



The Old Rectory, River Coln



An Advisory Visit by Nick Lawrence for the Wild Trout Trust February 2017

Contents

Introduction	3
Catchment Overview	4
Fishery Overview and Habitat Assessment	5
Recommendations	9
Making it Happen	11

Introduction

This report is the output of a Wild Trout Trust visit undertaken on a small section of the upper river Coln, in Coln St Dennis, Gloucestershire (national grid reference (NGR) SP 08597 10850). A walk-over of the site was requested by Mrs Wilson, who acquired The Old Rectory a few years ago. The primary focus of the visit was to assess the river habitat for wild trout (*Salmo trutta*) and for wildlife in general, and to provide advice on good river management practices.

Comments in this report are based on observations on the day of the site visit and discussions with Mr & Mrs Wilson and Nick Lawrence (Wild Trout Trust). 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.

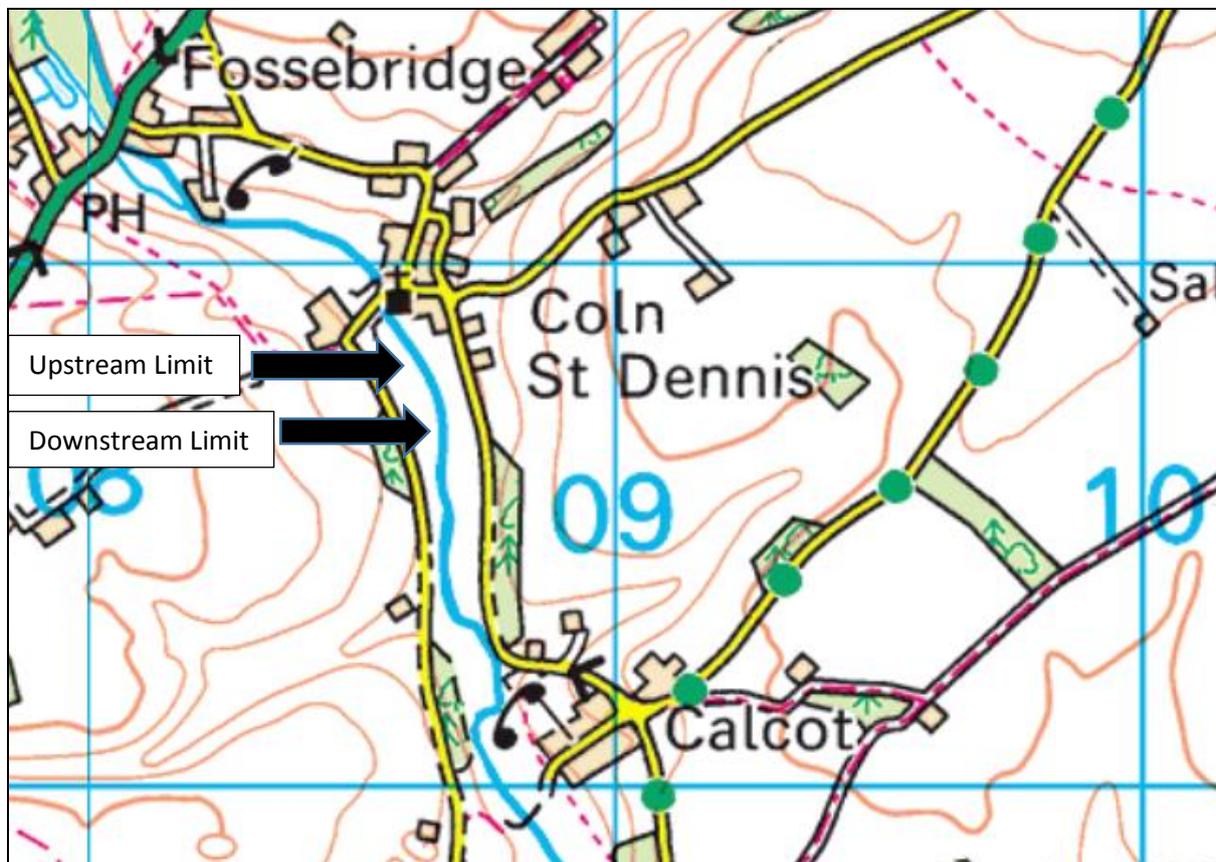


Figure 1: Map showing the area visited on the reach of river Coln.

Catchment Overview

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.

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 are 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 main sewage inputs to the river are from works at Andoversford, Bibury and Fairford. Bibury Trout 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.

The water framework directive (WFD) classification for the Upper Coln. Water body: GB106039029991 is that is currently 'moderate' condition with targets to meet good condition set for 2027.

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>).

In the last few seasons, the Coln, like other Cotswold limestone rivers, has been suffering from elevated levels of turbidity. Numerous theories have been put forward to explain the green opaque hue which currently exists, with the consensus view being that the issue is a chemical condition caused by excess dissolved calcium in the water, possibly exacerbated during periods of elevated base flow.

Fishery Overview

The Old Rectory garden leads down to a water meadow and through the water meadow flows the river Coln. The section of water is approximately 150 meters of single bank fishing (LB). The Wilson's bank has little to no fishing pressure and the other bank has some fishing from the owner and his friends, however most of it is comparatively light.

No fish were spotted on the visit due to water clarity and also the river bed could not be observed. Therefore, there will be some presumptions throughout the report. The river should support a reasonable number of wild trout and grayling. Apparently, the owner on the opposite bank stocks fish, but the numbers aren't known.

Mr and Mrs Wilson would like to improve the river for fish and biodiversity in general. They would also like some advice on sensible management practices for maintenance.

Habitat Assessment

The Old Rectory section of the Coln is set in a lovely water meadow in deepest Gloucestershire. It's fairly simple to diagnose the issues that this section of water has. The river would benefit from some habitat improvement work.



Figure 2: The bottom boundary is blighted by the telegraph pole and reinforcement bar weir that impounds the whole reach of the Old Rectory's water.

As seen in Figure 2, one of the main issues with the reach is the impoundment by the old telegraph pole weir, with this removed it will leave the river 'free'. Even if the weir was notched, to lower the degree of impoundment, this would dramatically change the reach above, which is the area that needs improvement. This will make a marked difference on the flow over the winter, and will pull the silt off the bottom of the river bed upstream. With the addition of some woody habitat features above the river it could be possible to get back some much-needed habitat and flow diversity. A dialogue defiantly need to be opened up with the owner of the RB to discuss the weir, who put it in and will they have an objection to it being removed. But the Wilsons have a right to remove half the weir on their side of the river.

The river does suffer from a lack of flow velocity (due to impoundment) and has little to no woody habitat in the river. The section lacks sinuosity and topographical diversity and the tree distribution is very uniform, both of which highlight the man-made influences of the channel.

The river has been straightened, as seen in the cover photo and Figure 3. In fact, it is unnaturally straight, probably due to drainage for farming practices. Some sinuosity needs to be restored and this can be done in two ways; either with the addition of woody material (either brushwood berms or log deflectors) or with the introduction of gravel to create hard berms to bounce the flow from one bank to the other. The RB is suffering from grazing pressure and the LB has no grazing.



Figure 3: The middle section looking towards the top boundary, notice unnaturally straight banks and no low cover.



Figure 4: Looking upstream near the bottom of the reach, the two small alder coppice could be re-coppiced to provide useful materials for staggered brushwood structures and the regrowth would provide valuable low cover.

Again Figure 4 shows the straightened nature of the channel and, as mentioned previously, the tree planting is quite uniform. The small alder coppices in the middle of Figure 4 would provide great material for woody structures to introduce some sinuosity to the reach as well as the regrowth from the stools providing low cover for fish in future years.

Once the weir is removed/ notched, some strategically placed woody material to promote gravel cleaning and provide marginal cover for juveniles could contribute to resolving this issue of sinuosity and marginal cover. More information on the value and use of woody material can be found on the WTT website at <http://www.wildtrout.org/content/wtt-publications>

In addition to the potential work previously mentioned, there was a lack of willow along the whole reach, which is strange as usually there is a plethora of this species around.

One quick fix to introducing more of this type of habitat is planting small whips of goat willow *Salix caprea*, not on the bank, but in the toe of the bank, where the water meets land and at an angle to the flow so the tips of the tree are touching the water.



Figure 5: This image illustrates the top of the reach and the difference between a managed bank and a more natural, unmanaged bank on the reach above.

A great example of how a river bank should look is Figure 5, this shows the contrast of a managed bank in the foreground of the picture and an unmanaged natural bank in the background.

Notice how this is the only degree of sinuosity throughout the whole reach! This is by no means luck. It is highly likely this has been allowed to develop because of the lack of maintenance (or careful maintenance and no or limited grazing?) done on the reach above. In particular, the lovely scrubby low marginal cover has been allowed to encroach, thus pinching the river and creating a seam of deflected faster water that can be noticed in the top of the picture (as indicated by arrow). Again, the alder coppice could be used for materials to accentuate the bend, or even some of the back limbs hinged in to provide cover. This is how a

river margin should look in winter: straw coloured and long, providing valuable protection to the river bank from floodwaters in the winter months.

The scallop in the bank in the center foreground of Figure 5 could be caused by hitting the fringe too hard in the autumn thus leaving the river bank unprotected for the winter months.

Recommendations:

In order for the Old Rectory section of the river Coln to achieve its full potential as a good quality river/ meadow habitat, capable of supporting healthy, self-sustaining populations of fish, the following actions are recommended:

1. The telegraph pole and reinforcement bar weir should be removed as it is impounding the flow upstream and would definitely be interrupting natural sediment transport and could contribute to habitat uniformity and resulting flow diversity downstream. At the very least this should be notched in the middle to pull the flow into the middle of the river utilising the velocity rather than eroding the river bank, and decreasing the impoundment of the reach above. A dialogue should be opened with the owner of the RB, so ensure some joined up management. The issues to discuss with them are taking the weir out, management of the fringes, light grazing or fencing from heavy grazing and tree planting.
2. The uniformity of the channel upstream of the weir needs to be addressed, once the issue of the weir is solved. Brushwood berms could be staggered in strategic areas to create flow sinuosity and marginal vegetation as well as providing habitat for juveniles. Log deflectors (Figure 8) could be used in this area where the spawning riffles are identified to keep gravels clean and scour out depressions in the river bed. Examples of how staggered deflectors can be introduced to a straightened channel can be seen in Figure 6, and the functions of brushwood berms in Figure 7. Discussions should take place with the owner of the RB so work can be complimentary to both banks.
3. Fringe management was touched upon on the visit as the fringe was noticeably short (Figure 5). Fringes should be kept as long as possible to allow marginal plants to flourish and flower, they will also protect banks in the winter from flooding. Small windows can be cut to allow fishing access and reed beds that get too high can be hedge cut to waist high. If the opposite bank can be fenced from sheep grazing this would in turn benefit the river.
4. Plant small scrubby trees (goat willow) where river meets river bank, where no trees or low cover is evident. Staggering them would be best,

one or two in an area on the LB, then go downstream 30 yards and the same on the RB, it is recommended that only 10-20 whips of goat willow are used in this process (obviously, this needs to be cleared with the owner of the RB). Care should be taken to make sure it doesn't look too uniform, and that it's not overplanted. Other areas could benefit from planting a strategically placed willow, alder or ash.

Explore the potential of a partnership restoration plan with the owner of the RB, WTT, EA and possibly the Cotswold Rivers Trust.



Figure 6: An illustration of how alternating log deflectors could increase sinuosity along a straightened channel.

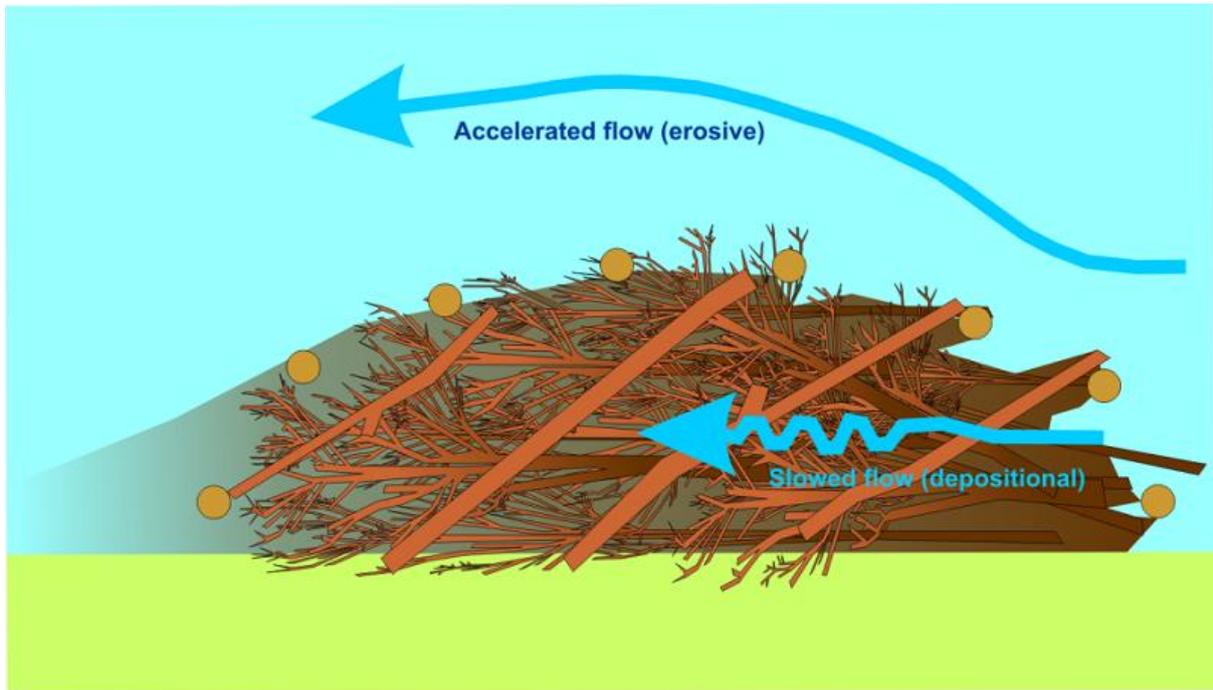


Figure 7: An illustration (plan view) of how brushwood berm structures can help manage in-stream fine sediment



Figure 8: A simple log deflector installed pointing upstream and keyed into the bank will deflect flow out into the centre of the channel, this will help to scour gravels and keep them clean, useful on a spawning riffle. For clarity, the river in this picture is flowing from left to right.

Making It Happen

The creation of any structures within most rivers or within 8m either side normally requires a formal Environmental Permit from the Environment Agency.

An application will normally have to be submitted, probably along with a methodology and drawings detailing the proposed works. This enables the EA to assess possible flood risk, and also any possible ecological impacts. Contacting the EA and informally discussing any proposed works is recommended as a means of efficiently processing an application.

The WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

<http://www.wildtrout.org/content/index>

The Wild Trout Trust has also produced a 70 minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop <http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0> or by calling the WTT office on 02392 570985.

There is also the possibility that the WTT could help via a Practical Visit (PV). PV's typically comprise a 1-3 day visit where WTT Conservation Officers will complete a demonstration plot on the site to be restored.

This enables recipients 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.

Recipients will be expected to cover travel and accommodation (if required) expenses of the WTT attendees.

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 organisations and landowners through guidance and linking them up with others that have had experience in improving river habitat.

Disclaimer

This report is produced for guidance; 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 guidance made in this report.