



## **River Coln – The Bull Water at Fairford**



**An advisory visit carried out by the Wild Trout Trust – November 2008**

## 1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Coln at Fairford. The water is owned by the Bull Hotel in Fairford and is run as a day and season ticket fishery. Further information about the fishery can be obtained at: <http://www.thebullhotelfairford.co.uk/fishing.php>

The Coln is one of the classic Cotswold limestone streams and is a tributary of the River Thames.

This report was carried out at the request of the fishery manager, Mr Chris Johnson. Mr Johnson, along with a small team of enthusiastic volunteers, has taken on the management of the fishery on behalf of the Bull Hotel. Despite the fact that the fishing represents exceptional value for money, fishing revenue taken from the beat has been modest and the owners and managers wish to enhance the quality of this section and its reputation as a first class wild brown trout *Salmo trutta* fishery.

Prior to the advisory visit, Mr Johnson had applied for land drainage consent from the Environment Agency (EA) to undertake some habitat improvement works.

During the visit we met Mr Paul St Pierre from the EA's Biodiversity team who was inspecting the river with a view to commenting on Mr Johnson's proposals. In addition to the desire of the fishing club to improve and enhance trout habitat, there had also been some works undertaken by a local environment group organised through the local Parish Council. Like many Cotswold riverside towns and villages, Fairford suffered some flooding during the exceptional rainfall of July 2007. The comparatively rough and unmanaged nature of some of the margins, coupled with the presence of a few submerged and partially fallen trees, had prompted calls for action to be taken to remove them in case they posed an enhanced threat of future flooding.

During the advisory visit, it was the view of the author that some of the fallen woody material should be left within the channel to promote enhanced wild trout habitat. This led to the WTT proposing an amendment to Mr Johnson's original Land Drainage Consent application. The amendment requested the retention of some large woody debris within the channel and expressed the desire to work with the local EA Operations team in finding an acceptable compromise between improving habitats for fish and alleviating any potential flood risk .

Land Drainage Consent was duly granted and on the 26<sup>th</sup> November the WTT carried out a practical visit (PV) with members of the Bull Hotel fishing group.

This report describes the current condition of available habitat and seeks to provide the fishing group with options for further enhancement.

The comments and recommendations made in this report are based on the observations of the Trust's Conservation Officer, Andy Thomas and discussions

with Mr Mark Ferryman, representing the fishing group, Mr Paul St Pierre from the EA and subsequent conversations with Mr Chris Johnson.

Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.



**Members of the Bull fishing group get to work combating marginal erosion during the WTT Practical Visit in November 2008**

## **2. Description of the river.**

The River Coln rises at an altitude of about 200m Above Ordnance Datum near Sevenhampton in Gloucestershire and flows from the limestone Cotswold Hills in a south-easterly direction to Lechlade where it joins the River Thames. The source of the river is in the Inferior Oolite aquifer in which it flows for the first few kilometres, but most of the river runs on the Great Oolite aquifer. Both of the limestone aquifers are sources for water abstraction; a total of 55 ml per day are licensed to be taken from this catchment.

Near the bottom of the catchment the river crosses Oxford Clay as it drops into the upper Thames flood plain. The catchment is mostly rural, with farming the main industry. The upper catchment is mainly grazing land, and there are large areas of deciduous woodland in the south-west. The upper two-thirds of the catchment is within the Cotswold Area of Outstanding Natural Beauty (AONB), and around Fairford the river has been designated as a Nitrate-sensitive area. There are no large conurbations on the upper catchment, although Cheltenham,

from where surface water drains into the limestone above the river's source, has a population of over 100,000. The Coln catchment supports a population of around 9,000. The main sewage inputs to the river are from works at Andoversford, Bibury and Fairford. Bibury Tout farm is the largest discharge into the river, although most of this is 'on-line' through fish-ponds. The river has been subject to various enhancement schemes to improve ecology and fisheries. Water quality was recorded as 'good to fair' in the 1995 General Quality Assessment survey; the classification varies throughout the river, due to the effects of both discharges and low flows.

The biological quality of the river is very good. As well as a brown trout fishery, the river also supports natural populations of grayling (*Thymallus thymallus*) and coarse fish populations. Native crayfish (*Austropotamobius pallipes*) have been recorded but not since 1991; populations of the introduced American signal crayfish (*Pacifastacus leniusculus*) are also present. This, and further information about the River Coln catchment is available from the Environmental Challenge Network. : (<http://www.ecn.ac.uk/aboutecn.htm>).

The Bull's Waters comprise approximately 2 km of single LB fishing running downstream from the village of Fairford. The top 500m of the water backs onto formal gardens located on both LB and RB and in some sections maintenance regimes from gardens have spilled over to be extended into some marginal sections of river bank. A public footpath runs throughout the length of the fishery and is extensively used.

Near the very top boundary there is a long island where the river has a particularly steep gradient. This section appeared to offer good scope for developing better quality spawning and nursery habitats.



### Raised bank and formal gardens near the top of the fishery



Part of the LB where riparian gardening has resulted in the loss of a natural fringe of aquatic plants and marginal herbs.

Approximately five hundred metres from the top boundary there is a ford servicing a farm which is, effectively, located on an island in the river. When the PV was undertaken a few weeks after the initial visit, it was apparent that this farm posed a significant water quality threat to the Bull's waters. Of particular concern was the presence of a large dung heap immediately adjacent to the RB just above the ford and from which there was clear evidence of polluting liquor running into the river.

Near the lower end of the fishery, the river became less managed and there were numerous examples of fallen trees and submerged large woody debris (LWD). Many of these were acting as flow deflectors and enhancing spawning potential as well as providing cover for adult fish. Much of the river bed substrate on the Coln is comparatively poor for trout spawning, either being large chips of limestone or gravels concreted together. The river did, however, have lots of variety in depths and flow patterns, probably induced by the presence of LWD at certain times which has sculpted habitats for all life stages of brown trout. The presence of LWD has been shown to be extremely important in several respects:

- An increase in the variety of flow patterns, depths and localised velocities.
- Development of high in-channel physical habitat diversity

- Significant benefits to the control of run-off at the catchment scale. Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased.

LWD is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams and rivers is derived from trees located within the riparian corridor. Streams with adequate LWD tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. Therefore LWD is an essential component of a healthy stream's ecology and is beneficial by maintaining the diversity of biological communities and physical habitat.

Traditionally, many land managers and riparian owners have treated LWD in streams as a nuisance and have removed it; often with uncertain consequences. This is frequently unnecessary and harmful: stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will utilise for shelter and spawning and reduce the level of erosion resistance provided against high flows. In addition, LWD improves the stream structure by enhancing the substrate and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A stream with a heterogeneous substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout



A good example of a "natural" groyne which is promoting good habitat diversity.



If LWD is potentially blocking the channel as in this case, it can usually be moved and secured to provide good quality habitat.



Low scrubby cover provided by marginal trees such as goat willow provides essential cover from predators, particularly in the winter period when weed growth is poor

Some concern was expressed over areas of marginal erosion. Most of the sites inspected where some erosion was evident appear to be caused by bank side activity such as access by dogs (or perhaps geese) rather than due to river flows. On some sections of bank, low strimming and mowing was evident - leaving the margins vulnerable to erosion.

Near the bottom end of the fishery some attempts had been made to arrest erosion on the outside of a bend quite close to an adjoining side stream. Any excessive movement of the river could potentially threaten the footpath which runs between the two channels for some distance before they eventually join. The plywood revetment with soil backfilling will not provide a long term solution to this problem and is not fit for purpose.



Revetting a bank with planks of timber, or with sheets of plywood as in this case is doomed to fail.

In areas where protection of the bank is of paramount importance, it is still possible to create valuable habitat as well as give lasting protection to the banks. A strategically placed tree trunk at a 50 to 70 degree upstream angle to the bank can deflect the erosive forces of the river towards the centre of the channel and away from the bank. Creating a softer, squishy toe to the bank and planting up with marginal emergent plants can also tie the soils together and absorb some the rivers energy.





A good low, soft margin to both banks with the addition cover provided by the scrubby goat willow.  
First class habitat.

During the survey, good numbers of both trout and grayling were observed. It is possible that most of the trout are derived from better quality spawning sites found further upstream; because, on the whole, spawning habitat appeared to very limited. There were a few examples of glides that could potentially provide good spawning habitat. However, the quality of the gravels in most areas appeared to be poor. Much of what, at first, appears to be gravel are nodules of calcified limestone.

It is possible to break up and loosen the concreted gravels and consent could potentially be obtained to import fresh gravels from one of the local working Coln valley gravel pits to create new spawning sites. Care must be taken to identify suitable sites as raising river bed levels can adversely effect upstream habitats by backing up the levels, slowing flows and encouraging deposition.

Any new spawning riffle should be at least 20m long and have a depth of gravel of at least 30cm with the aim of ending up with a normal summer water depth of approximately 25cm.

The principle is to line the bed initially with large flint rejects and stone and then top dress with mixed angular river gravels of 15 to 50 mm. Ideally the riffle should have a gentle downstream slope. Alternatively, having a gentle ramp up to (approximately) the front third of the riffle and then a gentle slope down over the remainder also works well. The riffle should be very slightly dished in the centre. However, in reality, the gravels are often relocated following the first

spate. This should not be a concern on a straight run where generally the material will lock and settle into a natural looking riffle.

Construction of spawning riffles will require the assistance of a specialist contractor and hydraulic excavator.

Further information on enhancing existing spawning gravels or introducing new gravels can be found in the WTT's Chalkstream Habitat Manual which is available on request from the WTT Office.

**It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank. Any modifications to hard defences will require a land drainage consent on any river designated as "main river". Advice can be obtained from the Development Control Officer.**

### 3. Conclusions

The Coln at Fairford is a delightful stretch of Limestone stream. It is the intention of the management to run the fishery as a truly wild fishery and therefore managing the habitats to enhance and protect wild stocks will be of paramount importance.

Retaining as much LWD within the channel as possible to maintain the heterogeneous nature of the river bed is seen as a priority.

Attempts should be made to enhance spawning potential both through cleaning existing spawning habitat and by potentially introducing new gravels. There are several techniques used for gravel cleaning and further advice can be found in the Chalkstream Habitat Manual.



Gravel cleaning using a backpack leaf blower

Because of the recent flooding event, it will be very important for the fishing group to explain to the Parish Council and local community what your management regime is designed to do. Having one group removing potential trout habitat whilst another introduces it is obviously nonsensical. Joining in the debate with local people to raise awareness of the importance of good habitat management, not just for fish but for the general biodiversity of the whole reach will enable the fishing group to make further enhancements. It is recommended that a "softly softly" approach is taken in undertaking further works and when dealing with local people and the EA, especially following last year's serious flooding event.

The group should consider asking the Bull proprietors to check their deeds with regard to their rights on the fishery. It seems unacceptable that third parties, including the EA and the Parish Council are undertaking works on the banks of the river without any prior consultation with the owners. The EA does have statutory rights of access but it is generally accepted that when works are proposed that a dialogue is opened up with the fishery owners before works commence. This is essential if future control of maintenance works is to be achieved.

In improving the fishery and encouraging others to take up the excellent value fishing it will be very important to get the right balance between habitat and access for fishing. Wild fish populations often thrive on a little bit of neglect and clearing sections to make them more fishable could result in the population moving off to more favourable, quieter reaches. Some refuges where it is impossible to land a fly will only encourage more fish to remain within the fishery.

There have been a number of concerns raised over local water quality issues. It is recommended that representations are made to the local EA to provide information on the current performance of local waste water treatment works that are known to discharge locally into the Coln near Fairford. It is imperative that quality standards are maintained at a high level to sustain salmonid recruitment. A watchful eye should be kept on your neighbours and if material likely to pollute is being stored adjacent to river then the EA should be informed until the problem is resolved.

Sites like this, where there is a consented discharge from a waste water treatment works, will always be vulnerable to periodic fluctuations in the quality of the effluent discharged. Consequently, the health of the river receiving this effluent is similarly vulnerable. The presence or absence of certain pollution intolerant macro-invertebrate species is a very effective way of monitoring the quality of the water. It is recommended that perhaps one or two volunteers consider undertaking some simple training in order that a regular assessment of local water quality can be made. To this end WTT recommends that fisheries register their interest in taking part in the Riverfly Partnership monitoring and training initiative. The initiative aims to support fishing clubs and river owners to monitor and help conserve the environment. More details can be found on [www.riverflies.org](http://www.riverflies.org)

A dialogue should be maintained with local neighbours on riverside maintenance regimes. It may be pertinent to offer to take over the responsibility of managing certain marginal areas to ensure that good habitat can be preserved.

#### **4. Recommendations**

- Retain as much LWD within the channel as possible. The West Country Rivers Trust provides a useful guide to the management of natural LWD:
1. Is the debris fixed, if yes then continue to 2, if not continue to 5.
  2. Is the debris causing excess erosion by redirecting the current into a vulnerable bank? If yes then go to 5 if not then go to 3.
  3. Would fish be able to migrate past it (take into account high river flows). If yes go to 4, if no go to 5.
  4. **Retain the woody debris in the river.**
  5. **Re-position or extract the debris.**

Note: If the debris dam needs to be removed but there is still a significant amount of the root system attached to the bank then it is recommended that the stump be retained for its wildlife habitat value and its stabilising effect on the bank.

- Retain refuge areas where fish can hold up without being disturbed by anglers.
- Instigate an autumn programme of spawning enhancements. Identify the main areas of spawning activity and during October give those areas a thorough clean using high pressure pumps or a leaf blower.
- Consider the possibility of enhancing the productivity of the fishery by creating new spawning habitat with imported gravels.
- Clarify the rights of the fishery owners.
- Open up a positive dialogue with the Parish Council and local environment groups.
- Provide other riparian owners with properties backing onto your water with information on "best practice" for bank side management and maintenance.
- Keep a watching brief on water quality through joining the Riverfly Partnership and undertaking some monitoring of key areas.
- As a day ticket fishery the rules should be periodically reviewed. Catch and release using barbless hooks is recommended on a fishery sustained by wild stocks.

## **5. Making it happen**

There is the possibility that the WTT could help to start an enhancement programme. Physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). PVs typically comprise a 1-3 day visit where approved WTT 'Wet-Work' experts will complete a demonstration plot on the site to be restored. This will enable project leaders and teams to obtain "on the ground" training regarding the appropriate use of conservation techniques and materials, including Health & Safety equipment and requirements. This will then give projects the strongest possible start leading to successful completion of aims and objectives.

The WTT can fund the cost of labour (two/ three man team) and materials (max £1800). Recipients will be expected to cover travel and accommodation expenses of the contractor.

Alternatively the Trust may be able to help in the development of possible project plans for the creation of new spawning and nursery habitats.

There is currently a big demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to clubs, syndicates and landowners through guidance and linking them up with others that have had experience in improving trout fisheries.

### **Acknowledgement**

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programmes.

### **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 the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon comments made in this report.