



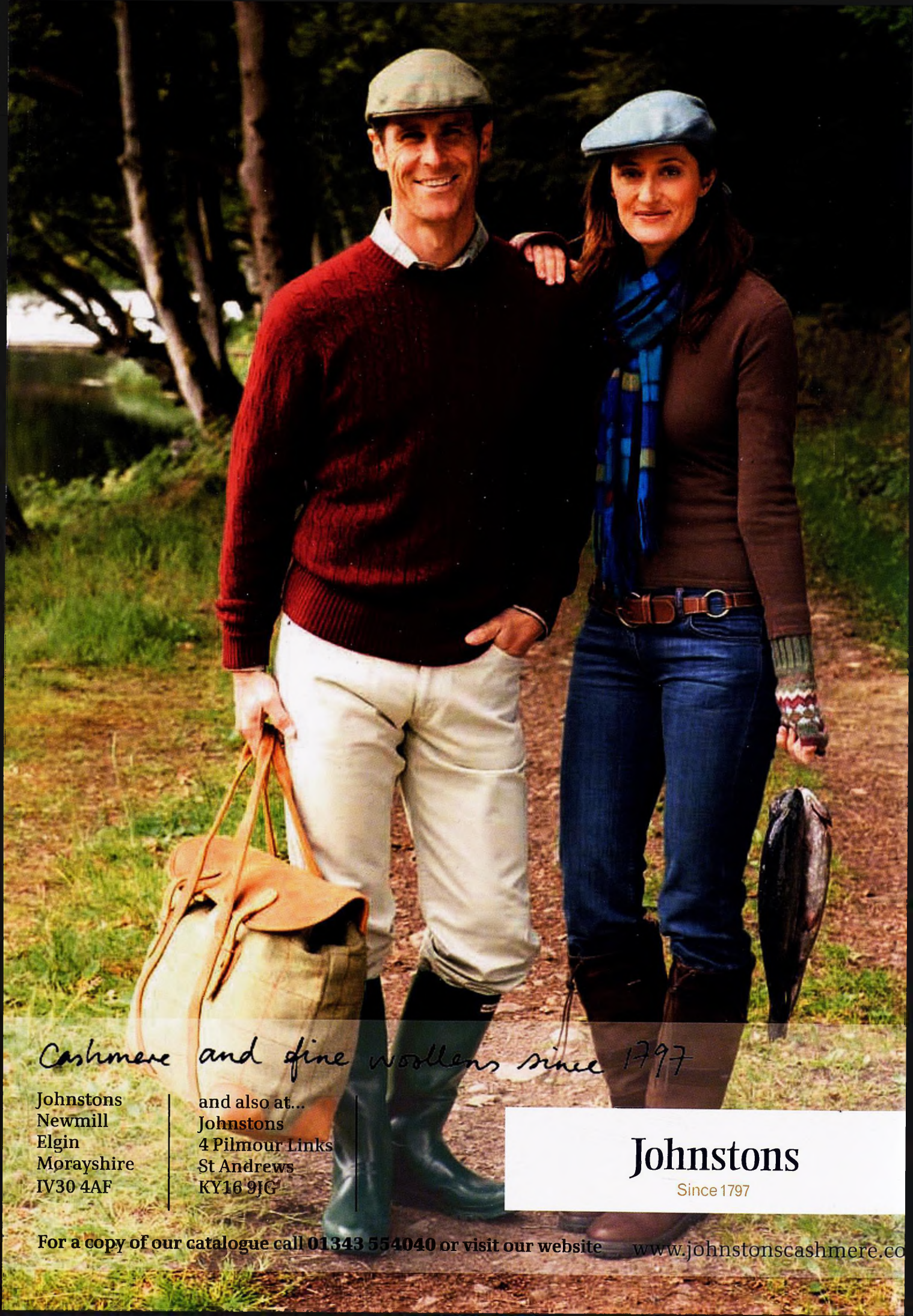
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**Atlantic Salmon Trust**  
Winter Journal 2008/2009



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## 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
- The Trust works for the conservation and restoration of wild salmon and sea trout stocks to a level which allows sustainable exploitation
- The Trust is an independent, registered Charity, with a small staff, which receives no Government funding

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HRH The Prince of Wales

### *President*

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[www.atlanticsalmontrust.org](http://www.atlanticsalmontrust.org)

Registered Charity Nos. 252742 (E) SCO37902 (S)

## 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 mixed stocks exploitation
- Reduction of the impacts of aquaculture on wild salmon and sea trout
- Reduction of mammal and bird predation
- Improvement of river habitats and water quality
- Improvement of the AST's education, information and communications roles

## 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

## USEFUL DATES 2009

### JULY

3-5 The Scottish Game Fair, Scone

24-26 CLA Game Fair, Belvoir Castle

### AUGUST

7 and 8 Highland Field Sports Fair, Moy

### DECEMBER

9 AGM & Members' Meeting,  
Fishmongers' Hall





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## IMMEDIATE BAN ON SALES OF ROD-CAUGHT SALMON AND SEATROUT IN ENGLAND AND WALES: OBLIGATORY TAGGING OF COMMERCIALY CAUGHT FISH

The AST is delighted with the news that anglers in England and Wales will no longer be able to sell salmon or sea trout caught on rod and line, and that all commercially caught fish will have to be tagged by netmen to make them legally saleable. The new Environment Agency byelaws for England and Wales came into force on January 31st. This legislation brings England and Wales in line with Scottish law, which banned the sale of rod caught salmon and sea trout in 2007.

The decision to include carcass tagging of commercially caught fish in the legislation is a radical and positive step. The AST will work to persuade Scottish ministers that carcass-tagging legislation is introduced quickly to bring Scotland into line with the legislation in Ireland and the rest of the United Kingdom.



### EDITORIAL

In the Summer Journal 2008 I made the point that one of the main roles of the AST is to communicate to the public the purpose and results of research on the lives of salmon and sea trout. I argued that salmonids can engage people in special ways, and make us feel better if we know they are present in our rivers, brooks and burns. I remember a December after-church gathering one Sunday at Widecombe-in-the-Moor in the early 1960s, attracted to a bridge over the East Webburn, a tributary of the Dart, to watch salmon (or large sea trout) in the stream below. Few of those people were anglers, but they were clearly fascinated and moved by the sight of the spawning fish in the last stage of their migration home to their native waters. Salmon can thus appeal to our emotions directly, but to convince people that research, such as the AST-supported SALSEA project, is relevant, we need to be imaginative in the way we present both its objectives and findings.

The eminent physicist, Erwin Schrödinger, complained that scientific research that is too specialised and fails to engage the public, puts the future of science in jeopardy. He argued that specialisation is an unavoidable consequence of human progress, but that without its context and an understanding of its wider purpose, it has little meaning for the non-scientist public, and ultimately it is they who sustain research. Schrödinger was not belittling specialised research, but he was exhorting scientists involved in it to be more communicative.

The AST's journal attempts to bridge the gap between necessary detailed research and the motivation, probably shared by most of its readers, to do something practical to ensure the future of salmon and sea trout. This means it must steer a course between good science and popular appeal. In this edition are articles, exemplified by the contrasting approaches of Nigel Milner and Drew Jamieson, which I hope will appeal to both scientists and laymen.

I hope you enjoy this Journal, whatever your motive is for reading it. The next edition will be published in June 2009 and I welcome your suggestions for it. Please tell me what you think. Are we getting the balance right? Do you have ideas for improving our appeal to a wider public?

In the meantime, from the AST team, I wish you a very happy 2009.

Tony Andrews, Executive Director

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

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#### JOURNAL DATES

Summer Edition:  
Contributions by 1st May  
Published late June

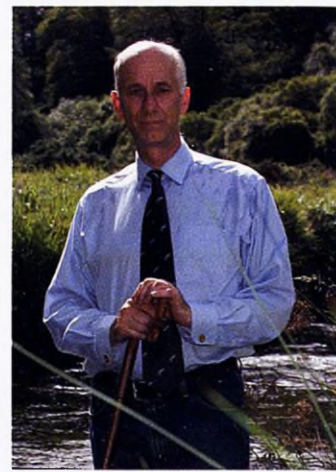
Winter Edition:  
Contributions by 1st December  
Published late January

#### Photographs:

Front cover: Spring salmon country; the Tay at Dalmarnock  
Photograph: Kacper Kwik, Chef at East Haugh House Hotel, Pitlochry  
Back cover: 'Not a thin grilse' from the River Thurso in 2007  
Photograph: Tony Andrews  
Other photographs: Andrew Graham-Stewart and John Webb



# From the Chairman



Robert Clerk

We live in interesting times and the Atlantic Salmon Trust will not be immune from the implications of the maelstrom that has struck the world's economies since our last Summer Journal was published. In turn the dramatic events of recent months will not be good for salmon and sea trout either since fisheries research and management have an appetite for money and, so far as the Trust is concerned, we are all too well aware that fundraising is not going to be easy in the coming year and probably beyond.

It has been a successful year for the Atlantic Salmon Trust, one in which Tony Andrews, our new Executive Director, has travelled extensively both north and south of the border, Ireland and overseas, making himself known to Civil Servants, Fishery Trusts, angling organisations and many others with whom we have always kept in close contact. Already well known in the rural forum, Tony has brought to us a wealth of experience in promoting fieldsports and has an infectious enthusiasm for the improvement of salmon and in particular sea trout stocks.

A new man at the helm generally brings new ideas and so it comes as no surprise that we have embarked upon a programme to freshen up and modernise the Trust's published material, our website and our presentation at Game Fairs and

similar events. The first evidence of this will be seen in the brochure for our annual fishing auction. This year we have joined forces with the Rivers and Fisheries Trusts of Scotland and the Association of Rivers Trusts south of the border to offer what must be the largest selection of fishing and other lots ever put forward by the Trust and most probably by any similar organisation.

The proceeds from the annual auction provide a significant proportion of our income and we are most grateful both to those who so generously support us in giving donations and also those who bid for the fishing and other items on offer.

As we have said for a number of years, the fundamental cause of the relative scarcity in recent years of both salmon and sea trout in UK rivers, appears almost certainly to be the result of the disappointingly high levels of marine mortality experienced by both species. For these reasons the Trust continues to support SALSEA-Merge, the North East Atlantic component of the international SALSEA research programme which seeks to define the place of salmon in the changing eco-system of the North Atlantic Ocean. In the coming year we are also particularly keen to support research that will benefit sea trout. It is of great concern that throughout the UK there have been reports of very poor runs of

sea trout, fish which so often are overlooked, being treated as the poor relations of the salmon and about which too little is known.

In the next year or two it seems inevitable that we will have to tighten our belts and be very selective in choosing the research projects we can afford to support. It will be a time of economising in our cost of administration wherever we can and saving money by working in close association with like-minded organisations so as to avoid duplication of effort and expenditure.

We will not, however, compromise in our efforts to ensure that the Atlantic Salmon Trust retains its position as a highly respected UK-based, but international organisation, which stands for the greater understanding and better management of invaluable salmon and sea trout stocks. In the meetings of its Honorary Scientific Advisory Panel the Trust brings together scientists of international reputation and it is upon their advice and guidance, which we value so much, that we largely decide how the funds we give to promote research should be directed, and which in our last financial year amounted to approximately £100,000.



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# Director's Report



Tony Andrews, Executive Director



HRH The Duke of Edinburgh discussing salmon at sea with Tony Andrews at the CLA Game Fair 2008.

## International – Salmon at Sea – the SALSEA Project

The Atlantic Salmon Trust's support for SALSEA-Merge is our main commitment. The North Atlantic Salmon Conservation Organisation's (NASCO) research project aims to find out how changes in the marine environment continue to affect the abundance of salmon returning to their rivers of origin. The project co-ordinator, Jens Christian Holst, gives an account of the 2008 data collection in this Journal, and some indications of the direction of future work. The launch of SALSEA-Merge took place in Ireland during the summer and was attended by the AST.

The three-year SALSEA-Merge project, which concentrates on the North East sector of the Atlantic Ocean, successfully completed the first phase of mapping, especially the routes taken by post-smolts and their dispersal into the traditional feeding areas east of Iceland.

The combination of better understanding of the lives of salmon at sea with salmon genetics mapping from our rivers, to both of which the AST contributes funds, gives fisheries biologists and managers new data for their management decisions. In some cases this information will provide details of specific salmon populations, including run timings, spawning and juvenile habitat locations. But it would be a mistake at this point to think that genetic mapping will give us answers to all our questions about salmon survival. Initially at least, the SALSEA-Merge and genetic mapping projects will provide us with broad indicators, regional rather than location-specific.

As I said in the Summer 2008 Journal, these initiatives are at the cutting edge of research into the life story of the Atlantic salmon. This extension of our knowledge in itself is important and justifiable in terms of the AST's main objectives. Much more importantly, in my view, is the enhanced

capacity this new data will give us to manage salmon stocks more effectively. As the knowledge grows, there is a real likelihood that our management methods will become more sophisticated. Already we are seeing the emphasis on population-based management, supporting our better understanding of the genetic structure of our salmon stocks.

An important issue for salmon conservation organisations is how governments of the Atlantic salmon countries keep pace with this new knowledge. Ideally, their policies should respond to the new science to enable us to manage our salmon stocks sensitively and effectively. In this context the application of the precautionary principle has never been more valid.

## Salmon Aquaculture

The AST is closely involved in discussions with the Scottish Government, salmon farming and wild fish groups to try to resolve the problems associated with salmon aquaculture on the Scottish west



Dr Ken Whelan and the AST's Ivor Llewelyn at the SALSEA-Merge launch.

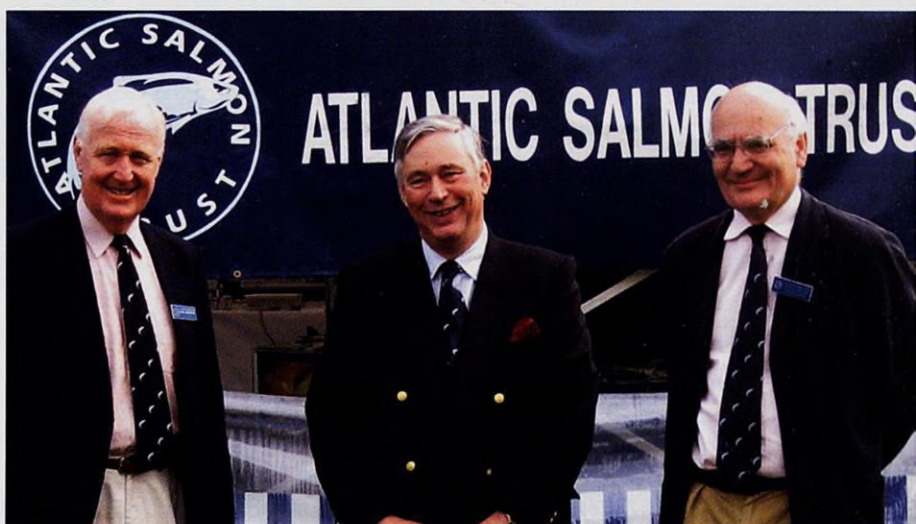


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Fiona Campbell, ASFB/RAFTS, Capital Business Centre, 24 Canning Street, Edinburgh EH3 8EG.  
Tel: 0131 272 2797. Email: [fionaasfbrafts@btconnect.com](mailto:fionaasfbrafts@btconnect.com)

coast and in the Scottish islands. We recognise that the main factor affecting the catastrophic decline of sea trout in these areas is the impact of salmon aquaculture. This is the view of most fisheries biologists, and both publicly and privately of a number of salmon farmers. The AST recognises the polarised nature of the argument, and we are determined to keep the dialogue open on the grounds that salmon aquaculture is here to stay and our job is to ensure that it is sustainable, which in some cases it is plainly not at present.

The Tripartite Working Group (TWG) over ten years has established a dialogue between farm and wild fish interests, which in some cases has led to better management. But problems in certain key locations remain, such as in Loch Ewe and Loch Ailort (and others). While these 'hot spots' continue to be perceived by the wild fish community as obstructing restoration of sea trout and salmon stocks in those areas, there is unlikely to be any immediate resolution of the conflict. It is important that the focus of the salmon aquaculture group is now directed towards these most damaging locations, perhaps with an enforced trial period of set-aside to monitor the effect of this measure on wild fish stocks. One of the difficulties of working in an environment where views are so entrenched is that those Area Management Agreements (AMAs) which have been successful are not properly recognised for what they have achieved. The context of this discussion is the Government's desire to see the two industries existing sustainably together. That can only happen when the wild fish community feels that disease, escapes and



*The AST team at Blenheim: Neil McKerrrow, Tony Andrews and Ivor Llewelyn at the CLA Game fair 2008.*

pollution are all under control. Until that confidence becomes evident, the salmon aquaculture issue will continue to be contentious.

### **Mixed Stocks Exploitation**

NASCO is committed to the phase-out of coastal mixed stocks fisheries (MSF) and is closely monitoring each of its signatory states on their policies and actions to end this form of exploitation. The 2008 NASCO conference agreed to extend closure of these fisheries on the grounds that killing salmon from more than one river, without knowing the status of populations in those rivers, is bad management practice. The AST has long supported this principle, and our involvement in the Government-led discussion group on MSF provides the opportunity to examine all aspects of this issue. As with the salmon aquaculture conflict, positions are entrenched. The coastal mixed stocks netting interests feel beleaguered by what

they see as the relentless campaign to remove their livelihoods, while fishery managers feel that it is impossible to manage salmon stocks effectively whilst this form of exploitation continues. The group's meetings are private in order to encourage open discussion, and ultimately resolution. The decline of sea trout abundance, as shown in the FRS 2007 statistical report, may be included in the discussion on the grounds that coastal nets in certain locations are killing significant numbers of these fish. I hope to be able to report on the outcomes of this group in the next Journal.

### **Sea Trout**

The meeting of the AST's Scientific Panel (HSAP) in April will be extended by one day to include a seminar on the state of sea trout in the UK and Ireland, to scope existing research and to explore ideas for collaboration. I shall report on the outcome of this meeting in the next Journal.



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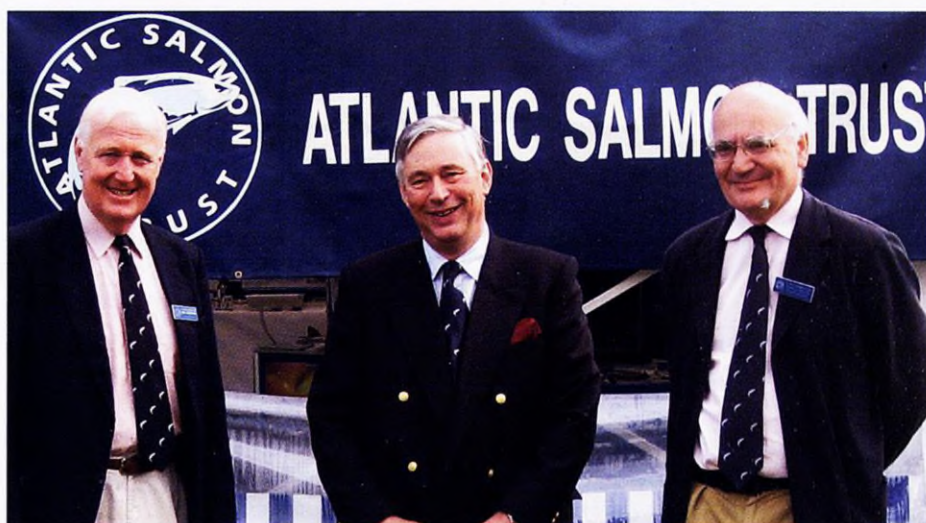


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**Ivor Llewelyn, Deputy Director, England, Wales and Ireland**

## **Future Legislation**

The previous edition of the Journal reported that Government had included provisions on salmon and freshwater fisheries in its draft Marine Bill, and explained the main changes it would make to legislation in England and Wales. The Trust is delighted that these provisions remain part of the Marine Bill which is now before Parliament; it received its second reading in the House of Lords on 15 December.

Two issues in the draft Bill were of particular concern to the Trust. Under current legislation fisheries owners whose fishery is affected by certain bye-law changes are entitled to compensation. We were concerned that this would make the Environment Agency reluctant to use the new powers it will acquire to regulate fixed engines, and argued that the law should be changed. The Bill now makes compensation for bye-law changes optional, and we have made it clear that we do not think that compensation should be paid for measures necessary to conserve salmon and sea trout stocks.

The other issue concerns estuaries and coastal waters. Currently, the Environment Agency is responsible for regulating sea fisheries in most of the estuaries of major salmon rivers. This enables it to control fishing for sea fish that deliberately or accidentally take salmonids. The draft Bill gave responsibility for regulating sea fisheries in all coastal waters, including estuaries, to the the proposed new Inshore Fisheries and Conservation Authorities. Despite pressure from the Trust and others

the Bill retains these changes, and during its passage through Parliament we will be seeking assurances from the Government that the new arrangements will provide adequate protection for salmon and sea trout in coastal waters.

Alongside the Marine Bill, DEFRA, the Welsh Assembly Government and the Environment Agency are working on a wider programme of legislative change, which the Agency is calling Fish for the Future. Among other things, this comprises the proposed ban on the sale of rod-caught salmon and sea trout, carcase tagging for net-caught fish and the renewal of the spring salmon byelaws (which are still awaiting confirmation by Ministers); new rules to enable the Agency to reduce barriers to fish migration; new rules on moving and stocking fish of all kinds; a variety of measures implementing provisions in the Marine Bill once it becomes law. We will be fully involved in the consultations and discussions on all these.

## **Wareham**

For many years the river laboratory at East Stoke, near Wareham has monitored the River Frome and it provides valuable facilities for research into salmon and sea trout. It is currently funded by a Government research institute, the Centre for Ecology and Hydrology (CEH), but CEH has decided to stop funding salmon research and without alternative funding the laboratory would have had to close next March. Fortunately, the Game and Wildlife Conservation Trust has stepped in, and will be taking over the laboratory and

its staff. In the meantime, we have been lobbying DEFRA and the Environment Agency to provide increased funding for research at Wareham, and the AST has also agreed to provide a grant of £10,000 next year to the GWCT to help it meet the additional costs involved.

## **Severn Barrage**

The Trust is deeply concerned about the potentially devastating effect a Severn barrage would have on salmon stocks in the Severn, Wye and Usk. While we accept that there is a sound case for using the tidal power in the Severn estuary to generate renewable energy, we believe that this should not be at the expense of migrating salmon and sea trout and of other wildlife. There are a number of possible alternatives to a conventional barrage. One example is a proposal for a 'tidal reef' a much lower barrage utilising low head turbines. This would generate electricity for longer each day, as it would utilise tidal flows in both directions, and interfere less with natural tide flows. Such a scheme could produce more electricity than a conventional barrage at lower cost with a reduced environmental impact (although its effect on salmon and sea trout needs further investigation).

We have joined a wide range of other environmental organisations to urge the Government to continue to look at all options for tidal power in the Severn estuary, with a view to developing a solution that maximises energy output with minimal environmental damage and at lowest cost.



## The 2008 Season

Initial reports from the Environment Agency suggest that in general, salmon anglers have had a reasonable year, although this could well reflect good fishing conditions on most beats rather than an increase in salmon numbers. Against this, high flows meant that fish tended to run through the lower reaches on some rivers; this may be the reason for the poor catches on the Hampshire Avon. On the Wye, on the other hand, the rod catch is expected to exceed 1,000 fish for the first time since 1996. There seem to have been more large 3 sea winter fish than for some years, with a good run of 2 sea winter salmon as well. Grilse runs were again late.

Fish counter data confirm that numbers this year have in general been in line with those in recent years. The Tamar recorded

the second lowest count for 15 years, but this is probably because very high flows allowed many fish to by-pass the counter. The Lune appears to be an exception to the general rule, recording the fourth highest number of fish in a 17 year time series; this in line with the upward trend in returns over this period.

Netsmen reported poor fishing conditions over long periods, and net catches are expected to be well down on the (historically low) catches in recent years.

## IRELAND

In Ireland, 2008 was the second season since the closure of the drift net fishery and the introduction of other conservation measures. On most rivers both catches and, where available, counter returns were down on last year's high figures. On the

closely monitored Burishoole system, for example, the number of returning fish fell from 1,000 last year to some 600, close to the long-term average preceding the drift net closure.

Early indications are that there will be few changes to conservation measures next year, with compulsory catch and release relaxed on a limited number of rivers but little, if any, change in the number of rivers closed completely to all salmon fishing.

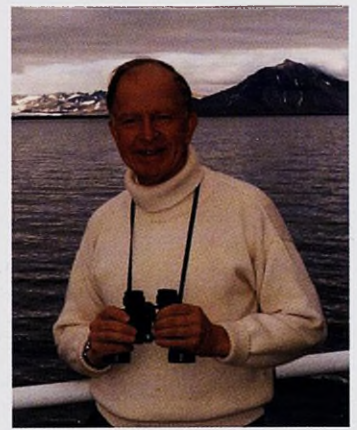
The picture in Northern Ireland seems to be very similar, with returns to the River Bush well down on the 2007 figure, but in this case slightly up on the long-term average. Reasonable catches have been reported from some rivers, including the lower Bann, but reports from the Foyle system have been mixed.



East Stoke migratory fish monitoring facility on the River Frome (Photo: APHA).



## Stock Assessment and the Atlantic Salmon



Dr Richard Shelton, Research Director

### Records of Catches

Both the angler on the river bank and the netsman on the coast measure their success by the catches they achieve. If accurately compiled and maintained, such records are of great value in themselves as the formal records of an industry currently worth over £250m to Great Britain and Ireland. Over a period of years they also document changes in the monthly availability of the salmon within the fishing season and in the abundance and size range of the fish. However, valuable as catch records can be for the partial insights they thereby provide into the status of the stocks of salmon on which the fisheries are based, they are insufficient in themselves to inform modern management which demands an unbiased assessment of the total resource. Catch records are biased for a number of reasons including:

1. Fishing is restricted to fixed seasons which in some rivers are considerably shorter than the variable periods over which the salmon run.
2. The "catchability" of the fish, especially by angling, varies with, among other factors, their maturity status, the time of year, water flow and temperature and barometric pressure.
3. The effort put into catching the fish varies according to the likelihood of success and, in the case of netting, the prevailing state of the market.
4. Recent genetically-based studies have shown that the total stock supporting many fisheries comprises more than one more or less self-contained population, the relative abundances of which vary over time.

It will be clear from the above that collecting the data required to assess salmon resources convincingly presents something of a challenge but, before outlining how scientists seek to meet it, it is helpful to consider the factors that control the size and structure of a salmon population several of which may be present in any one river:

### Salmon Populations

Put simply, a salmon population is a group of fish which, over successive generations of homing at spawning time, has achieved a degree of reproductive isolation and thereby local adaptation in such factors as run timing, egg size and rates of growth and sexual maturation. Like all inherited characteristics, the precise way in which these adaptations are expressed will depend upon the environmental conditions prevailing at the time.

Within each population, the abundance and age structure of the group of fishes returning to home waters to support the fisheries and to spawn is controlled by the numbers of young fish which entered the sea as smolts and their subsequent history between sea entry and growth to maturity. Although members of individual populations exhibit inherited differences in rates of maturation, and therefore in the tendency to mature and return after shorter or longer periods of sea feeding, the dynamics of maturation are also susceptible to environmental influences, including some that take effect even before sea entry.

An increase in the rate of maturation increases both the proportion of grilse

(1SW fish) in the population and increases the total numbers returning by shortening the period of exposure to marine mortality. The other factor of critical importance in determining the abundance and age structure of the returning adult population is the rate of mortality itself which impacts hardest on the fish which are exposed to it longest. Over time, the effect of an increase in total marine mortality rate is therefore to reduce both the total numbers of returning fish and the relative abundance of multi-sea-winter (MSW) fish. Thus, in both of the foregoing examples, there is an increase in the proportion of short sea absence fish but in the former instance it is associated with increased abundance and in the latter with reduced. At the time of going to press, all the indications, including the relative scarcity of previously-spawned salmon in catches, are that high marine mortality is the most important contemporary factor in reducing both total abundance and the representation of MSW fish in our salmon fisheries.

### Conservation Limits

Of course, what happens to the fish at sea is only part of the assessment story for an anadromous fish like the Atlantic salmon. Whether growth and survival opportunities between smolt entry and return provide enough fish both to support the home water fisheries and to stock the spawning fords so that the abundance of the next generation of young fish is fully maintained is the most important question asked of the assessment biologist. Its latest expression is the so-called "conservation limit" which may strictly be defined as the number of





*Fishery Board staff electro-fishing in the South Esk to assess densities of juvenile salmonids (Photo: APHA).*

spawners required to ensure that the production of young fish by each salmon population in the river is not limited by the supply of eggs.

Two main factors complicate the estimation of conservation limits, the difficulty of identifying and charting the distribution of individual populations in time and space and the effects of variations in flow on the opportunities available to the adults to access the spawning fords, especially those upstream of partial obstructions. Short torrential rivers are a special case of the latter in which droughts in combination with inter-annual variation in the distribution of spates may restrict access to such an extent that the full productive potential of the rivers is often not attained.

### Monitored Rivers

There are few rivers anywhere in the current geographical range of the Atlantic salmon where anything approaching full

assessment has been achieved. Among this small company of monitored systems are the Burrishoole in the Republic of Ireland, the Bush, in Northern Ireland, the Frome in England, the Dee in Wales and the North Esk and two tributaries of the Aberdeenshire Dee in Scotland. The results of this diverse body of work have shown that, given adequate access to good quality spawning and nursery habitats, smolt output by salmon rivers can be remarkably stable. Provided there are sufficient spawners, growth and survival opportunities for their progeny in the river control production. Given also that the group of smolts that enter the sea together each year include fish derived from more than one brood year, annual production of smolts in numbers may vary by little more than a factor of three.

### Assessment by Wetted Area

The habitat bottlenecks that limit smolt production in individual systems vary from river to river. For instance, in a southern

chalk stream, the availability of uncompacted spawning gravel may be the critical arbiter whereas in a Cairngorm burn, the extent of over-wintering habitat for parr may set the limit. Despite these differences in local conditions, some of the bolder spirits in the salmon fishery world are currently seeking to estimate conservation limits by extrapolating the results achieved in the partially monitored rivers to systems where the only data available are the statistics of catches and the so-called, "wetted area" of the river relative to that of the most appropriate monitored system.

How useful the results will prove in practice only time will tell. That nothing better can currently be done for so many salmon rivers is an indication of just how far home water salmon resource assessment still has to go. In the meantime, perhaps we should regard the results achieved so far as for, "the obedience of fools and the guidance of wise men"!



# What does the AST Biologist do?

## John Webb, AST Biologist



Sir Robert Clerk, AST Chairman with John Webb, AST biologist, at the Scone Game Fair.

## Biologist's summary report (summer and autumn 2008)

The past six months have seen the AST's biologist working on a number of different and interesting projects. A brief summary of some of the main 'highlights' is detailed below:

Since April 2003, approximately three fifths of my time has been seconded to the Tripartite Working Group (TWG) as the restoration co-ordinator. As restoration co-ordinator one of my main tasks is to provide science-based support and advice to Fishery Boards, Fishery Trusts, and proprietors, angling clubs and associations across the West Highland area (see winter 2006/2007 Journal).



Trout redds in the Loch Maree catchment (Photo: John Webb).

Last autumn I was commissioned (together with co-authors Alan Youngson and Eric Verspoor of the Freshwater Laboratory) by the TWG to write a short report on the restoration of fisheries on the West coast of Scotland. Such an exercise was likely to be a challenging task – not least because of the bioregional scale of the problem, the lack of quality data (particularly on the impact of past and current management efforts) and the continuing problem of

fragmented systems of river management. Nevertheless, the final draft was submitted to the Scottish Government at the end of October this year. The report covers some important areas including: defining management actions most likely to constitute restoration, the importance of focusing management action towards relieving the main 'bottleneck(s)' affecting fishery performance, and discussing a range of possible management options. The report contains four recommendations, a decision key for determining stock restoration requirements and advice on monitoring and evaluating outcomes.

A request for assistance from the Outer Hebrides Fishery Trust, led to a week-long advisory visit to the Western Isles of Lewis, Harris, and North and South Uist. The main purpose of the trip was to visit sites identified by the Trust and the local Fishery Board as of particular relevance, and to discuss a range of fishery-related issues with local stakeholders. Western Isles catchments are often characterised by lochs linked together by small rivers and burns. The lochs provide the main focus of salmon and sea trout fisheries in the area, and in many cases, great efforts have been made in the past to install sluices to control water levels or in some cases, deliberately prevent the free passage of migratory fish. More recently, some of these weirs and sluices have supplied water to commercial salmon farming hatchery units. As a result, the resulting reduced flows may exacerbate existing problems of access for migratory fish. However, on a more positive note, it was good to see so many young salmon in some of the streams surveyed.

Following the Government decision to permit an experimental extension of the angling season (catch and release) on the Aberdeenshire Dee for the first fortnight in October, the Dee Fishery Board and Fishery Trust approached the AST for training support for their staff in live fish handling and Floy and radio-tagging techniques. This training provides a platform for a new three-year radio-tagging project to monitor the behaviour of adult fish returned by anglers in October. Despite persistent rain on the day, it was a successful day and for me evoked memories of my earlier research tracking exploits on the Dee back in the late 1980s and mid-1990s. As I write, the latest reports suggest that the tagged fish are doing well and distributed throughout the middle and lower river.



The River Dee at Potarch in June (Photo: APHA).

Staying with the Dee, in early November I worked with members of the FRS Freshwater Fisheries laboratory team in their annual task of operating the fish traps on the Girnock burn – an upland spawning tributary of the Aberdeenshire Dee. The main purpose of this work was to gain further insight into the status of both early-running salmon (i.e. spring salmon) and early-running grilse (1 SW), and to inspect



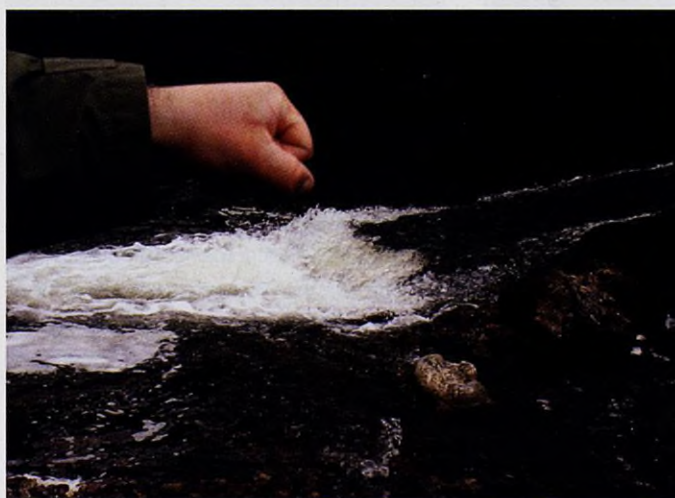
as many fish as possible for signs of red vent syndrome (RVS). Perhaps not surprisingly, the numbers of MSW adults returning to spawn was broadly consistent with the reported performance of the spring fishery in the main river earlier in the year (February-May). Furthermore, closer inspection of the trap catches revealed that a significant proportion of the early running grilse appeared to be rather thinner than usual, and that some of the 2 SW fish showed signs of the effects of RVS.

In mid-October I attended the 39th Annual

Institute of Fisheries Management (IFM) Conference at the Royal Armouries in Leeds. The theme for this year's meeting was 'Breaking down barriers' – with a particular focus on the problems of affording safe fish passage at dams and weirs. One notable feature arising from the meeting was the problem of ensuring migratory fish access within recovering former industrialised rivers that now suffer from a legacy of numerous disused dams and weirs.

The run up to the New Year will see a shift back to the West coast and a series of

advisory visits to Fishery Trusts in the region. Most of the work will focus on the annual task of delivering advice and training on spawning redd identification and survey methods. In addition, the visits will also provide a useful opportunity to undertake some brief surveys of my own in rivers in Argyll, Wester Ross, Skye and Lochaber, and an opportunity to undertake the annual task of sorting through restoration broodstock collections to remove as many escaped farmed salmon as is practically possible.



*Original fish-pass. J Webb indicating with his fist a concrete overhang posing a threat to migrating salmonids.*



*John Webb, AST, surveying breached dam on the South Esk.*



# Salmon at sea – why don't they come back? That's what SALSEA's all about!

Dr Jens Christian Holst, Scientific Co-ordinator

After years of planning, application writing, organising and waiting, the European, North East Atlantic component of SALSEA, SALSEA-Merge, finally got under way on April 1, 2008. Commitment to this large international project is further evidence of the high value that is placed upon wild salmon in Europe. As the name suggests, the focus of the work is on the marine phase of the life cycle of the

what scope there may be for improving return rates through management action.

The work of SALSEA-Merge in 2008 has three main components, the planning meetings, the field work and the preliminary analyses. The principal meetings were the SALSEA-SALMAN II genetic symposium and workshop in Paris in February, the survey co-ordination meeting

personalities. Their co-ordinated efforts hold out excellent prospects for revolutionising our understanding of the lives of salmon in the North East Atlantic.

The highlight of SALSEA-Merge in 2008 was the programme of sampling at sea which covered almost a million square kilometres of the North East Atlantic and involved four research vessels. The sea-



RV Magnus Heinasson.



Inspection of RV Celtic Explorer.



Post-smolt salmon.

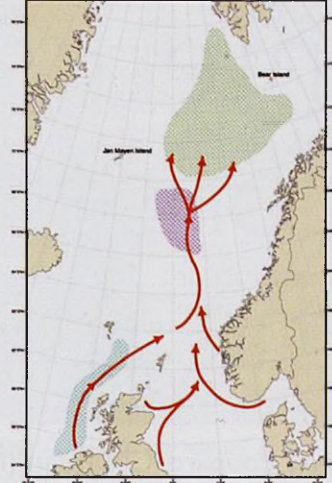
salmon where over 95% of its growth is made. The need for such an investigation has been driven by the unequivocal scientific evidence that the return rates of salmon from their sea feeding grounds are but a third to a half of what they were four decades ago. Thus, although improving the quality of salmon habitats in fresh water is as important as it has ever been, its full benefits are not being enjoyed because too few adult salmon are returning to support the fisheries and to found the next generation. The ultimate aim of SALSEA, which includes similar research to SALSEA-Merge being undertaken by North American scientists, is to define the place of salmon in the changing pelagic eco-system of the North Atlantic to see

in Copenhagen in March, the SALSEA-Merge start up meeting in Sligo in May, the genetic meeting at Stansted in August and the scale/growth meeting in Trondheim in September. Each of these meetings has been directly relevant to the field programme and to the co-ordination of the parties undertaking the work. The last meeting in 2008 took place in Edinburgh 16-17 December when the steering committee took stock of what has been achieved during 2008 and planned for 2009. As Scientific Co-ordinator, I have taken part in all of the meetings and have been greatly impressed by the level of enthusiasm and commitment of all taking part. SALSEA-Merge incorporates a wide range of nationalities, professions and

going programme started officially on May 16 when RV Celtic Explorer sailed from Killybegs on the west coast of Ireland for a 10 day deployment to the north west of the British Isles. Prior to sailing, Dr. Ken Whelan and colleagues from the Marine Institute had arranged for the ship to be inspected by Mary Robinson, the charming Deputy Prime Minister of The Irish Republic. There was also a successful press conference and several classes of school children were shown over the vessel. One week before the official launch of SALSEA-Merge, the smaller RV Celtic Voyager also sailed from Killybegs to undertake 6 days of sampling to the west and north west of Ireland. The specially designed trawl provided by the Atlantic Salmon Trust



Post-smolt migration pathways to NE Atlantic.



proved highly effective and she returned with good catches of post-smolts. The success of this first cruise in pursuit of early sea entrants set the standard for the three later cruises in searching, like pearls on a thread, for young salmon that had been at sea for longer. Between them, the two Irish cruises secured 426 post-smolts. Their expeditions were followed in early July by the cruise of the Faeroese RV,

feature within which the post-smolts are concentrated. They spread out once they have reached their summer sea feeding grounds to the north. This area is more difficult to sample than the shelf edge and will be the object of increased effort in 2009.

One of the most important objectives of SALSEA-Merge is to use the latest area-

latest methods of using the analysis of scales to assess changes in the rates of growth of salmon when feeding at sea. Analysis of scales taken from the samples collected in 2008 is now well under way.

The changes in the fortunes of salmon at sea which were the stimulus for the initiation of SALSEA have been paralleled by changes in the abundance of other



Mackerel and herring caught with the post-smolts.



Processing post-smolts at sea.



Dr Malcolm Windsor (L) and Dr Ken Whelan.

Magnus Heinasson which brought back 363 post-smolts from the central Norwegian Sea. The final sampling, during which 88 young salmon were caught, was undertaken by the Norwegian RV, *Eros* in the northernmost sector of the SALSEA-Merge grid, the sea area bounded by the north coast of Norway, Jan Mayen Island, Spitzbergen and Bear Island. The contrast between the high catch rates achieved by the first three cruises, which took place during the initial northerly migration phase of the post-smolts, and the lower catch rate to the north provides an interesting insight into the behaviour of the young salmon. The migration north takes place in the surface waters of the Shelf Edge Current, a relatively narrow oceanographic

based genetic markers to determine the likely fresh water origins of young, and indeed older, salmon captured at sea. The first task was to agree on the markers to be used. A "give-and-take" debate at the Stansted meeting between the scientists from the several laboratories involved, led to agreement on an official set of markers which will be used throughout the SALSEA-Merge programme. The different laboratories are currently seeking to enlarge their genetic data-sets using material collected in fresh water so that the representation of markers in the fish sampled at sea can be assigned to likely areas of origin.

The meeting at Trondheim reviewed the

species of fish, such as herring, mackerel and blue whiting, in the North East Atlantic whose surface waters they share. The grossly depleted state of the blue whiting stock after several years of poor recruitment is a particular cause for concern. As a result of these problems with other mid-water fishes, increased effort is currently being put by a number of fishery laboratories into improving our understanding of the pelagic eco-system. This increased scientific effort and the money it attracts from governments is of direct benefit to SALSEA and will help us to interpret the results we achieve.

From the SALSEA-Merge Co-ordinator with best wishes for the New Year.



# International salmon conservation and the role of NGOs

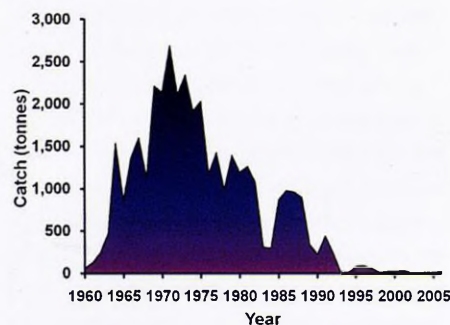
Chris Poupard, Chairman (NGO Group, NASCO)

When the ocean feeding grounds of Atlantic salmon were discovered fifty years ago, the Inuit hunter-fishers of Greenland were quick to exploit the opportunity, and a commercial fishery of staggering proportions developed off the coast of West Greenland. From small beginnings in the 1960s, the fishery peaked at 2,500 tonnes, or more than 750,000 fish, in 1971. Slightly later, fisheries developed in the Norwegian Sea and around the Faroe Islands, with annual catches exceeding 900 tonnes and 1100 tonnes respectively. To put these figures into perspective, the total catch of Atlantic salmon across the whole North Atlantic in 2007 was 1,500 tonnes. The abundance of wild salmon had been taken for granted by many, and it took some time for alarm bells to ring; the Atlantic Salmon Trust (AST) was one of those sounding the alarm, and it was at a symposium organised by AST and the Atlantic Salmon Federation (ASF) in 1979, that the idea of a new organisation to regulate the high seas fisheries was first mooted.

That organisation was the North Atlantic Salmon Conservation Organisation (NASCO)\*, eventually launched in 1984, charged with the conservation, restoration, enhancement and rational management of salmon stocks in the North Atlantic. The NASCO Convention immediately established an enormous protection zone with no salmon fisheries beyond 12 nautical miles. The Northern Norwegian Sea fishery was ended immediately. Crucially, the mandate included negotiations for regulatory measures for

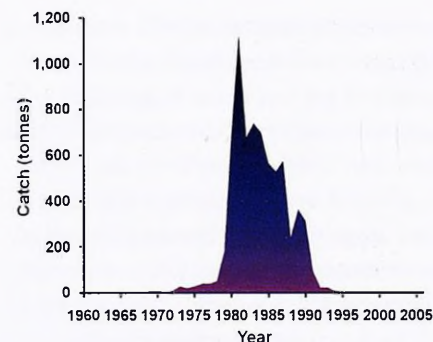
the fisheries at West Greenland and around the Faroes. The going was initially tough, but NASCO was able to eliminate fishing on the high seas by non-NASCO countries, and impose greatly reduced quotas on the fisheries at Greenland and the Faroes. By the time the compensation arrangements negotiated by the North Atlantic Salmon Fund (NASF) were introduced in the early 1990s, the hard work, based on scientific evidence of stock declines, had been done and reduced quotas were in place. Today, the combined catch at Greenland and Faroes is around 20 tonnes. The establishment of those NASCO measures for Greenland and Faroes meant there was international pressure on the states of origin to put their own houses in order if they wanted Greenland and Faroes to continue to make sacrifices.

From the beginning, NASCO had admitted NGOs like AST and S&TA as observers,



*Atlantic salmon catches – West Greenland fishery.*

but our contributions at the annual NASCO meeting were limited to a three minute opening statement and informal



*Atlantic salmon catches – Faroe Islands fishery.*

lobbying in the corridors. By 1994 there were 24 NGOs accredited to NASCO as observers, but the impact of so many short statements on a wide variety of topics, was minimal. Some of us recognised that, to have any real influence on the governments responsible for salmon conservation, NGOs needed to co-operate.

Progress was not easy, because the NGOs at NASCO encompass very different constituencies, from international conservation organisations like WWF to national salmon angling organisations and salmon netmen. By 2002 we were able to make a single joint opening statement – practical evidence of close co-operation between NGOs on both sides of the North Atlantic. This enabled us to focus on critical issues, such as the damaging impacts of the Irish drift net fishery. Our interventions at NASCO caused acute embarrassment to the Irish government and the EU delegation in front of delegates from the Faroes and Greenland who had already taken hard decisions to close high seas fisheries. This formed a small part of the international campaign against the Irish

\* The contracting Parties to the NASCO Convention are Canada, Denmark in respect of the Faroe Islands and Greenland, European Union, Iceland, Norway, Russia and the USA. The European Union contains 11 jurisdictions with salmon populations which are represented within the EU delegation at NASCO.





*Dr Malcolm Windsor, Secretary of NASCO ceremonially releases hatchery-bred salmon parr into the River Sela in Asturias, Spain (Photo:APHA).*

drift nets in support of the "Stop Now" campaign and the challenge by the Wessex Salmon Trust under the EU Habitats Directive, which eventually forced the closure of this fishery in 2007.

Nevertheless, despite the effective closure of the distant water fisheries, salmon stocks across the North Atlantic continued to decline throughout this 20 year period. It was clear that many factors were at work: habitat degradation as a result of, among other things, intensive agriculture and forestry, predation, the impacts of aquaculture, continuing exploitation from commercial and recreational fisheries in home-waters, and so on. NASCO responded by introducing formal guidelines for its member Parties on habitat restoration, salmon fishery management and minimising the impacts of aquaculture on wild salmon. However, progress at implementing these measures in the jurisdictions of member states was extremely variable, and in some cases, frustratingly slow.

At the 20 year anniversary of NASCO in 2004, WWF and ASF sponsored a report calling for basic changes to make the organisation more effective. We called for NASCO to be given more "teeth" to force the implementation of conservation measures in member states, and to make the organisation both accountable and transparent by incorporating the NGOs into its decision making processes.

Not surprisingly, the idea that an international body might dictate conservation measures in the home-waters of sovereign countries, was resisted, but

combined pressure from NGOs and supportive governments, particularly the USA and Norway, forced a compromise. NASCO Parties agreed to produce detailed Implementation Plans, with commitments and timescales to implement NASCO agreements on salmon fishery management, habitat restoration and minimising the impacts of aquaculture. Coupled with this, NGOs have been fully integrated into the NASCO process, so for the first time, NASCO Governments will be individually and publicly accountable to NGOs for their salmon management plans. This process began in 2006.

It has become increasingly clear in recent years that a key factor in the continuing decline of salmon stocks, is survival of salmon at sea: the number of smolts returning to fresh water has more than halved over the last 30 years. Investigating the marine phase of the salmon life cycle is a difficult and expensive process, and only NASCO could have set up the SALSEA research programme, a joint public/private partnership with a total funding requirement of £8 million. The first cruises to track salmon movements at sea began in 2008. For full details see [www.salmonatsea.com](http://www.salmonatsea.com). AST was instrumental in the formation of NASCO nearly 30 years ago, and now plays a leading role in the management, implementation and funding of the SALSEA project (see pages 14 and 15).

Cynics will be forgiven for asking what impact the work of NASCO has on salmon conservation, compared to direct practical action such as buy-out initiatives,

for example. The answer is straightforward: despite all the buy-outs, net closures, habitat restoration schemes and so on, wild salmon numbers have continued to decline for the last 40 years. The key factor is survival of salmon at sea, and we have to hope that the SALSEA project will identify the cause or causes of this phenomenon. In the meantime we have to give salmon the best chance we can, by improving habitat, controlling predators, minimising the impact of aquaculture and controlling exploitation by rods and nets where they impact on conservation limits. This requires a huge joint undertaking by all concerned, from individual anglers and riparian owners through to NGOs and government.

NASCO is the only inter-governmental organisation dedicated to wild Atlantic salmon conservation and sets the international standard for all this work. NGOs now have real influence on the governments responsible for salmon conservation. Of course, many challenges remain: persuading governments to take often difficult political decisions in favour of salmon, and the ultimate challenges posed by climate change. The contribution of the NGOs at NASCO is a small but vital part of the huge team effort taking place across the North Atlantic to conserve and restore this iconic species.

*Chris Poupard, a former Director of the Salmon & Trout Association, has been the elected Chairman of the NGO Group at NASCO since 1996.*



# An historical perspective of salmon management

*Colin Carnie was a member of the Salmon Advisory Committee and later of the Salmon Task Force. He has many years of experience of hydrology, working for the civil engineering company, Crouch, Hogg Waterman where he developed his skills as a 'River Doctor'. Colin continues to advise fishery boards on minimising the adverse effects of obstacles to salmon migration and has written a number of management plans for Scottish salmon rivers. Here he writes about the history of various efforts at restocking Europe's rivers with hatchery-bred Atlantic Salmon.*

**Colin Carnie**

When I was writing the Management Plan for the River Brora I came across a delightful little book "Angler's & Sketcher's Guide to Sutherland" written in 1881 by Archibald Young. He visited the Brora in 1878 and he states; "On the south shore of Loch Brora, near its lower extremity, there is an establishment belonging to the Duke of Sutherland for artificial hatching of salmon. When I saw it, it contained about 340,000 salmon eggs from the Brora, Helmsdale, Thurso and Rhine". The idea that eggs should be brought from local rivers did not surprise me but the concept of bringing them from the Rhine immediately fascinated me and led me to discover the extent of the work of six men who in their various endeavours played such a significant part in the pioneering days of fishery management.



River Brora (Photo: APHA).

In Germany in 1758 Count Von Golstein had demonstrated the process of fertilising ova with milt and by 1841 two "humble" farmers, Géhin and Remy, were successfully hatching trout eggs at the village of La Bresse in the Vosges Region. The stocks of trout were declining in the Moselle and its tributaries and their stocking in the 1840s made a significant improvement in the

fishery. This was an era of great scientific advances in France, supported by the French Government which then employed the two farmers "at good salaries to stock particular rivers and to teach the system they used to the peasantry". Although they were described "as men who had made a great scientific discovery" this is really not the case but what they had done was to demonstrate that the known processes of hatching and stocking could be carried out on a large scale. By 1849 their hatchery was producing between 5 and 6 million eggs which led to a bigger hatchery with rearing ponds being built on an 80 acre site at Huningue near Basle. By the time this hatchery was supplying eggs to the Brora its annual output was more than 16 million eggs and it was supplying eggs of salmon, trout and other species to many rivers throughout Europe.

Andrew Young was the Duke of Sutherland's fishery manager who undertook extensive work on three stages of growth of salmon, the age at smolting, the initial period at sea and the recovery of kelts. He argued strongly that parr smolted after one year, that grilse returned to fresh water within a few months of smolting, and that kelts recovered their strength and put on weight at a rate that seems extraordinary to us today.

Young found that his juveniles smolted at the end of their first year and frequent trials gave him the same results. While this is quite possible in a hatchery, Young held the view that this was applicable to all smolts which in due course brought him into conflict with Shaw, who was the Duke of Buccleuch's fishery manager.

Over a number of years he tagged smolts with different year tags as they went to sea in April and May and in June and July of the same year he caught them as grilse with the particular year tag weighing between 3lbs and 8lbs but did not catch a single grilse with a previous year's mark. One is left wondering whether Young was supporting an argument or whether there was such abundant feeding in the Moray Firth that such growth rates were possible. Young also showed that kelts marked in February and March weighing 4lbs returned as salmon in June and July weighing between 9lbs and 14lbs. Again, remarkable growth rates but rather more understandable than grilse growth and his findings were supported by work on the Tay – a tagged kelt recovering from 10lbs to 21lbs in five weeks. While Calderwood doubted these early studies he reported comparable recovery rates from his own work some 50 years later.

While there may be doubts about Young's work on growth, he made other observations which have contributed to fishery management. He demonstrated in the five rivers discharging into the Kyle of Sutherland that salmon returned to the river where they were marked and that fertilised eggs could be carried successfully over many miles before planting out. This observation is unsupported by modern experience.

Ichthyology was at the forefront of science in the 1830's and Shaw who was the Duke of Buccleuch's fishery manager presented two papers to the Royal Society of Edinburgh in 1837 and 1839. He showed that salmon parr become smolts





Colin Carnie fishing the River Shiel in 2008 (Photo: APHA).

demonstrating this both with fry caught in their first summer which smolted the following year and with large parr caught in the spring which smolted in a few weeks. He considered that this proved that parr remain in the river for two years before assuming the silvery appearance of a smolt and indeed he went on to demonstrate this from eggs which he hatched. At that time there was a widely held view that a smolt grew from egg to a size of six or eight inches in as many weeks, and to take its departure for the sea after this brief period had elapsed. In fact it required more than the work of Shaw to convince people that this was not the case.



*This weir on the Cample Water near its confluence with the River Nith was the source of water for Shaw's hatchery and ponds. While his facilities are not recorded, this location combined with adjacent depressions where his ponds would be ties in with the plan included in his paper to the Royal Society of Edinburgh.*

A further result of Shaw's work was to show that while female parr did not reach maturity male parr did and he bred from these successfully. Quite amazingly, the precocious parr was recognised in the 1830s.

Shaw did not claim that all parr would smolt at the age of two years but modestly and perceptively commented that his work was confined to one particular locality, and that workers with more extensive opportunity of research may have different findings.

The last two are Robert Buist and Peter Marshall, but first we must recall James Esdaile.

In 1853 Dr James Esdaile, MD HEICS, late Presidency Surgeon, Calcutta, presented "A Plan for Replenishing the River Tay with Salmon" which he sent to the proprietors of the salmon fishings on the river. The Plan referred to the work in France and addressed the means of stopping the gradual, but certain, decay of the productiveness of the proprietors' salmon fishings, and, as he said "again stocking the Tay with abundance of fish, surely, speedily and cheaply". He had retired from his post in India and as his time was "entirely at his own disposal, he would be glad to employ it in working out a problem, not only of interest to you, but which would also be of national importance". He had grown up in Perthshire and thus knew the rivers and streams of the Tay catchment and "it would be labour of love for me to be the means of restoring our waters to their former celebrity and lucrativeness as fishing streams". The Plan was also discussed by the Town Council on 4th July when it was minuted that the Council "recorded their best thanks to Dr Esdaile for the attention he had bestowed on the matter" and the Lord Provost was appointed "to attend any meeting which the proprietors may call." Dr Esdaile pointed out that the natural facilities of the immediate neighbourhood

of Perth were so great that the process of breeding fish by artificial means could be carried out on a great scale with ease, simplicity, and at small cost. He emphasised that it was quite inappropriate to speak of experimenting upon the subject; the matter in principle, and in all its details, was already a practically realised system. Either of the two great lades at Stanley and the flat ground nearby would provide an admirable site for a large hatchery and its associated ponds.

The Tay proprietors met on 21st October 1853 and resolved to make ponds and rearing boxes and voted £500 for the purpose to construct the facilities at Stormontfield on land made available by the Earl of Mansfield. On 23rd November the facilities were ready for use under the direction of Robert Buist, superintendent of fishings on the Tay, and with Peter Marshall, the keeper at Stormontfield who subsequently signed his letters and articles 'Peter of the Pools', looking after the day-to-day operations. It was at the time the biggest hatchery operation in the UK. Interestingly there were no further references to Dr Esdaile but the story of Buist and Marshall was taken up by William Brown in his book "The Natural History of the Salmon as ascertained by recent experiments at Stormontfield on the Tay". He considered that it was sufficiently new to be described as an experiment and possibly the most significant aspect of it was the increase in scientific knowledge which emerged from these two men as work continued in the principal purpose of producing smolts. Brown listed eight topics of increased knowledge arising from 10 years work





*Some details of the ponds at Stormontfield can still be seen. The masonry for the sluices and the depressions where once the ponds were located are quite visible today. In the photograph above the largest pond can clearly be identified by the line of shrubs and trees.*

at Stormontfield including smolting, parr maturity and the benefit conferred by male parr remaining in the streams, hatching times, egg survival, return to natal rivers and salmon and grilse were the same species.

Some details of the ponds at Stormontfield can still be seen. The masonry for the

sluices and the depressions where once the ponds were located are quite visible today.

The commitment which the proprietors were making in the middle of the 19thC to support research and ensuring better management of their fisheries is very

apparent from the Scottish examples referred to briefly above. It provides an interesting parallel with work our fishery biologists are doing today and the hugely valuable broader commitment being made by the Atlantic Salmon Trust.

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# Fishing and flying

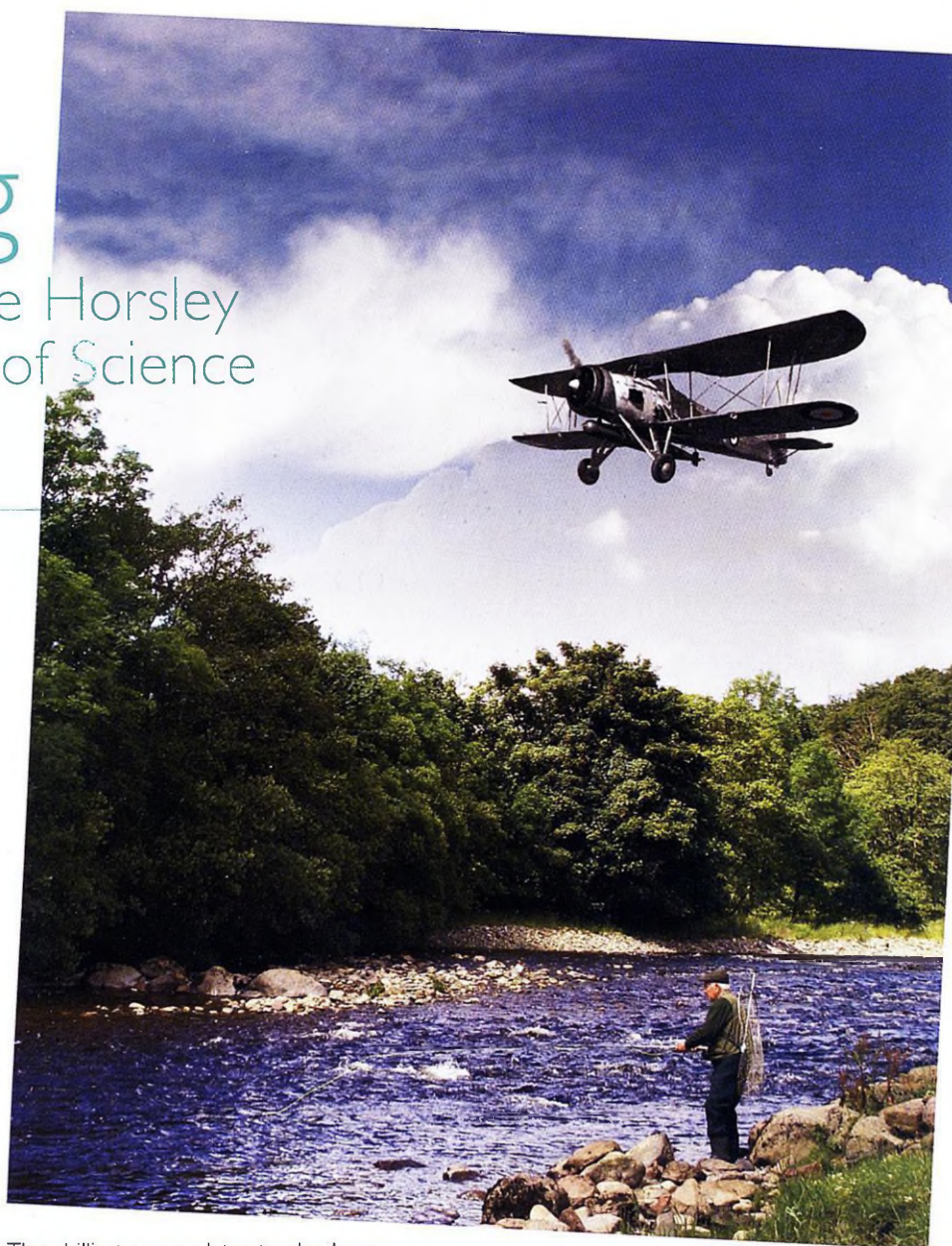
## Homage to Terence Horsley and the Appliance of Science

Drew Jamieson

It is a dark night in June, not long after midsummer, and the only noise is the occasional splash of a sea trout. It should be a clear night up here in the far north but it is cloudy with a thick layer of strato-cumulus from 1000 feet to 10000 feet with poor visibility underneath. I am the only rod on the beat tonight, I think, and am enjoying having the beat to myself until I see the dark shadow further down the pool. He is quiet, knee deep at the pool-tail just the swish-swish of his rod betraying his presence.



"Long-time friend of the owner", he offers, sensing my surprise at the intrusion. There is plenty of room for both of us and the sea trout aren't taking yet. He seems a nice enough guy, polite and well-spoken in an old-fashioned sort of way. A traditionalist I assume or even a collector, as I admire his classic split-cane rod. He doesn't have a Barbour jacket, just one of those retro, fleece-lined Air Force surplus things. "Used to be a tenant here, a long time back", he continues, "just get the odd night off now, when the weather is too bad for flying". I wish him luck, leave him to it and move on down to the next pool.



The ghillie turns up later, to check my progress. I tell him I have met the other guest. "What other guest?" he asks. There is no other guest, he tells me. I describe the bomber jacket, split cane rod and old fashioned ways and recognition dawns. "This happened one night last year", he says. "Filthy night, too", he reminisces. "Strange chap. Never any bother. No idea who he is. Must like his sea trout fishing."

Back at the hut, when we get there, laid out on the grass, is a brace of sea trout. Pinned to the door, scribbled on a scrap of paper: is the message, "Thanks for the hospitality – Stringbag." I turn it over. It is torn off an aeronautical chart, with airfields marked in purple. The bottom corner of the map, written in blue, reads "Fleet Air Arm, 1941".



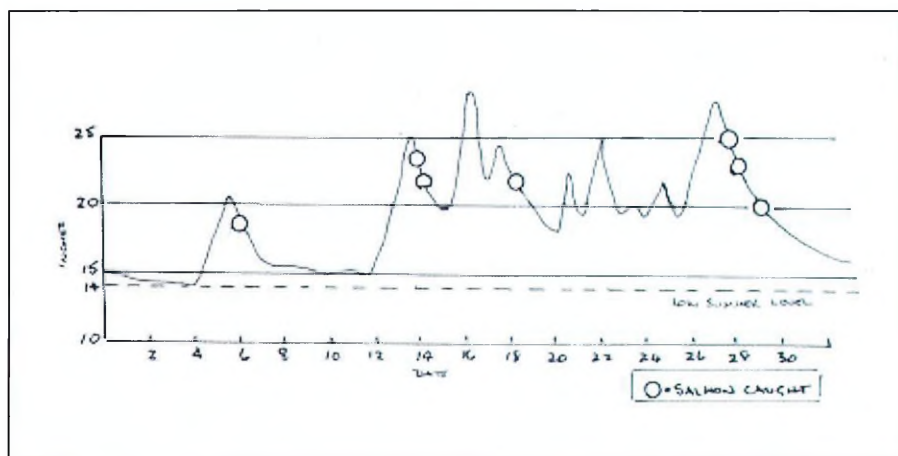


## Terence Horsley

Lieutenant Commander Terence V Horsley RN was a keen sportsman and glider pilot who flew Swordfish and other aircraft with the Fleet Air Arm during the Second World War. He began to write articles under the nom-de-plume of "Stringbag" and latterly published a series of fascinating books on naval air power, gliding, shooting, fishing and flying. His most outstanding book, *Soaring Flight*, was published just before the end of the War in 1944 and his story of the Fleet Air Arm, *Find Fix and Strike* followed in 1945. He published his first purely fishing book, *Salmon and Trout Fishing*, in 1946, followed by *Sporting Pageant: a Gun, a Rifle and an Aeroplane* in 1947. His last book *The Long Flight*, also published in 1947, describes the dramas and romance of long-distance travel by fish, wildfowl and aircraft.

I first met Horsley in the pages of his classic book, *Fishing and Flying*, also published in 1947. From the ecstasies of tumbling a high-performance aircraft through the clouds, corries and passes of the Cairngorms at 360 mph, to the quiet magic of fishing the night estuary for sea trout, Horsley had me in thrall, leading me intensely through his two contrasting worlds of flying and fishing, including the River South Esk in Angus.

The South Esk starts life in the high hills of the Grampians and after traversing Glen Clova, emerges into the great sandstone lowland of Strathmore and on into the North Sea. On its way it drains some of the richest farmland in Scotland and passes through the ancient and historic burghs of



After Horsley, 1946.

Kirriemuir, Brechin and Montrose. Horsley was, for a time, the tenant on the Finavon beat, near Kirriemuir. During that time he applied his analytical skills as a pilot to the experiences of salmon fishing.

## The Appliance of Science

On the basis of his catch-returns for August 1941 on the Finavon Beat of the South Esk he published one of the early empirical records to show the relationship between salmon catches and river height, where all his catches in that month occurred on a falling water level. Although this was a fact that many anglers had surmised, this provided a demonstration of the "appliance of science" – the practical benefits of scientific observation to practical action on the river; whether for angler or fishery manager.

On the 4th of the month, heavy showers brought the river up and his first salmon was caught on the 6th as the water level dropped. On the 12th heavy rain and a strong south-east wind started a series of

spates with fish landed on falling water on the 14th and 18th. A further series of very heavy showers brought river up again from 26/27 and three salmon were caught on 28/29.

## Airborne Again

From Horsley's base at HMS Condor (RNAS Arbroath) the South Esk was just beyond the airfield circuit. He describes: "During the minutes which my observer required to obtain wireless permission to 'pancake', I could fly across the seven-hundred-foot ridge ... inspect my water, noting whether there were poachers about ... noting the height of the water by a stone on the edge of the pool, and discovering on the way a remarkable fund of information about the birds and beasts along the banks."

He had a love-hate relationship with his "little river", as he called it. His first fish was a 20 lb Spring salmon and he caught many others, yet his river could be a fickle mistress.



*"Oh reluctant, horrid little river!" he wrote, "I wasted a gallon of petrol on you today, convinced that you would repay it. Do you remember that, when I flew over you this morning, you showed me your stone, half uncovered ... on your own reckoning you were, today, in perfect order. Deceptive wretch."*

The diary conversation of one man, an airman and a fisherman, to his fickle love – his "little river" – the South Esk.

Terence Horsley died in a gliding accident on April 24, 1949 at the age of 45, at Bradwell Edge, in Derbyshire, where his gliding career began. His obituary, in *The Aeroplane* of 13 May 1949 starts with Benjamin Franklin's quote: *They that can sacrifice essential liberty for a little temporary safety deserve neither liberty nor safety.*

## More Appliance of Science – "LIFE" after Horsley

Things have moved on since Horsley's time and life goes on. The South Esk is now recognized as a Special Area of Conservation (SAC) under the European Union Habitats Directive because, the designation states:

*"it supports a large, high-quality salmon population in a river draining a moderate-sized catchment on the east coast of Scotland. ... The high proportion of the South Esk which is accessible to salmon and the range of ecological conditions in the river allows it to support the full range of life-history types found in Scotland, with sub-populations of spring, summer salmon and grilse all being present."*

Since 2004 it has been one of the eight salmon rivers forming the *Conservation of Atlantic Salmon in Scotland (CASS)* project sharing some £3 million of EU money under the LIFE-Nature programme of projects applying the results of scientific research to the practicalities of managing salmon fisheries. Activities undertaken by the Esk DSFB included surveys of salmon habitat and juvenile numbers together with extensive fencing of river corridors in the upper catchment to control grazing, reduce erosion and prevent siltation of spawning gravels. One of the key activities of the CASS programme has been raising awareness of salmon conservation. The *Salmon in the Classroom* project introduces children to the wonders of salmon by hatching salmon eggs in schools and growing the resulting fry until they are old enough to release back into their local river.

## Back-cast

My own interest in the South Esk? Well, both flying and fishing. I first looked down on the river from my Chipmunk aircraft on my first solo navigation exercise from Scone, to Kirriemuir to Forfar and back to base. From the air it looked attractive and I vowed I would return. In my subsequent twenty years of flying Canberras and others of Her Majesty's aircraft, I had, like Horsley, *"lingered in the sunlight above the peaks of the Cairngorms and marvelled at the apparent innocence of the land"*. And yet again I had *"flown southwards at four miles to every minute ... until the ground split and the headwaters of the South Esk were suddenly below."* I had hung up my flying gloves before I could follow him to his "little river" with a salmon rod in my hand. But I did eventually, and caught my first salmon in the Beech Tree Pool of, what was then called, the Shielhill beat. The rest is history – *"Those whom the Gods seek to destroy; they first allow to hook a salmon"*.

Like a homing fish I still return to the South Esk. Each season, when the Tornados or Typhoons from RAF Leuchars boom over at low level and the sea trout are feeding, *"Fishing and Flying"* all come together again – and Terence Horsley continues to share my night-fishing – when the weather is too bad for flying!



# The Rise of the Trout

## Editor's note

Nigel Milner is a member of the AST scientific panel, an acknowledged expert on the complex life history of sea trout and one of the architects of the Celtic Sea Trout Project. The following article sets the scene brilliantly for the AST's forthcoming meeting to discuss the problems faced by sea trout in the United Kingdom and Ireland. Nigel highlights the importance of trout as the barometer species that offers us the best measures of our husbandry of the land and its water courses and he argues convincingly for more attention to be paid to *salmo trutta* L. as the designated Biodiversity Action Plan salmonid.

## Dr Nigel Milner, APEM Ltd and Bangor University

The trout is the most important, iconic and useful fish species in the British Isles. Some years ago that might have been seen as a mischievous, not to say risky, way to start an article in the Atlantic Salmon Trust's Journal. But no longer and the elevation of trout, by which I mean *Salmo trutta*, the brown and/or sea trout, to the top rank of the fishy celebrity list has been rapid and impressive. I would not promote seriously a competition for top spot in the fish beauty contest (trout would obviously win that) because modern fisheries science is increasingly about the whole package of ecological and inter-specific interactions that make ecosystems work, rather than focusing on single species. Nevertheless, our understanding of the whole is based on the detailed knowledge of the parts. Much of what we know about salmonids comes from salmon, which has been the focus of research and assessment, but for trout that is not sufficient. The rise of interest in the trout and investment in applied research has happened because the species and the state of its fisheries raise specific questions and problems. Moreover it turns out that the trout, perhaps more than any other UK fish species, offers potential for exploring wider environmental questions. This article outlines the reasons for the renewed interest and the directions in which research is heading.

From the perspective of conservationists and environmentalists the trout offers several advantages. It lives almost everywhere, so is an ideal key species candidate. A key species in this sense is one that is ubiquitous and provides common, well-understood responses

to environmental pressures. Do we understand these responses well enough in trout? Not yet, but see below. The trout needs clean water to thrive, so it is a sensitive bio-indicator – an underwater canary if you like. It is highly polymorphic, that is it displays differences in form, coloration, behaviour and life history that are unsurpassed in any other fish species in the British Isles. This variety is moulded by environmental circumstances and opportunities that permit expression of the unusually wide genotypic variation that *S. trutta* displays. Here, in its variety of life history, lies the trout's trump card – its populations may be fully resident in fresh water through its life cycle or anadromous. Anadromy is the sea-going habit, by which, following egg and juvenile stages in fresh water some or most trout migrate to sea and return after one or more years to

for example, are favourable. Anadromy is a life history strategy with enormous significance and practical importance for fisheries, conservation and environmental management.

But sea trout have two other important attributes. First, they remain, so far as we know, within European territorial waters, probably mostly within coastal waters. Thus they return to rivers having experienced environmental conditions in comparatively restricted areas that we can describe and which lie within national control. Second, sea trout have a comparatively high incidence of repeat spawners than salmon. Individuals return often several times to breed, bringing back information, in their scale structure and chemistry, on another year's life at sea. The variety of life histories that trout display has been remarked upon for a hundred years, and anadromy in salmonids has attracted scientific attention in the context of evolutionary biology, where it presents an intriguing model of genetic-environmental interaction and life history optimisation theory.

This complexity is both a problem and an opportunity. As we learn more about its causes, so we will understand better the biological significance of spatial and temporal variation in trout life history. But we need to be able to decode the signals of observed variation in life history traits (e.g. growth, maturation timing and survival) and set them against improved understanding of sea trout ecology and distribution at sea. The subtext here is climate change and the influence that it has on both freshwater and marine habitats.

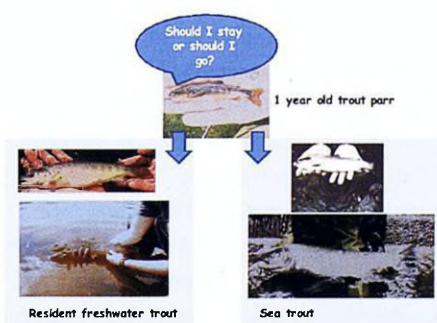


Fig 1 Anadromy in *Salmo trutta*.

spawn in fresh water as large, fecund sea trout (Fig 1). Mostly it is the females that do this and they have the most to gain: egg number and size are related to body size; so it makes reproductive sense to go to sea, providing that the trade-offs, in terms of predation risk and energy expenditure



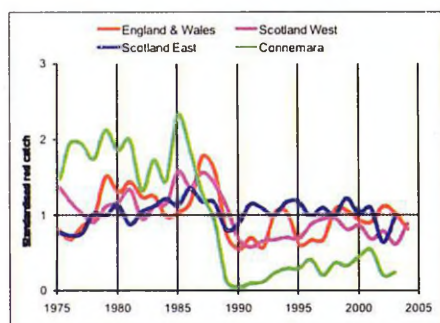


Figure 2. Long term sea trout rod catches around the British Isles (Data from P. Gargan (Central Fisheries Board), Environment agency, Fisheries Research Services catch statistics), standardised to their long term means.

All this requires information and knowledge and that comes through good quality stock assessment, monitoring and research, which brings us to the recent history of research initiatives on sea trout.

It is a cliché that it takes a crisis to focus minds and the sea trout decline – total collapse in some cases – in the late 1980s certainly did that (Fig 2). The work in Ireland to find out the cause of decline in West coast sea trout was a classic example of what can be done when the will and resources come together: Sea louse infection linked to marine salmon farming was unequivocally the key proximate factor in Ireland and reasonably explained most of the differences between Scottish east and west coast sea trout catch trends (Fig 2). But other factors are also at play, leading to significant river and regional differences, some of which may reflect effects on fishing or catch recording rather than on fish abundance. Simple catch data also hide some important stock composition changes, such as the increase seen in many rivers in the proportion of

finnock (aka whiting or peal), which are small sea trout returning to the river before their first sea winter. Closer examination of stock changes reveals a complex mosaic of responses to local influences, superimposed on some major common patterns. Properly describing these patterns and disentangling the causal factors is a tricky task.

The Salmon Strategy of the National Rivers Authority, produced in 1996 and later adopted by the Environment Agency (EA), actually started life as a sea trout strategy prompted by concern over catches. It was hijacked by the salmon interests responding, justifiably, to big political drivers through international fisheries negotiations and delivery of obligations to NASCO in the face of salmon decline. Sea trout had no such influential patronage and temporarily lost out, again. However, the latest round of the EA's Salmon Action Plans, actively brings sea trout into its "Salmon" Action plans. The EU Water Framework Directive, which seeks to protect "ecosystem health", is partly responsible for this and will have an increasingly strong influence on how such fishery plans are assembled and presented. Salmon and trout management should be closely linked and we see this also in the management plans for the Spey and Tweed, where the sea trout (and non-migratory trout) has assumed a much higher profile in recent years, again a consequence of recent catch concerns.

Following the upsurge in activity since the 1990s, a sea trout symposium (part funded by the AST) in 2004 brought together recent information and made recommenda-

tions for future research, including the roles of genetics and environment in anadromy, marine movements and ecology, interactions with other species (especially salmon) and the socio-economics of fishery development. In turn this provided a stepping off point for a number of new initiatives now in hand or about to start across the British Isles and further afield. The Celtic Sea Trout Programme (CSTP) is a Wales-Ireland Cross-Border collaboration that is currently the subject of a bid to the EU Interreg IV programme. This project focuses on sea trout stocks and fisheries in Ireland and Wales, but looks also at sea trout throughout the Irish Sea including the important Solway coast fisheries, North West England, the Isle of Man and Northern Ireland. Collaborating partners come from all these countries, variously from government departments, agencies, rivers trusts, and universities. The focus is on climate change impacts and how to manage the fisheries to achieve the maximum sustainable benefit. For the first time we hope to examine the sea-phase ecology of sea trout through sampling in coastal waters and further offshore. The tasks include a detailed look at the stock structuring and distribution of sea trout, using genetics and scale microchemistry; a review of the status, trends and development opportunities in the fisheries; a study of the variation in sea trout juvenile production and its response to catchment features and the description of river and regional patterns in life history variation. This latter aspect will be taken further by exploration of environmental mechanisms through linking to an ecosystem model for the Irish Sea in



partnership with marine fisheries scientists at CEFAS. It is an ambitious and exciting prospect – let's hope the bid is successful.

On the other side of the British Isles, the Living North Sea project is also applying to Interreg for funding, but to the North Sea Region programme. This project is bringing together workers from Scotland, England and Denmark, The Netherlands and Scandinavia to explore collaborative opportunities, mainly focused on developing transnational management where that enhances conditions for migratory fish, including sea trout. It is based on the premise that decline in stocks can be attributed to three main problems: intensive fisheries; lack of connectivity between rivers, deltas and the sea preventing fish from completing their life-cycles, and lack of good habitats, especially spawning grounds, and pollution.

In a more regionally focused endeavour, the Moray Firth Sea Trout Project is a three year collaborative project combining the efforts of District Salmon Fisheries Boards, Fisheries Trusts and Angling Associations to address the decline of sea

trout stocks. A combination of various stock assessment methods, research and management practices is being put in place in an integrated strategy to address the decline. Another regionally focused project is the North Norfolk Sea Trout Project led by the Wild Trout Trust with partners to investigate and restore sea trout stocks and fisheries of north East Anglia. It is not an area that immediately springs to mind for sea trout fishing; but formerly it had an important coastal net fishery, reduced now through regulation, and has productive trout streams, so there is considerable potential.

There are projects under way on the Scottish West coast, where the fish farming issues mix with other potential impacts, and amongst these the Shieldaig project includes a trapping facility as part of a long term monitoring programme. Long term monitoring is vital to research the types of stock changes seen in sea trout and the British Isles sea trout network is still sparse, so the Shieldaig is an important facility.

The English South coast presents a geographical gap in sea trout research.

There are some significant, if unusual, sea trout populations in those rivers and there are emerging proposals to develop a programme of sea trout research to bid for European funding.

The AST has played an important role in pushing forward the sea trout's interests. In addition to the 2004 symposium it has funded individual research projects, such as that of Alice Ramsay (Bangor University), reported in the AST 2008 Summer Journal, and has supported the planning of the CSTP.

There is a long list of other sea trout work, research and management, going on through for example the ART, RAFTS, ASFB, the TWG as well as significant programmes at CEFAS, FRS and the EA and in Universities such as Exeter and Southampton. It is not possible to detail all these. However; so much is now happening and things are moving so fast that it is appropriate to have another review of our collective progress, and that is what the AST is planning to do in spring 2009.



*Salmon and sea trout a case for multispecies management?*



# Catch and release: some further refinements of advice on live fish handling

John Webb (AST Biologist)

Many regular readers of the Journal are aware of the Trust's long-running involvement in research into catch and release, delivering relevant training and advice, and supporting the development of conservation policies on different rivers.

Whilst welcoming the considerable progress that has been made over the past ten years, a casual glance at many of the 'gallery' sections of the various angling magazines and numerous fishing websites suggests that many anglers and ghillies are increasingly using photography to record the results of their sporting endeavours. The need for some form of 'trophy' or

similar long-lasting token of success is not new, and has been a prominent feature of Western field-sport culture for some time. However, in contrast with previous eras when images of neatly arranged harvests or the prospect of a fully stocked glass case were the norm, many modern-day salmon and trout anglers are now limited to hastily acquired images of their quarry captured (and instantly available) via digital cameras. Whilst the great value of these images to anglers (and fishery owners) is obvious, once in the wider public domain the same images also convey powerful insights into the standards of care being afforded by angling based interests towards

fish of high conservation, economic and cultural value.

Practical advice on the basic catch and release techniques is now readily available in the form of numerous leaflets, posters and website articles. Nevertheless, regrettably, many photographs of live fish in the media continue to show anglers and ghillies holding or handling live fish in a manner that strongly suggests that basic catch and release guidelines are being ignored. Indeed, it is still all too common to see a successful angler without the benefit of either a ghillie or a net, struggling to maintain a grip on an active fish (usually



**Photo 1:** With the fish safely in the net, *slowly* orientate yourself and the net so that the fish's head is facing into the current. If large amounts of silt have been disturbed – gently move away to a clearer area – carefully keeping the net and the fish in the water. **Do not lift the net up out of the water.**

**Photo 2:** (The author training ghillies on the River Naver on catch and release techniques) Holding the net handle at knee height – put one leg over it and hold between your legs. The net is then supported by holding the handle between the knees. You now have full control of the fish which is **recovering** (i.e. breathing) in the net whilst you prepare to unhook etc. Crucially, both hands can now be used to hand your rod to somebody or place it safely. You can also take your time to get your forceps ready and perhaps unwind your tape measure. When using a net in this way – take care to net the fish in a depth of water that is at least as deep as the fish. Netting or 'beaching' fish in water that is too shallow may cause the fish to 'flap' – causing additional stress and the risk of scale loss and sand and grit forcing its way under the scales.

(Note: Whenever possible, fish should always be unhooked whilst in the water. Consequently, unhooking and release should be undertaken by whoever is most confident and has the most suitable footwear.)



out of the water!) with one hand – whilst attempting to either find their forceps/camera in their pockets or taking pictures with the other.

One other aspect of catch and release photography also warrants particular concern. Many anglers are now increasingly keen to have photos taken of them holding their live fish – a process that necessarily requires the presence of another person to take the picture. Consequently, it is also common to see lone anglers restraining a live fish on the bank for several minutes whilst signalling to their friends or other anglers or making a phone call in an effort

to ensure that the required photo is obtained.

Failure to adhere to the basic published guidelines is likely to cause an unnecessary increase in the potential risks to the fish involved. The basic rule of catch and release is that whenever possible, fish should be kept in the water at all times. Fish taken out of the water will suffer unnecessary stress and increase the risk of physical damage via the associated handling and contact with grass, rocks and sand etc.

Thankfully, to date, despite these common problems there have been no reports of

significant levels of mortality among fish returned by salmon and sea trout anglers. Nevertheless, in the light of these concerns, fishery owners and managers, and ghillies are urged to continue to use and promote best practice to ensure that a balance is struck between the full enjoyment of the sport, fish welfare and the conservation needs of the fishery – plus the wider public perception of angling.

With this advice in mind and by way of an aide memoire, the following sequence of photographs on how to net, unhook, photograph and release a fish with the minimum stress and risk of damage.



**Photo 3:** Forceps at the ready – you can now reach in and with both hands. Ideally, the fish should be facing upstream and lying parallel with the axis of the bottom seam of the net. If it is not – then gently manoeuvre the fish around with wet hands (without lifting the fish) and make sure that the teeth, kype or paired fins are not entangled. Gently support the head with wetted hands and remove the hook. **Do not grip the head or attempt to put your fingers in the gill arches.** If the fish kicks or attempts a prolonged burst of swimming – **DO NOT be tempted to attempt to physically restrain the fish (particularly if it is fresh run) as this may lead to excessive levels of scale loss:** simply withdraw your hands/forceps and wait for the fish to settle down. Remove the hook/s from the net area. If required, the fish can be measured and photographed within the base of the net.

**Photo 4:** To release the fish, simply release the net from your knees and let the net drop down (taking care that it does not strike the fish) and gently ease the fish away towards the main flow – supporting it gently by the chin and tail. This is the point at which a full photo can also be taken – with the fish being gently lifted to just above the water surface for just a few seconds.

*Editor's note: John has practised catch and release on salmon, sea trout and brown trout for over 30 years in the UK, Irish Republic, Russia, Poland, Canada, Chile and Argentina.*



# Trials and tribulations

## Editor's note

Andrew Graham-Stewart, with his unique overview of Scottish rivers, especially in the far north and west coast, gives his personal perspective on the state of and prospects for Scotland's salmon stocks. Andrew works closely with the Scottish fisheries trusts, the river boards and the angling and research organisations. His reports in the angling press are well known to anglers from all over the world.

## Andrew Graham-Stewart, PR Consultant and AST Member

Rod catches of salmon have long been used as the primary means of assessing the relative productivity of Scotland's rivers and beats as fisheries. For the last 150 years or so angling catches on the great majority of salmon rivers have been meticulously recorded, not least because recent annual averages are generally the most important factor in determining the capital value of a fishery. They have also been employed for many decades as a barometer of the efficacy of management policy – from stocking to predator control to catch limits and catch and release. River managers are intensely aware that their performance will to some extent be judged by catch levels on the waters they are responsible for. Furthermore much of the income that Fishery Boards depend upon in order to operate effectively is either directly or indirectly related to rod catches.



Salmon Smolt Farm, Loch Shin (north end).

Fish counters (as long as they are reasonably accurate) are of course a more reliable indicator of migratory fish runs. However there are very few counters in Scotland – aside from those installed in hydro dams – and this surely needs to be addressed as a matter of priority. Rod catches are still the main measure of salmon numbers. The problem is that they are an inefficient indicator of the strength

or otherwise of runs and all too often this can lead to false optimism. An article in a recent issue of a leading game-fishing magazine referred to the "phenomenal runs of last summer" (ie 2007); the author was confusing rod catches (which were prolific due to ideal angling conditions – almost constant high water) with runs – in fact fish counter information (albeit limited) confirmed that the runs were not much better than the average of recent years and in some instances well below.

Average annual rod catches of salmon and grilse are now actually significantly more than they were in the 1970s (the totals for 2004 and 2007 were the second-highest and third-highest respectively since country-wide records began in 1952). It is worth examining how this has been achieved. The table below shows Scotland's official average declared annual catches (by all methods) of wild salmon and grilse over the last four decades (the raw data is sourced from FRS's *Statistical Bulletins*).

The decline (amounting to 75 per cent over the above time period) in the total annual average catch is certainly dramatic. Obviously this partially reflects the fall in marine survival of salmon. A major additional contributory factor has been the long-term decrease in the size of the salmon netting industry (both net and coble and fixed engine) as falling catches

and increased competition from cheap farmed salmon in the late 1980s and early 1990s severely reduced the profitability of netting stations – persuading very many owners of netting rights to sell up to conservation bodies (particularly the Atlantic Salmon Conservation Trust).



Harris: Virtually no tidal exchange.

The total declared net catch (by both methods) of salmon and grilse has fallen from an annual average of 342,662 in the 1970s to an annual average of just 28,231 since the turn of the millennium. By 2007 it was below 20,000 and 2008 (the figures will not be published until September 2009) is likely to see a further substantial drop following the closure of the North Esk coastal nets and the Strathy nets. As regards rod catches, the great reduction in netting effort and catches since the 1970s has compensated for the huge decline in marine survival. Essentially a much greater proportion of those fish that do actually survive their time at sea (and return to our coastal waters) are able to

|         | Rods   | Net and coble | Fixed engine nets | Total annual average |
|---------|--------|---------------|-------------------|----------------------|
| 1970-79 | 63,828 | 166,226       | 176,436           | 406,490              |
| 1980-89 | 73,027 | 103,806       | 129,619           | 306,452              |
| 1990-99 | 71,536 | 27,050        | 44,342            | 142,929              |
| 2000-07 | 75,247 | 7,604         | 20,627            | 103,478              |

Note: rod catches from 1994 include fish caught and released.



reach their natal rivers without falling prey to the nets. To quote Fisheries Research Services' *Statistical Bulletin of Scottish Salmon and Sea Trout Catches, 2007*: "To date, the decline in the netting industry has acted as a buffer for the rod fishery as marine survival has declined".

It is quite clear that, although average annual rod catches of salmon and grilse across Scotland as a whole have remained remarkably stable during the last four decades, there is little room for complacency. There is no indication that marine survival is likely to improve. The SALSEA programme may well come up with reasons for the decline in marine survival, although the problems may be insoluble, particularly if, as is likely, they relate to climate change and the availability of prey species. Thin grilse have featured for the last three years and there is no doubt that the 2008 grilse run was numerically limited. Better numbers of 2SW summer salmon were some compensation, as was the increase in 3SW spring salmon.

However, overall I would suggest that we are only treading water in terms of maintaining salmon numbers in Scotland and preventing any further slump in abundance. Surely the precautionary principle demands (in order to compensate for any further decline in marine survival) that we address with urgency those identifiable issues which are, given political will and if necessary intervention, within our grasp. Two major issues must be priorities.

The first is the remaining mixed stocks

nets in Scotland. Their declared annual catch is now below 20,000 salmon and grilse but, in the context of current levels of marine survival and very depleted runs in some rivers, this is still a significant figure. It is important to emphasise that there is also an undeclared catch; the extent of this is by definition an unknown factor although ICES' advice to NASCO suggests that non-reporting of salmon catches may be as high as 50 per cent in some countries. In addition "hung fish" (those that are damaged and/or removed from fixed engine nets by predators) do not appear in any figures; in my experience, for every 100 whole fish caught, another 20 may be "hung".



Seal-damaged (headless) Salmon.

There is now almost universal acceptance internationally that mixed stocks netting is unsustainable from a management or conservation perspective. ICES' advice to NASCO is pretty unequivocal; it states that "mixed-stock fisheries present particular threats to stock status". Since the closure of the Irish drift-net fishery, Scotland's mixed stocks netting is increasingly under the spotlight and the Scottish Government is beginning to appreciate that it can no longer hide behind the mantra of not wishing to interfere with the heritable

rights of netsmen and that the principle of "willing buyer, willing seller" must prevail.

The remaining commercially viable netting operations have little incentive to come to the negotiating table, given the astonishing premium price now commanded by wild salmon.



River Cassley: Angler releasing a sea-licked spring salmon.

The Strategic Framework for Scottish Freshwater Fisheries (published by the Scottish Government in July) confirmed the need to "develop a strategy for mixed stocks fisheries". A working group, under an independent chairman, has now been set up. It will "review all aspects of mixed stocks fisheries, identifying the impact on management and conservation and make recommendations based on evidence and good practice". It will report by the end of 2009 and it is hoped that it will give the Scottish Government the necessary mandate to intervene.

The second major issue is aquaculture. In 1999 the Scottish Executive set up the Tripartite Working Group (TWG), comprising itself, wild fish interests and the salmon farming industry to mitigate the impact of aquaculture on the migratory fish runs of the west Highlands and Islands.





Loch Ainort, Isle of Skye: A view down from the Cuillin Hills.

The TWG's original remit – "to address problems common to salmon farming and wild salmon fisheries and to seek solutions . . ." – was not over ambitious but it at least represented an acknowledgment that the status quo was not sustainable.

Now ten years on, it is pertinent to ask – just what has the TWG actually delivered at a cost of many hundreds of thousands of pounds of public money? According to its own criteria, it has been "very successful", brokering 18 Area Management Agreements (AMAs), designed to promote dialogue on a local level between the salmon farmers and those representing



Loch Roag, Grimmersta, SAC.

wild fish. The AMAs develop initiatives such as the synchronised treatment of the farms for sea-lice and the fallowing of farms.

Surely the only relevant criterion, on which the success or otherwise of an AMA should be judged, is whether wild fish numbers are recovering. In the great majority of the river systems in question there is absolutely no sign of any resurgence in salmon; and the situation with sea trout is simply dire. Consequently

there is a growing consensus on the west coast (amongst fishery managers and wild fish members of the AMAs) that the TWG initiative has failed in what should be its primary objective.

Concurrent with the TWG, the Scottish Government has introduced extensive legislation and a licensing regime to regulate the aquaculture industry. So far these measures have been singularly ineffective in stamping out bad practice on the ground. Thus the Aquaculture 2007 Act deals with the issue of escapes from farms, but it only comes into effect *after* an escape has occurred and the damage (the introduction of non-native fish, usually of Norwegian origin, into the wild environment) has occurred; to date no salmon farm has been prosecuted for permitting an escape. The Scottish Environment Protection Agency (SEPA) has been given responsibility for considering applications for fish farm expansions. However SEPA, in deciding the merits of an application, declines to take into account either the implications of escapes or sea lice (both of critical concern to wild fish interests) because neither is deemed to be a "pollutant".

The end result is that fish farm expansion applications are simply rubber-stamped. Some of the Scottish Government's own scientists have advised unequivocally that "marine cages should not be situated within 30 km of major salmon rivers" (see page 389 of *The Atlantic Salmon – Genetics, Conservation and Management*, edited by Eric Verspoor, Lee Stradmeyer and Jennifer L Nielsen and endorsed

by Fisheries Research Services, 2007). To date there has not been a single environmentally-based relocation of a fish farm and licences for the expansions of farms within the immediate vicinity of important salmon rivers continue to be granted.



N. Harris.

Time is running out in many parts of Scotland's west coast – indeed in some rivers it is believed that there are now no wild fish left to save. The Scottish Government needs to appreciate that its strategy over the last ten years has failed from a wild fish perspective. There is little argument over what practical measures need to be introduced (including, as an absolute priority, a fish farm relocation programme). But do the powers that be have the inclination to instigate such measures, given the lobbying influence of the Norwegian multi-nationals? It is perhaps no coincidence that there are only three designated Special Areas of Conservation for salmon in the west Highlands and Islands.



# Seals Working Group

Neil McKerrow



*Common seal on the bank of the South Esk near Kirriemuir, 16 miles from the head of tide (Photo: Derek Strachan).*



*Seal at Finavon 15 kilometres from the head of tide (Photo: Derek Strachan).*

A major Seal Management Conference was held in Inverness in June. It was opened by Richard Lochhead, Cabinet Secretary for Rural Affairs and the Environment, and set against the background of the new Marine Bill.

Dr James Butler outlined the origins and key operational features of the Moray Firth Seal Management Plan, now regarded as a successful model for others to emulate. This was followed by presentations on latest research findings by SMRU, St Andrews University, and FRS Faskally, and discussion of best practice in seal and wider marine management.

These discussions took place against a background of declining common seal populations, particularly off the north and east of Scotland, where dramatic declines in common seal numbers have been reported. An up-to-date report is currently awaited from NERC's Special Committee on Seals, statutory scientific advisers on seal management.

Theories are many and varied, and include competition between common and grey seals for food supplies, and the impact of predation by killer whales – with a common theme of global warming and reduced sources of food – all of which are consistent with our own research into the undernourished condition of returning grilse, and declining numbers.

On the legislative front, there has been discussion of various aspects of the Seals Conservation Act 1970, with particular regard to the interpretation of exceptions to Seals Conservation Orders (The Netsman's Defence), Licences and Closed Seasons as they may apply to the aquaculture industry dealing with marauders. It is likely that all these aspects will be further considered as part of the Marine Bill legislation consultations.

In general terms, the seals issue will remain politically sensitive until an effective non-lethal deterrent can be developed – reports are circulating of some success in Canada with a new generation of seal 'scarers'.

## Joint Project Atlantic Salmon Trust/ SNH/FRS Faskally/SMRU, St Andrews University

An interesting consortium project, supported by the Trust and SNH, is under way for the development and application of predation logger and transmitter devices to assess impacts of seals on salmonid smolts.

This reflects the continuing concern being felt about the possible impact of seals on salmon and sea trout populations and the fisheries they support.

The project has involved the development of a prototype predation logger and transmitter (PLT) by Phil Rycroft of Wyremicro, in association with FRS Faskally and SMRU.

The PLT is mounted on the back of the seal where it operates autonomously, detecting the presence of passive integrated transponders (PIT) tags in the intestines.

The concept is that smolts leaving target river systems may be fitted with PIT tags and so can be detected when consumed by seals. Trials so far have been limited to laboratory conditions, but it is hoped to test the application at Shieldaig next year.

This will involve the application of PLTs on seals at Shieldaig to investigate the impacts of seals on sea trout smolts. Dependent on feasibility of operating with small PIT tags, work could be extended to NE rivers to investigate the impact of seals on salmon smolts.



# Scale-readings



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Robert Scott-Dempster, AST Board Director, discussing Spey salmon issues with River Spey Director, Roger Knight.

## Atlantic Salmon Trust Publications

**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

**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

**A Review of Irish Salmon and Salmon Fisheries**  
K. Vickers

**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

**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

**Surveying and Tracking Salmon in the Sea**  
E.C.E. Potter and A. Moore

**Salmon in the Dee Catchment: The Scientific Basis for Management**  
A. Youngson

**Enhancement of Spring Salmon**  
edited by D. Mills

**Water Quality for Salmon and Trout**  
J. Solbé

**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

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

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

## Trust Shop

*(a percentage of the sales of 'other books' and the DVD come to the AST)*

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## Prints

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by Shirley Carnt £20.00

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

To order, contact Jenny at the Trust's office:

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# Book Reviews

Tony Andrews reviews two recent books revealing different aspects of fishing for salmon and trout. Sandy Jenkins and Jo Orchard-Lisle show what extraordinary and varied responses these fish evoke from us, and how the culture of fishing for them permeates our lives.



Fishing Huts: The anglers sanctuary.

## Cast of a Lifetime

By Sandy McL Jenkins

Eccleston Publishing EH46 7BH

Sandyjenkins37@tiscali.co.uk

ISBN 978-0-9560980-0-9

*Cast of a Lifetime* is about memories linked with fishing, rather than the business of catching fish. Sandy Jenkins uses his recollections of an angling lifetime to take his reader to some of the greatest cold wildernesses of the northern hemisphere. His accounts of a perilous trip by canoe led by an Inuit hunter; wading the treacherous sea pools of the Russian River Strelina in full spate, and even escaping an evening rise of vipers in the Atlas Mountains, are not customary fare for readers of fishing books.

Like Bill Currie's *The River Within*, this book is about the inscape of the angler – his feelings on seeing his first salmon, early impressions of holidays at Arisaig, fishing the Borrodale Burn, the delight of catching huge trout in a small Highland loch (with an understandable reluctance to share its exact location!), a long term and not always rewarding loyalty to the Thurso, adrenalin inspired reactions in Canadian bear country, and moments of unforgettable tranquility in the silent forests of a fishless upper Strelina, surrounded by feeding waxwings.

The author is acutely aware of the relentless cruelty of the northern winter; as much as he is of the dark history of Russia. The chapters on fishing the Varzuga, Pana, Barbia, Kitsa, Strelina and other rivers of the Kola Peninsula have as their backdrop the harshness of the climate and the inhumanities of previous political regimes.

Having visited these places myself, the first in 1993 in the company of the late Professor George Dunnet, I can only agree with the author's thoughts and feelings on these aspects of subarctic Russia. In those early days of post-soviet Russia, political power fell on the shoulders of strong men, brokers, such as Svetoslav Mikhailovich Kalyuzhen, who controlled most of the Kola's rivers, a situation which remains largely true today.

The fishing philosophy of Sandy Jenkins comes through in his account of fishing the Thurso, usually without catching a fish, but his enjoyment stems not from the catch itself but from the setting, the company and the ever-present hope of a fish. That is a cocktail that serves most of us salmon anglers. *Cast of a Lifetime* is more than a book about fishing: it is a reflection of how fishing can become a life fulfilling adventure. This book isn't just for anglers; its appeal will go far beyond that.

## Fishing Huts: the anglers sanctuary

By Jo Orchard-Lisle

Excellent Press Ludlow £25

ISBN 1 900318 36 9

ISBN 978 1 900318 36 5

Huts are indeed the anglers' sanctuary, as Jo Orchard-Lisle's charming book illustrates so well. But they are much more than this as I discussed recently with a fishery owner on the Tamar, who told me that a good hut makes a contribution to conservation by ensuring that anglers linger there to enjoy a view of the river in comfort. This is a book about British fishing huts, revealing far more about the eccentricities of river fishery owners than about anglers' preferences. Huts in other countries aren't

quite the same, as many have found, for example on the Rivers Umba and Sidirovka in Russia. These two represent extremes by any standard, with Umba Lodge a palace made for the drinking of vodka and supping of caviar and Ocha, that delicious salmon consommé and speciality of the Russian arctic, whilst the aptly named hut that gives its name to the prolific 'Sh..t-house Pool' on the enchanting Sidirovka is the epitome of Russian utilitarianism. I have my own favourite hut on a Scottish river, located in a secret place with a 180° panoramic view of the river flowing past. Huts are integral to fishing memories; places of good company, sometimes heated debate and, for the night sea trout fisher, or the dawn grilse angler, a place to sleep.

This is a book for people who fish, the people who accompany them (or choose not to), and the faintly incredulous. For someone who has never fished for salmon or trout, the range of these buildings must seem very strange with, at one end of the scale, Henry Cotton's classically designed chapel to angling on the Derbyshire Dove, and at the other end an abandoned minibus in the Western Isles. Some huts, such as the stone-built one at Upper Floors on Tweed with its pebble outline of a 59lbs salmon as doorstep, reflect the grandeur of their location. Others, such as the huts on the River Thurso in Caithness are simply utilitarian in the bleakest of landscapes. But all huts share an important function in giving what is essentially a solitary pass-time a social focus. Jo Orchard-Lisle's enthusiasm for her subject is infectious and she has done the cause of our fishing huts a real service.

Tony Andrews.



# Financial and Fundraising Review

## Record Project Funding – in a dramatically changed economic environment!

Neil McKerrow, Commercial Director (Finance)

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### OUR CASE FOR SUPPORT

The Trust has committed to record levels of funding over the past two years, and this commitment has been sustained into the current year. We need to continue to raise funds in order to sustain project funding towards restoration of sustainable salmon and sea trout stocks!

- 1 **The Atlantic Salmon Trust is the only charitable body exclusively devoted to research and restoration of wild salmon and sea trout stocks on a national and international basis.**
- 2 **The Atlantic Salmon Trust** liaises with, supports, and provides advice on an independent, scientific and practical basis to governments, national authorities, wildlife and environmental organisations, as well as still-water 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.
- 5 **NASCO has launched** its long-awaited international SALSEA-Merge marine research project, a multi-million, EU backed, international marine investigation into salmon mortality and movements at sea. The Trust is acting as the lead British NGO for this project, and has committed to funding the post of the International Scientific Research Co-ordinator for SALSEA-Merge, Dr Jens Christian Holst of Norway for the three year duration of this significant International Project.

### THE YEAR 2008-09 SO FAR!

How times can change! Writing these thoughts barely 12 months since we were basking in the afterglow of a memorable Fundraising Dinner at Fishmongers' Hall and an exceptional 40th Anniversary year of events, it is salutary to reflect how the gathering 'credit crunch' and recessionary maelstrom have so rapidly changed the financial climate and economic outlook! All charities are looking to safeguard their income and manage their costs, while maintaining support and furtherance of their particular objects and interests. We have never been so reliant on the goodwill and support of all our members and supporters. There is much to do, and we aim to bring our 'case for support' to a wider audience so that we can assist the many worthwhile scientific projects in furtherance of salmon and sea trout restoration.

#### Our Income

Given the fast changing external environment, and the comparison with the last exceptional year, it is really no surprise that our income to date is lagging by some 12% behind the previous year.

However, with high hopes of a revitalised Fishing Auction, now operating in conjunction with RAFTS and ART, we hope that the second half will come through in strong fashion!

#### Our Expenditure

The HSAP at its Spring Meeting in Edinburgh reviewed a record number of projects applications, which resulted in £50,000 being granted towards 12 scientific projects, the details of which have been covered elsewhere in the Summer edition of the Journal.

In addition, the current year marks the first of three years in which the Trust is providing

£50,000 funding towards the costs of the International Scientific Co-ordinator's post at the heart of the SALSEA-merge research into salmon mortality at sea. Dr Jens Christian Holst's fascinating article appears elsewhere in the Journal.

Primary funding has also been provided to various sea trout research projects, in particular the Celtic Sea Trout project, as part of a strategic commitment by the Trust to increased promotion of sea trout sustainability issues, and attendant public awareness. It is planned that the results of the research will be shared in a major Sea Trout Symposium in 2010 or 2011.

On the promotional front, much work has been undertaken on the revitalisation of the AST 'brand' logo and presentation. Plans are already well advanced to update the Trust's presentation at game fairs and other public occasions. A range of clothing accessories has also been produced bearing the AST salmon logo, available to members and supporters. These have been well received – please do buy!!

#### Merchandise

A small range of quality merchandise suitable for the riverbank or town is available bearing the AST salmon logo. These are illustrated on page 34, and include a navy Fishing Fleece, lambswool jersey – both V and round necked, and a tasteful ladies scarf, to augment the much respected tie!

Further items are planned – please let us know of any bright ideas or articles you think would appeal to our friends and supporters!

To order either phone Jenny on 01738 472032, or email [jenny@atlanticsalmontrust.org](mailto:jenny@atlanticsalmontrust.org), or complete and return the form below with your cheque.



## Advertisements

If you would like to advertise in the next issue of the Journal, please contact Neil or Jenny at King James VI Business Centre by Telephone on 01738 472032 or by Fax: 01738 472033 or email: [jenny@atlanticsalmontrust.org](mailto:jenny@atlanticsalmontrust.org) by 20 November.  
Quarter, Half and Full page sizes available.

### Fundraising and Annual Fishing Auction

Following last year's record proceeds, this year marks a significant enhancement of our much celebrated Annual Fishing Auction, the Trust's prime fund raising event.

With the support of RAFTS, ART and the Wild Trout Trust, members have generously contributed not only mouth-watering fishing, but articles, artefacts, and even opportunities for expert tuition.

These arrangements are on the basis that the Trust returns all monies generated by these lots, directly for the benefit of the rivers trust or organisation concerned, less a contribution to the running costs of the Auction itself.

This is a genuine 'win win' for everyone involved; the Trust benefits from access not only to wonderful fishing, but also access to a wider audience of anglers and fishing enthusiasts.

With the valued assistance of Fly Fisher and Fly Tier Magazine, and also CKD Galbraith, we have distributed over 35,000 mail back leaflets, which have already generated a healthy response.

So we await Auction Day on 3rd February with keenest anticipation, and hope that all our readers and fishing friends will enjoy the new look Catalogue, bigger and better than ever before, with its many superb photographs of rivers in Scotland, Ireland, England, Wales and further afield. Above all, please bid generously!!

### 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:

£15,000 – cost of a privately hired research vessel in North Atlantic for one day

£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 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

Many of these are covered in the 'Research' section.

For fuller details of projects please call Tony Andrews, Dick Shelton or Neil McKerrow.

#### Make a legacy to the Trust

##### Bequests to charities

Giving a Legacy – Your Will could express a donation in various ways, eg. The 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!!



# Gift Aid Declaration and Banker's Order Form

If you would like to support the Atlantic Salmon Trust, you can help us by making a cash donation or setting up a Banker's Order. Please complete the Gift Aid Declaration and parts A or B

## THE ATLANTIC SALMON TRUST – GIFT AID DECLARATION

PLEASE COMPLETE IN BLOCK CAPITALS, EXCEPT FOR SIGNATURES

Title Forename(s) Surname  
Address  
Post Code e-mail

I would like the Atlantic Salmon Trust (Registered Charity Nos 252742 and SCO37902) 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, 3/12 KING JAMES VI CENTRE, FRIARTON ROAD, PERTH PH2 8DG.





## ATLANTIC SALMON TRUST

### Patron:

HRH The Prince of Wales

### President:

Major General The Duke of Westminster

### Vice Presidents:

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Mr Neil McKerrow

### Deputy Director (England, Wales and Ireland):

Mr Ivor Llewelyn

As at 1st May 2008

## HONORARY SCIENTIFIC ADVISORY PANEL (HSAP)

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J.L. Webster, B.Sc., Ph.D. (Scottish Salmon  
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K. Whelan, B.Sc., Ph.D. (The Marine  
Institute of Ireland and President,  
NASCO)

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

### Observers:

J.W. Armstrong, B.Sc., Ph.D.  
(FRS, Freshwater Laboratory)

A. Moore, B.Sc., Ph.D.  
(The Centre for Environment,  
Fisheries and Aquaculture Science)

N. Sotherton, B.Sc., Ph.D. (Game &  
Wildlife Conservation Trust)

P. Hutchinson, B.Sc., Ph.D., F.I.F.M.  
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## 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 & Wildlife Conservation Trust  
(GWCT)

North Atlantic Salmon Conservation  
Organisation (NASCO)

North Atlantic Salmon Fund (NASF) (UK)

Rivers and Fisheries Trusts for Scotland  
(RAFTS)

Salmon & Trout Association (S&TA)



Neil McKerrow, AST Commercial Director, presenting the AST Award to Alistair Maltby, one of Professor Stuart Lane's science assistants at Durham University, for research linking hydrological connectivity of land and fisheries, at the Association of Rivers Trusts Annual Dinner and Awards in November 2008.



AWARD WINNING

ZG **HELIOS**  
FLY RODS



**The kudos just keep coming ...**

*"I haven't found a distance it doesn't cast well, with no effort on my part! Lays down a lot of leader, as gently as a puff of smoke."*

*- Fly Rod & Reel magazine*

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