



WILD TROUT TRUST

Advisory Visit

River Derwent, Cromford, Derbyshire

April, 2023



1.0 Introduction

This report is an update to the WTT advisory visit (AV) carried out for Cromford Fly Fishing Club (CFFC) in 2012 following a further visit by Tim Jacklin of the Wild Trout Trust to the River Derwent, Cromford, Derbyshire on 27th April 2023. Comments in this report are based on observations on the day of the site visit and discussions with members of CFFC committee.

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

The Derbyshire Derwent rises in the southern Pennines between Manchester and Sheffield and flows south to join the River Trent just south-east of Derby. The upper reaches of the river are impounded by Derwent, Howden and Ladybower reservoirs and hence the river flow is influenced by compensation flows and water releases. The geology of the catchment comprises the Millstone Grit and shales of the Dark Peak and carboniferous limestone in the White Peak where tributaries such as the Wye arise.

The catchment is largely rural, with pastoral agriculture the predominant land use. The middle and lower river flows through towns such as Matlock, Cromford, Belper and Derby where pioneers of the Industrial Revolution such as Richard Arkwright harnessed the river's energy to power mills, something recognised by the World Heritage Site status of the Derwent Valley. The mill weirs, combined with historical pollution and other barriers on the Trent, led to the extinction from the Derwent of migratory fish species such as salmon and river lamprey. Since the AV in 2012, fish passage improvements at weirs on the lower Derwent have allowed the recovering Trent salmon population to extend into the Derwent, with adults and juveniles recorded as far upstream as Belper. Presently, the weirs at Belper and Ambergate prevent salmon from reaching CFFC waters. The Environment Agency and partners continue to work towards improved fish passage for as wide a range of species as possible.

The Water Framework Directive (WFD) classifies rivers (as high, good, moderate, poor or bad) based upon various measures of ecology, water

chemistry, flow regime and physical condition of the channel. The measures of ecology include fish, invertebrates, macrophytes (plants) and phytobenthos (algae). WFD sets a target for achieving overall *good ecological status* by certain dates; if there are overriding factors that prevent the achievement of good ecological status, the waterbody may be designated as a *heavily modified or artificial waterbody*, in which case the target is to achieve the best *ecological potential* possible within the constraints present. The latter is the case with this section of the Derwent (Waterbody ID GB104028052390, River Derwent, River Wye to River Amber), because of the regulated nature of the flow (compensation releases from Ladybower reservoir) and the presence of barriers to fish migration (weirs). The current ecological potential (assessed in 2019) of this section of the Derwent is *moderate* (considered the best possible within the constraints), which has improved from *poor* since the WTT advisory visit in 2012.

Cromford Fly Fishing Club control approximately 2½ miles of mostly double bank fishing on the River Derwent, between Cromford Bridge (SK3001257195) downstream to Holmesford Cottage Meadows (SK3263455360). The river here is known to contain brown trout, grayling, chub, barbel, pike, perch, minnow, stone loach, bullhead and brook lamprey. The club have 76 members and stock the river annually in two batches with a total of approximately 800 brown trout of a takeable size.

This section of the Derwent does not flow through any sites with statutory conservation designations (e.g. SAC, SSSI), but the Cromford Canal SSSI does follow the course of the valley here. This disused canal is designated for its rich aquatic and wetland flora and associated insect fauna.

3.0 Habitat Assessment

The river was walked from Cromford Bridge to the downstream limit. In general, the in-stream habitat quality within this section of the Derwent is very good. The river has a moderate to steep gradient and a good diversity of flow patterns and depths provided by the pool, riffle and glide sequence. The river bed substrate is also very varied, ranging from boulders down to sand, with a good proportion of gravel in the 5 – 100mm size range, which encompasses the spawning requirements of fish such as trout, grayling, barbel, chub and lamprey (Photo 1, Photo 2).



Photo 1 A good diversity of flow patterns and gravel substrate size



Photo 2 Excellent in-stream habitat features.

The banks are stable, with mature trees present for the majority of the reach. Trees are important for river habitat on several counts:

- they bind the bank with their root structure (preventing over-widening and shallowing of the channel);
- They provide shade to the channel, keeping water temperatures within tolerable limits for cool-water species like trout;
- They provide an input of leaf litter and terrestrial invertebrates to the aquatic food chain;
- They provide low cover over the water which is an important habitat for adult fish;
- They provide a source of large woody debris (LWD) for the river channel.

Large Woody Material (LWM) is a general term referring to all wood naturally occurring in rivers including fallen trees, branches, stumps and logs. Almost all LWM in rivers is derived from trees located within the riparian corridor. Streams with adequate LWM tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. LWM is an essential component of a healthy stream's ecology and helps maintain a diversity of biological communities and physical habitat.

Often LWM is treated as a nuisance and removed from the river. This may be necessary in some cases (e.g. to reduce flood risk by removal of accumulations from bridges), but very often removal is unnecessary and harmful to stream habitat. Removal of LWD reduces the amount of organic material supporting the aquatic food web, and removes vital in-stream habitats that fish will utilise for shelter and spawning. In addition, LWM improves the stream structure by enhancing the substrate (scouring and sorting gravel) and diverts the stream current in such a way that pools and riffles are likely to develop. The best approach to managing LWM in a way that benefits river habitat is to adopt a default position of leaving it in place (Photo 3). LWM is dynamic and relies on wooded banks for supply; structures will appear, move position and wash out over varying timescales.



Photo 3 Naturally occurring large woody structure provides multiple benefits – fish refuge habitat, trapped leaf litter which will support invertebrate life and hence trout food, and diversity of flow patterns and gravel sorting. Leaving it in situ is the best habitat option.

Photo 4 and Photo 5 illustrate the difference between un-grazed and grazed banks respectively. The un-grazed banks support tree succession with multiple native saplings observed. Valuable low cover over the water is provided by saplings and low branches on mature trees; this provides good lies for trout and increased angling opportunity. Healthy understory vegetation on un-grazed banks supports better invertebrate biodiversity (trout food).

In contrast, the grazed banks have no tree succession and a short grass sward. The shallow root horizon of the latter, along with the livestock desire lines, make the banks less stable leading to an increase in the rate of loss of mature trees (Photo 6). Consequently, cover and fish-holding capacity are poorer within this section. The left bank opposite the grazed section has recently been rebuilt and protected with large stone rip-rap following a land slide that affected the road there (Photo 7), further reducing natural habitat quality within this section.



Photo 4 Un-grazed banks with tree succession, good understory vegetation and good low cover over the water.



Photo 5 Grazed banks prevent tree succession, are less stable and provide little cover over the water.



Photo 6 Possible site of a fallen tree, illustrating shallow root horizon of grass and reduced bank stability.



Photo 7 Hard-engineered left (far) bank and sewer storm overflow pipe (foreground).

A main sewer runs along the right bank for most of CFFC's water leading to the sewage treatment works for Matlock, where treated effluent is discharged into the river on the right bank, opposite Lea Wood (Photo 8). At one point along the sewer, CFFC reported a recent problem with a storm overflow discharging untreated sewage to the river; this was responded to quickly and fixed and is not a recurring issue (Photo 7).

CFFC take part in the Riverfly Partnership's Anglers' Riverfly Monitoring Initiative (ARMI), taking regular samples of invertebrates throughout the fishery to check water quality.

The invasive non-native plant species Japanese knotweed was observed on the banks close to the Cromford canal crossing. This should be treated by a suitably qualified operative to prevent its spread.



Photo 8 Treated effluent discharge from Matlock sewage treatment works.

4.0 Recommendations

- Continue with the Riverfly Partnership Anglers' Monitoring Initiative and other water quality monitoring initiatives.

- Control non-native plant species including Japanese knotweed and Himalayan balsam. The former requires specialist input (for example stem injection of herbicide by a qualified operative). The latter can be controlled by hand-pulling before it flowers (it is an annual plant).
- Exclude livestock from the grazed sections of bank. This would require close liaison with the grazier and agreement on issues such as responsibility for maintenance of fencing and provision of water for livestock.
- Retain large woody material (LWM) in the river channel for its multiple habitat benefits.
- Retain low cover over the water - avoid the removal of low branches as these create spots close to the banks where trout feel safe and choose to lie / feed. Create more low cover by 'hinging' small bankside trees (where abundant and available) into the river margins (Photo 9).



Photo 9 Laying small trees/coppice re-growth to provide low cover in/over the river.

- Fish stocking

CFFC reported poor grayling catches in recent seasons and were considering stocking juvenile grayling. It is unlikely that stocking would be cost-beneficial, given that very large numbers would have to be stocked to overcome high natural mortality rates of juvenile fish, and produce a measurable increase in the adult population.

Trout stocking by CFFC was considered at length in the [2012 advisory visit report](#) . Since then, the club has reduced the numbers of fish stocked from 1000 to 800 per annum, and stocked fish should all be infertile triploids in line with Environment Agency regulations. If catch-and-release rates remain as high as in 2012 (90%+), the same advice stands to reduce numbers of trout stocked whilst monitoring the effect on catches via catch returns. The rationale behind this advice is given at www.wildtrout.org/content/trout-stocking .

Please note - 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 may be able to offer further assistance such as a Practical Visit. Where recipients require assistance to carry out the improvements highlighted in an advisory report, there may be the possibility of WTT staff conducting a practical visit. This would consist of a WTT Conservation Officer(s) teaming up with interested parties to demonstrate habitat enhancement methods (e.g. pinned woody material, willow planting, willow laying, etc.). Please contact your local WTT Conservation Officer for further information.

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

www.wildtrout.org/content/wtt-publications

We have 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 populations and managing invasive species.

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

6.0 Acknowledgement

The Wild Trout Trust would like to acknowledge the support of the Environment Agency which made this visit possible.

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.

