Orkney burns in order to identify which of them currently support populations of trout, and sea trout in particular, so that future efforts to conserve this species in the Islands can be fully effective.

The aim of this project, therefore, is to carry out baseline surveys to establish the presence or absence of trout and sea trout populations in those burns which are as yet unsurveyed. A summary of the project is as follows:

- Establish the presence of juvenile brown trout in burns by presence/absence electro-fishing surveys in late 2005/early 2006.
- Carry out timed surveys on known trout burns to examine the distribution of 0+ trout.
- Carry out a limited programme of spawning and redd surveys in late 2005.
- Carry out a rolling programme of pre-smolt surveys in Spring 2006.

Results from stage 1 will largely dictate the selection of burns for spawner and smolt surveys, i.e. spawner and smolt surveys will generally be carried out in burns where the presence of juvenile brown trout has been established.

### (ii) Summary of methods

#### Preliminary assessment of systems and presence/absence electro-fishing

Surveys have involved an initial inspection around the area of the burn mouth to judge access opportunities for sea trout. This work was followed by an exploratory electro-fishing survey upstream from the head of tide to check for the presence of juvenile or adult trout.

#### Timed electro-fishing surveys

In four burns, where good numbers of juvenile trout are known to be present, a programme of more detailed work was undertaken. A series of timed surveys (10 minutes each) were carried out at a number of sites distributed along the

accessible length of each burn. The aim of these surveys was to examine the distribution of different age classes of trout to determine the major spawning areas and also the impact of any potential obstacles in the burn, e.g. waterfalls, road culverts and choked channels.

#### Presmolt/smolt surveys

Previous work by the author in 2004 and 2005 has been successful in finding pre-smolts and smolts by electro-fishing in the lower reaches of several Orkney burns in the main smolting window of April/May. Smolt surveys will be conducted in April/May 2006 in burns where the presence of juvenile trout has already been established.

#### Adult spawner surveys

Spawning surveys were carried out in December 2005 in order to note the presence of redds, particularly those which may have been made by sea trout. Notes on the structure of the redd, e.g. whether it was complete, partially constructed or abandoned were made. A national grid reference was collected using a hand-held GPS device so that the site could be revisited. Night time surveys using torches were also carried out to see if sea trout spawning could be observed.

### (iii) Summary of results

#### Presence/absence surveys

Presence/absence surveys have been carried out in 27 burns. Juvenile trout were detected in five streams. In two cases, the catch consisted only of juvenile trout parr. In two cases the catch consisted of a single sea trout finnock. In one burn both juvenile parr and finnock were caught. No trout were found in the other 22 burns. Other fishes recorded in the course of these





Malcolm Thomson sampling in Orkney

surveys included three spined sticklebacks (*Gasterosteus aculeatus*), European eel (*Anguilla anguilla*) and flounders (*Platichthys flesus*).

#### Timed surveys

The timed surveys yielded a large amount of useful data on the distribution of 0+ trout which will allow future electro-fishing surveys to target the 0+ age class more effectively, and will also allow more information to be collected on patterns of spawning/habitat utilisation. The surveys have also helped to examine the impact of potential barriers to both adult and juvenile movement. While most features inspected appeared to be passable, one road culvert in the Bu Burn may present a significant barrier to upstream movement of trout.

Interestingly in the Isbister Burn, a probably salmon/trout hybrid parr was found. This is only the second time that evidence of salmon spawning in Orkney burns has been recorded in recent years. Although the parentage of the fish was unknown, scale reading suggested a possible link with a large escape of farmed salmon that occurred at a nearby marine production unit in 2002.

#### Pre-smolt/smolt surveys

To be completed in Spring 2006.

#### Spawner surveys

Training in redd survey techniques was provided by the Atlantic Salmon Trust's Biologist, John Webb, during a visit in early December 2005. In total, five burns were surveyed for the presence of redds. This included two burns on the Loch of Stenness. Notes on redd features were collected and their position noted, which

will serve as the basis for future electro-fishing surveys. Although spawning activity was noted in all burns, the availability of suitable spawning substrate appeared to be limited in some cases.

#### (iv) Comment/discussion

The work carried out in 2005 succeeded in collecting information on 27 previously unsurveyed burns. The absence of trout from many of the burns was surprising and raises a number of potential issues. The possibility exists that trout were present in some burns but were not detected during the surveys. However, it is the experience of the author that in burns where trout are present, they are caught immediately at the start of electro-fishing – and certainly within a few minutes. Nevertheless, basic survey design and electro-fishing efficiency will be reviewed and some repeat surveys will be undertaken in 2006.

Without prejudicing the final outcomes of the project, a trend appears to be developing where, apart from those burns previously surveyed, very few other burns on the mainland actually contain juvenile trout. Although no data previously existed, it was always assumed that many of Orkney's smaller burns would contain trout. The reasons for their absence are not clear as yet. It is possible that some of the burns surveyed were on the lower limits in terms of levels of water flow necessary to support a population of trout.

No evidence of gross pollution was observed during the surveys, although many burns had been modified by agricultural activity (i.e. drainage) and the common associated impacts of over-

grazing, diffuse pollution and bankside erosion by stock were frequently evident.

The absence of trout from burns where both water levels and habitat quality appeared suitable is a cause for concern and warrants further investigation. To this end, additional electro-fishing to confirm the status of systems will be carried out under this project in 2006. A programme of water quality and invertebrate surveys (perhaps jointly with SEPA) may help to determine the reasons for the absence of trout.

#### (v) Remaining survey work

From late March 2006 onwards, presence/absence surveys will be resumed on the remaining 25 burns. This work will be separate to the smolt surveys described below. Furthermore, a random selection of burns surveyed in 2005 will be resurveyed to confirm that trout are indeed absent. Time permitting it may also be possible to add some sites on some of the other islands, e.g. Hoy, or Shapinsay, where pressures on freshwater habitats, from agriculture and other forms of development, are less.

Pre-smolt/smolt detection surveys will be undertaken in April and May, depending on weather/water levels. These will be carried out in burns where the presence of juvenile brown trout has been previously established.

A further sampling for adult sea trout returning to burns is planned for late 2006, again being weather dependent. The work will be coupled with spawning distribution surveys.

Malcolm Thomson



# Research (continued)



AST purchased rotary screw trap on River Balgy

## Predation Logger and Transmitter: progress update for the Atlantic Salmon Trust (FRS)

A prototype seal-mounted PIT detector, termed a predation logger and transmitter (PLT), was tested in 2004 and on a seal in captivity. The device detected tags fed to a seal with a high degree of reliability. It was decided then to invest significant effort in miniaturising the device further before applying it to seals in the wild and Fisheries Research Services contracted Phil Rycroft of Wyre Micro Design Ltd. to conduct this development work in 2005-2006. The aim was to have a mark II design available for field trials during the smolt run of 2006.

This further development has progressed extremely well. The final dimensions of the device will be 130mm long x 80mm wide x 40mm high. The range has been extended slightly to 280-300cm but retained near the original dimension for comparability with the earlier laboratory tests. A breakthrough in design theory

means that the range of the device might be extended sufficiently in the future so that it could be used to detect small (12mm) PIT tags, which may be attached to Atlantic salmon smolts. Currently, larger PIT tags must be employed and can be carried only by fish the size of sea trout smolts or larger. The development of the telemetry link between the PLT and receiving stations on the mainland has been completed and tested at the prototype stage. It has been shown that a range of 600m to 1000m should be achievable. This is a workable range for use at the proposed sites for the land-based receiving stations at Shieldaig on Loch Torridon.

The development of the PLT is now in the final but crucial stages. There are several aspects of the project that now need to come together to give a functioning device. A commercially produced printed circuit board for the electronics is currently in production and due for delivery. Electronic components will be attached to the printed circuit boards, the populated boards will be wired to the PIT tag interrogating units and the complete assembly will then be potted with marine-compatible epoxy in a thin-walled vacuum-formed plastic housing. Barring unforeseen problems, the mark II PLTs will be complete and ready for field trials as planned.

As I write this, the AST has just purchased a rotary screw trap which we will put on the River Balgy. The information it will provide will complement the rest of this project at Shieldaig.

*John Armstrong*

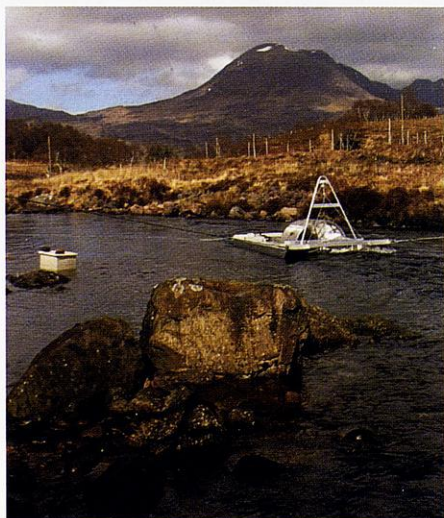
## Seal Predation in Scottish Salmon Fisheries (SMRU)

Isla Graham and Rob Harris continued to carry out regular surveys each month for seals on the Rivers Ness, Conon and Kyle of Sutherland throughout the winter and to photograph, wherever possible, all seals observed during the course of these surveys.

A further attempt was made to capture a seal in the River Conon on the 13th and 14th February 2006, for the purpose of fitting the seal with a telemetry tag. Unfortunately we were again unsuccessful on this occasion. However, each attempt gives us invaluable experience and allows us to refine our catching techniques for use in rivers. In addition, Isla Graham and Rob Harris have received further training in the capture and handling of seals.

Since the end of January, we have been carrying out regular counts of seals in the North Esk where Martin Stansfeld, Kinnaber Fishings, has installed an Acoustic Deterrent Device (ADD) in the river. The ADD is being switched on and off for regular periods throughout February and March. This trial may give us some indication of the efficacy of a permanently installed ADD at deterring seals from using a specific area of river.

*Ian Boyd*

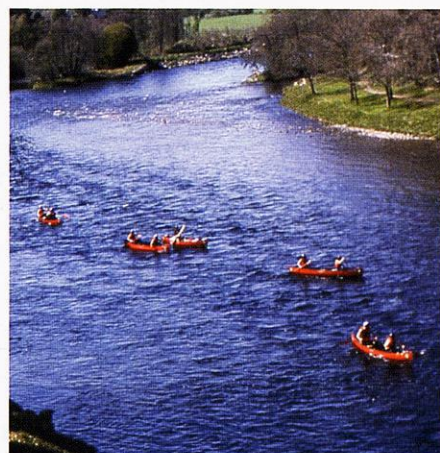


RST on the River Balgy, Torridon



# Canoes and Rafts:

If salmon are repeatedly disturbed, their energy reserves are depleted and their ability to contribute effectively to the next generation of salmon is compromised.



River canoeing

## Further Reports 2005/2006

Some very useful and interesting reports have also been received from managers of other projects which the Trust supported. These include:

- Survey of small fishes within littoral zone – Loch Maree (WRFT)
- The Dart Catchment Project (Wild Life Trust, Devon)

## Habitat description, management and assessment in rivers (HDMAR).

A Workshop on this issue was held at FRS Freshwater Laboratory, Faskally on the 8th and 9th March 2006.

This Workshop was held at the instigation of the Trust's Honorary Scientific Advisory Panel. It was run by Dr. Malcolm Beveridge of FRS and Dr. Nigel Milner of the Environment Agency. It was also supported by the Association of Rivers Trusts. The key outcomes were:

- Better awareness of the issues and applications of habitat surveys
- A compendium (*in the form of an AST Blue Booklet and possible website*) of good practice to bring more consistency, enabling easier sharing of results and a common language across workers in the field
- A framework for future development – through for example a standing group on habitat assessment, e-discussion group or repeat workshops
- A prioritised programme of key future research needs and benefits to put to potential funding bodies

An AST Blue Book will be prepared and it is the intention that a small working group will review progress on a regular basis.

## 15th International Salmonid Conference 17th to 20th October, Newcastle, Gateshead

This four day conference, hosted by the Association of Rivers Trusts, has the theme "Salmonids in the 21st Century" and will focus on the future and on the management of salmon and trout at both the local and international level. The AST will be a sponsor and will take part. The Conference will also incorporate the ART's Awards Dinner. For more information please go to: [www.associationofriverstrusts.org.uk](http://www.associationofriverstrusts.org.uk) or e-mail: [info@associationofriverstrusts.org.uk](mailto:info@associationofriverstrusts.org.uk)

## Canoes, Rafts and Salmon Disturbance

**Increasing levels of canoe and raft traffic are problems for a number of our rivers. That such disturbance interferes with angling, no one doubts but what about the fish themselves? Dick Shelton lists his concerns:**

Adult salmon and sea trout enter rivers to spawn. They do not feed in fresh water; the only energy reserves they have to fuel their upstream migration and subsequent reproduction are the ones they bring with them from the sea.

These energy reserves have to last for many months, especially for the early-running fish that spawn in the upper reaches of our long river systems.

Salmon in the river conserve their limited energy resources by spending long periods

resting quietly in "lies" out of the main current, where the need to swim actively is minimal.

Salmon are able to detect sounds over a range that extends from less than 10 cycles per second to about 300 cycles per second. They appear to be most sensitive to the lowest frequencies, probably because vibrations in this range (acoustics experts call it "infra-sound") generate the greatest mass movement of water molecules.

The action of paddles, jumping up and down in a rubber raft and jumping in or out of a raft, are actions which generate high levels of infra-sound with the potential to disturb salmon and cause them to leave their lies.

If salmon are repeatedly disturbed, their energy reserves are depleted and their ability to contribute effectively to the next generation of salmon is compromised.

At a time when spawning populations of upper river salmon are already depleted by high levels of mortality at sea, it is imperative for the future of the resource that the fish which have survived to enter the river and reproduce are allowed to do so undisturbed.

We accept that there should be reasonable access to responsible canoeists and rafters but, in the opinion of the Atlantic Salmon Trust, uncontrolled and thoughtless canoe and raft traffic causes significant and undue disturbance to the fish.

Dick Shelton



# Acid waters correction on Wye: the pHISH project

Dr. Stephen Marsh-Smith, Director Wye and Usk Foundation and winner of the AST sponsored Association of Rivers Trust's Award for Contributions to Science 2005

The Wye's former reputation as a salmon river was remarkable for two reasons: The return to form after a near total stock collapse at the end of the 19th Century and the very large average weight of its early running spring fish.

Over 100 years ago, a well documented renaissance took place because the extensive estuary and in-river netting was curtailed. Thanks to an enlightened group of proprietors, the in-river netting rights were bought off and later purchased outright and, though recovery took more than a single generation of fish (6 years for 3SWs, 5 years for 2SWs), it was found that the benefits of more rod-caught salmon easily outweighed the financial loss to the river netsmen. The river recovered with a more appropriate level of commercial exploitation confined to the tidal and estuarial reaches.

The Wye today is known of as a river once again in crisis. Reputations often linger beyond reality, for the river is once again in recovery. The 21st century revival is rather

different from that of just over 100 years ago. Then, fish allowed to escape netting, were able to spawn in unspoilt and pristine habitats. That is not so now. Barriers, water quality problems, habitat degradation and over exploitation head the all too familiar list of problems south of the border. The relative extent of each cause can be summarised at various points in time by the pie charts: illustrated on pages 16 and 17.

In 1935, J R Hutton published "The spawning streams of the Wye" it was one of the first recorded 'walk over surveys' and detailed the extent to which salmon access to spawning habitats was determined by obstructions. His paper remains an invaluable record of where fish spawned in the best days of the Wye.

In 1995, we compiled a new record of obstructions with a walk over by owners and NRA (as was then) staff. Now with GIS and accurate mapping, it can be seen that the area excluded had dramatically increased. Other researchers plotted the areas suffering from the effects of diffuse

pollution or degraded habitat and from a separate survey, the proportion affected by acid rain.

The charts in 2003 show progress with barrier removal, while that of 2008 projects our aspirations for progress in the near future. Looking again at 1995, it is easy to see why Wye salmon suffered quite literally, decimation.

Turning to an overall solution for the Wye: barriers have been removed and fish passes built. Habitat restoration is under way with over 100km of stream now fenced and coppiced. The remaining drift nets and putchers in the Usk and Wye district have been closed: Regulations and voluntary codes restrict exploitation. We are already seeing results.

However, it is the area coloured yellow in the pie charts – that part of the catchment affected by acid rain that is the main concern of this article. On the Wye this amounts to some 17% or 62km of main stem plus tributaries. In Wales: some 1200km of river is affected by this blight but also significant areas of southwest Scotland, Cumbria and Devon suffer too. Clearly, there are significant gains to be made across the whole of the UK if these areas are returned to salmon production following a successful remedial project.

The tributaries affected by acidification on the Wye are the extreme north (main Wye) and its western tributary the Irfon. To look at, the affected streams often appear crystal clear: Examination of the bed reveals a lack of the essential invertebrate communities, while one is struck by the feel of the pebbles themselves which are devoid of the



Acidification monitoring



The Wye today is known of as a river once again in crisis. Reputations often linger beyond reality, for the river is once again in recovery.



*Forestry blocks*

characteristic sliminess evident in unaffected areas. You will not have to go far to find a local who recalls the serried ranks of spawning monsters, some of which were often removed for "non scientific purposes"!

Low pH rain falls everywhere without necessarily causing damage to fisheries. The acidifying effects tend to be worst in high rainfall areas particularly if heavy industry discharges into the prevailing weather: If the receiving geology is unable to buffer these effects, then the streams become low in calcium ions and acidic.

If coniferous forestation is present, the whole effect is exacerbated for two reasons: Unlike agricultural land, it has been deemed necessary in commercial forestry plantations that water must travel away rapidly. Coniferous leaves attract and retain an occult acidic precipitation and the net effect is that any rain takes this and deposits it into the rivers downstream giving rise to severe low pH events. The Upper Wye and Irfon exhibit all these problems.

Against those disadvantages, these parts of the catchment often have excellent salmonid habitat features. Banks are often fenced and un-shaded or with a very low grazing pressure. Siltation is not the problem elsewhere on the catchment and there are ideal gravels for spawning. Other helpful news is that atmospheric pollution of the kind that causes acid rain is significantly declining – by as much as 71%, though the area under intensive coniferous forestation remains about constant.

However; this atmospheric improvement is not equalled by a corresponding biological improvement to the affected streams. Speculation as to why this is so links the possibility of permanent loss of buffering capacity due to long-term leaching effects and the loss of upland wetlands within forestry altering the hydrology. If a method could be found of applying levels of neutralising calcium economically, advantage could be taken of the lower levels of sulphurous deposition.

We looked at options for achieving this. There are a number of possible methods

of getting calcium ions into the streams. The key is to achieve the desired ionic exchange without losing high volumes of insoluble material down to estuary. Simply putting lumps of limestone in the stream has been proven not to work.

The use of mechanical lime dosers is dependent on there being good supply routes, (there is never any limestone in the vicinity!) electricity, servicing and ideally a lake downstream to allow adequate mixing. They work well in these circumstances but need to be very reliable too if all hard won gains are not to be lost. A short-term breakdown could result in a damaging acid flush remaining untreated. The liming of the adjacent Tywi and Camddwr upstream of Lynn Brienne is a good example of a successful de acidification programme carried out by Environment Agency Wales.

Sand liming is a technique of placing fine ground limestone into first and second

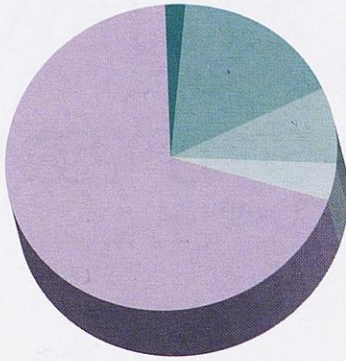


*Spawning redd areas*



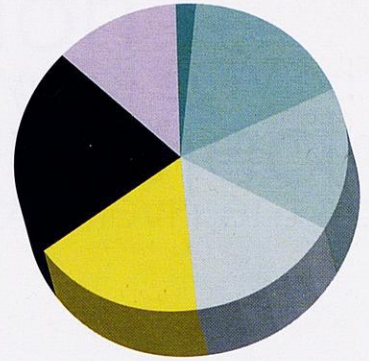
1935

|   |     |
|---|-----|
| ■ Elan Obstructions                         | 2%  |
| ■ Monnow                                    | 17% |
| ■ Lugg and Arrow                            | 8%  |
| ■ Upper Wye Tributaries                     | 4%  |
| ■ Acid Waters                               | 0%  |
| ■ Habitat destruction and diffuse pollution | 0%  |
| ■ OK  | 69% |



1995

|   |     |
|---|-----|
| ■ Elan Obstructions                         | 2%  |
| ■ Monnow                                    | 17% |
| ■ Lugg and Arrow                            | 15% |
| ■ Upper Wye Tributaries                     | 15% |
| ■ Acid Waters                               | 17% |
| ■ Habitat destruction and diffuse pollution | 22% |
| ■ OK  | 12% |



order streams and allowing a random downstream 'drift' of slowly dissolving particles. Disadvantages include that it needs regular (annual) topping up and may not deal with extreme low pH events. Advantages are that the interspaces of spawning gravels may be the main beneficiaries and so the most susceptible stage of the salmon's lifecycle, the alevin are protected.

However, the method we chose was first tested in the adjacent catchment of the Tywi. When the effects of acidification were first discovered in the late '70s and early '80s, a series of treatments were tested to see if there was a practical and effective answer. Using alternative first order tributaries to the north/south flowing Camddwr and Tywi above Llyn Brianne, different treatments were devised and tested against alternate controls streams. The experiments were duplicated on the tributaries of each of the main stems.

Treatments included clear felling, catchment liming, and limestone in gabions. The upshot of this was that the only treatment that delivered a positive improvement for any significant length of time was the liming of a hydrological source (the wet and



Liming machine

boggy starting point of a first order stream). In fact, a follow up investigation showed that the formerly acidic stream was still running circum neutral some 15 years after the initial treatment.

The attractions of this technique were obvious: If this could be repeated over the acid rain affected sub catchment, results could be long term and large scale ... and affordable within our planned Objective 2 bid.

We were extremely fortunate to be able to involve two scientists who were instrumental in this original research and have them oversee and monitor our attempts to solve the 'acid problem'. Dr. Brian Reynolds (CEH Bangor) undertook the supervision of monitoring the water chemistry; Prof. Steve Ormerod (Cardiff University) oversaw and integrated other aspects of monitoring, project design and undertook the essential calculation of how much, liming treatment, where and so on. He also guided us through the difficulties of presenting the concept to authorising agencies and supervised a PhD undertaking the fieldwork.

We were introduced to Dr. Ingrid Jeuttner, an expert in diatom research with the National Museum of Cardiff. Long-term changes in water chemistry can be monitored by counting the number and species of diatoms that favour a particular pH. It was felt that this offered a better result than battling with the complexities of technical devices in streams. Though the process of counting and collecting diatoms is lengthy, it can be combined with visits to collect invertebrates, and water samples for chemical analysis.

A total of 48 sites is regularly monitored in both upper Wye and Irfon for all these data. The Environment Agency carries out a specific electrofishing survey to determine the penetration of fish and together with the foundation, redds are counted in November and December.



Lime delivery

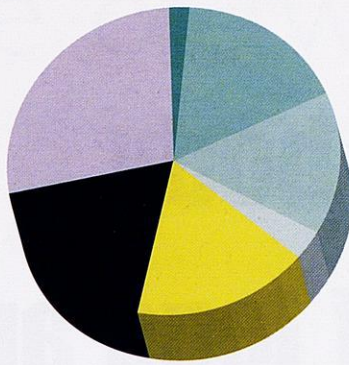
The Foundation undertook the responsibility for selecting appropriate sites, gaining consents from owners and authorities and the delivery of lime to these places. The nearest limestone quarry was near Kington, about 35 miles away and discussions with Tarmac Western revealed they could provide a small, track-laying machine that could deliver powdered limestone to our chosen sites. Work started on August bank holiday Monday, 2003 when ten lorries delivered 750 tonnes of powdered limestone to an area with Wales' second highest rainfall!

The actual site delivery process was one of those steep learning curves. Speed of spreading, amount of lime in machine, turning on certain wet parts, recovery of vehicle, at times seemingly determined to consign itself to the peat record, all led to the evolution of a technique involving a carefully managed integration of mechanical and manual spreading.



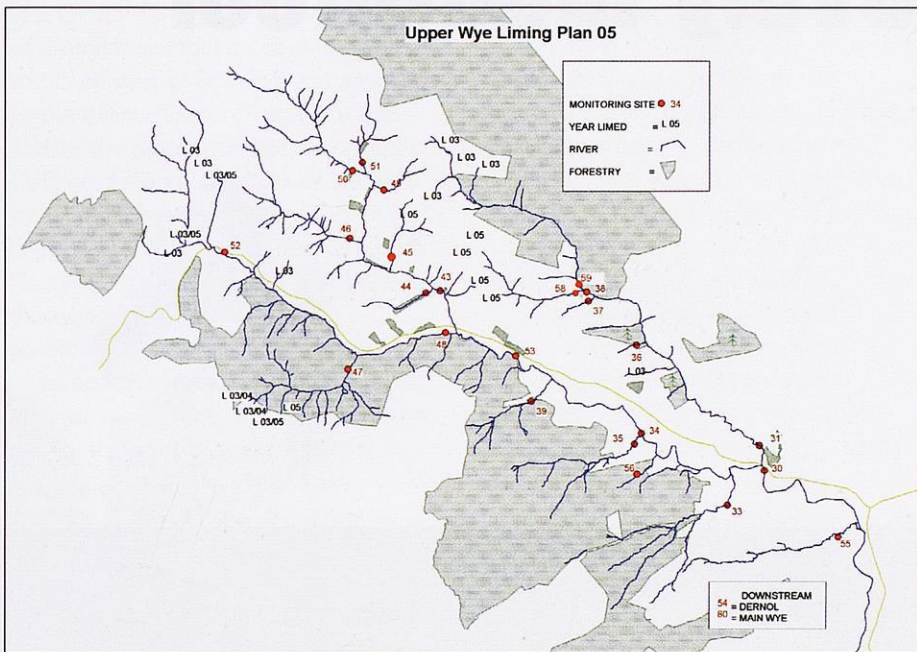
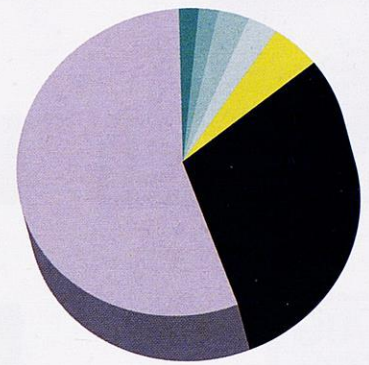
2003

|   |     |
|---|-----|
| Elan Obstructions                         | 2%  |
| Monnow                                    | 17% |
| Lugg and Arrow                            | 15% |
| Upper Wye Tributaries                     | 3%  |
| Acid Waters                               | 17% |
| Habitat destruction and diffuse pollution | 19% |
| OK  | 27% |



2008

|   |     |
|---|-----|
| Elan Obstructions                         | 2%  |
| Monnow                                    | 2%  |
| Lugg and Arrow                            | 3%  |
| Upper Wye Tributaries                     | 3%  |
| Acid Waters                               | 5%  |
| Habitat destruction and diffuse pollution | 30% |
| OK  | 55% |



Prof Ormerod's calculated doses were not met in year one. Year two (2004) had a rather wet August in central western Wales, leaving us with the difficulty of machine recovery and virtually no spreading done. 2005 was just right. We got out over 1000 tonnes into the selected hydrological sources. 2006 should see the completion of the recommended dose, at least in the upper Wye part.

What can we demonstrate so far? The recorded data set is now in its third full year. Before referring to any effects of introducing lime, it seems we started at the beginning of a series of relatively dry years overall, quite atypical for the region. The effect of this has been to produce an overall measurement of pH band that is much wider than would normally occur; given an average amount of rainfall. The upper limits of pH were extended during these dry periods. Most notable was the

autumn of 2003. We found that during these low flows, where even streams normally given to acid events and low pH were above 6.8 with the highest at 7.4.

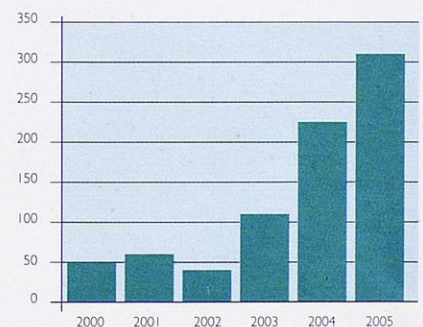
Subsequent (brief) high water events brought our acid controls back to their characteristic low pH, but did the limed streams stay closer to neutral than the unlimed sites? At first it could not be determined that significant changes had occurred but after further liming of some of the lower pH sites it seems that we recorded some pH stability in higher flows. It should be emphasised that because in the course of a year, the range of pH changes is so large: detecting changes due to liming to which rigorous statistical tests can confirm this will take more time and data sets.

Behind all this is an expectation of improvement to fish stocks. It does seem

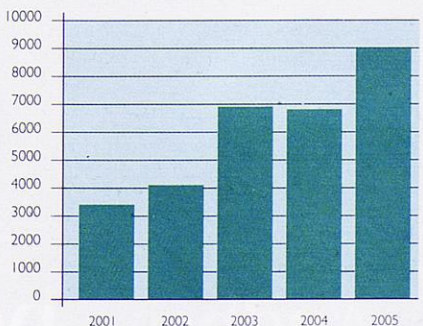
that there are increases in numbers of salmon redds. For the very first time, electrofishing has found salmon fry in the Tareng. This technique was not in practice when this stream (the one with the very worst chemistry) stopped producing fish. The extent of penetration upstream by salmon has significantly increased, as have parr densities.

We still have 500-1000 tonnes of lime to spread to meet the calculated dose. Throughout the monitoring, especially on the upper Wye, continued forestry activities have substantially altered the extent of cover. And we also wait for the effects of this to stabilise. We look forward to presenting the final report.

Wye Spring Salmon Catches



Salmon recorded at Redbrook fish counter

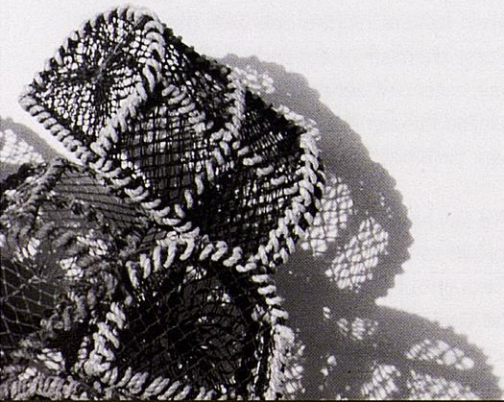






EÀRLAIG  
E STREET

**loads of body,  
plenty of legs and  
a lovely mouthfeel**



**beg to differ**

[ardbeg.com](http://ardbeg.com)



# A tale of two rivers

... to mark the twentieth anniversary of the “twinning” of the Quebec river Jacques Cartier with the Dordogne.

Jeremy Read, former Executive Director, AST

Last October, a seminar on the restoration of salmon rivers took place in Bergerac, in the south west of France. It was arranged by the Atlantic Salmon Trust's long-time affiliate, the Association Internationale de Défense du Saumon Atlantique (AIDSA), to mark the twentieth anniversary of the “twinning” of the Quebec river Jacques Cartier with the Dordogne. Well before this twinning was agreed by the governments of France and Canada in 1985, both previously abundant rivers had suffered complete stock collapses, due to the construction of barrages, habitat degradation and over-exploitation. The purpose of the twinning is to promote and assist work on stock restoration, especially through scientific exchanges, and the seminar aimed to compare and analyse the experience of the previous twenty years.

The town of Bergerac, lying on the banks of the Dordogne, was a natural choice as the venue for the event. The meeting took place at the Maison des Vins, the headquarters of the Inter-professional Committee for the Wines of the Bergerac Region. This building, incorporating part of a much older structure, is close to the river, on the edge of the splendidly well-preserved Old Town. Apart from a well-fitted lecture hall and offices, it contains a comprehensive information centre and displays the range of regional wines, some of which were generously offered to delegates for sampling during a reception.

The seminar was organised jointly by AIDSA and the Québec Federation for Atlantic Salmon (FQSA). The FQSA is a non-profit organisation, with more than 1000 members. Its main concerns are to unite and represent the interests of the anglers in Québec, and it aims to promote

the preservation and improvement of salmon rivers, the development of salmon sport fishing and the protection of the salmon resource and its habitat. A major French participant in the seminar was MIGADO (the voluntary association for the restoration and management of migratory fish in the Garonne/Dordogne basin). MIGADO was set up by a group of local fishing associations, and it works closely with the Government fishery organisation and the hydro-electric authorities in the region. It is engaged in research into the state of fish stocks, the monitoring of fish movements, the operation of five monitoring facilities and three hatcheries, and the planning and execution of the resultant stocking.

Proceedings during the three days began by tracing the development and implementation of restoration projects in the French and the Canadian rivers. French presentations covered not only the Dordogne and the Garonne, but also the western Pyrenean river systems, including the Gave d'Adour and the Gave d'Oloron, as well as the southerly extremes of the

Nive and Nivelle. These were followed by reports from the Jacques Cartier and neighbouring Quebec rivers.

On the Dordogne and the Garonne, substantial progress has been made in the last twenty years, with a mixture of governmental and voluntary finance and support. Runs of fish have been revived, but stocks still remain critically low. Although a number of fish passes have been constructed, three major obstacles remain. Habitat improvement studies and measures have been undertaken; this includes work aimed at countering the loss of spawning areas as a result of the construction and operation of barrages. Early restoration work involved the stocking of a number of strains of salmon from other rivers, principally the Loire, but the current thrust of rehabilitation uses local stock. The Bergerac hatchery and kelt reconditioning unit plays a major part in this. Broodstock are derived from returning adults taken in each of the rivers, and the results of selective planting out above obstacles are being carefully monitored, although only about half the current



*The Dordogne at Bergerac*



The purpose of the twinning is to promote and assist work on stock restoration, especially through scientific exchanges, and the seminar aimed to compare and analyse the experience of the previous twenty years.

potential habitat is currently being used. Monitoring at fish counting installations involves the use of a specially developed computer programme, which has options for varying detection thresholds and altering fine discrimination, has been used successfully to optimise the quality of data.

In Canada, various existing Government hatcheries were utilised to reintroduce salmon to the Jacques Cartier, obtaining broodstock initially from neighbouring rivers, and subsequently from returning adults captured in the river itself. The principal strategy for overcoming man-made and natural obstacles to upstream migration involved large-scale physical transport of captured spawners. This has proved to be very expensive, and between 1998 and 2001 it was not possible to secure funding for the work. The strategy for making future substantial progress in restoration is under examination; the principal elements include significant easing of upstream and downstream access, and improvement of habitat to increase spawning success and juvenile survival, all to be complemented by better monitoring. The hope of restoring a sustainable fishery remains, but reductions in state support are a handicap.

Funding from the voluntary sector provides a very important element of backing in both France and Canada. One interesting presentation described the work of the Quebec Wildlife Foundation, which acts as an umbrella fund-raising organisation for a wide range of local conservation groups. The Foundation is able to apply significant economies of scale in achieving publicity and in stimulating sponsorship in order to multiply the effect of initial voluntary contributions.



*Bergerac Fish Pass and Hatchery*

Public information is vital in the achievement and maintenance of voluntary involvement in restoration work. This is especially strongly recognised in Canada, as is well known from the activities of the Atlantic Salmon Federation, and involvement of schools is seen as particularly important. One innovative project in Quebec has been the installation of a fibre optic video link between the observation chamber at a fish pass on the River Matane and the Biodome (a natural history exhibition centre) in Montreal. This allows city visitors to watch in real time the passage of returning adult fish. It is tempting to consider the possibility of a link between the Faskally observation chamber and UK sea life centres – perhaps even the Westminster aquarium.

A wide range of monitoring and research projects was discussed during the seminar. There is not space here to report on all of them, but two were of particular interest and merit description. Both projects were conducted on the Nivelle. One addressed the differences in survival of wild and hatchery-reared juvenile salmon. It was

aimed at overcoming the fact that artificially-reared fish generally suffer rapid and major mortality on entering the wild environment, compared with their naturally-spawned counterparts. It assessed the concept of “conditioning” hatchery-reared alevins before release, by keeping them for a short period in a semi-natural stream (a rearing channel) or in a tank adapted to provide visual cues and to manipulate water flow and food supply. Under these conditions, these juveniles do indeed modify their swimming behaviour and positioning, and become more capable of resisting variations in flow and of avoiding predators. In parallel studies, they compare well with fish reared in the wild.

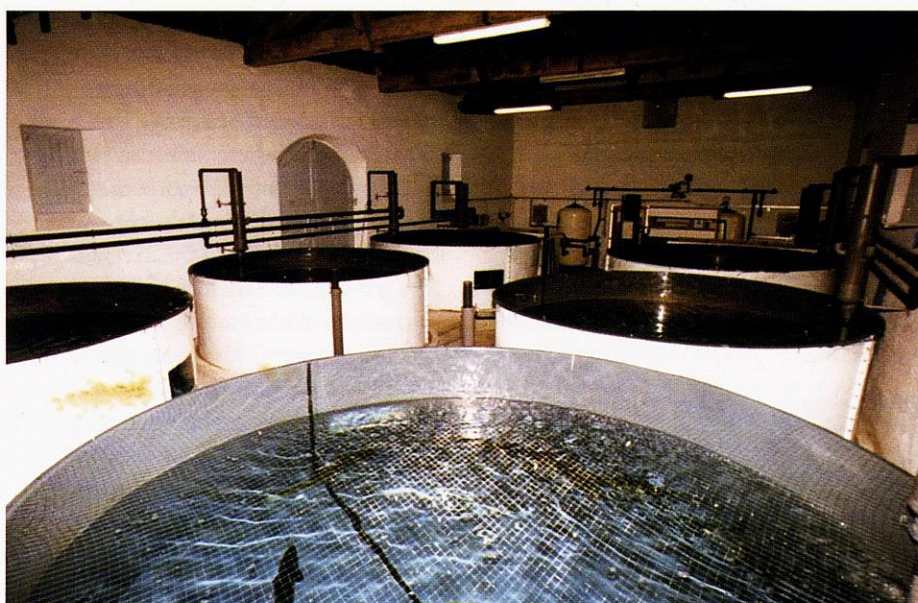
A second, and very topical, presentation described work to examine the effects on salmon reproduction of the climate changes to which the population of the Nivelle, at the southern limit of the Atlantic salmon's range, is potentially among the most vulnerable. Over the last twenty years, mean annual air temperatures have shown a significant increase, and periods



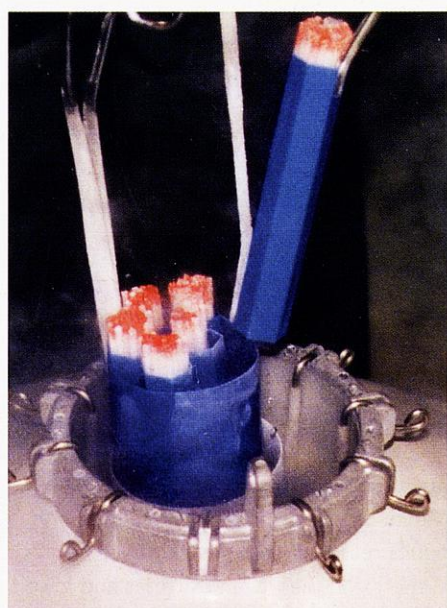
Since 2002, a cryo-preservation programme of freezing milt samples has been operated. The project is intended to maintain a long-term gene bank, and to compensate for the limited numbers of returning adult cock fish.

when water temperatures during spawning are above a critical threshold of 12°C have occurred more frequently. It had been feared that female spawning capability might be reduced, but this did not appear to be the case. However, it was discovered that a greater proportion of fertilisation was due to the activity of precocious parr, whose contribution has apparently increased in this river in relation to environmental conditions favouring juvenile growth in fresh water. If this is a genuine trend, the result could be an increase in the ratio of non-migrating fish, which could well have significant consequences for salmon populations. The final report on this work has yet to be written, but a request has been made for a copy to be provided to the AST in due course.

A particularly interesting element in the programme was a visit to the hatchery. This well-equipped unit has been



*Tank Cluster*



*Containers of Frozen Milt*

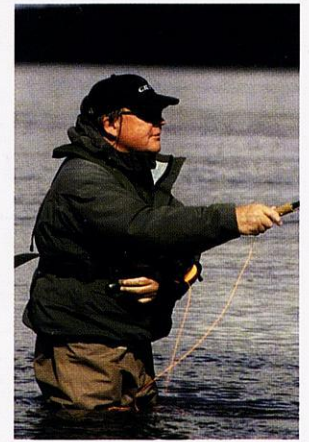
constructed adjacent to the Bergerac fish pass and trap, installed in the barrage which presents the first of a number of man-made obstacles to upstream salmon migration on the Dordogne and its tributaries. Kelt reconditioning is practised in order to reduce the number of fish taken from the Garonne and Dordogne, to avoid uncertainties in obtaining broodstock, and to develop the genetic pool. Currently, the unit can handle up to 150 spawners, allowing the production of 600,000 eggs. These are used for direct re-stocking, and also for line-breeding. 600 fish have been through the system since 1994. Survival of hens to a second spawning has been of the order of 70%. The unit operates on a closed circuit system in order to maintain water purity and to overcome variations in natural conditions. Since 2002, a cryo-preservation programme of freezing milt samples has been operated. The project is intended to maintain a long-term gene bank, and to compensate for the limited

numbers of returning adult cock fish, and the difficulty of keeping them in captivity.

On the last morning, a series of resolutions was discussed, outlining priorities for work (primarily in France). One significant conclusion was the need to encourage French participation in NASCO, and it was pleasing that the particular importance of promoting and supporting marine research was fully agreed. In summary, this was a most interesting seminar, distinguished by differences as well as commonalities in the French and Canadian approaches, and offering a number of new ideas. The sharing of experience will clearly be worthwhile in the development of strategies, and continued liaison will be assured by the augmentation of existing personal contacts. The significant part played by voluntary organisations on both sides of the Atlantic was especially noteworthy.



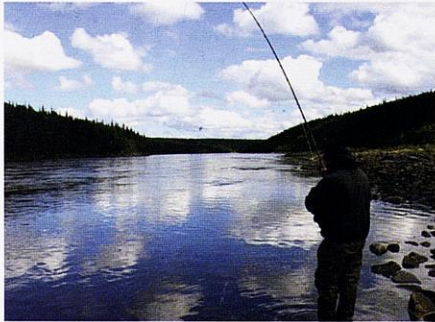
# Rivers of the Kola – a vast but delicate environment



*The author on the Ponoï*

Dr. Ken Whelan, President NASCO and Member HSAP

To the Atlantic salmon angler the Kola Peninsula is the nearest thing to piscatorial heaven – huge majestic rivers, exotic locations, a seemingly boundless wilderness and kind friendly hosts. Salmon catches in this self-sustaining haven are legendary and it is easy to convince oneself that stocks are limitless. But as in all salmon fisheries the world over, it is vitally important not to equate catches with either abundance or productivity.



*Into a fish on the Ponoï*

This past summer I spent a fascinating week with Dr. Sergei Prusov, of the Russian PINRO research institute, who has the enviable job of resident biologist at the Ryabaga camp, run by Frontiers International, on the Ponoï River. During the seven short days I spent with Sergei I never ceased to be amazed by his encyclopaedic knowledge of the Kola salmon populations and their unique and exotic life histories.

During my visit we had an opportunity to electro-fish several of the Ponoï tributaries and I also indulged my passion in hunting for invertebrates amongst the granite stones and riffles of several unspoilt streams. I quickly realised that the rivers of the Kola are truly a tough and inhospitable environment, forged by millennia of fire and ice. Evidence abounds of tough, hard

boulders, ground to dust by the force of shifting, relentless spring ice. The Ponoï itself lies deep in a gorge gouged out by millennia of powerful ice-flows. The tributary streams are crystal clear and boulder strewn with just pockets of eroding gravel. The juvenile salmon we found were tough and hard. Exceptionally slow growing, little creatures of 10 to 12 cm were already three years of age. It can take a parr 3 to 6 years to smoltify in this harsh environment, due to an exceptionally short growing season, a paucity of in-stream invertebrates and the ever-challenging physical environment. Air temperatures along the Ponoï can plunge to  $-49^{\circ}\text{C}$  in winter and rise to a stifling  $30^{\circ}\text{C}$  in summer. The flood plain forms an enormous corridor along the stream margins bearing evidence of massive flood events, coupled with the unimaginable force of freshwater ice flows.

Perhaps the most fascinating and revealing day for me was one spent alone, along the Ryabaga River, far from the camp. Surrounded by dwarfed silver birch and treading on the deep pile of luscious berries and snow-white lichen I began to realise that the entire environment of the Kola is both fragile and delicate. Just 700 miles from the North Pole it is frequently encased in ice from late September to early May and it is moulded by vast sheets of moving ice and short-lived but intensive bursts of sun. A grilse here could be seven years of age, a large salmon 9 to 11 years old. I have no doubt that the beautiful 40 to 50 cm grayling I found lurking in the runs and deep pools of the Ryabaga were also of an ancient vintage but these were truly elegant creatures, with battleship grey flanks and spectacular high dorsal fins stripped with slashes of vivid red.

On many Kola Rivers salmon catches are high due to very low angling pressure and strict pragmatic management, but these are not productive rivers. The sheer size and scale of the watersheds and the vast scale and isolation of their drainage systems ensures high adult numbers in the main access channels. Total returns to the Ponoï are on a par with that of much smaller river systems in Western Europe, where productivity is high and where the rivers hold adult salmon of four to six years of age.

... the entire environment of the Kola is both fragile and delicate. Just 700 miles from the North Pole it is frequently encased in ice from late September to early May and it is moulded by vast sheets of moving ice and short-lived but intensive bursts of sun.

Should the Kola rivers be subjected to the same pressures as those of western Europe and southern Canada, they have far less biological buffering capacity and recovery would be a decadal if not a century long process. The biology of the White Sea stocks is unlike any other with adults returning each autumn, overwintering in the frozen estuaries and lower pools. They spawn the following autumn, some twelve to fourteen months after



Identifying the migration and distribution of individual salmon stocks at sea is fundamental to predicting the likely future abundance of salmon stocks and their rational management.

leaving the sea. These unique White Sea stocks will be subject to the full rigours of predicted climate change scenarios, both in freshwater and at sea.

In an effort to learn more about the life of Atlantic salmon at sea NASCO's International Atlantic Salmon Research Board has launched the SALSEA initiative ([www.salmonatsea.com](http://www.salmonatsea.com)). The expert knowledge of Russian scientists, such as Sergei Prusov, is vital to the initiative as are the long-term data sets collected from

sport anglers throughout the Kola region. It is vitally important that precise monitoring of delicate environments such as the Kola is intensified. We need more accurate information on the annual level of smolt exodus and improved statistics relating to adult salmon returns but we are also in urgent need of a genetic atlas of individual river stocks against which to compare post-smolt and adult samples from the oceans. Identifying the migration and distribution of individual salmon stocks at sea is fundamental to predicting the

likely future abundance of salmon stocks and their rational management. Current climate change models predict increasing pressure on the more southerly Atlantic salmon stocks and it may well be, that for future generations, the only truly abundant stocks will be located in challenging sub-arctic and arctic regions.

*Ken Whelan was a guest of Dr. Sergei Prusov of the Russian PINRO research institute, courtesy of the Ponoj River Company and Frontiers International.*



## Anthony Woodd Gallery

SCOTTISH, SPORTING, MILITARY  
and CONTEMPORARY PICTURES

*Framing - Restoration - Valuations - Commissions*



KNIGHT, Roland (c1860-1900)

*The Leap*

Oil on canvas, 8" x 11"

Send for exhibition brochure or visit our website

4 Dundas Street Edinburgh EH3 6HZ

Tel. 0131 558 9544 – Fax. 0131 558 9525

[www.anthonywoodd.com](http://www.anthonywoodd.com)    [sales@anthonywoodd.com](mailto:sales@anthonywoodd.com)

Salmon & Trout  
Association



• water and habitat management

• fish stock management

• promoting game angling

**Fighting  
for the  
future of  
game angling**

**Join today**

[www.salmon-trout.org](http://www.salmon-trout.org)



# A Journey's Beginning

... all facets of fishing encompass a certain quality; observation, a study (as Walton said) to be quiet, and insight.

Charles Jardine – AST Member, author and artist

It is probably not a good idea to follow in your father's footsteps – waded or not. But I am glad that I did: most of the time.

Let me explain.

Amid this august Journal you will read a huge diversity of stuff; much of it incredibly technical and erudite. Well, it goes above my head – but then most things do – but all are connected to our abiding and singular passion: salmon. A creature that this wonderful organisation is pledged to support and promote, nurture and see prosper. My father felt the same way. He was a salmon fisher; within him beat the rhythm of far flung rivers through wild landscapes. I turned out to be a trout fisher. Nothing wrong in that: just the way it is. I enjoy the lyricism and the minutiae that obsess trout fishers. Fishing for darting, dappled shapes in intimate stream brings to me everything I need. The understanding of the place, the food and the fractions of seconds that are involved in the pursuit. It is also about stealth and losing yourself in a world where time – it is often stated and I believe utterly true – has a capacity of standing still. Slowly though, I am becoming a salmon fisher. You grow into it, I think, rather like a comfy coat.

Why? Well, I actually like casting, and have found that the way that I approach salmon fishing (mostly badly and unsuccessfully) I do a great deal of rod movement and line manipulation, compared with the visceral catching "bit". Of course, there is always the other reason: I live just beside a pool where the odd and occasional silver traveller passes through or might rest. It would be unconscionable not to at least make some token gesture. Wouldn't it?

But all facets of fishing encompass a certain quality; observation, a study (as Walton said) to be quiet, and insight. All are integral to other worlds I wander through – painting and cobbling together the odd word for journals. My father did the same.

With the longest introduction over, the question "Why?" still resonates.

I have to tell you, there are a great many easier paths to take, if you want to earn money. My wife, bank and family will give testament to that.

But standing in water, sometimes with the sharp bite of a north easterly etching into my very soul, or bathed in golden sunshine, hunting the crystal and turquoise flats for the ghost of the tropical flats: Bonefish. I am the richest person on the planet. To then have, even a tiny ability – and here I am in awe of "true" artists – to convey that world to others less fortunate; either in film, type, or paint: pencil or pen, is special. My father was the better artist. His use of both watercolour and oil – indeed line, too, taught me that you had to be bold – maybe a little mad – but above all, fearless. Every time I pick up a brush I am fearful. I imagine what can go wrong, rather than use the happy accident. I guess that is why I chose watercolour and he predominately oils. If I cock-up at least it's over fairly quickly. That said, I strive constantly to get better and some pieces "work" and others don't: I am getting used to that being a fact of life, but increasingly my Pa's words haunt me: "you can never divorce yourself from nature; get out there! Paint among the elements!" This has led me to almost hang bat-like from trees, gurgle subsurface looking at fish in their

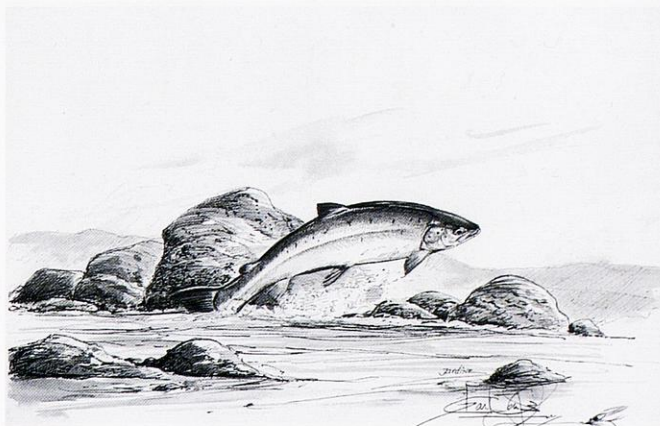
own worlds, cloak myself in all manner of lugubrious substances to avoid detection. I have wandered down a weird path of discovery.

There is though, a big "but". The massive problem for me now is: Do you fish? Do you paint? Do you take photographs? What? I have found you can only do one thing, never a combination. It's a real problem. Pleasant one though.

I recall one day, whilst doing a series for *Trout and Salmon* at Bewl Water in Kent, when I wanted to depict a boat drifting down a length of the reservoir: a particularly lovely bit along Hook straight. It was a green-washed Wealden setting ruffled by gentle winds – easy on the eye and palette. I even elected, in order to catch the moment, erecting, somehow, an easel in the boat. I also thought that whilst I was there, I would set up a rod "just in case". You know I find it weird. Why is it, whenever you are in an angling setting and not obviously fishing, fish go nuts; nicely "nuts". I had only composed, sketched and applied the first initial, "establishing" wash, when up the wind lanes they came; greedy mouths furrowing the surface, great swathes of rainbow trout hunting the surface like a war party. I have encountered similar things in the past when sketching a delightful pool on the Allan (Scottish one, as opposed to Dorset), from nowhere salmon nosed and tailed and glided through the area in easy finned aloofness. Do they know? Must do.

But those Bewl trout had not reckoned on me having the rod set up and obviously duped by the easel, carried on in their haughty, hungry way. So, in between washes





The author's illustration for Ted Hughes' poem

drying, I intermittently pitched out a dry fly. The trout were simply not expecting an assault from an artist in a boat (but then, who would?). The painting was a little disjointed, but I did get some cracking rainbows. The painting? Well, lets just say it was not one of my best!

Throughout all this palaver, there has been fishing. Always fishing. And I would be the very first to acknowledge how incredibly lucky I am: have been.

We, all of us, and you will know this, are closer to worlds that others never ever see. We can touch skies, almost weep at the lyric beauty of natural places and instances, we know, too, nature's savagery, but even here, there is beauty. We do not march through a world with our fishing rods unknowing; we are, for the most part, all-seeing and intuitive. We study to notice. All that I have done, in my only little inept way, is lay down, in some kind of illustrative note taking, something of these fleeting moments of rare beauty and privilege. That is all.

Increasingly though, I am being drawn to the camera and that split second encapsulation of our angling world: it is liberating. Now, in tandem, I can take an immediate and actual account of the chosen subject and then explore the depth and the imagined places before and after that specific moment in paint and line. And that, I see, is the distinction between photography and painting. Both echo that moment caught in time, but in art you can hint at the unknown. It is a fascinating business.

But where would any of this be without the things that I – and others – am trying

to depict? None of us can stand idly by: not any more.

Now here is the rub. Because my – our – business is about watching and to some extent, analysing the natural world, we can monitor, minutely, the changes within this world. Over the past decade these changes have been extraordinary. No more so, than the water shortages in the south and the skeletal river banks, the near catastrophic decline of river-born insects, the drip, drip decline of sustainable salmon stocks, the increase of predators – mink, seals, cormorants. We see this. It is up to us to act. Sadly – and I mean this – the last couple of years has seen a partial reversal of salmon fortunes and I fear that this might deflect the vigilant "gaze" and create an "I'm all right Jack" mentality. Beware of complacency. I digress.

I would only close by urging anyone to pick up a pencil, pen, sharp pointed stick burnt at the end – anything and make marks on paper. It has rescued me from some very dour times by the river and given me a joy that has endured for fifty years.

One lovely story that not only happens to be true, but demonstrate how the two worlds – painting and art – can collide, was enacted on that *magical Isle*, Mull when I was twelve. Holidaying there was bliss – a place that will haunt me forever, nights after sea trout, days after salmon or mackerel, rock hopping, beach combing, mussel and scallop collecting . . . what more could you want.

Anyway, one particularly blisteringly hot day, the type that makes horizons swim in and out of focus and drift a haze over the landscape, I decided – because the young

know no better – to fish the sea pool of the River Baa. Father decided to paint a particularly lovely series of bends in the River looking towards the "big house" and set up his easel and readied his palette. We parted on the prophetic words "I don't know why you want to fish on a day like this – way too bright: especially for salmon!"

I got to the a little rocky promontory overlooking the main sea pool's belly and cautiously, almost thief-like, peered into its depths. I saw grey shapes there – long ones snaking in a chain like smoke: grey and coiling. Salmon. Quite a few salmon! I only had a trout rod and a tatty size 14 Mallard and Claret. Unfazed out it went. Well, you probably will be able to guess the rest. I managed to snatch my fly from the jaws of certain victory on two fish – the biggest of course – but I did finally get one: awesome. Everyone that I know can recount their first salmon with the clarity of a new day. Flushed and shaking, I stomped back through the bracken and heather with my prize. Six pound or not, it was a salmon.

I have never seen my father finish a picture so quickly. In a spray of ultramarine he was packed and heading for the rod room.

I think I realised then, you can do one or the other, certainly not both. Now there are three, if you add photography.

Life is full of decisions: nice ones.

*Editor's note: Charles Jardine has illustrated the Ted Hughes' poem 'The Best Worker in Europe': copies are available from the Trust – see page 39.*



# Return of the springers

Time will tell but in the meantime there has been a great deal to celebrate.



Andrew Graham-Stewart, the AST's PR Consultant, reports on the 2006 spring runs in Scotland

It has been some considerable time since such liberal amounts of good cheer have been evident during the spring on the banks of Scotland's salmon rivers. Indeed the magnitude of the improvement in catches has been truly remarkable; for much of the country, between the Borders and north Sutherland, they have been the best for over 20 years.

Catches are of course always affected by angling conditions. At times the latter were simply horrendous, particularly in March when heavy snow, ice and strong winds

seemed to be the norm. April was often similarly inclement. In fact these two months were akin to a traditional spring with water temperature barriers holding fish back in the lower reaches of rivers for much longer than has been the case for several years. The volume of snow in the hills maintained water levels through April and into May. Cool weather (together with plenty of water) continued to prevail in May, giving some ideal late spring conditions as fish dispersed further upstream. In addition to catches, anglers were seeing far more fish than they have been used to.

The reality is that the fish were there in good numbers and the runs kept coming; all too often in recent years the spring runs have been intermittent rather than consistent. At the time of writing (31st May) fish counter data is of limited relevance as most counters (e.g. those on the Tay system) are located at temperature barriers, which fish are reluctant to negotiate until there is a warm spell. It is worth noting that the number of seal-damaged salmon was minimal – typically no more 4 per cent of catches were afflicted – in contrast to what we have become accustomed to.

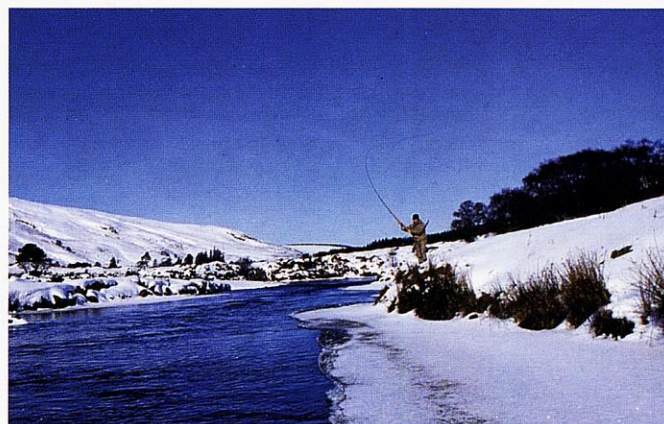


The UK's largest on-shore helicopter company



Telephone 0870 607 9000 or visit our website [www.pdg-helicopters.co.uk](http://www.pdg-helicopters.co.uk)





River Helmsdale, Little Rock Pool



Finavon Castle Beat

What has brought about this exceptional turnaround in salmon fortunes? There can be little doubt that all the conservation measures adopted over the last decade or so have contributed to the upturn – including catch and release in the early months and extensive habitat restoration programmes in the upper reaches. These measures have helped to ensure that the number of smolts from spring stock has been at optimum levels. However, the critical factor must surely be a significant boost in marine survival. This is of course the one aspect of the salmon's lifecycle over which we have virtually no influence (beyond the control of human exploitation). Accordingly the concern must be that whatever has happened to ocean conditions and hence feeding opportunities could be reversed over the coming year, causing sea survival to drop back to levels similar to those prevalent in recent years. Time will tell but in the meantime there has been a great deal to celebrate.

Below is a summary of spring 2006.

### East coast

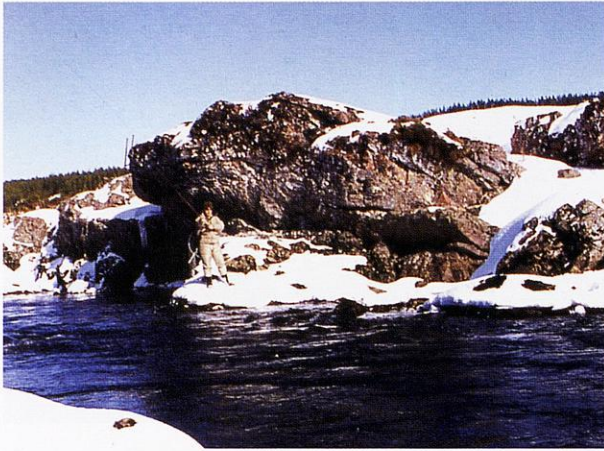
On Tweed catches between February and April were some 10 per cent up on those for the same period in 2004 and 2005. April fished especially well as fish moved up into the middle beats – prior to that catches had been dominated by the lower beats. On Tay catches picked up dramatically at the end of February. The water was low and cold for most of March, benefitting the lower beats. The total catch for the month for the system was some 500. Following a massive spate at the end of March, April continued in similar vein, producing well over 800 springers. This gave a total for the season to date of some 1500 – almost certainly the best result for quarter of a century. One local ghillie, renowned for his pessimism, remarked: "There is really nothing we can complain about". Both the North and South Esks

enjoyed their best spring catches for over 20 years. The fishing on the North Esk was described as "absolutely phenomenal" with record catches off many beats. On the Dee, the cold low water dictated that catches in February (over 200) were concentrated in the lower beats. In March the Grampians received the heaviest snowfalls for more than ten years; indeed there was more snow in the month than there usually is in a whole winter: Angling conditions were often extremely difficult but catches (over 500) held up well on the middle and lower beats. Numbers increased further as the weather moderated in April with over 600 reported. The Dee's recovery is gaining momentum with a steady increase in the five year average for the first three months.

### Moray Firth/Dornoch Firth

The Spey followed the pattern of the other major rivers with most of the activity in February and March on the lower beats, some of which have had their best spring catches for over 15 years. The consensus is that the spring run has been steadily increasing year on year over the last three seasons. The total for the Findhorn to the end of April was 281 (more than double the five year average). On the Ness system cold water coming down the tributaries held fish back in the loch where the boats had their best spring for many years. The Kyle rivers saw some prolific catches with 300 off the Carron to the end of April, 300 on the Oykel to mid May (including a March week of 71) and 29 in a day to six rods on the lower Cassley in May.





River Helmsdale, Falls Pool



Releasing a Conon April springer

### Far north

The upper Brora was prolific with over 70 in a fortnight in April. By late May the Helmsdale (12 rods) had passed the 500

mark. Catches were up by 15 per cent on the Thurso; the quality of the fish (averaging 12 lb) was remarkable. The

Halladale had by far its best ever spring (50 per cent up on the previous record set in 2005).



**Johnstons**  
Since 1797

For a mail order catalogue tel: 01343 554040

[www.johnstonscashmere.com](http://www.johnstonscashmere.com)

ELGIN

Cashmere Visitor Centre, Johnstons, Newmill, Elgin IV30 4AF Tel. 01343 554099

ST ANDREWS

Johnstons, 4 Pilmour Links, St Andrews KY16 9JG Tel. 01334 472216



# Catch and release – the importance of good technique

A personal perspective by John Webb, AST Biologist



Many readers will be aware of the huge shift away from exploitation by both net or rod fisheries that has occurred over the past ten years. In particular, the development and implementation of widespread catch and release of salmon and sea trout has been nothing less than remarkable. Who could ever have imagined back in the mid-nineties that by 2005 about 40-50% of the salmon caught by anglers in Scotland would be returned alive? Moreover, despite these changes and against a background of improving but generally moderate catches, many fisheries and angling club waters have remained active and economically viable.

Within the UK, managers and anglers increasingly regard the adoption of catch and release as a progressive step forward in the ever-challenging mission of conservation of our wild salmon and trout resources and the sustainable benefits that accrue from them. Crucially, where conservation is required, it also represents an increasingly attractive and sustainable alternative to management choosing to ignore the critical factors affecting the resource by continuing to provide opportunities for anglers to 'wield the priest' – or by embarking upon 'magic bullet' quick-fix schemes that are often expensive and wasteful.

Prior to the late 1990s, most of the opposition to releasing otherwise takeable fish focused around such factors as the tradition of taking fish for the pot, fear of economic losses, a lack of understanding of the threats to fish resources and concerns about levels of survival following release. Fortunately, much of the early opposition is now turning into support. Despite often-earlier reservations, many anglers and

ghillies that I speak to now acknowledge that the introduction of catch and release has served to allow them to continue with their fishing – whilst engendering an increasing understanding and acceptance of the need to return fish belonging to particularly vulnerable or threatened stocks. By the same process, it has also probably served to focus many people's attention on the wider economic and cultural values of both wild salmon and sea trout.

... a number of common handling mistakes have the potential to impose unnecessary levels of stress and physical damage on fish.

*"The Art of Catch and Release – it's the technique, not just the thought that counts"*  
(Anderson, 1984)

Because of the complex issues involved, the use of catch and release as a management tool will probably always remain vulnerable to criticism. Nevertheless, the progress made to date in the UK strongly suggests that many of the arguments supporting the 'Why' message may now have been largely taken on board. However, despite the plethora of advice that is widely available, it is clear to me that too many ghillies and anglers are continuing to fail to use either the correct equipment or handle their fish in a manner that is consistent with good practice. The practical application of the 'How' message therefore remains a matter of concern.

Anglers and ghillies should remain vigilant at all times and do everything that they can to ensure minimum losses. Thankfully, in recent history, evidence of large-scale mortality among wild adult wild fish through disease is rare. Nevertheless, from a disease-risk and more general fishery-related mortality management point of view, the importance of ensuring that all live fish released by anglers are handled as carefully as possible is often being overlooked.

Though the risks of losses due to catch and release on different rivers are difficult to estimate, a number of common handling mistakes have the potential to impose unnecessary levels of stress and physical damage on fish. Unlike some coarse fish, salmon and trout are particularly sensitive to handling and prolonged exposure to air. Fresh-run salmon and sea trout are particularly prone to being damaged – through abrasion and scale loss around the belly, flanks and the 'wrist' of the tail. Fish should therefore not be brought ashore aloft in a landing net or kept out of the water on the riverbank. Rather, they should be landed and unhooked while in a soft, knotless net – whilst the net is kept in the water.

The all-too-common practice of fully 'beaching' fish to aid unhooking (a practice that may necessitate a fish being played to total exhaustion) is particularly undesirable, and can lead to damage to the skin, scales and eyes. Fish that are 'beached' are also particularly prone to particles of sand and silt becoming lodged under their scales – a scenario that can simply act to further increase the risks of a fungus or bacterial infection taking hold.



# “The Art of Catch and Release – it’s the technique, not just the thought that counts” (Anderson, 1984)



The use of correct equipment is important. Unfortunately, some fishery proprietors continue to provide ghillies and boatmen with old, coarse knotted-mesh landing nets (often with rusting rims) from a previous era. Such items are unsuitable for catch and release angling and should be permanently removed from huts, bank sides and boats.

The reasons why some anglers and ghillies appear either reluctant or unable to follow the basic handling guidelines is unclear and may warrant further research. Are they simply satisfied with the *status quo* – just so long as fish are being returned, or are they simply unaware of the potential impacts of their actions? Perhaps organisations such as the EA, ASFB and AST should be making even greater efforts to educate anglers about the risks to fish

posed by poor handling techniques? Perhaps when required by management, the handling and releasing of fish safely should be regarded as an important part of the craft of game angling – as important say as the ability to ‘read’ a pool, cast a good line, or choose a lure or fly?

As a keen game angler myself, and somebody who has trained many anglers and ghillies in the methods of catch and release, I believe the process of building on and developing the new sensibilities among many anglers through adopting good handling practice must remain a management priority. Further efforts to get the ‘right message’ across should therefore be made. The influence of the UK game angling magazines should not be underestimated. Undoubtedly, articles – and particularly those containing good

quality photographs, convey important and influential messages to their readers.

However, too often in my view, the contrast between photos of fish being carefully landed, unhooked, photographed and released as part of articles on the pursuit of wild brown trout, and equivalent articles on salmon and sea trout fishing could not be more obvious – even within the same publication. In North America, the Atlantic Salmon Federation (ASF) now adopts an editorial policy of promoting live release and avoids publishing photographs where fish are being mishandled. Perhaps it is time to begin to encourage a similar kind of policy here?

... the handling and releasing of fish safely should be regarded as an important part of the craft of game angling – as important say as the ability to ‘read’ a pool, cast a good line, or choose a lure or fly.

From a different but related perspective, fishery stakeholders should also perhaps begin to pay greater attention to the importance of the wider perception of angling by the general public. In Scotland, a number of recent public and privately funded education initiatives in schools etc. have focused attention on the intrinsic value of our wild native fish resources as important ecological, cultural and





... we should undertake careful monitoring of the way in which fish that are being handled and released by anglers, and strive to ensure that the widely available guidelines are adhered to.

economic assets. The importance of sustainable fishery management has been a key message in this process. Over the same period, the public, due to a series of changes to the trespass laws, now has greater rights of access to rivers and lochs. Against this background, it is perhaps unrealistic to presume that the behaviour of anglers will continue to remain largely unscrutinised by wider society.

*'Properly conducted, catch and release angling permits us the privilege of interacting with these incredible creatures without unduly interfering with their final destiny' (Tufts, 2001)*

The economic and cultural values of angling, and when deemed necessary by management catch and release angling are clear. However, the act of landing and releasing live wild fish for the dual purpose of both sport and conservation confers important responsibilities upon all parties

and many of the supporting arguments necessarily rely on the key philosophies of responsibility and self-restraint among those involved. We should therefore not be tempted to 'rest on their laurels' – just so long as fish are being returned. Rather, we should undertake careful monitoring of the way in which fish that are being handled and released by anglers, and strive to ensure that the widely available guidelines are adhered to.

**Here are some tips and reminders:**

### **For fishery proprietors, agents and managers**

- Unless access or personal safety is an issue, then fish should be kept in the water at all times. It is therefore important to ensure that anglers and ghillies wear waders.

- Remove and dispose of all old landing nets that may have rusting frames/ coarse, knotted-mesh nets. Beats should offer to loan modern, lightweight knotless landing nets to anglers.
- Prohibit the use of tailers, gaffs and knotted nets on your water – this could soon be the law.
- Ask your ghillies to brief rods fully on the standards of equipment and conduct that are required. When showing rods the pools for the first time, it is also useful for ghillies to advise anglers where to land, unhook and release their fish safely at different water heights.
- Provide copies of published advice on C&R in fishing huts and accommodation.
- Provide forceps and disposable cameras for your ghillies and tenants.

### **For ghillies, boatmen, guides and anglers**

- Consider the welfare of fish at all times. Remember that sea-liced or fresh run fish are particularly susceptible to scale loss.
- Offer to assist with landing/handling/unhooking/photographing fish and release.

*Editor's note: John Webb has been a keen game angler for over 30 years. He has fished in Scotland, England, Ireland, Russia, Canada, Poland and Chile. John has also undertaken research on the survival of salmon released by anglers and organised numerous training courses on catch and release methods.*





# Experiment to determine the fate of salmon escaping from fish farms

Fisheries Research Services, Freshwater Laboratory

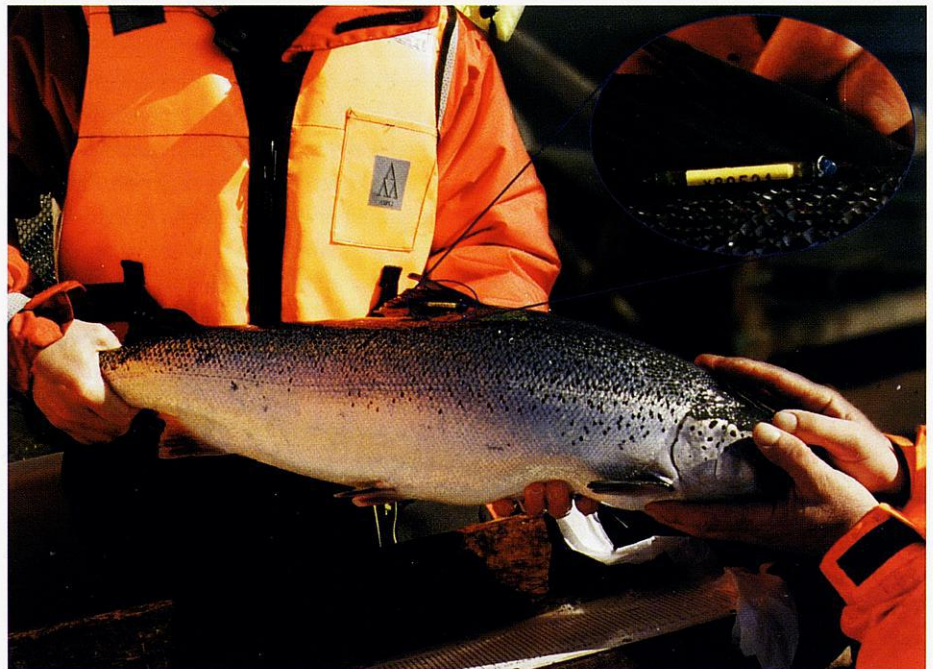
## Summary

In April 2006, the FRS Freshwater Laboratory will carry out an experiment to help determine the fate of salmon that escape from fish farms. Tagged fish will be released in a simulated escape. The experiment is exploratory in nature and therefore relatively modest in scale. The number of fish to be released is the smallest number that is expected to answer the question – 'do salmon that escape from aquaculture in Scotland appear in the Norwegian salmon Fisheries?' The work will be performed in Wester Ross but tagged salmon may be recovered more widely in the Scottish fisheries and any captures should be reported and the tag returned to any of the local Fishery Trusts or to FRS Freshwater Laboratory (01224 294400).

## Background

Data on the estimated numbers of salmon that escape from fish farming operations throughout the NASCO North-East Atlantic Commission Area, and the estimated numbers of fish of farm origin taken in salmon catches are presented each year to the International Council for the Exploration of the Sea (ICES) and the North Atlantic Salmon Conservation Organisation (NASCO). The returns from Scotland show that in some years, substantial numbers of salmon escape from fish farms but that relatively few of them turn up later in the fisheries.

There are several possible reasons for this. A large proportion of the escaped fish probably die at sea, fish that survive may not be recognised as farmed escapes, escaped fish may enter rivers after the



*Farmed fish showing Lea tag fitted*

fishing season has closed, or they may migrate outside Scottish waters. In Norway, relatively large numbers of escaped fish occur both in the fisheries and among spawning fish and it has been suggested that some of these originate outside Norway.

At the Annual Meeting of the North Atlantic Salmon Conservation Organisation (NASCO) in 2003, it was agreed that an experiment should be undertaken to help determine the fate of salmon that escape from fish farms. A proposal was tabled that numbers of fish farm salmon in countries in the North-East Atlantic Commission Area with salmon farming industries should be tagged and released from sea cages in a co-ordinated experiment to simulate escape events. The Contracting Parties to the NASCO Convention, which includes the European Union, agreed to the

proposal, and the Scottish experiment is SEERAD's contribution to this internationally agreed experiment. We hope that all the many parties with interest in the salmon fisheries will support this initiative.

## How you can help

In April, 700 large salmon in the 5-8lbs range will be tagged. Lea tags (*see picture*) will be used in order to achieve consistency with Norwegian practice and to aid reporting from the Norwegian fisheries, which is to be the main focus of the experiment. Lea tags are made of tubular plastic and about 40mm in length. They contain a message including an individual code number.

The fish will be released near Ullapool. Based on previous studies, the fish are



expected to head for the open ocean, rather than immediately entering rivers. Many fish will not be seen again but those that survive are expected to return towards rivers in late summer and autumn. At this time, some tagged fish may occur in coastal and river fisheries. Based on previous studies, entry to rivers may be delayed beyond the end of the fishing season and the fish may then appear only among broodstock. Homing is not expected to be especially accurate and surviving fish may turn up across a wide geographical range – including possibly Norway.

Targeted recovery of tagged fish is not possible and the success of the experiment will depend entirely on anglers or fishery managers returning any tags they may come across. Again, the main contact in Scotland is FRS Freshwater Laboratory (01224 294400) but the local River Trusts will also be able to help. A reward, currently of £3, will be paid by FRS Freshwater Laboratory for tags returned with details of the time and location of capture and a note of the size and condition of the fish. In addition, qualifying tag returns will be entered to the annual NASCO Tag Recovery Incentive Scheme which offers a price of \$2500.

*Editor's note: As to the fish, knock it on the head and take it home! Do not release it back into the river. This article is a reproduction of a recent leaflet produced by FRS and with their kind permission.*



Lea tag showing code number

# The *CLA* Game Fair

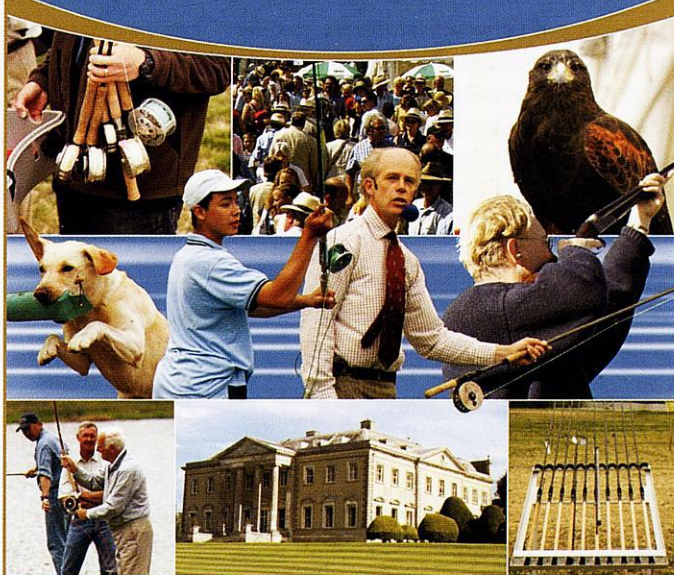
## A WORLD CLASS EVENT

In association with  
**The Daily Telegraph**

### Broadlands

Romsey . Hampshire

Friday 28th - Sunday 30th July 2006



If you enjoy country sports  
you will love The CLA Game Fair

*The UK's biggest fishing exhibition*

Visit **The Game Fair website** for information on demonstrations, championships, competitions, exhibitors and full programme of events in **House of Fishing**

|   |              |
|---|--------------|
| Hotel Booking Agency:                                       | 0870 1914779 |
| Caravan bookings:   | 01908 588051 |
| Disabled - info and to book Event Mobility powered scooter: | 0870 1261751 |
| Private plane/helicopter info:                              | 01256 389767 |

Have A Go  
Events for  
all the  
Family

**GameFair**  
*CLA*

The annual  
gathering  
of the  
Countryside

(please quote BR038 when booking)

**ADVANCE TICKETS**  
order online [www.gamefair.co.uk](http://www.gamefair.co.uk)  
or Tel: 0870 126 1751

For further information and recommended routes, visit our website



# Fishy Dishes



Claire Macdonald

I could eat salmon several times a week for the entire salmon fishing season. I am told that, during the war when people did just that because there was nothing else to eat, they were absolutely sickened by this wonderful fish; but all those decades ago there was very little else with which to embellish cooked salmon. When I think of just how wide a variety of other ingredients we tend to combine with salmon these days I realise why I could never tire of this fish, above all others; but there are a couple of things I do loathe about salmon. Top of my hate list is twice-cooked salmon – overcooked salmon is nastier than any other type of overcooked fish.

Both overcooked and twice-cooked (the same thing really) salmon leave a most unpleasant cardboard texture in the mouth, and so it follows that I dislike

salmon fishcakes. These tend to be sold at a higher price than smoked haddock fishcakes, yet salmon fishcakes are vastly inferior in taste to smoked haddock fishcakes. No fishcake or fish pie should ever be made without smoked fish as the fish ingredient. For a rather more ritzy type of fishcake I use hot-smoked salmon, which, like all smoked fish, gives most wonderful fishcake results. I expect many of you hot-smoke your own fish. We have a Webb hooded barbecue which hot-smokes fairly small pieces of fish (not much more than about 4 lbs/2kg in weight). The answer is to impart the smokey flavour whilst only lightly cooking the fish. The result can then be made into succulent and delicious fishcakes – try mixing a good couple of heaped tablespoons of chopped parsley into the mashed potatoes and flaked hot-smoked salmon. Or try pressing the salmon fishcakes into slightly salted

sesame seeds instead of the more usual breadcrumbs; they tend to pop as the fishcakes fry (I fry in a deep, non-stick sauté pan, with a spoonful of olive oil and a couple of ounces – 50g – of butter), but nothing too painful! Of course, fishcakes freeze very well, but thaw them in a single layer – they will take about three hours to de-frost.

Hot-smoked salmon makes the most heavenly risotto. You will know never to add parmesan cheese to a fishy risotto, but I add the finely grated rinds of a couple of lemons (very well scrubbed under running hot water, and dried before grating) to 1 lb/450g risotto rice, for a hot-smoked salmon risotto for six people. The washing is vital, to remove the preservative our citrus fruit is sprayed with to give it a longer shelf life for the benefit of the wretched supermarkets. Whether you add

## Pepper Crusted Salmon Fillets with Tomato and Basil Salsa

The inspiration for this came one night when we were eating in Skippers Restaurant, Leith. I would never have thought of putting brown sugar as a major part of a crust for salmon, but it was so good, and was perfectly contrasted by their tomato and basil salad. My version includes the peppercorns and I have made the accompaniment into a salsa, which I like even better. The salsa benefits from being made and dressed several hours in advance – the flavours settle down together.

### Serves 6

6 salmon fillets, each weighing about 6oz/170g

#### For the crust:

2 tbsp 4 colour (pink, green, white and black) peppercorns, either coarsely ground or crushed in a pestle and mortar with  
1 tsp flaky salt, e.g. Malden's  
2 tbsp demerara sugar  
2 tbsp chopped parsley, preferably flat-leaved

Mix together the above ingredients. Put the fillets on a baking tray lined with baking parchment, and divide the crust mixture between each. Press it over the surface of the fish. You can do this several hours in advance.

#### To cook:

2 tbsp extra virgin olive oil  
Heat the oil in a large sauté pan to a very high heat.  
Put the fillets of salmon into the pan when the heat is high, crust side downwards, and cook for about 2-3 minutes before turning them over and cooking for a further couple of minutes on their other side. The splitting will be horrendous, but the taste is worth it! Don't worry – some of the crust invariably falls off, but most remains sealed onto the fish.

Meanwhile, make the salsa.

#### For the tomato and basil salsa:

The salsa can be made, and is in fact better if it is made several hours in advance.

6 vine tomatoes, each skinned and de-seeded and the flesh diced small  
1 tsp very finely chopped red onion  
a handful of basil leaves, torn  
finely grated rind of 1 lime, or lemon  
2 sticks of celery, trimmed and sliced transparently thin  
2 tsp Balsamic Vinegar  
4 tbsp extra virgin olive oil,  
1/2 tsp flaky salt

Carefully (so as not to squish them) mix together all the salsa ingredients.

Serve the salmon as soon as it has cooked, with a spoonful of the salsa beside the fish.





Lime marinated salmon cooked by Pink Pastry

a small amount of double cream to your hot-smoked salmon risotto is up to you – I do – about 4 (large) tablespoons of double cream, for a risotto for six people. A couple of pinches of saffron strands are very good, too; and halved hardboiled quails' eggs are another option. Such a risotto is a variation on a hot-smoked salmon kedgeree, and really much better; I think, because of its slight sloppiness. Like kedgeree, a hot-smoked salmon risotto can be eaten at a brunch, lunch or dinner:

It is very difficult to better the simplest way to cook, serve and eat salmon, especially when the weather is hot. We so hope it will be warm and sunny for my mother's ninetieth birthday in early June. Her chosen celebratory lunch for our massed family, now spanning four generations what with the clutch of her four small great grandsons, is for cold poached salmon with mayonnaise, new potatoes and salads. I am sure that most

people are aware how faultless cold salmon is, how perfect it will always be if you simply immerse the fish in water. I add a handful of parsley, sliced lemons, flaky salt and peppercorns to the water. Then bring the water around the fish to a gentle boil, more a slow bubble, and cook for just one minute. Take the fish-kettle off the heat and leave the fish to cool completely in the liquid. When it is cold, take it up from the liquid, and peel off the skin and decorate it as you choose. No matter the size of fish, the cold fish will be just perfect, succulent and never, ever overcooked.

Really good mayonnaise must be homemade. There is no commercially made mayonnaise which even begins to rival homemade. Use what you like in the way of oil – all extra virgin olive oil will give a very densely flavoured mayonnaise, so I tend to use a lighter olive oil. Season according to what you like. For me that means a small amount of caster sugar and

a good heaped teaspoon of Dijon mustard added to the salt and pepper; one egg and one yolk, and I like a squeeze of lemon juice as well as white wine vinegar to sharpen my mayonnaise; but then, if you like, you can add a whole range of things to your mayonnaise. Diced skinned and deseeded tomatoes with chopped or torn basil is very good with salmon – I love this with barbecued salmon; dill and diced cucumber is another variation. Mayonnaise is very good with hot fish as well as with cold. Hollandaise sauce is utterly wonderful with hot salmon, too, so there is a dilemma – only you can decide! If you are concerned that making hollandaise must be last-minute, do be reassured, it's not. Make it two or three hours in advance, and keep the hollandaise in a thermos until you are ready to serve the salmon.

However you eat it, do enjoy this fantastic fish during these summer months. I intend to!

### Lime marinated Salmon with Crème Fraiche and pink peppercorn

This is another recipe for which I got the inspiration from Good Housekeeping. It can be either a first course or, served in larger quantities, a main course. Ideal for hot summer weather:

#### Serves 4 as a first course

8-10 oz filleted raw salmon, weighed when skinned and bones removed  
finely grated rind and juice of 4 limes  
1 teaspoon rock salt  
1 pot full-fat crème fraiche – 500ml

6" cucumber, skinned, deseeded and diced and marinated in:  
2 tablespoons pink peppercorns  
2 tablespoons white wine vinegar  
2 teaspoons caster sugar –  
1-2 tablespoons chopped dill  
For the same time as the salmon

Salad leaves, for serving

With a very sharp knife, slice the filleted salmon across as often as you can, then down, to form neat, small dice. In a shallow dish, pour the lime juice and add the grated rind and the rock salt. Mix in the diced salmon, mixing well, and leave

for several hours – overnight, if possible. Mix up the diced fish once or twice during its marinated session – but this doesn't mean you need to get up during the night to do so!

To complete the dish – after marinating, during which the fish is actually "cooked" by the acid in the lime juice – drain the lime juice, then mix it with the crème fraiche and the pink peppercorns. Drain the wine vinegar from the diced cucumber and sugar mixture and mix in the cucumber, and the chopped dill.

On serving plates, arrange a small clump of salad leaves, and either divide the salmon mixture in spoonfuls or, with wetted hands, form it into small mounds on the leaves.

The cucumber adds a good contrast in texture to the soft fish in its crème fraiche dressing.

For more information or to visit Claire's Shop go to [www.claire-macdonald.com](http://www.claire-macdonald.com)

Pink Pastry prepare the HSAP's lunches. Contact details: [enquiries@pinkpastry.co.uk](mailto:enquiries@pinkpastry.co.uk) 07875 155 861.



A woman wearing a blue cap, sunglasses, a patterned sweater, and waders is fishing in a stream. She is holding a fishing rod. Two golden retrievers are standing in the water with her. The background shows a scenic landscape with hills and a blue sky with clouds.

**CKD Galbraith**

Scotland's premier sporting lets agency

... for the very best  
of sport in Scotland

Brochure available

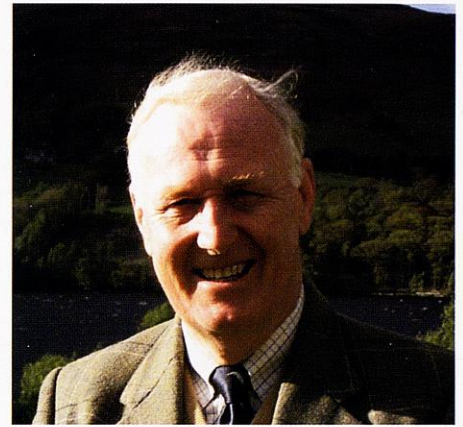
Telephone: +44 (0) 1738 451600

Email: [sporting@ckdgalbraith.co.uk](mailto:sporting@ckdgalbraith.co.uk)

[www.sportinglets.co.uk](http://www.sportinglets.co.uk)



# Scalereadings



Neil McKerrow, new Deputy Director, AST

## Activities and People

Action continues apace both indoors and out. Seminars, conferences and meetings abound whilst there's always something to be done on the river whatever the weather.

We were present at the Opening Day on the Tay and the Spey, as usual.

We welcome Neil McKerrow to the small team at Pitlochry. One of two Deputy Directors, he is responsible for financial affairs, including fundraising, and is the Company Secretary, taking over in these responsibilities from John Gray and Tim Hoggarth respectively. He also deputises for Seymour Monro in Scotland. In September, Tim Hoggarth will hand over his responsibilities in England and Wales to Ivor Llewelyn.

We bade farewell to Malcolm Beveridge in March, he had been the Director of the Freshwater Laboratory at Faskally for five years. He worked in close harmony with the AST and was an Observer at our Honorary Scientific Advisory Panel meetings. He was a great friend and wise counsellor: we wish him well in the Middle East and Africa where he now works for 'Worldfish' who are based in Cairo.

## Members' Meetings

The next Members' meetings are:  
Thursday 20th July, Ingliston, Edinburgh.  
Wednesday 6th December, Fishmongers' Hall, London.  
Details will be sent out to Members in due course.

## Game Fairs

The AST will have a display at:  
GCT Scottish Game Fair,  
Scone 30th June-2nd July;

CLA Game Fair, Broadlands 28th-30th July  
Highland Field Sports Fair, Moy  
4th and 5th August.

Yet again the Salmon & Trout Association have invited us to join them in their stand at Broadlands; we are most grateful.

Members and supporters are encouraged to help us on our stand – please let us know if you are able to do so even for an hour or so!

## Postal Auction

Over 250 donations were made to the Trust for this year's Postal Auction. There were many new donors and new bidders and we are very grateful to everyone who took part. The Auction realised over £47,000, the second best sum ever; and still represents the Trust's largest single element of income. Invitations to donate Lots for next year's Auction will go out in September.

## DVD – “At Sea with the Atlantic Salmon”

This is the first DVD which the Trust has ever produced! The film sequences and Dick Shelton's commentary are quite unmissable! Free copies have been distributed to river boards, trusts, government departments and agencies, scientific establishments and to our Members. It is reviewed on page 40 and copies may be obtained for £10 from Jenny at the Trust's office.

## 40th Anniversary – Booklet of Achievements

We aim to produce a booklet relating the Trust's achievements in its first 40 years. If anyone has a story or view of how the Trust has helped champion wild Atlantic salmon and sea trout, do please send it to Moulin.

## Purely Fly Fishing

Dick Shelton writes:

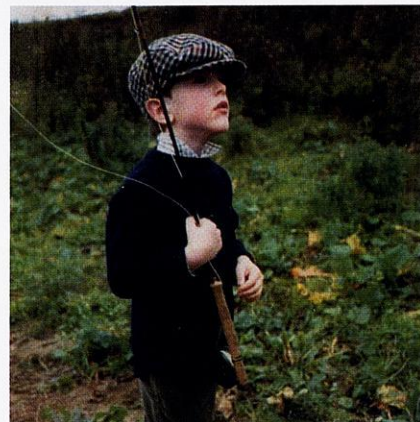
Cold blooded they may be, but fish, especially migratory ones, are complex creatures with many a survival trick built into their DNA. Man, the terrestrial mammal, is not by nature a fish predator and unlike his intended prey he is completely dependent upon learned skills when he seeks to become one. Beginner's luck notwithstanding, it is the universal experience of fishing communities across the world that the most successful fishers start young and go on learning for the whole of their fishing careers. The same applies with even more emphasis to the specialist suppliers of the tackle and fishing opportunities on which most modern anglers depend.

William Culbert was lucky enough to be born into an Irish sporting family living in Scotland and has fished for as long as he can remember. As one who has seen him in action, I can confirm that no salmon or sea trout is safe (even in Patagonia!) when William takes time out from his studies at St. Andrews University to pursue his favourite sport. William realised how lucky he was and that it was time to put something back. The answer was to offer a competitively priced mail order service



# Scalereadings

'Blue Books' are available FREE!



William Culbert on his first day's fishing

to anglers. "I came up with the idea when I was still at school", said William. "I was keen to try and make it easier and a great deal cheaper for young anglers of all ages to gain access to good new products from British, North American and European sources. It's been enormous fun and so successful that I am now supplying shooting accessories as well. I also run a Sporting Holiday and Hotel Directory to help my clients to take advantage of any special offers that make good fishing and shooting opportunities more affordable".

You can take it from me; nothing is too much trouble for this highly professional recruit to the sporting business world. Contact William at [www.purelyflyfishing.com](http://www.purelyflyfishing.com)

## Trust Publications

All publications are free except where indicated. Postage will be charged for packages over £5.

### Salmon Stocks: A Genetic Perspective

N.P. Wilkins

### Salmonid Enhancement in North America

D.J. Solomon

### Salmon in Iceland

Thor Gudjonsson and D. Mills

### Atlantic Salmon Facts

D. Mills and G. Hadoke

(Revised May 2003 by R.G.J. Shelton and J.B.D. Read)

### The Atlantic Salmon in Spain

C.G. de Leaniz, A.D. Hawkins, D. Hay and J.J. Martinez

### Salmon in Norway

L. Hansen and G. Bielby

### The Automatic Counter – a Tool for the Management of Salmon Fisheries

A. Holden

(Report of a Workshop held at Montrose, 15-16 September 1987)

### A Review of Irish Salmon and Salmon Fisheries

K. Vickers

### Water Schemes – Safeguarding of Fisheries

J. Gregory

(Report of Lancaster Workshop)

### Genetics and the Management of the Atlantic Salmon

T. Cross

### Acidification of Freshwaters:

#### The Threat and its Mitigation

R. North

### Strategies for the Rehabilitation of Salmon Rivers

D. Mills

(Proceedings of a joint Conference held at the Linnean Society in November 1990)

### Salmon Fisheries in Scotland

R. Williamson

### The Measurement and Evaluation of the Exploitation of Atlantic Salmon

D.J. Solomon and E.C.E. Potter

### Salmon in the Sea and New Enhancement Strategies

edited by D. Mills £30.00

(Proceedings of the 4th International Atlantic Salmon Symposium, St. Andrews, New Brunswick, June 1992)

### Surveying and Tracking Salmon in the Sea

E.C.E. Potter and A. Moore

### Automatic Salmon Counting Technologies – A Contemporary Review

G.A. Fewings

### Salmon in the Dee Catchment: The Scientific Basis for Management

A. Youngson

(Proceedings of a one day meeting held at Glen Tanar House, 13 October 1994)

### Spring Salmon

A. Youngson

### Enhancement of Spring Salmon

edited by D. Mills

(Proceedings of a one day Conference held at the Linnean Society of London 26 January 1996)

### Water Quality for Salmon and Trout

J. Solbé

(second, revised edition)

### Salmon Fisheries in England & Wales

W. Ayton

### The Industrial Fishery for Sandeels

A.D. Hawkins, J. Christie and K. Coull

### The Interpretation of Rod & Net Catch Data

edited by R.G.J. Shelton

(Proceedings of a Workshop held at the Centre for Environment, fisheries and Aquaculture Science, Lowestoft November 2001)

### Predation of Migratory Salmonids

(Assessment of a Workshop held in Edinburgh on 11-12 April 2000, made by the Chairman, Professor Fred Last OBE)

## Trust Shop

Books (a percentage of the sales of books and the DVD come to the AST)

### The Salmon Rivers of the North

Highlands and Outer Hebrides (signed)

1st Reprint. Andrew Graham-Stewart

£35.00



# Scalereadings

Some shop items are offered at further discount prices at game fairs.

To order, contact  
Jenny at the Trust's office:  
Moulin, Pitlochry PH16 5JQ  
Telephone: 01796 473439  
Fax: 01796 473554  
e-mail: [jenny@atlanticsalmontrust.org](mailto:jenny@atlanticsalmontrust.org)

**The Longshoreman** (*signed*)  
Richard Shelton £12.00

#### McSalar

Michael Martin £4.00

**Richard Waddington 1910-1999**  
**Autobiography**

Richard Waddington £18.00

**Upon a River Bank** (*signed*)  
Derek Mills £9.95

**Occasional Salmon**  
Neon Reynolds £9.50

**The Fox and the Orchid**  
Robin Page £5.00

**Atlantic Salmon –**  
**an Illustrated Natural History**  
Roderick Sutterby and  
Dr Malcolm Greenhalgh £25.00

**Trout, Salmon and the Evening Rise.**  
**The Barometric Breakthrough**

Andrew. Bett £19.95

#### DVDs:

DVD – 'Atlantic Salmon, a life on the edge' (incl. p&p) £18.00

DVD – 'At Sea with the Atlantic Salmon'  
(incl. p&p) £10

**AST TIES** (dark or mid blue)  
Silk £10.00 Polyester £5.00

#### Posters and Postcards

"Salmon Recognition"  
Posters £3.00

Postcards (A5 size) 50 pence  
"Life Cycle of Atlantic Salmon"  
Posters £3.00

Postcards (A5 size) 50 pence  
"Threats to Salmon"  
Posters £3.00

#### Poems

"The Best Worker in Europe"  
Signed by Ted Hughes, with drawings by  
Charles Jardine £100.00 (incl p&p)

"Lines from Euston  
(by one who is not going)"  
by A.M. Harbord £5.00 (incl p&p)

#### Prints

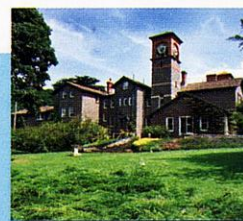
"The Junction Pool, River Tweed"  
by Shirley Carnt £20.00

Extra copies of the AST's Journal,  
leaflets and car stickers are  
available free



  
**Gliffaes**  
COUNTRY HOUSE HOTEL

THERE IS MORE TO YOUR FISHING TRIP THAN JUST FISHING



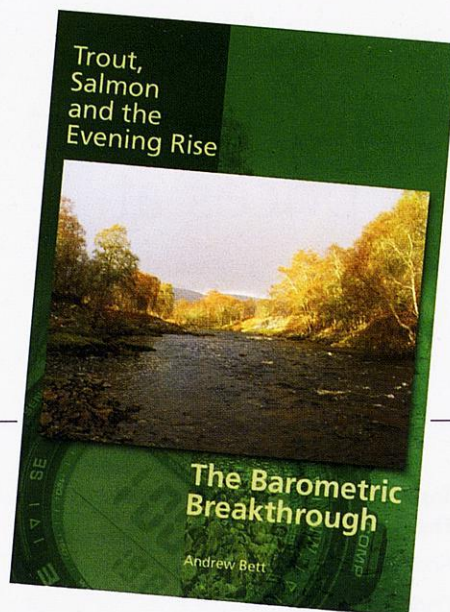
**At Gliffaes Country House Hotel we have a lot more to offer than just 2.5 miles of wild brown trout and salmon fishing on the river Usk.**

Think comfortable rooms, 33 acres of stunning grounds, good locally sourced food, a varied and reasonably priced winelist, almost limitless walking in the Brecon Beacons and that special something that has kept our guests coming back for more for over fifty-five years.

Gliffaes Hotel - Crickhowell - Powys - NP8 1RH - 01874 730 371- [www.gliffaes.com](http://www.gliffaes.com)



# Book & DVD Reviews



## Trout, Salmon and the Evening Rise. The Barometric Breakthrough.

Andrew Bett

Salar Pursuits

184pp

110 colour illustrations

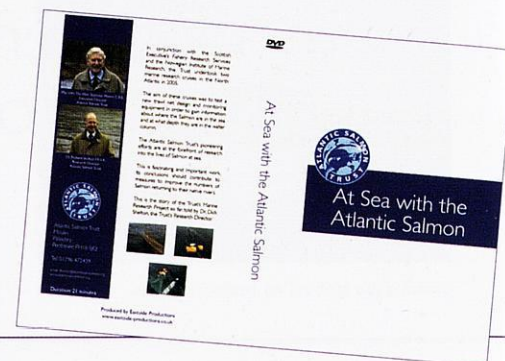
ISBN 0 9552418 0 4 £19.95

One of the first things that strikes a marine biologist when, on a summer day, he puts his face-masked head into a typical Scottish salmon river is just how barren it all is. No swirling plankton, no jellyfish, indeed very few real fish sport in mid-water. No starfish or sea urchin crawls over the river bed and, below its surface, but few bivalve molluscs and a handful of worms remind him of the wealth of creatures which enrich such prolific fish feeding grounds as the Dogger Bank. The fact is that life on earth began in the sea, a well-buffered solution of salts in which the nucleic and amino acids on which life depends are quite at home. Freshwater and terrestrial animals cope by carrying their own diluted sea with them in the blood and other body fluids which bathe their tissues. Maintaining adequate internal salt concentrations in a salt-poor environment which constantly threatens to dilute it is a specialised and often energy-consuming business for the creatures that have to put up with it. Little wonder then that young salmon and sea trout lead such frugal lives, fattening as best they can mainly on drifting aquatic and terrestrial insects (especially important for trout) blown in from the surrounding countryside.

Aquatic insects are at their most vulnerable when, as nymphs, they swim up to the surface to moult and begin their brief terrestrial lives as flying duns and

reproductively mature, adults. By undertaking this dangerous activity in co-ordinated "hatches" and during the "evening rise" the ascending insects maximise their individual chances of survival by saturating the capacity of the limited number of fishy mouths available to snap them up. They also improve their chances of meeting later as male and female adults, plighting their troth with damask wings in balmy air heavy with pheromones and insect romance! It is Andrew Bett's thesis that hatches and the evening rise are responses to small rises in atmospheric pressure to which both the nymphs and their salmonid predators are sensitive. Not only that, but he surmises that adult salmon and sea trout recall their learned association between increases in barometric pressure and the availability of food when they are back in the river and express this memory in the attenuated feeding behaviour that leads these fishes to take a lure. Andrew Bett supports his hypothesis with well-focused citation of the scientific literature and a wealth of direct and indirect observational evidence, not the least of which is his personal experience as an outstandingly skilled salmon fisher: He would be the first to agree that he does not have all the pieces of the jigsaw. However, he has certainly convinced me and, were I ever to take up salmon fishing seriously, I would not leave the house without consulting the particular brand of barometric watch that has brought Andrew such success!

Dick Shelton



## At Sea with the Atlantic Salmon

Narrated by Dr. Richard Shelton

Published by AST. 21 minutes. £10

First I should declare an interest. We in NASCO and its member Parties spent many months in setting out an international research programme, called 'Salmon at Sea' or SALSEA, to answer the question "Why is the marine mortality of salmon higher than in the past?" The truth is that marine fisheries have been closed or very strictly controlled, habitat is being improved and catch and release widely adopted yet the stocks have not recovered their former abundance. So we launched the SALSEA programme, a comprehensive mix of freshwater, estuarine, coastal and offshore research and identified offshore issues to improve understanding of the distribution and migration of salmon at sea as the priority. To my great admiration, the Atlantic Salmon Trust, in conjunction with the Institute of Marine Research, Bergen, and the Scottish Executive were first off the mark with financial and expert support for the SALSEA programme. This DVD tells the story of the initial stages of the AST work trialling new pelagic trail gear which allows salmon post-smolts to be identified without capture. It is told with clarity and with excellent visuals of what the work involves at sea. It is easy to appreciate, when you have seen this, how difficult and costly such sea-going research is. If you want to understand the magnitude of the task and the central importance of it in salmon conservation, then I do commend this DVD to you. I hope that this will encourage others in the private and public sectors to join us in supporting the SALSEA programme.

Malcolm Windsor  
Secretary, NASCO



# Fundraising

Record funding and direct support initiatives in 2005-06, but we urgently need to increase our project funding and we need YOUR help!!

Neil McKerrow, Deputy Director

## OUR CASE FOR SUPPORT

- 1 **The Atlantic Salmon Trust** is the only UK charitable body exclusively devoted to research into and restoration of wild salmon and sea trout stocks on a national and international basis.
- 2 **The Atlantic Salmon Trust** liaises, supports, and provides advice on an independent, scientific and practical basis to governments, national authorities, wildlife and environmental organisations, as well as stillwater and river proprietors, managers and biologists.
- 3 **The Atlantic Salmon Trust** funds numerous research projects in the UK and Ireland, and in international marine waters. It participates in international initiatives and research.
- 4 **More funding** is desperately needed now to support worthwhile marine and freshwater projects. These are reviewed by the Trust's Honorary Scientific Advisory Panel, whose expertise is widely acknowledged.

**WE HAVE INCREASED OUR RESEARCH GRANTS FOURFOLD THIS PAST YEAR, BUT THERE ARE MANY MORE WORTHWHILE PROJECTS FOR WHICH FUNDS ARE REQUIRED!**

## OUR TRACK RECORD

The Journal records the variety of current project initiatives. One of the most significant is the groundbreaking Marine Research into migratory salmon and their survival rates at sea.

Over £130,000 has been expended in direct and indirect assistance this past year – over double the previous levels of investment/disbursement.

To restore the salmon and sea trout stocks, we rely primarily on the support and generosity of individuals, trust funds, and voluntary bodies.

Full acknowledgement of significant donations and sponsorship can be given.

## OVERVIEW Income and Expenditure 2005-2006

Our Financial Accounts for the year ended 5 April 2006 are currently being audited.

A more detailed analysis will be available for the Winter Journal. You are welcome to request a copy of the Company Report and Accounts which can be sent as soon as they have been approved and adopted by the Board.

## Our Sources of Income

Approximately two thirds of our annual income derives from Donations, Covenants and Gift Aid, with the balance being equally shared between investment income and fundraising activities undertaken by the Trust – principally the highly successful Annual Postal Auction.

## Our Expenditures

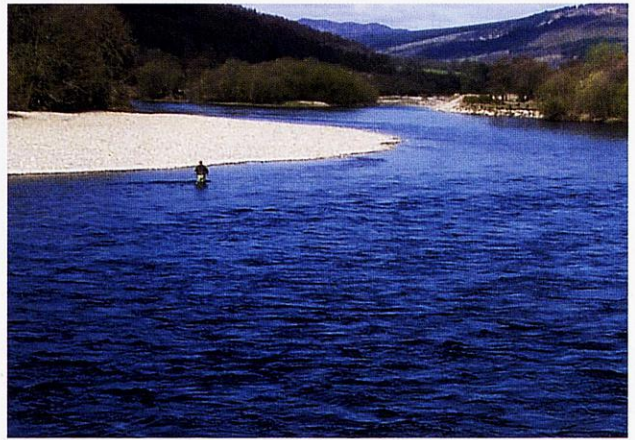
Administrative costs are tightly controlled. A significant proportion of staff time is spent representing the interests of the Trust at conferences, exhibitions, game fairs, in committee work or in the field supporting project work and giving advice.

Over half of the annual expenditure has been spent on the major Marine Research initiative, on other research project expenditure of which details are provided below, and on the work of the Trust's Biologist in the field.

The Trust spent or disbursed funds in excess of income in the year just ended. This reflected the Board's confidence in the essential merits of its research and restoration activities, and its ability to harness increased funding to sustain these efforts in the future.



# Fundraising



Has **he** supported the AST? **Have you?**

## YOUR SUPPORT – PLEASE!

You can help us by making a Gift Aid Donation, no matter how small. Some examples of current costs and projects are given below:

£10,000 – major research project on salmon genetics or predator/wild fish interaction

£5,000 – research project on river restoration or fish farming impact on water system

£1000 – practical advice or training by the Trust's Field and Research Biologist over 2/3 days

£300 – one day's practical advice on river bank management

## AS A SUPPORTER

You can help us in one of a variety of ways:

### Make a Donation by Gift Aid

The form is on the facing page. The Trust can reclaim Income Tax. Higher Rate Tax Payers can obtain the benefit of additional relief.

Donations can be made by single donation or by Banker's Order.

### Make a gift of shares to the Trust

You can claim Income Tax relief on their value, and will be exempt from any Capital Gains Tax charges.

### Sponsor the Trust or a specific project

These currently include:

Cumberland Eden Project

Moray Firth Seal Management Project

Shieldaig Seatrout and Seal Project

Marine Research into Salmon at Sea

From Improvement Project

Other potential projects are currently under review.

For fuller details of projects please call Seymour Monro, Dick Shelton or Neil McKerrow.

## Make a legacy to the Trust

Giving a Legacy – Your Will could express a donation in various ways, eg. a gift of a specific sum of money, a gift of specific assets (such as shares), or a gift of all or a specific part of the balance of your estate once all other legacies (eg. to the family) are taken account of. This is known as the 'residue'.

Bequests to charities are deducted from the total value of the estate before the calculation of any inheritance tax therefore reducing the total inheritance tax payable.

If you would like to leave a legacy to AST by changing your Will please consult your legal and financial advisors.

Some families invite friends to leave the Trust donations in memory.

If you would like to leave a legacy to the Atlantic Salmon Trust please contact our Financial Director, Neil McKerrow, who will be very pleased to advise further.

Being a Supporter will secure you a copy of the Journal which is produced twice a year, as well as access to publications and research findings. Above all, you can be sure in the knowledge that you are assisting a most worthwhile cause.

## PLEASE DONATE – AND ENCOURAGE OTHERS TO DO SO!!

Leaflets and other publications can be supplied for fishing huts and beats!!

## Advertisements

If you would like to advertise in the next issue of the Journal, please contact Neil or Jenny at Moulin by Telephone on 01796 473439 or by Fax: 01796 473554 or email: [jenny@atlanticsalmontrust.org](mailto:jenny@atlanticsalmontrust.org) by 1st December. Quarter, Half and Full page sizes available.



# Gift Aid Declaration and Banker's Order Form

## THE ATLANTIC SALMON TRUST – GIFT AID DECLARATION

PLEASE COMPLETE IN BLOCK CAPITALS, EXCEPT FOR SIGNATURES

|   |           |         |
|---|-----------|---------|
| Title   | Forenames | Surname |
| Address   |           |         |
|   |           |         |
| Post Code   | e-mail    |         |
| I would like the Atlantic Salmon Trust (Registered Charity No 252742) to treat as a Gift Aid Donation this and all donations I make from the date of this declaration until I notify the Trust otherwise. |           |         |
| Signature   | Date      |         |

### EXPLANATORY NOTES:

- You must be a taxpayer to make a valid Gift. The total of income tax and capital gains tax payable by you in each year must be at least equal to the tax recoverable on all your Gifts.
- For every £1 donated under Gift Aid, the Atlantic Salmon Trust can recover a further 28p.
- Higher rate tax relief can be claimed by you on Gift Aid Donations.
- A Declaration can be cancelled at any time by notifying us. It must cease if you no longer pay tax.

- A. Cash donation. I enclose a cheque in the sum of £ \_\_\_\_\_ made payable to the Atlantic Salmon Trust
- B. To make a series of donations, which will be of great help in allowing the Trust to budget for work in future years, please complete the Banker's Order below.

### BANKER'S ORDER

|  |              |           |
|--|--------------|-----------|
| To The Manager   | Bank Plc     | Sort Code |
| Branch Address   |              |           |
|  |              |           |
| Post Code  |              |           |
| Please pay to BANK of SCOTLAND, 76 Atholl Road, Pitlochry PH16 5BW (80-09-41) for the credit of          |              |           |
| THE ATLANTIC SALMON TRUST LIMITED (Account No 00890858) the sum of £ _____ ( _____ pounds)               |              |           |
| on the _____ day of _____ 20____ and a like amount on the same day each month/quarter/half year/year     |              |           |
| (delete as appropriate) (a) until I give you notice in writing OR (b) for a total period of _____ years. |              |           |
| Account to be debited A/c No   | Account name |           |
|  |              |           |
| Signed   | Date         |           |
|  |              |           |
| Full Name  | A/c No       |           |
|  |              |           |
| Address  |              |           |
|  |              |           |
| Post Code  |              |           |

PLEASE RETURN THIS COMPLETE DOCUMENT TO THE ATLANTIC SALMON TRUST, MOULIN, PITLOCHRY, PERTHSHIRE, PH16 5JQ





## ATLANTIC SALMON TRUST

### Patron:

HRH The Prince of Wales

### President:

Major General The Duke of Westminster

### Vice Presidents:

The Lord Nickson

The Lord Moran

Rear Admiral John Mackenzie

Major General John Hopkinson

Colonel Bill Bewsher

## BOARD OF DIRECTORS

### Chairman:

Sir Robert Clerk

### Vice Chairman:

The Lord Guernsey

Mr James Carr

Mrs Susan Garrett-Cox

Mr John Gray

Mrs Elizabeth Macdonald Buchanan

Mr Algernon Percy

Mr Robert Scott-Dempster

### Research Director:

Dr Richard Shelton

### Executive Director:

Major General Seymour Monro

### Deputy Director and Company Secretary:

Mr Neil McKerrow

### Deputy Director:

Mr Timothy Hoggarth

Mr Ivor Llewelyn (from 1 September)

## HONORARY SCIENTIFIC ADVISORY PANEL (HSAP)

R.G.J. Shelton, B.Sc., Ph.D., F.R.S.A.  
(Chairman)

D. Bright, B.Sc., Ph.D., C.Biol., M.I.Biol.

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

J. Solbé, M.B.E., D.Sc., C.Biol., F.I.Biol.,  
F.I.F.M.

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

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

W. Turrell, M.Sc., Ph.D, D.I.C., F.R.M.S.

J.L. Webster, B.Sc., Ph.D. (Scottish Salmon  
Producer's Organisation)

K. Whelan, B.Sc., Ph.D. (The Marine  
Institute of Ireland and President,  
NASCO)

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

### Observers:

N. Milner, B.Sc., Ph.D.

(Environment Agency)

J. Armstrong, B.Sc., Ph.D.

(FRS, Freshwater Laboratory)

A. Moore, B.Sc., Ph.D.

(Centre for Environment,  
Fisheries and Aquaculture Science)

P. Hutchinson, B.Sc., Ph.D (NASCO)

N. Sotherton, B.Sc., Ph.D (GCT)

## REPRESENTATIVES OF OTHER ORGANISATIONS

Atlantic Salmon Federation (ASF)  
(Canada)

Atlantic Salmon Federation (ASF) (USA)

Association Internationale de Défense du  
Saumon Atlantique (AIDSA) (France)

Association of Salmon Fishery Boards  
(ASFB)

Association of Rivers Trusts (ART)

Countryside Alliance

Fishmongers' Company

Game Conservancy Trust (GCT)

North Atlantic Salmon Conservation  
Organisation (NASCO)

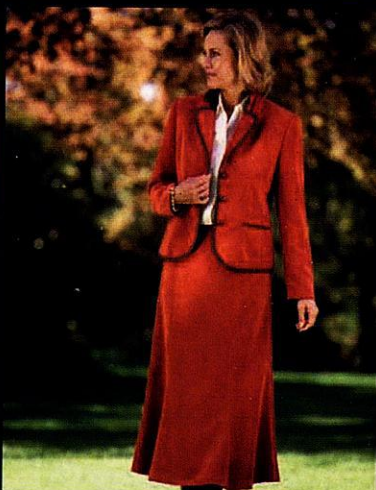
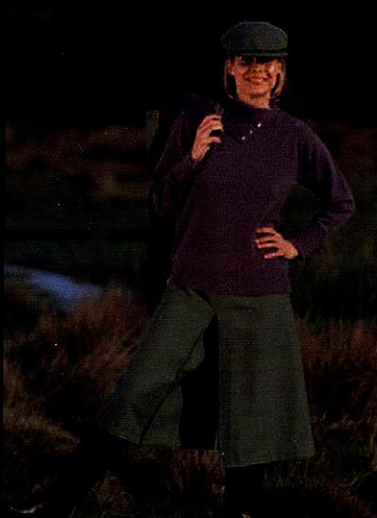
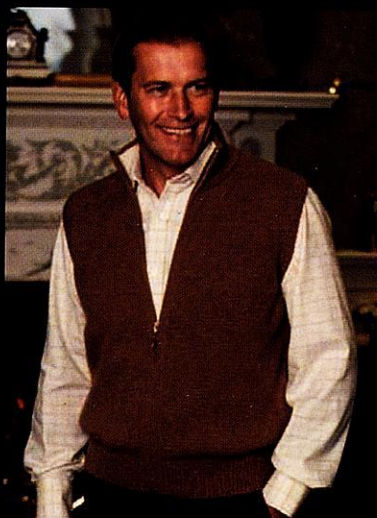
North Atlantic Salmon Fund (NASF) (UK)


Salmon & Trout Association (S&TA)

As at 1st June 2006

The Journal is designed by: Whitespace, Edinburgh and printed by: Woods of Perth Ltd.





  
 THE HOUSE OF  
**BRUAR**  
 Established 1993

## THE HOME OF COUNTRY CLOTHING

**The House of Bruar is Scotland's most prestigious country store.**

It includes eight Mens and Ladies Country Clothing Halls, a ladies Shoe and Handbag department, Scotland's largest Cashmere Hall, a comprehensive Foodhall and Delicatessen promoting the best of British produce and a 5,000 sq ft restaurant with covered outdoor eating area.

The recently opened 10,000sq ft department dedicated to Country Living is full of aspirational ideas for the home and garden and is an exciting addition to the Country Gifts department.

The recently opened Gallery is the most comprehensive and important collection of contemporary rural art ever exhibited in Scotland.

Our latest mail order catalogue is now available on request **The House of Bruar By Blair Atholl Perthshire PH18 5TW**  
 Telephone 01796 483236 Facsimile 01796 483390 Email [office@houseofbruar.com](mailto:office@houseofbruar.com) [www.houseofbruar.com](http://www.houseofbruar.com)





Atlantic Salmon Trust, Moulin, Pitlochry, Perthshire PH16 5JQ Tel: 01796 473439 Fax: 01796 473554  
email: [director@atlanticsalmontrust.org](mailto:director@atlanticsalmontrust.org) [www.atlanticsalmontrust.org](http://www.atlanticsalmontrust.org) Registered Charity No. 252742

