



Advisory Visit

River Wharfe, Addingham

December, 2009



1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the River Wharfe, Addingham, near Ilkley, Yorkshire, on 9th December, 2009. Comments in this report are based on observations on the day of the site visit and discussions with Ian Lord and other members of Addingham Angling Association, and David Morley of the Environment Agency Fisheries Department.

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Catchment / Fishery Overview

Addingham Angling Association controls the fishing on a 2-km stretch of the River Wharfe downstream of the Bolton Abbey Estate (Figure 1).

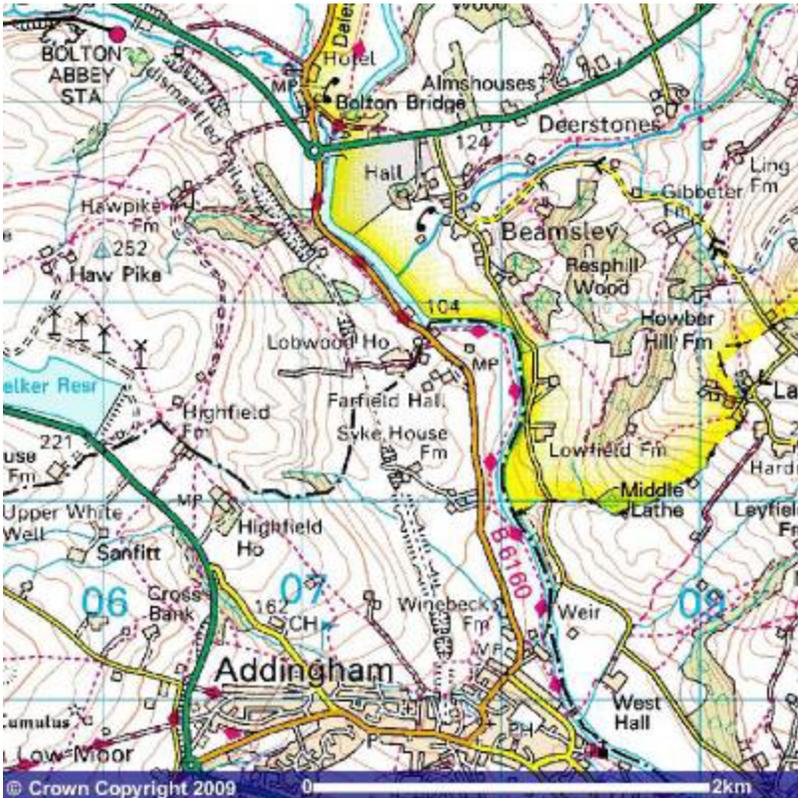


Figure 1

The stretch borders the Yorkshire Dales National Park on the left bank, and the Dales Way footpath follows the course of the river along the right bank.

The river was walked from the downstream limit at the weir at High Mill, upstream along the right bank to another weir near Lobwood House, where there is a water abstraction point and pumping station. The water level was about 30 cm above normal level at the time of the visit. Two tributaries which join the main river just upstream of the Addingham stretch were also briefly inspected; these were the Hambleton Beck (joining on the right bank just below the A59) and the Kex Beck (joining on the left bank a short distance downstream).

Addingham AA has 60 members, and day tickets are available (prior to fishing) to visiting anglers. The club introduce 500 12-14" brown trout annually, in two equal batches in April and July; the fish are sterile all-female triploids, which is in keeping with the recommendations of the Environment Agency's National Trout and Grayling Strategy to protect wild brown trout from interbreeding with farmed fish.

Stocked brown trout are also thought to drop down from introductions on the Bolton Abbey stretch of river immediately upstream. During the visit, it was mentioned that angling interests in this area of the Wharfe are looking into using a hatchery at Bolton Abbey to begin rearing trout from broodstock caught from the river – see the Recommendations section for further information.

Wild brown trout and grayling are present in this reach of the river. In common with the upper reaches of a number of rivers, anglers have reported a decline in grayling catches in the Wharfe. In response to the decline, some grayling have been stocked on the Bolton Abbey section and also higher upstream at Grassington (by the EA, about 5 years ago). Similar declines have been noted on the Nidd (David Morley), Swale, and Derbyshire Dove. A number of hypotheses have been put forward to explain the decline in grayling including:

- the impact of increased numbers of piscivorous birds (two goosander were observed during this visit);
- nutrient enrichment and associated algal growths causing increased egg mortality;

- flashier run-off regimes caused by land drainage and increasing areas of impermeable surfaces affecting recruitment of juvenile fish to adulthood.

It is likely that all these factors are implicated in the decline to some extent. Also, the grayling is a short-lived fish so its numbers are naturally prone to annual variation influenced by the success of recruitment in each generation. Addingham members reported increased catches of small grayling this year, so hopefully numbers are improving.

It would be extremely useful if club members could keep a record of their catches, to allow the perceived changes in fish numbers to be quantified. The club asks members to complete an annual catch return at the year end, but few members do. Long-term catch records are invaluable in assessing changes to fish stocks, and to inform stocking decisions. The Environment Agency can provide free log books which are quick and easy to complete and it is recommended these are adopted by the club – contact David Morley for further information.



Photo 1 Weir at High Mill



Photo 2 Impounded section of river upstream of High Mill



Photo 3 Broken water – great 'pocket water'

3.0 Habitat Assessment

Overall, this section of the Wharfe has excellent in-stream habitat. It is a large river with a relatively steep gradient, and despite having large weirs at either end of the stretch, only a relatively short section of river is impounded upstream (Photos 1 & 2). There is a good variety of in-stream habitat including fast-flowing riffle sections studded with boulders (Photo 3), shingle bars, steady glides and deep pools.

The banks on both sides of the river alternate between steep, tree-covered slopes and flatter areas of grazing. Just above the caravan site, muck spreading had recently been carried out and this extended too close to the river; any rainfall will soon wash the manure into the river here.

Where grazing of the banks was occurring, riverside fencing was present in some fields but not others. Where it was present, it was generally in a poor state of repair giving livestock free access to the river (Photo 4); however the grazing pressure was relatively light, and there were no areas of bank poaching evident. Well maintained fencing will allow a marginal fringe of low vegetation to develop which can provide valuable cover for fish where it hangs over the river; this is relatively less important on a large river like the Wharfe compared with smaller watercourses. An un-grazed strip alongside the river also allows young trees to establish; tree root systems provide valuable resilience to bank erosion.

In some areas, alder trees were present and appeared to be in poor health, possibly because of the fungal disease *Phytophthora*. Grazing pressure in these areas is preventing tree succession (removing tree seedlings), so in the medium term it is likely these trees will be lost and there will be nothing to replace them (Photo 5). The loss of the root ball will open up the bank to accelerated erosion, so it is advisable to assess the health of each alder tree and consider coppicing the trees with signs of the disease.

Coppiced alders will re-grow from the base if adequately protected from grazing stock, preserving the root ball. A well-maintained fence to protect an ungrazed riparian strip will protect coppiced trees and promote the survival of younger trees to provide a succession. The longer vegetation and young / coppiced trees in a protected riparian zone also have benefits for river flies, for example providing shelter for upwing (Ephemeroptera) duns

(sub-imagos) and increasing numbers of spinners (imagos) returning to the river.

Some areas of the right bank had been reinforced with stone to protect against bank erosion previously caused by livestock (Photo 6). This has stabilised the bank which has re-vegetated between the stones. Fencing these sections to allow trees to grow will protect these areas in the long term.

The factors affecting the abundance of wild trout (and grayling) in this section of the river will largely lie outside the boundaries of Addingham AA's fishing. For example, the way land is managed in the upper catchment can have a profound influence on water quality and flow regime. It is vital that angling interests support organisations like the Yorkshire Dales Rivers Trust (www.yorkshiredalesrivertrust.org.uk) that get involved in tackling such issues on a catchment scale.

Another example of the importance of catchment-scale issues is the habitat quality in the becks feeding into the river, and the ease of access to them for trout running from the main river to spawn; this will have a major influence on numbers of trout recruiting to the main river. The lower sections of the Hambleton Beck and Kex Beck which were inspected appeared to have good habitat and access, and some good quality gravels suitable for spawning (Photos 7 – 9). A previous Wild Trout Trust advisory visit in 2007 to the Wharfe at Bolton Abbey also looked at sections of the Hambleton Beck, and identified overgrazing as a pressure affecting river habitat quality. The full report of this visit can be read at www.wildtrout.org (follow the advisory visits link from the home page).



Photo 4 Poorly maintained fencing is allowing stock access to the river bank, exacerbating localised erosion problems caused by walkers on the Dales Way footpath.



Photo 5 Unfenced river margins prevent tree succession. This bank will be vulnerable when these alders are lost.



Photo 6 Stone reinforcing used to protect the right bank



Photo 7 Good spawning habitat on the lower end of the Hambleton Beck



Photo 8 Looking upstream on the Hambleton Beck – these tributaries are the key to improved wild trout stocks in the main river



Photo 9 The lower end of the Kex Beck.

4.0 Recommendations

- Support the Yorkshire Dales Rivers Trust (YDRT), and get involved in catchment-wide projects.
- Find out about land ownership on the tributary becks, and explore the idea of starting a project to assess and improve spawning and juvenile habitat on these watercourses, possibly in conjunction with other angling interests on the Wharfe, and YDRT.
- Use contacts with local landowners to influence the way the land is managed alongside the river. This could include the installation of fencing (and repair and maintenance of existing fences) to exclude grazing livestock from the river margins. This will promote the growth of a 'shaggy' margin and the establishment of new trees, which will have benefits for fish, invertebrates and bank stability. If this takes place, a close watch should be kept for invasive plant species such as Himalayan balsam and Japanese knotweed which are present elsewhere in the catchment, and appropriate measures taken to control them (see [http://www.environment-agency.gov.uk/static/documents/Leisure/GEHO0307BLZO-e-e\(1\).pdf](http://www.environment-agency.gov.uk/static/documents/Leisure/GEHO0307BLZO-e-e(1).pdf))
- Assess alder trees for signs of *Phytophthora* disease, and consider coppicing those affected to preserve the root ball within the bank. Note that livestock exclusion is essential if coppiced trees are to re-grow (Photos 10 & 11).



Photo 10 Coppiced trees in 2004 on the River Dane, Cheshire



Photo 11 2008: Good re-growth of coppiced alders at same site as Photo 10

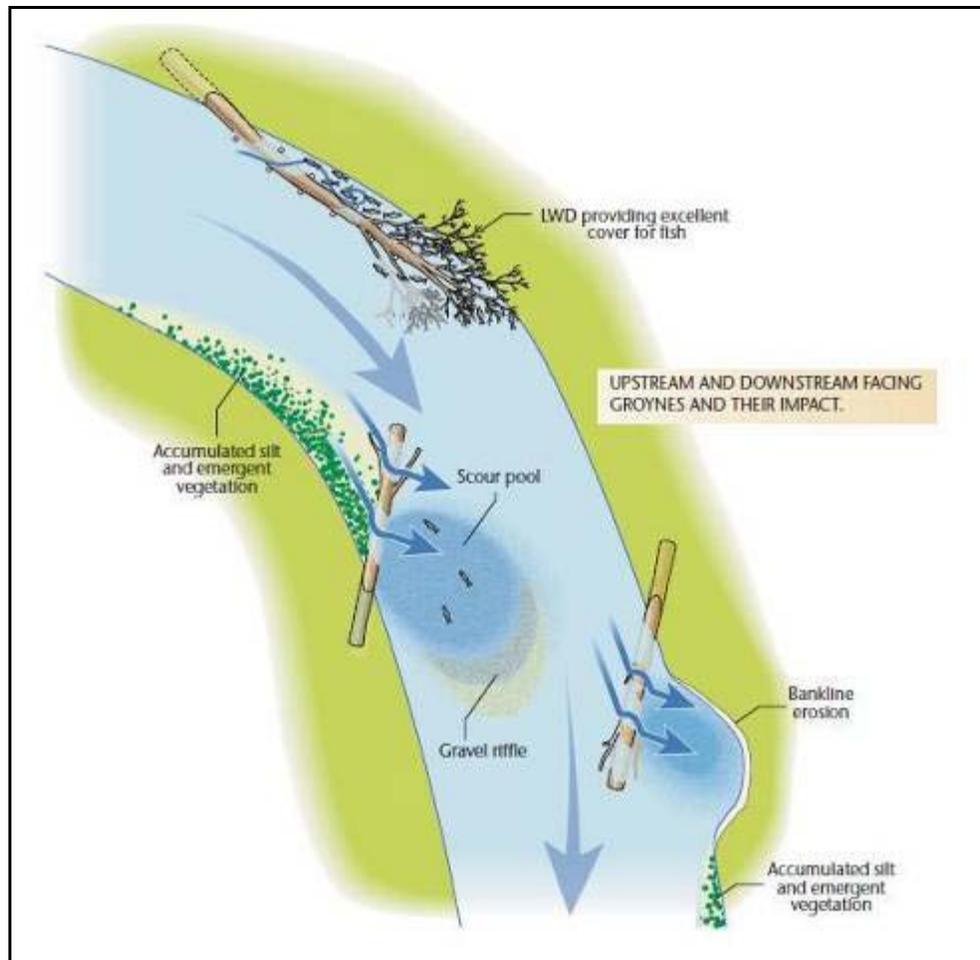


Figure 2 The effects of retained LWD

- Large woody debris (LWD) should be retained in the river channel whenever possible. 'Large Woody Debris' (LWD) is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams is derived from trees located within the riparian corridor. Rivers with adequate amounts of 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.

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, as Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased resulting in a less 'flashy' regime.

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 often 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 (Figure 2). A stream with a heterogeneous substrate and pools and riffles is ideal for wild trout and a range of other species.

Techniques for introducing and fixing LWD are available and have been trialled elsewhere on the Wharfe. These involve fixing whole felled trees to their stumps with cabled wire. Wild Trout Trust can provide further advice on this.

- Take part in the anglers' invertebrate monitoring initiative instigated by the Riverfly Partnership. This will enable volunteers to monitor water quality in the river and provide an early warning of pollution and a deterrent to potential polluters. Details of sampling strategies and training days can be obtained from the Riverfly website at www.riverflies.org. Contact Bridget Peacock riverflies@salmon-trout.org for further details. Stephen Moores (Riverkeeper with CLFFC) has been carrying out sampling further downstream and would be a good source of advice and guidance. Suitable nets for sampling macroinvertebrates can be obtained from Alana Ecology www.alanaecology.com Tel: 01588 630173
- The proposed hatchery for brown trout on the Wharfe needs to be considered carefully. Supportive breeding is the term used to describe

production of trout in hatcheries using wild local broodstock caught from the water system to be stocked. Whilst this may seem to be an attractive option, because the stock fish are being produced from a native gene pool, there are pitfalls:

- Knowledge of the genetic population structure in the water concerned is required before supportive breeding is undertaken. In some systems there may be different populations of trout isolated from each other by differences in the time or location spawning. Mixing of these stocks could lead to a breakdown of the natural population structure and loss of local adaptations.
- To prevent inbreeding depression, a minimum number of pairs of adult fish should be used for broodstock. This may represent a significant proportion of the breeding population in some systems and the loss of natural production resulting from the removal of broodstock should be considered against the gain from hatchery rearing. There is also the risk of “putting all your eggs in one basket” – loss of stock in the hatchery (to disease, for example) having removed that breeding potential from the wild.
- Fish produced have reduced survival and reproductive success compared to wild fish. The domestication process occurs very rapidly within the hatchery as the traits for survival within such an environment are very different from those required in the wild. Recent research shows large genetic differences between first generation fish produced from wild broodstock in the Dart system (Devon) and those born in the river (Griffiths, *et al.*, 2009).

The Environment Agency are currently working on guidelines for supportive breeding and these should be available in 2010.

- It is a legal requirement that all the works to the river require written Environment Agency (EA) consent prior to undertaking any works, either in-channel or within 8 metres of the bank.

5.0 Making it Happen

The WTT can provide further assistance in the following ways:

- Advice and support in formulating a worked-up project proposal and assistance with the preparation of Environment Agency Land Drainage consent applications.
- Financial support to kick start projects. Advisory Visit bursaries of £500 to £1500 are intended to be used as matched funding to assist in raising money from other funders towards project works. Sage or Hardy rods are available at cost price via WTT for use in fund raising auctions/raffles to raise money towards projects.
- Projects can be kick-started with the assistance of a WTT 'Practical Visit' (PV) where habitat improvement techniques are demonstrated. 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.

Note: Recipients of the programme must have received a WTT AV and have obtained the appropriate consents from the Environment Agency, landowners, etc., prior to arrangements being made to undertake the PV.

Applications for all the above should be made via projects@wildtrout.org

6.0 Reference

Griffiths, A.M., Bright, D. & Stevens, J.R. (2009) Comparison of patterns of genetic variability in wild and supportively bred stocks of brown trout, *Salmo trutta*. Fisheries Management and Ecology, **16**, 514-519.

7.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for the support that made this visit possible.

8.0 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.