

A Sad Empty Place - The Spey.

As I sat by the Spey one June night recently, having fished for two hours without sight of a fish, in what should have been perfect conditions, I got to wondering how this magnificent river got to where it is today and how on earth this was allowed to happen. It's like watching the life ebb away from an old friend.

Twenty five years ago the Spey District Fishery Board recognised a continuing decline in spring salmon numbers and was concerned enough to resolve to find a means of enhancing their numbers. Spring salmon after all provide fishing for the whole river throughout the season. In the 1960's the declared catch of spring salmon on the Spey by rod-and-line and the nets was around 4000; by the mid 80's it was around 1000. In the 90's the ten year average(1992-2001) was 600 - this was of course by rod-and-line only as prior to this the net-and-coble fishery had been bought off. If there were gains by the removal of the nets then they were masked by an even steeper decline. In 2003 the Fishery Board introduced a conservation policy for spring salmon and in recent years around 70% of spring salmon have been released by anglers. Despite these measures estimates of 2010's spring salmon catch seem to be about 400. A proportion of these will, of course, have been caught twice - real catch perhaps, 300. Were there less than 1,000 spring salmon in the Spey this year? It seems likely.

In the 1980's millions of eggs were stripped from hen salmon from the Avon and the Livet. The bulk of these were stocked back into the Spey system as unfed fry into upper tributaries. As one "old head" once remarked to me " you might as well put them in a neep park".

Back in 1993 the Spey Fishery Board decided to implement a management plan for the river which did not even mention spring salmon. At the time I was working for the Spey Fishery Board on the development of stocked juveniles derived from spring salmon parents. When asked to comment I said that I thought it was a mistake to shift the emphasis away from spring salmon but the reply I got was that my comments were out of place and unhelpful. Their earlier resolve to do something to enhance numbers of early-running fish evaporated in favour of a much wider-ranging management policy very similar to that in effect on the Tweed. This was on the advice of scientists from the Freshwater Fisheries Laboratory at Pitlochry and the Marine Laboratory in Aberdeen. Various updates of this management plan followed up to the present.

In an article published in Trout and Salmon magazine in 2000, "Sense and Science on the Spey", the authors, Jim Gray and Bob Laughton congratulate themselves on "successful stewardship" and a river "in good heart". However, the Spey Board's annual report for 2000 contained the following advice to anglers on grilse. "The Board does not advocate the releasing of grilse, as these are mainly male fish, and in a normal season compete with salmon on the spawning redds. The Board's recommended policy continues to be that grilse caught should be removed. It is up to individual proprietors to dispose of grilse as they consider best after capture". Oops!

Since then very large sums of money have been spent on the Spey. An acoustic counter designed to find out the numbers of adult fish running the river was installed at Delfur, on the lower river, along with underwater cameras to check the counts. This was abandoned after several years and, as far as I am aware, few results were ever published. It didn't work is the bottom line. I don't know how much it cost in total but my guess would be many hundreds of thousands of pounds. It would obviously be useful to know exactly how many fish run the river and at what times. Does this, however, merit priority over increasing the number of fish?

A new hatchery was built on a branch of the Livet, a Spey tributary, to stock areas of the catchment in which there were low juvenile salmon densities and areas above man-made obstructions. Fish are stocked out as unfed fry from March to May and as fed fry from June to August. The Fishery Board are disappointed by the resulting low smolt outputs from these areas but little wonder, since it would be many times more effective to stock these juveniles as 0+ parr in September or October. They can give no good reason for this inefficient use of their hatchery.

The efficiency of their stocking policy is now to be assessed by a programme of D.N.A. sampling of broodstock used in the hatchery and of returning adults. This will be very expensive. Were they to stock out 0+ parr in the autumn the juveniles would be large enough for a proportion to be physically marked for later identification as adults and efficiency of stocking could be gauged much more cheaply.

In the 2000's rotary screw traps were used to sample the smolt run in the river. Two traps operated for 4 years (2005 - 2008) in the lower river in spring and early summer. Two types of mathematical models were used to extrapolate the smolt numbers captured to an estimate of the total smolt run. One model estimated the total smolt run at 1,621,234 for 2006 and at 613,171 for 2007, a variation of about 2.5 times. The other model shows a range of estimates from 702,015 for 2006 down to 45,435 for 2008, varying by a factor of 15. This scale of variation in smolt numbers is very suggestive of a system which is not producing smolts up to capacity although the report authors maintain that these smolt run estimates are in line with "accessible habitat being well populated by juvenile salmon and therefore maximum smolt output probably being maintained".

If the estimate of 45,435 smolts for 2008 is near the mark then it would explain the lack of grilse in 2009 and low numbers of 2SW spring salmon in 2010. This number of smolts would result from an egg deposition of around 10 to 11 million eggs. This number of eggs would be produced by just over 1000 hen fish. Is this adequate spawning escapement? It represents a smolt output of around 0.4 smolts per 100 square metres of

useable habitat for the river. The picture is clouded, of course, by the fact that any smolt run contains smolts of different ages.

Dick Shelton, former head of the Freshwater Fisheries Laboratory at Pitlochry, in his book "To Sea and Back" states that - "the numbers of young salmon that enter the sea each year from well managed rivers vary within remarkably narrow limits". In the North Esk smolt numbers have been estimated by trapping for more than 40 years. Over all these years estimates vary by a factor of 3.

Anglers who can remember further back than 25 years on the Spey will recall how fishing a salmon fly in late May or early June was sometimes nigh impossible because of smolts jumping on the fly, sometimes several in the course of fishing out a cast. This will of course be dismissed by some opinions as anecdotal but I have not caught a salmon smolt on fly for several years. I'm in no doubt that the river is not producing smolts the way it used to. Scientists have detected an increase in marine mortality rate of smolts going to sea over the last twenty years or more but are unable to pinpoint a reason or reasons for this. In view of this higher marine mortality it is vital that smolt production is at a maximum.

Some scientists maintain that a relatively small number of returning adults is required to populate the river with juveniles. Even if this were entirely true, it does not make for a good fishery. At a 1992 S&TA (Scotland) conference on "The Salmon and the Scientist", Dick Shelton, then head of DAFS Pitlochry, conceded that productive river angling depends on management to secure more fish in a river than the minimum "conservation stock" required for spawning.

In many English rivers, hatcheries fell out of favour, and many were closed. Within a few years the rod fisheries of these rivers had collapsed. The normal response of many scientists and fishery managers to any suggestion of using hatcheries to increase smolt production is to fall back on the threat they pose to genetic integrity. I don't doubt that there are genetic differences between salmon from different rivers nor that there are differences between fish from separate tributaries of longer river systems. There are genetic differences associated with salmon running rivers at different seasons of the year. Hatching and rearing young salmon in hatcheries and rearing tanks undoubtedly changes the selective forces acting on them and the fewer parents normally used in hatchery crosses limit's the variability of hatchery-reared fish. However, the Atlantic salmon remains one species across its range. Historically there have been many transfers between river systems of eggs, fry, parr and adults. From the Spey Fishery Board's own report of 2009 we can see that eggs stripped from broodstock caught at Tulchan, less than halfway up the mainstem, were reared to fed fry (160,000) and stocked in June above Spey Dam right at the head of the system. What price genetic integrity here?

By far a greater threat to genetic integrity is the continuing decline in numbers of adults of a particular stock component. Noel Wilkins, in an Atlantic Salmon Trust booklet, titled "Salmon stocks - a genetic perspective" maintains that populations undergoing serious numerical decline may also be undergoing significant genetic change and eventually when the population size is very small all genetic characters could be effected. He suggests this would be a recipe for final disaster when genetic variability is lost. I feel that declining numbers of the spring salmon component present a greater threat to genetic integrity than considered and careful stocking. It is up for debate just how far the numbers in a population have to fall before the effects of random genetic drift reducing the variability within the population result in the collapse of that particular stock component.

Are we anywhere near to that crisis point? I don't know but it's possible.

The Spey Fishery Board has made a huge investment in research in the last 20 years but ask yourself how much of this spending has put more fish in the river. Anglers, in returning more than 70% of their catch since 2003 represent the only real big contribution to increasing smolt numbers leaving the system.

Criticism of what has gone and is in the past, justified or not, won't increase smolt output either.

I would like to see the establishment of small rearing units well up all the major tributaries of the Spey and on the mainstem each designed to produce 40,000 or 50,000 0+ parr from local broodstock. These would consist of 8 -10 rearing tanks operating from April to September. It is not hugely complex or expensive to rear this number of parr. I know this because I did it for seven years. All that is required is an adequate reliable water supply, security fencing and a storage shed. Estates might even provide the facilities and labour to do this.

Local broodstock from each tributary could be held, stripped and eggs from multiple crosses incubated centrally in the existing hatchery. To reduce the need for constant annual removal of broodstock from tributaries the main hatchery could also be used to recondition kelts post-stripping so that they could be used in successive years, topping up losses as required by taking new broodstock. The technology to recondition kelts has been developed successfully over many years at the Freshwater Fisheries facility at Almondbank.

To produce 50,000 0+ parr on each tributary, a broodstock of 10 hens and 10 cocks would provide the numbers. The geneticists would argue for larger numbers to better represent the population. 50,000 stocked parr would produce an additional 1,500 smolts for each tributary. Replicate this for 6 or 7 rearing units and an additional 10,000 smolts could be added to the river each year. If present marine mortality is around 90% as has been estimated, then around an extra 1,000 adults would come back each year. By marking a proportion of the parr with an adipose fin clip before release an assessment of returns could be made.

Autumn 0+ parr, stocked as they should be, spread carefully throughout the stream, at a density of around 1 per square metre, helps eradicate the patchiness of natural spawning which occurs particularly when

spawning escapement is low. These parr literally stay where you put them by enlarge so they have to be released 1 or 2 at a time as the person doing the job walks in the stream. More potential parr territories are utilised in this way. In more inaccessible streams they could be delivered to operatives on the ground by helicopter.

Production of smolts at a level of 5 per 100 square metres of useable habitat is said to be at an optimum for the Spey and elsewhere in Scotland. This is based solely on production from natural spawning and from relatively recent times when smolt outputs may not have been optimal. It can be improved on by stocking parr.

Using a stocking policy as already outlined would satisfy most of the criteria stipulated in the Scottish Fisheries Research Report "Hatchery Work in support of Salmon Fisheries". Where it differs is in timing of release. The report advocates as early release as possible so that the hatchery progeny are subject to the forces of natural selection for as long as possible. However, releasing hatchery stock as, for example, unfed fry incurs a very heavy loss in numbers. Less than 0.5% survive to smolting whereas autumn 0+ parr can produce 3 - 5% survival to smolting. Losses are also very high if fed fry are released in mid-summer. Early release defeats the numerical advantage of stocking. Most stocked 0+ parr remain instream for around 18 months, smolting as 2 year olds and are therefore subject to a considerable period of natural selection in any case.

Reading the river report for the once famous River Wye in July's Trout and Salmon one comes across phrases like - "nightmare start", "catches plummeted to a new low", "23 fish reported for May off the whole river", "still not a single fish for the river above Winforton again", "lowest on record" etc. Will we be reading similar phrases about the Spey in a few years? I hope not!

We need a recognition by the Spey Fishery Board that all is not well; that the river is not producing smolts as it should be and that 20 years of management plans have not worked. Anglers and ghillies up and down the river know this. The anti-stocking dogma has got to be seen for what it is - a reason to record and monitor but not to intervene. If you don't intervene then you can't possibly make a mistake or is that the biggest mistake of all?

Walter Polson - July 2010.