

WILD TROUT TRUST ADVISORY VISIT TO RIVER LOSSIE, 9-10 AUG, 2010

Part I – Estuary to Cloddach Bridge



Frontispiece: River Lossie, middle reaches.

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1.0 BACKGROUND

The Wild Trout Trust (WTT) was invited by Seymour Munro (Findhorn, Nairn and Lossie Fisheries Trust) to undertake an advisory visit to the River Lossie in Moray to examine habitat problems for wild sea trout and brown trout. The visit is integrated with the Moray Firth Sea Trout Project (www.mfstp.co.uk), one of several sea trout initiatives that WTT is sponsoring throughout the UK and Ireland. The Wild Trout Trust (www.wildtrout.org) was established in 1997 by a small group of people dedicated to the idea that ailing populations of wild trout can be given a helping hand by restoration and conservation of their habitat. It now provides practical guidelines and encourages riparian owners, angling clubs, fishery regulatory bodies and community volunteer groups throughout the UK and Ireland to instigate habitat projects, not only to protect and improve stocks of wild trout, but also to deliver many gains to local bio-diversity. Sea trout (sea-running trout) are part of the wide complex of forms of wild trout that we are still blessed with, but have been taken for granted too often in the past. A general decline in catches of sea trout has signalled the need for greater care of their stocks and the essential habitats upon which they depend. 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 in sea trout stocks in that area specifically, but linking in where possible with other new sea trout initiatives underway in other areas of the country. The MFSTP coverage extends from the River Deveron in the East right round to the Kyle system in the North and takes in all rivers and coastal streams round the coast. The WTT advisory visit was a natural follow-up to the recent Lossie Fishery Management Plan (2010-2015), produced by Bob Laughton (Senior Biologist, Spey Foundation). The visit took place over two days, with local knowledge supplied by Seymour Munro (both days), Ian Mackay (9 August) and (Tomas Christie) (10 August). Ian Mackay made further very useful comments on the manuscript, which comprises two linked parts (Estuary to Cloddach and Cloddach to Headwaters).

The River Lossie is a spate river which rises in commercial conifer afforested hills to the southeast of Elgin and flows essentially north for 31 miles (50 km), passing through Elgin, to join the sea at the eastern edge of Lossiemouth. Its main tributaries are the Leanoch Burn and the Black (or Back) Burn. Although the Lossie is a relatively small river by eastern Scottish standards, in recent years there have been serious problems with flooding, especially in Elgin and a major Flood Alleviation Scheme is underway (Moray District Council). While the water quality of the river is generally good and much has been accomplished to maintain this standard, there are remaining point and diffuse pollution issues, as in most rivers in the region, including some discharges from sewage treatment plants and septic tanks and sedimentation from agricultural, forestry and quarrying practices, thermal discharges from distilleries and various polluted run-offs from car parks, factories, roads and other developments. Meanwhile the demand for water abstraction for farming and for potable water grows along with housing encroachment and general

modernisation. As always, harmful effects on the river and the salmonid populations it supports can be obvious, with occasional fishkills, but usually the harm done is relatively unseen and insidious. A constant process of examination and negotiation between all the interested parties, given the appropriate information, is required to achieve practical and realistic mitigation. The WTT report is based on a short visit and makes no attempt to cover all of these problems. It simply tries to highlight some sensitive issues, especially for trout. Although the focus is on trout, other wildlife and related social benefits undoubtedly will accrue from suitable remediation.

2.0 VISIT OBSERVATIONS – Day I

2.1 Estuary and tidal reaches

The River Lossie flows to the sea through a long, shallow estuary, which lies behind an extensive sand and gravel bar that has built up over time. This long, shallow stretch is known to be a prime area for smolt predation by birds and seals. In addition, it can be a target area for poaching, also seen as a problem in Elgin, in particular. Although the river mouth used to be further east some years ago, the bar is a natural feature and there would seem to be little hope of re-routing it to form a more direct entry point and shorten the estuary.



Plate I: Shallow estuary of the River Lossie

At the time of the visit, the river was running a little above summer height due to overnight rain and was slightly dark-stained but clear. The tidal reaches of the river, including backing up of fresh water, extend well upstream as the terrain up to Elgin is generally rather flat.



Plate II: Tidal River Lossie

2.2 River Lossie below Elgin

The river begins to take a more sinuous shape before the limits of tidal influence are reached, with well-consolidated and often tree-lined banks. Although the bed is fairly bare and silty here, this area is likely to hold a mixed population of resident trout and salmon parr, plus sea-running fish, including flounders, eels and groups of finnock (0+ sea year sea trout). At present, most Lossie salmon run in summer and autumn and adult sea trout from about May, depending on river levels. The water quality appeared to be good. Problems with sewage treatment disposal which caused some pollution and enrichment of the river below Elgin in the past have been overcome. Although the banks were otherwise sound, the aggressively invasive, introduced plants, Giant Hogweed and Himalayan Balsam, were prominent and threatening to local biodiversity and bank stability. [These species, together with Japanese Knotweed were also seen commonly in other parts of the river corridor, a problem which is noted in the River Lossie Management Plan. There is a locally-effective spraying programme, but a comprehensive eradication policy is very hard to envisage at this time of severe budgetary cuts.]



Plate III: Good water quality and stable banks, with plenty of riparian cover



Plate IV: Bridge aprons in the lower reaches pose no problems for fish access

2.3 Mill weirs at Elgin



Plate V: Johnston's Mill Weir below Elgin Cathedral

A succession of redundant mill weirs in Elgin comprised the first obstacle. The weir below Elgin Cathedral may not pose problems for upstream fish movements at higher river discharges. However, the wide downstream face disperses and shallows the flow and no provision is made to assist fish passage. The slightly deeper run immediately against the Cathedral bank is a noted place for poaching and a wooden pallet seemed to be placed as a stance for that purpose. It is understood that the Flood Alleviation Scheme includes the construction of a by-pass channel behind the left bank (i.e. looking downstream). This channel which will carry excess flows during spates, will run at all times, taking part of the normal flow of the river away from the present weir. Thus, fish passage over the weir will be made even more difficult there at low ambient river levels (which ordinarily might not deter sea trout which often move at night). There may be a provision for access through the by-pass channel, but this seems unlikely. Migratory stocks held up temporarily below the weir may become even more vulnerable to poachers. However, these are matters for consideration by the local District Salmon Fishery Board and SEPA, both of whom will be consultees in the planning process. From the WTT perspective, the best solution would be the provision of a simple fish pass in the weir, perhaps funded in conjunction with the Flood Alleviation Scheme. The design of the pass should be carried out by specialists (*see later).



Plate VI: Bishop's Mill Weir - improvised diagonal baulks installed to concentrate the flow

Bishop's Mill weir higher up is of a similar design, unlikely to pose problems for migratory fish at higher flows, but acting as an awkward barrier at other times. The shallow face and then the ridge of stones at its upper edge will deter fish unnecessarily at lower discharge levels. Elgin Angling Association has installed simple diagonal baulks (sleepers) to concentrate parts of the flow. If these are thought to be sufficient, they should be consolidated, otherwise they should be replaced by a fish ladder.

Another weir shown in Plate VI (below) is believed by local anglers to pose fewer problems for fish passage, but here too the provision of a fish ladder ought to be considered in any future funding initiative. Deeper pools with well-treed banks lying between the weirs provide good holding cover for fish ascending the weirs and for resident brown trout. Again, the water quality looked good and although there was some debris from casual tipping this was less conspicuous than in many other rivers passing through large towns and cities.



Plate VII: Sheriff Mill Weir - River Lossie by Elgin

*For up-to-date information on fish passes, including monitoring of fish passage, consult “Fish”, Issue 99, the Magazine of Fisheries Management (Institute of Fisheries Management, 22 Rushworth Avenue, West Bridgford, Nottingham, NG2 7LF; www.ifm.org.uk; fish@ifm.org.uk). Also, note that within Scotland, application may be made to SEPA for funding to improve fish passage at obstacles through its Restoration Fund. SEPA can advise on the necessary methodology to assess individual barriers. For more information on the above protocols, visit www.sniffer.org.uk (project search:WFD111).

2.3 Linkwood Burn – Elgin

At this stage, we cut across Elgin to look at a couple of small tributary burns, one of which was extensively engineered, concreted and culverted, as it passed through a complex of shopping, factory developments and car parks. It is a key point that brown trout and sea trout spawn primarily in smaller streams, generally those less than about five metres in width. Consequently, it is essential to conserve these smaller watercourses as well as main stem rivers. This fact is often neglected and requires greater consideration. The burn described above has been heavily abused and showed no realistic prospect of practical improvement, at least within the immediate area. The water quality here at best may be precarious for fish. Apparently, there are plans to run this dirty channel into the much nicer, neighbouring Linkwood Burn, where electro-fishing has shown good stocks of juvenile trout and salmon. The linking of the two burns before they reach the river would be very regrettable, but the exact plans are not known.

A section of the Linkwood Burn was visited and a local interpretation board was seen on which brown trout were shown as one of the key species of flora and fauna (Plate VII). Contact should be

made with the organisers of this scheme as fish habitat improvements could be made. Assistance is likely to be available through the Moray Firth Sea Trout Project. Contact Marcus Walters (walters.mfstp@googlemail.com.). The channel of the burn has been dug and straightened, so that it has lost some of the natural meanders and variable stream habitat. Parts of the watercourse adjoining a public path were over-darkened by a dense tree canopy. Much of the riparian vegetation should be retained as cover for wildlife, but the productivity and biotic variability of the burn and its banks would be improved by achieving a more dappled light. This would be done by selective pruning of overhanging branches and possibly singling or coppicing of some trees, avoiding periods when nesting birds would be disturbed (see The Wild Trout Survival Guide – supplied). Also, the bed was too uniform and lacked larger stones that would provide greater variation in flow, diversity of habitat and substrate for invertebrates, plus additional cover for larger fish. Some of the gravel may be impacted in the bed and spawning potential could benefit from raking during summer, avoiding late autumn through spring, when salmonid fish ova and alevins could be dislodged. Traps could be deployed discreetly to monitor and then restrict the extent of mink predation on fish and other wildlife, although the proximity to local pathways might preclude this.



Plate VIII: Linkwood Burn Wildlife Corridor Project interpretation board.



Plate IX: Some structures such as vortex weirs, groynes and random boulders could be installed to break up the flow, providing hiding cover for fish and greater invertebrate diversity



Plate X: Small unscreened water take-off and awkward weir – Linkwood Burn

A small weir was seen which fed water to a distillery by an unscreened lade. Immediately above the weir the bank was heavily eroded and showed signs of regular trampling, presumably by children playing beside the water. There is a housing area nearby. Under current fisheries legislation, lades from parts of rivers where migratory fish are present must be screened at top and bottom to prevent smolts and kelts gaining access. This would require restoration of the eroded section of banking to prevent higher flows by-passing the upper screen. Also, the smooth weir face and top step will delay upstream migration. The weir could be improved for fish passage by fixing some stones on its face to provide a more rugose surface and perhaps by heightening the pool below to reduce its length. Also, a slot is required in the top step. The full course of the lade should be investigated to establish whether it is still in use and whether there are other problems that need to be considered.

2.4 Excavated channel of part of the Lossie above Elgin

Continuing the inspection of the River Lossie above Elgin, we visited a severely excavated stretch of several hundred metres in length in the vicinity of a sand and gravel quarry. Gravel extraction from the river had been carried out without consideration of the ecological damage that would accrue. The natural bed should be much higher and all the usual diversity of pool and riffle habitat had gone, leaving a fast-flowing and heavily-eroding, bare channel (Plate XI). Apparently, SEPA stopped a farmer from dredging the river recently and cautioned him with possible legal proceedings, although no further action has been taken. Under CAR regulations stemming from the European Water Framework Directive, SEPA has enhanced powers to intervene to ensure that the natural state of river banks is preserved and even restored where this is possible. It seems self-evident that the extensive channelling of the Lossie beside the sand and gravel quarry must carry extreme spates through to Elgin more quickly than would the natural water course, while increasing bed and bank erosion with consequent substantial deposition of eroded sediments further downstream. Surely, a better plan would be to restore boggy wetland in the headwaters, increase reservoir storage capacity to hold back some of the flood water, encourage the regular flooding of some flatter areas of low-value land and generally promote slower drainage to reduce the height of peak flow events. Ironically, flood bank construction and river straightening from Cloddach Bridge downstream for three miles was originally carried out in the early 1960s to prevent flooding of approximately 100+ acres of farmland (pers.comm. I. Mackay).



Plate XI: Heavily modified channel of the River Lossie in the vicinity of a gravel quarry above Elgin



Plate XII: A swinging gate valve towards the lower end of a side channel presumably prevents back-flooding but removes access to good trout spawning and nursery habitat



Plate XIII: This oxbow lake could be restored as part of a braided system

In addition to the severely dredged main river, access has been denied to spawning brown trout and sea trout that could have entered a small tributary burn on the right bank. There is a large flap valve (Plate XII) situated where the burn is piped under a wide gravel track, the valve apparently designed to prevent back-flooding pressure from the river at times of high flows. The burn emerges from what appears to be an oxbow lake lying above the track (Plate XIII) that have been part of the river channel at some time in the past. From a fishery viewpoint, the flap valve should be removed and replaced by a bridge, retaining a natural bed. Trout would almost certainly find good spawning and nursery habitat upstream, which would be beneficial to stocks in the main river. Closer inspection of the site and discussions with the site owners would be required to determine whether this would be feasible.

2.6 Cloddach Bridge

Fortunately, the Lossie becomes a natural river again with excellent habitat conditions above the last site. However, there is another problem for fish passage at Cloddach Bridge (Plate XIV)



Plate XIV: Complex rock barrier below Cloddach Bridge

Here the concreted bridge apron merges with a band of naturally eroding conglomerate rock, forming a complex temporary barrier to migration. At the time of the WTT visit, the river was running at a moderate summer flow after some rain. A torrential discharge through a narrow channel in the sloping rock face seemed to be too turbulent for fish to negotiate its length. The white water shown on the right side of the barrier was too shallow and the preferred route for salmon and trout at moderate flows was more likely to be towards the right bank (not shown). The central, violently cascading, channel could be widened to about 1500mm and a series of shallow steps (ca.300mm) cut in it. There is also a possibility of a plank placement under the bridge on the left bank (right side in the image), to divert more flow to the middle and other side of the river, to assist passage at medium to higher flows.



Plate XV: Anglers fishing with worms in the pool below the conglomerate rock weir at Cloddach Bridge. The central, over-turbulent and narrow, channel, cut or eroded into the rock face, is shown at the right of the image

3.0 SUMMARY AND ACTION POINTS

- The estuary is retained by a long gravel bar, creating a wide shallow stretch that is very conducive to fish and seal predation. A more direct outlet could be excavated, but this is unlikely to be acceptable to planning authorities.
- Water quality and most of the habitat within and beside the river seem to be very good. Riparian vegetation and trees should be retained as bankside cover.
- A programme of control/eradication of alien, colonising plants, including Giant Hogweed and Himalayan Balsam, should continue.
- Mill weirs in Elgin are temporary barriers for ascending trout and salmon and problem sites for poaching. Simple fish ladders should be installed to promote passage, integrated with the Flood Alleviation Scheme (also consult SEPA about Restoration Fund).
- A long stretch of main stem River Lossie in the vicinity of a sand and gravel quarry has been heavily modified by gravel extraction, eliminating the natural bed and banks. It would be a huge task to effect restoration. Consideration should be given to braiding the river from the top end through this gravel site, to restore/augment ecological diversity and spawning/nursery habitat, especially for trout. This should help reduce the peak of spate events.
- A flap valve is blocking a sideburn that might otherwise be suitable for trout spawning. This should be replaced by a bridge, or a suitably designed culvert with a roughened base, and the oxbow lake above incorporated into the braided spawning/nursery system.
- Small tributary burns to the main river need greater consideration and protection as they are key areas for spawning and juvenile production of trout.
- Linkwood Burn by Elgin, running close to a public footpath, could be an excellent site for habitat improvement, joining with an existing Wildlife Corridor scheme and assisted by the Moray Firth Sea Trout Project. A rumoured plan to connect to this burn to another that is polluted to some degree and severely modified throughout its largely urban course should be investigated and, if necessary, opposed.
- The narrow, highly-turbulent, central channel in the conglomerate rock slope below Cloddach Bridge should be widened and shallow steps cut in it to promote fish passage.

***Note that “The Uplands Rivers Habitat Manual,”** supplied with the AV report, is available as a CD from the Wild Trout Trust, is a key reference work for practical guidance on specific aspects outlined in Parts I & II. Its PDF sections, Upland River Systems, Project Planning, Land Use and Physical Enhancement, can be downloaded separately for ease of printing from www.wildtrout.org (under the Publications link)

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**WILD TROUT TRUST ADVISORY VISIT TO RIVER LOSSIE, 9-10
AUG, 2010 Part II – Cloddach Bridge to Headwaters**



Frontispiece: River Lossie, middle reaches above Cloddach Bridge

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[This section should be read in conjunction with Part I, i.e. from the estuary to Cloddach Bridge]

1.0 VISIT OBSERVATIONS – DAY II (River Lossie upstream of Cloddach)

1.1 Upper, middle reaches

The second part of the WTT advisory visit took place on August 10th 2010. Although there was more rain in the afternoon, the river was still running at a reasonable level for inspection. The middle stretches of the river, above the quarry, are very attractive through Kellas and Dallas, flowing through mixed, largely pastoral, rolling farmland and offering secluded fishing with often hardwood tree-lined banks. Some stretches, however, showed significant bank erosion. Also, a section of river that shows serious bank erosion in the Bogside area was missed by the AV. According to Ian Mackay, “this area has suffered very serious erosion and movement of gravel, with areas of up to one acre in extent being washed away in a single flood. Pools have all but disappeared and therefore suitable spawning areas are almost non-existent. The river is starting to carve out new side channels which look good nursery areas, but they almost dry out in summer and fry and parr have little protection from herons etc.” Large-scale intervention may be unrealistic for estate owners and fishery managers faced with river movements on this scale.



Plate XVI: Good holding pool at Dallas



Plate XVII: Serious bank erosion at Brokentore

Some sections of bank erosion may be addressed by soft engineering, using root wads, log and Christmas trees, local stone and tree branches and by planting willow shoots which will readily root, become established and help bind the soil (see The Wild Trout Upland Rivers Habitat Manual – supplied). Concrete revetment would be too expensive and likely to become undercut and then collapse. A ford at Bodnastalker which has been partially washed away will have to be slightly re-routed and some bed restoration carried out if large-scale bank engineering is to be avoided.



Plate XVIII: Ford at Bodnastalker

On the other hand, a former weir in the same area that was a recognised as a problem site for fish passage has been destroyed by spate damage and requires no further action.



Plate XIX: Site of a former problem weir which has been washed away

Although the erosion damage and loss of trees was too extensive to address overall, other than by strategic catchment management of the headwaters, smaller damage noted at key points, e.g. at bridges, should be restored to prevent further loss of infrastructure (Plate XX)

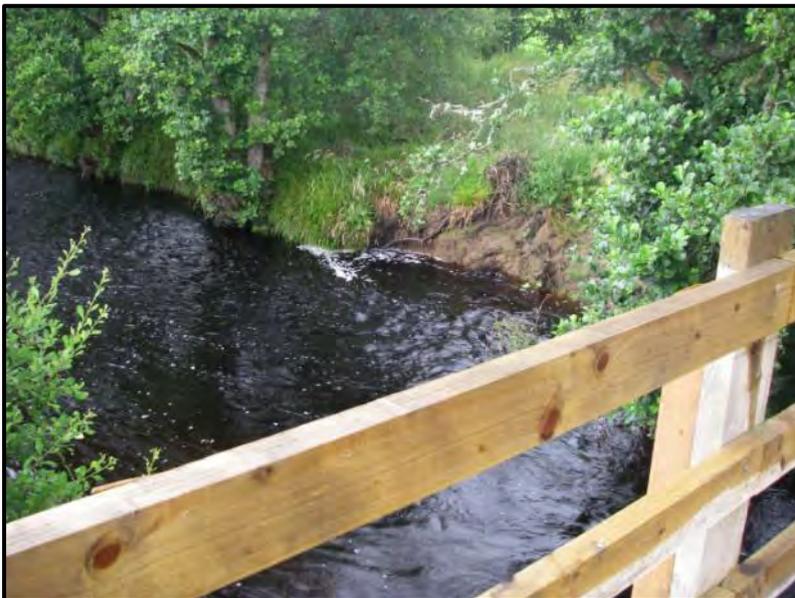


Plate XX: Repairs of small amounts of bank erosion at bridges should be prioritised



Plate XXI: Upper reaches below the main forestry plantations



Plate XXII: Falls at Torwinny

A series of waterfalls beginning at Auchness form the upstream limit of migratory fish, with the precise point to be established by electro-fishing. Up to that area, spawning habitat for salmon and probably for trout seems to be good. Thereafter the land is much steeper and easing of the falls does not seem a worthwhile option. Sea trout, but not salmon, have been confirmed above the lower falls, a situation mirrored elsewhere in eastern Scotland (e.g. River Earn headwaters) where salmon are blocked by complex waterfalls that trout manage to ascend. Brown trout, likely to be found higher up, are unlikely to contribute many downstream-migrant juveniles, because of genetic selection for resident behaviour and a lack of abundance. Extensive conifer afforestation blankets most of the headwaters and this area also provides the site of a large new windfarm. Although migratory fish cannot reach these higher parts, large-scale commercial forestry and windfarms require roads and bridging and some modification of water courses, which may cause further

erosion, greater flow fluctuations and potential episodic pollution and these problems may have consequences downstream. However, this part of the river catchment was not visited.



Plate XXIII: Headwater afforestation and windfarm development

1.2 Rainbow trout farm and fishery

Due to reports of small numbers of takeable-size rainbow trout appearing recently in the middle reaches of the river, the opportunity was taken to look at a local rainbow trout farm and also a rainbow trout commercial fishery, to look for likely points for fish to escape. Both sites were well-designed to avoid losses to the river and seemed not to be the source. It is possible that the rainbow trout had come from privately stocked waters.

1.3 Black Burn

The main tributaries of the Lossie are the Black Burn and the Leanoch Burn, of which only the former was visited. The Black Burn is a noted producer of sea trout. The so-called Tumbling Bays by Ness Bridge and Barnhill Farm have been identified as a problem for fish migration and were inspected. Both are gabion constructions intended to dissipate the flow. The lower one (Ness Bridge) showed signs of erosion damage and boulders supporting the banks seem likely to collapse. The upper one was more secure, but both had some trailing mesh which could injure or otherwise interfere with jumping fish. Also, the upper site lies in a wider channel and discharges into shallow water. This shallow jumping pool, plus the trailing wire mesh from damaged baskets, is problematic for fish passage. If the gabions now have no useful purpose, and since they are clearly requiring maintenance, they ought to be removed.

The largely bare channel of the burn for some distance downstream from the upper barrier may have been caused by works associated with its construction. If the gabions are removed, the stones

that they contain should be scattered into the water where they will be dispersed naturally with spates, providing improved substrate variability. Some larger field stones could be installed. Also, this stretch was over-canopied and would benefit from singling and/or coppicing to allow greater light penetration to increase benthic productivity and variety.



Plates XXIV&XXV: Lower “Tumbling Bays”



Plate XXVI: Upper "Tumbling Bay"



Plate XXVII: Discoloured sideburn entering Black Burn

A smaller tributary of the main burn entering some 50 metres below the upper weir and passing by a field containing farm animals was badly discoloured, as though polluted. The discolouration may be a natural effect, such as by iron bacteria, but SEPA should be asked to comment on its water quality status.

2.0 SUMMARY AND ACTION POINTS

- Most of the river habitat is very sound and needs no attention.
- A programme of eradication of alien plant species should be continued.
- Some bank erosion needs to be undertaken, using soft engineering techniques with local materials where feasible. Larger areas of erosion, including temporary loss of pools and collapsing riparian trees, may not realistically be addressed, other than by strategic headwater catchment planning to try to reduce spate intensity. These may be issues that the newly formed rivers trust could address, through liaison with landowners in the catchment.
- Small numbers of rainbow trout found in the river seem not be coming from the obvious places, the local trout farm and trout fishery, but may be from one or more private ponds without adequate screening.
- The so-called Tumbling Bays on the Black Burn may be a problem for upstream access of trout and salmon and, while this problem could be addressed, it would be better to remove these gabion constructions if they are not now required.
- Parts of the river channel are over-canopied and some trees could be pruned, singled, or coppiced, to let in more light, promoting greater benthic productivity and variety.
- As in the lower reaches, greater consideration should be paid to smaller sideburns which are potentially the best spawning areas for trout. Ideally, these burns need to be electro-fished to establish problem areas that need to be dealt with. Failing that, they should be investigated visually for that purpose.

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