



Advisory Visit

River Seven, North Yorkshire

11th November, 2008



1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust on the River Seven, at Cropton, near Pickering, North Yorkshire on 11th November, 2008. Comments in this report are based on observations on the day of the site visit and discussions with Ken Hall and Brian Jones.

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 Fishery Overview

The River Seven rises in the North Yorkshire Moors National Park, and is a tributary of the River Rye in the Yorkshire Derwent catchment. The section visited was in the National Park, between the villages of Cropton and Lastingham. Seven Bridge at National Grid Reference (NGR) SE 74547 89827 is the approximate mid-point of the reach, and the river was walked from here downstream to Cropton Mill, and also a short section upstream of Seven Bridge. The Cropton Beck (aka Sutherland Beck) was also walked from the confluence with the Seven at Cropton Mill, upstream beyond the road bridge.

3.0 Habitat Assessment

The River Seven is an upland rain-fed river running off a moorland catchment area. The instream habitat is generally very good with a natural pool-riffle sequence and a wide variation in depths. There are deep pools, glides, gravel shoals, and broken shallow runs – a good balance of habitat for all life stages of trout. Apart from the more open upstream sections the banks are lined with mature trees, mostly alder, but also ash and some hawthorn (Photos 1 and 2).

On the upstream section of the river (above Seven Bridge), the river flows through open moorland, giving way to more intensive grazing on improved grassland. Downstream of Seven Bridge land use is a mixture of grazing and arable. There is grazing on the left bank, and some fields are fenced



Photo 1 Pool and riffle habitat



Photo 2 Shallow water with plenty of boulders – great juvenile habitat



Photo 3 Arable field on the RHB below Seven Bridge with a nice wide buffer zone



Photo 4 Removal of submerged alders roots – this is undesirable as they are great habitat for trout and crayfish

alongside the river. In the field on the right bank wheat had been cultivated, and there is a wide margin between the crop and the river (Photo 3).

Ken and Brian have done a tremendous amount of work along the left bank clearing brambles and briars and thinning out the lower branches of trees to allow more light to reach the river channel. This should benefit the river banks by encouraging growth of tall grasses and other low, fringing vegetation. Unfortunately the submerged roots of some alder trees have also been removed; these are very valuable habitat for trout, crayfish and other species (Photo 4). Adult trout in particular will use submerged tree roots as a safe refuge, and establish territories in their vicinity. Removal of the tree roots will cause fish to move elsewhere and generally reduce the carrying capacity of the river for trout.

Generally the banks of the river are in good condition with little damage caused by grazing livestock. One exception to this was on a sharp bend in the river about halfway between Seven Bridge and Cropton Mill. Here the outside of the bend was eroding quickly leading to the loss of trees (Photo 5).

At the confluence of the Cropton / Sutherland Beck, there was an old weir across the Beck with a head difference of about 2 metres (Photo 6). Two trout were observed leaping at the weir during approximately five minutes observation, and Ken has subsequently observed many further attempts by trout to ascend the weir. The structure appears to be impassable to fish, certainly at the flows observed on the day, and probably at higher flows as well. The weir appears to have been associated with Cropton Mill, although the leat is now blocked and in-filled.

Above the weir, the beck is impounded, slow-flowing and has an accumulation of fine sediment on the bed (Photo 7). There are some good examples of submerged alder roots in this section (Photo 8). Above the backwater effect of the weir the beck has some very good in-stream habitat; there is a pool-riffle sequence with a good balance of adult and juvenile trout habitat. There were one or two areas where livestock had access to the beck for crossing and drinking where the banks were poached – an undesirable source of fine sediment which can impact on trout egg survival – but generally the high banks restricted livestock access (Photos 9 and 10).



Photo 5 Rapidly eroding banks, cutting behind trees.



Photo 6 Weir at the mouth of the beck (the mill can be seen in the background). Trout were observed leaping to ascend the weir (unsuccessfully), at this point



Photo 7 Slow water in the impounded section above the weir



Photo 8 Submerged alder roots. Great habitat – leave them in!



Photo 9 Livestock crossing and drinking area. An alternative drinking source (troughs) and fences and gates would prevent fine sediments getting into the water course in these areas.



Photo 10 The high banks help in restricting livestock access to the watercourse

Upstream of the road bridge over the beck, the good habitat continues. The beck channel is quite deeply incised, and there are examples of bedrock cascades and deep undercut banks. The banks are lined with mature trees (alder, ash, beech and oak), beyond which there is grazing on the RHB and a mixture of woodland, grazing, wheat and game cover crops on the LHB. The beck was walked as far upstream as the footbridge at NGR SE 75333 89987. Beyond this the land use appeared to become less intensive and moorland in character (wet with abundant *Juncus* rushes).

On both the River Seven and the beck, there was generally a lack of large woody debris in the river channel (Photo 11). 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 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 often unnecessary and harmful to high quality streams such as the Seven. 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.

Some brief invertebrate samples were taken by kick sampling, both in the river and the beck. Very few invertebrates were found at any of the sites, which is probably because of the relatively high water conditions and the time of the year. A small Mayfly nymph (*Ephemera danica*) was caught in the beck, and a stonefly nymph in the main river. Ken and Brian report good hatches of upwing flies (including large dark olives, blue-winged olives, and Mayfly).



Photo 11 One of the few examples of large woody debris seen during the visit – good habitat that should be retained.

4.0 Recommendations

- Adopt a policy of retaining LWD in the river channel wherever 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.

Current Environment Agency policy nationally is to encourage LWD in headwater streams with an associated low flood risk, in order to slow discharge rate through a reach and encourage out of banks flow during high water events. This provides a degree of attenuation helping to reduce flood risk in more populated downstream reaches. Consultation with the local Environment Agency Flood Risk Management Team would be of benefit in order to establish a management protocol for the fishery with respect to LWD.

- Retain alder roots in the watercourse – these are valuable habitat for a range of species including trout and crayfish.
- Take part in the anglers' invertebrate monitoring initiative instigated by the Riverfly Partnership. Regular invertebrate samples provide a quick water quality "health check" and can provide an early warning of pollution problems, such as sheep dip. 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. Suitable nets for sampling macroinvertebrates can be obtained from Alana Ecology www.alanaecology.com Tel: 01588 630173
- Selectively coppice the trees along the more heavily shaded sections of the river to encourage a diversity of size and maturity amongst bankside trees, and increased light penetration to the river and banks (Photos 12 and 13). Careful rotational coppicing of selected trees, particularly alder, would enhance the growth of valuable fringing vegetation. Ideally the channel

should not be opened up excessively; a ratio of 60:40 shaded to open channel is generally believed to be a good target. The north-south alignment of the river means coppicing should be carried out equally on each bank.

The following important points must be considered before embarking upon any tree management:

1. Depending on the extent and timing coppicing, it may be necessary to obtain a felling licence from the Forestry Commission prior to commencement of operations.
2. Surveys for protected species such as bats, water voles and otters may be required prior to tree management, and a suitably qualified person should be consulted (e.g. at the local Wildlife Trust, National Park Authority or Environment Agency)
3. Tree work should not be carried out during the bird nesting season, between March and September.

It is recommended that contact is made with the Conservation section of the North Yorkshire Moors National Park Authority (NYMNPA) to discuss tree management. There may be synergies with conservation work for water voles, white-clawed crayfish, and river and stream habitats; all of these have specific action plans under the Biodiversity Action Plan (BAP) which can be viewed on the NYMNPA website at

<http://www.visitnorthyorkshiremoors.co.uk/content.php?nID=730>

There have been projects carried out previously to enhance river habitats, for example the Upper Derwent Enhancement Scheme:

<http://www.visitnorthyorkshiremoors.co.uk/content.php?nID=205>

There may also be the possibility of involving the NYMNPA's Conservation Volunteers in any habitat improvement works.

It is vital that coppiced trees are protected from grazing livestock with suitable fencing to allow the coppiced stools to regrow.



Photo 12 Alders coppiced on the River Dane, Staffordshire, in 2004...



Photo 13 ...and re-growth by October 2008. Rather than coppicing blocks of trees like this, it would be better to aim for a more varied pattern of height and maturity of trees.

- The possibility of removing or lowering the weir at end of Cropton / Sutherland Beck should be explored. This will increase access for trout to good quality spawning and juvenile habitat and contribute to improved fish stocks. Consultation with the Environment Agency and NYMNPA is recommended to check what constraints there might be on weir removal, including rights of water abstraction, flood risk issues, archaeological interest and ownership of the structure.

- The bank erosion observed on the bend between Seven Bridge and Cropton Mill should be addressed to prevent it getting worse. This could be achieved using techniques such as a tree kicker (Figure 1) or brushwood mattresses (Photo 14), in combination with fencing out livestock. Arisings from tree work could be used for this work.

- There may be white-clawed crayfish present in this watercourse. This is a nationally threatened species vulnerable to a disease carried by non-native American signal crayfish. It is recommended that anyone fishing or working on the river ensures their equipment and clothing is fully disinfected or dried out prior to use. See http://www.english-nature.org.uk/LIFEinUKRivers/publications/crayfish_monitoring.pdf (page 45).

- There was some discussion over stocking trout into this section of the River Seven. Given the very light fishing pressure currently taking place, and the good catches (but low harvest) being made, it is recommended that stocking is not necessary. There is also mounting evidence that interbreeding between domesticated farmed trout and wild fish can lead to lower fitness and survival amongst the offspring, reducing the numbers of river-bred fish in the population. Recent changes to the Environment Agency's National Trout & Grayling Strategy reflect this concern, and by 2015 all farmed trout stocked to rivers will be required to be sterile all-female triploids, or derived from local broodstock. More information on this subject can be found at:

<http://www.environment-agency.gov.uk/subjects/fish/165773/1791055/1800027/>

NB: 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.

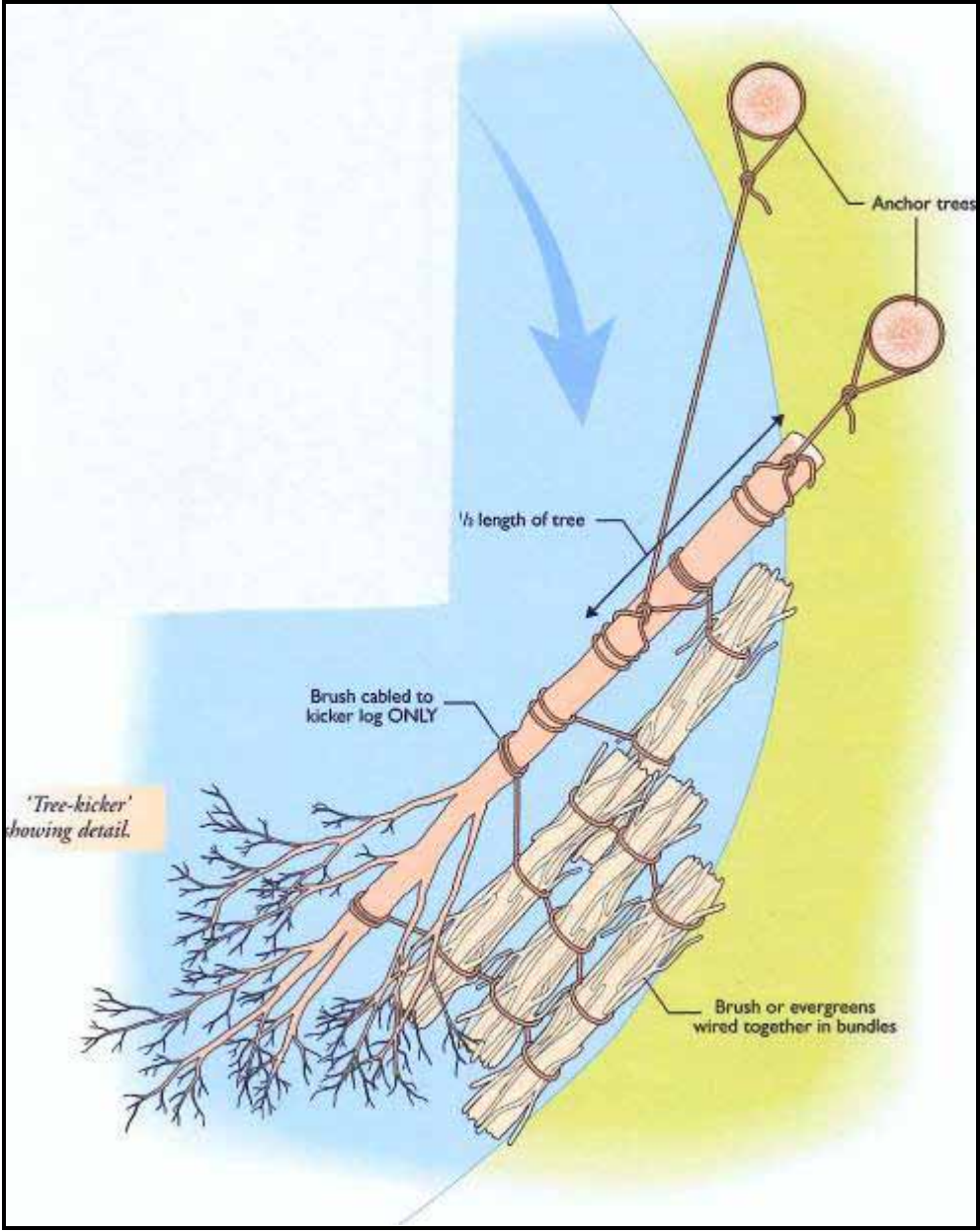


Figure 1 Example of 'tree kicker' erosion protection for high energy streams



Photo 14 Brushwood protection of an eroding bank on the River Dove, Derbyshire

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.
- Seed corn funding of £500 to £1500 to kick start projects. These bursaries are intended to be used as matched funding to assist in raising money from other funders towards project works.

- Works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). The WTT will fund the cost of labour (two-man team) and materials. Recipients will be expected to cover travel and accommodation expenses of the advisors. The use of specialist plant will be by separate negotiation.

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 Acknowledgements

This Wild Trout Trust advisory visit was made possible through sponsorship provided by the Environment Agency, the aim of which is to provide professional advice and project support for fishing clubs, riparian owners and community groups wishing to undertake wild trout conservation projects.

7.0 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.