ADVISORY VISIT TO THE RIVER IRVINE, GALSTON ANGLING CLUB, 13/14 MARCH 2007

Frontispiece: River Irvine by Galston

By Dr Andy Walker, Ellwyn, Moulin, Pitlochry PH16 5ER
(Tel: 01796 472743; E-mail: Libisandy@aol.com)

On behalf of Windrush AEC Ltd, The Cottage, Fordwells, Witney, Oxon OX29 9PP

1.0: BACKGROUND and OBJECTIVES

Galston Angling Club (GAC), with about 5 miles of salmon and trout fishing in the River Irvine around the small town of Galston in Ayrshire, requested a Wild Trout Trust (WTT) advisory visit be carried out in three local spawning burns in conjunction with a Grand Raffle for fund-raising held on 13 March, 2007. WTT provided two high-quality fly rods from Hardy Bros. and matched funding of £1000 to be used for the project. I gave a presentation on the WTT and Brian Shaw, Principal Biologist for the Ayrshire Rivers Trust gave a talk on aspects of their work. After defraying expenses, the sum of £4000 was available for habitat improvements in the burns.

Galston lying in the historical heart of Ayrshire nowadays depends on manufacturing and service industries. The River Irvine catchment, including the catchments of the River Garnock and Lugton Water, occupies an area of 706 km² in North Ayrshire and drains west past Galston, through Kilmarnock and Irvine to the Ayrshire Coast. In spite of the large towns, the catchment lies in a predominantly rural area where agriculture is a key socio-economic industry, with approximately 70% of the agricultural land being improved grassland used for the intensive and extensive grazing of dairy and beef cattle, with a low intensity of sheep. The River Irvine is essentially a spate river and used to be badly polluted in its lower reaches but now has a recovering salmon and sea trout population, while its brown trout fishing also can be very good.

The advisory visit (av) was a follow-up to one carried out specifically on the Burnawn (Burn Anne) tributary in 2005 by Ron Holloway (WTT) in order "*to pinpoint and identify any obvious limiting factors that may be controlling the reproduction, survival and free passage of salmonids brown trout, sea trout and salmon. To advise and suggest such measures that the Galston AC members themselves should or could undertake that would help to improve the survival of wild stocks of self sustaining brown trout and sea trout and salmon, at all life stages and improve natural salmonid reproduction. This is with a proviso that any work undertaken by the Galston fishing club is compatible with the objectives of the River Irvine Fisheries Association and the Ayrshire Rivers Trust.*"

2.0: COMMENTS FROM THE 2007 WTT ADVISORY VISIT

The av undertaken in March 2007 looked at progress on the Burnawn and also the Hag and the Polbaith Burns where the Club has been carrying out habitat work to improve spawning and nursery habitat. A significant new development was extensive flood wall and other civil engineering underway in the bottom section of the Burnawn where it passes through Galston. Flood defence work has also been carried out or is underway on the main river. A series of digital images taken in the order of inspection illustrate points of interest noted during the visit. Galston AC Committee Member Gary Anderson was in attendance throughout, arranged access with riparian owners and provided the required local information.

Plate I: Burnawn confluence with River Irvine at Galston.

The Burnawn was carrying a heavy silt load as it joined the River Irvine due to the civil engineering work involving heavy plant underway within the town. The banks and bed of the stream are being extensively modified for flood defence. The Ayrshire Rivers Trust (ART), in making comments about the proposals for this work in a letter written by Alistair Duguid, Principal Biologist, in 2004, pointed out that the opportunity should be taken to improve access for salmonid fish in the lower reaches of the burn, which contained a flat bridge apron/chute (Plate I) and a sizeable weir above Galston. It is unclear from information available at the time of the visit whether this opportunity to improving access for upstream passage of spawning stocks of salmon and trout has been taken, or indeed whether any consideration has been made for the retention of natural stream bed characteristics that would provide adequate juvenile habitat in the reconstructed section. An Environmental Statement (Final Report, 2005) by East Ayrshire Council describes mitigation to be implemented to reduce environmental effects including the canalisation of the burn, but does not comment on measures to protect or assist fish stocks. However, temporary diversion of the burn flow past the major in-channel works was at least reducing the level of siltation carried down to the main river (Plate II). The Burnawn would be a serious loss to the River Irvine if spawning access is denied by the flood defences. It is highly recommended that the Galston AC and the River Irvine Angling Improvement Association (RIAIA), probably through the ART in conjunction with SEPA, obtain electro-fishing data to monitor the development work and provide a basis for any mitigating action. [It is understood from a note from RIAIA that SEPA will be monitoring the recovery of the burn for the next five years]

Plate II: Burnawn flood prevention works in Galston

Plate III: Burnawn immediately above Galston

The Burnawn was still subject to extensive modification immediately above the town. According to local knowledge, this section used to be noted for large caddis fly larvae popular as bait for trout, but they are less commonly found now. Their absence is thought to be due to stream bed erosion caused by recent severe spates rather than overexploitation by bait-gathering anglers, or man-made alterations to the banks or bed (pers. comm.G. Anderson).

Plate IV: Ramped section under bridge in upper Burnawn

Further upstream is a steeper, wooded area where a broken, ramped bridge apron could be difficult for upstream migration of salmon and trout, although passable in moderately high water conditions, but possibly not in full spate. A number of cracks in the concrete probably assist fish passage by breaking up the flow. Any repairs that may be carried out in future should be designed with a rough substrate in order to minimise laminar flow velocity. Alternatively, consideration could be given to the installation of a simple fish ladder. Providing spawning adults can still reach this point in the burn, juvenile densities obtained above and below the bridge would provide an indication of whether or not there is a problem of access further upstream.

Many attractive pools and gravelly runs occur in the upper areas of the burn, some in dappled shaded woodland and others in more open grazed hillside. Juvenile habitat appeared to be very good, although there were some log jams caused by fallen timber. Galston AC has already done a lot of valuable clearance of fallen trees and accumulated debris to reduce the number of potential barriers to upstream migration. It will be important to plan this work carefully, bearing in mind that the retention in streams and rivers of some large woody debris can be very advantageous for larger fish, including resident brown trout by providing hiding and resting cover and wintering refugia.

Plates V & VI: Upper Burnawn showing good habitat and occasional log jams

Deep cover of this sort also is very valuable for adult salmon and sea trout awaiting spawning time. Each log jam needs to be assessed to see whether it is actually a barrier to fish movement before full-scale removal is enacted. Of course, the extent of blockage will change with time according to gales and spates, requiring that the situation in the burn is constantly reviewed. For further advice on large woody debris, consult the excellent article by Vaughan Lewis, 'Two limbs good, four limbs better', published in the latest edition of the WTT magazine Salmo Trutta, Vol. 10, which I have just seen. The magazine also contains several other articles with sound advice for tackling habitat improvements. Of course, the manual of the WTT, The Wild Trout Survival Guide, which will be supplied with the final AV report, shows the full background picture and lots of these practical techniques in action.

Plate VII: Fallen timber can build into barriers to fish movements, but can also provide deep cover for larger fish

A few open sections of the burn had some bank erosion, as shown in Plate VIII. Here one bank is fenced to retain grazing livestock, but the other is only partially fenced. Farmers are encouraged as far as possible to install adequate fencing to create buffer zones along stream margins that will help to bind the banks while providing cover for wildlife. Unprotected, over-grazed, stream banks can erode away rapidly, widening and shallowing the wetted channel and allowing large amounts of substrate to be transported downstream. However, it is possible that some of the erosion that was seen occurred during unusually severe spates. Meteorogical experts advise us to expect more summer droughts and milder, wetter winters, with an increasing prevalence of localised deluges and flooding. Banks protected by fencing typically grow long grasses and become bushed. They are much more durable in spates and provide very valuable overhead cover for larder fish, especially trout. Unfortunately, grants for farmers to install fencing, plant native deciduous trees and bushes and set aside land through the Rural Stewardship Scheme are believed to be restricted at present because of national budget shortfalls.

Plate VIII: Severe bank erosion in a section of the upper Burnawn

The second burn visited was the small Hags Burn which enters the River Irvine on the right bank between Galston and the village of Newmilns. About 100 metres up the burn from the river is a low weir (c. 1.5 metres) below the bridge over the A71. Because the wide pool below this weir carries away flood water without allowing the burn level to rise much, upstream passage of migrating fish is likely to be difficult into the shallow, rapidly flowing channel below the bridge. Galston AC members have constructed a simple secondary weir from concrete blocks to raise the normal level of the pool to reduce the height that fish need to leap and ease their passage. The blocks lie loosely and some are washed downstream in high flows, but are easily found and replaced.

Plate IX: Hags Burn road culvert and raised weir

The rubble weir looks unsightly but seems to be effective. The provision of a more permanent one could be thwarted by erosion of the soft alluvial stream banks and the gravel bed. A notch could be cut in the weir immediately below the culvert and perhaps also in the culvert floor in order to concentrate the flow and potentially

provide access at a great range of stream flows. However, specialised engineering advice should be sought before proceeding.

Above the main A71 roadway, the burn is a pebble and cobble channel, with mixed gravel, passing through quite dense woodland. It is likely to be over-shaded in summer when the leaf canopy is at full stretch and may lose nursery potential in consequence. Shading is more of an issue for smaller streams and in extreme case results in 'tunnelling'. This darkening effect constrains the growth of algae on the wetted stones and the growth of binding streamside vegetation. There are many dead trees, especially mature elms and, consequently, the channel of the Hags Burn is very prone to log jams. Some long-standing ones have already been sawn and cleared through the efforts of Galston Club members and more work is planned. As in the Burnawn, some large woody debris is beneficial and only that which causes genuine obstructions to migration should be removed. A watch should then be maintained for fresh falls of timber and blockages that need to be dealt with, working in conjunction with the local riparian estate owners, with the obvious proviso that some live or fallen tree removal will require specialist help. Hags Burn is probably an important spawning burn for trout.

Plate X: Hags Burn in woodland

Plate XI: Hags Burn showing fallen tree

The final burn that was visited was another right bank tributary of the River Irvine, this time downstream from Galston. The larger Polbaith Burn rises at an elevation of about 230 metres on conifer-afforested Sneddons Law, but is accessible to migratory fish only for about a kilometre to a series of high falls. Most of the accessible burn runs through open, grazed hill ground and is little fenced, but would be expected to hold good spawning and nursery conditions, for trout and salmon. We had a chance meeting with the local farmer who was very amenable to the aims of the Galston AC in tributary improvements, but cannot at this time undertake the substantial amount of stock fencing that would be required for the banks. In any case, with the steep nature of the burn, fencing would be of less value in protecting the banks here than in flatter areas. The same may also be true of some upper parts of the Burnawn.

Further upstream, the Polbaith runs through scattered deciduous trees and becomes increasingly rocky. We did not proceed up as far as the falls. The water was slightly peat-stained reflecting its moorland and conifer forestry origins. No information was available on the seasonal pattern of water chemistry, but the invertebrates found under stones were scarcer than expected, although reasonably diverse. The Ayrshire Rivers Trust found that juvenile fish densities in this burn are relatively low (pers. comm. Brian Shaw). This could be due to various causes including water chemistry constraints, problems of access for migratory fish, or there might be a problem with sheep dipping or other forms of pollution. The soft grassland surroundings of the middle reaches suggest neutral to alkaline underlying rocks and soils, but the moorland higher up and the coniferous forestry plantations would be expected to yield more acidic water chemistry, which might not be fully buffered lower down during spate events.

Plate XII: Unfenced middle reaches of the Polbaith Burn in heavily-grazed grassland

Plate XIII: Polbaith further upstream

Plate XIV: Polbaith showing bedrock pools near waterfalls

The lower Polbaith ie. below the minor road (Loudoun Kirk/Milton) is flatter and runs through fields and past an old covered landfill dump, material from which is emerging at points along the banks and entering the burn. Also, there are seepage channels that are both very unsightly and contain polluted water, although the volume reaching the burn was small and the dilution appeared to be sufficient to remove any gross signs of pollution downstream of the points of entry. However, this opinion was only based on a superficial examination and SEPA should be asked for technical advice on the chemical and biological status of the burn, especially in this area.

Plate XV: Seepage pipe from covered landfill site

Plate XVI: Landfill material eroding into the burn

Plate XVII: Seepage channel from landfill site

Plate XVIII: Good gravel stretches in lower Polbaith

Plate XIX: Lower Polbaith with some fencing

On the credit side, stretches of the lower Polbaith contain clean gravel (Plate XVIII) and there is no indication of a physical barrier, although there could be judicious clearance of some woody and other debris. A stretch is fenced near the confluence with the main River Irvine and the habitats within and outwith are contrasted in Plate XIX (above). The stream banks are well-vegetated and sounder inside the fencing and show signs of overgrazing and general breakdown outside it. The water still looks quite darkly stained in this area.

3.0: GENERAL CONCLUSIONS

The Wild Trout Trust applauds Galston Angling Club for its efforts to improve spawning access and nursery habitat in the feeder burns to the River Irvine. The Club has achieved notable success in publicising these activities and attracting necessary funding and outside support. In so doing it has gained considerably in its credibility as a body of anglers prepared to work to improve conditions for both salmonid fish and the wider ecology of the river corridor. Many anglers are happy to exploit fisheries and do little to help the underlying fish stocks remain sustainable.

It is too early to assess the ecological impact of the considerable flood defence work that is taking place in the Burnawn. It is essential that the passage of salmon and trout has fully been accommodated, as required by the Club, the River Irvine Angling Improvement Association and the Ayrshire Rivers Trust. Assuming that free passage is obtained through the town stretch, there is extensive spawning and nursery habitat further upstream, at least to the point where waterfalls impede further progress. There is a difficult bridge apron with jetted flows, but fish can probably pass this at some flows, although this would need to be confirmed. If any repair work should be considered there, it would be worth considering ways of improving passage over a greater range of flows. Some judicious pruning of branches and small trees could be done to let in more light in darkened areas and log jams could be removed or partially cleared where these are so dense as to interfere with migration. The banks of open stretches where there is some erosion would benefit from fencing where this feasibly can be done. Similar advice applies to the other two burns, although the lower Polbaith has special problems with a landfill site which need to be addressed with SEPA and its overall water chemistry needs to be considered.

The Club should consider whether some of its funding could be directed towards strategic juvenile surveys to indicate problem areas, or demonstrate successes after habitat work has been undertaken. The surveys would probably be carried out by the Ayrshire Rivers Trust. The River Irvine Angling Improvement Association has similar interests for the whole catchment and therefore should continue to be advised of the work of the Club. Close links also need to be maintained crucially with SEPA as the statutory body required to uphold good ecological status in our rivers. Finally, for practical information on specific habitat improvement techniques, consult the new and highly acclaimed Wild Trout Trust publication '*The Wild Trout Survival Guide – Habitat and Fishery Management Guidelines*' (supplied). For other details and examples, consult the Wild Trout Trust website (http://www.wildtrout.org/). Previous advisory visit reports by the various WTT consultants in various parts of Britain can be reviewed and relevant parts downloaded. Galston Angling Club should be aware that some of the legal requirements and the agencies that need to be consulted for river management schemes are different in Scotland from England and Wales.

Disclaimer:

This report is produced for guidance only and should not be used as a substitute for full professional advice. Accordingly, no liability or responsibility for any loss or damage can be accepted by Windrush AEC Ltd as a result of any person, company or other organisation acting, or refraining from acting, upon comments made in this report.