WILD TROUT TRUST

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River Sid, Sidmouth, Devon

A Project Proposal by the Wild Trout Trust April 2023

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Contents

Summary

- The River Sid below Fortescue weir has been significantly straightened, resulting in a channel profile that lacks the physical diversity needed by wild brown trout in each stage of their lifecycle.
- Numerous boulder weirs and rock armouring of the banks lock the river in stasis.
- Two large weirs (Fortescue and School weir) are significant barriers to fish passage, resulting in a fragmented population of wild brown trout that are more vulnerable to the effects of pollution, climate change and predation.
- In channel habitat is lacking. A paucity of large woody material in the river has resulted in cover habitat and spate refuge being at a premium.
- An absence of large woody material also means that the riverbed is uniform.
- The reach inspected is heavily overshaded. Dropping trees into the river and securing them as cabled tree kickers would help open up sky lights in the canopy, thus improving in-stream and marginal productivity.

Introduction

This report is the output of a site visit undertaken by Ed Eley of the Wild Trout Trust (WTT) and Charles Sinclair of the Sid Valley Biodiversity Group (SVBG) on the River Sid, near Sidmouth. The visit was primarily focused on assessing habitat for wild brown trout and identifying and recommending actions to improve habitat.

Comments in this report are based on observations on the day of the site visit. 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.

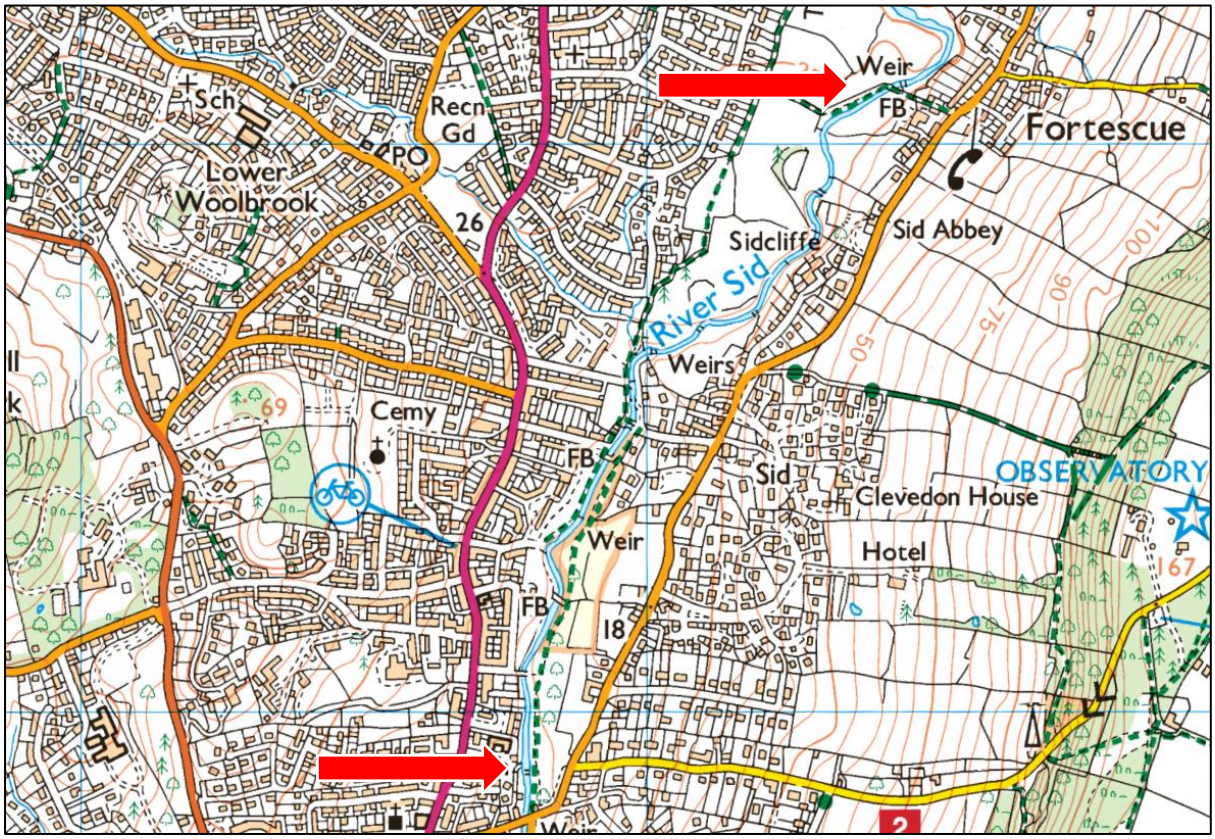

Figure 1: Map showing the location of water visited. Red Arrows marking U/S and D/S Extents.

Habitat Assessment

The section of the River Sid visited is uniformly straight, heavily shaded and lacks bed diversity. As a result, the flow regime is relatively smooth and laminar and habitat diversity is low. Channel uniformity is compounded by two large weirs at the upstream and downstream extents of the proposed project area and numerous boulder weirs along the length of the proposed area.

Fortunately, an abundance of bankside trees give rise to the opportunity to enhance flow diversity and reinvigorate natural geomorphological processes. Habitat quality in this reach would greatly benefit from the introduction of hinged and/or felled and secured tree kicker features (Appendix II proposed plan view).

The woody features would provide valuable in-stream over and spate refuge, whilst helping to create some localised scour of the river, thus greatly improving river geomorphology. The works carried out would also open up 'sky lights' into the reach helping to create a better-balanced dappled light to shade regime, which would in turn increase in-stream and marginal productivity.

Figure 2: The river alongside Gilchrist Field is artificially straight and uniform in bed profile. The LB is armoured with boulders and mature alder trees area casting dense shade over the river.

Figure 3: Mautre bankside trees are heavily shading the river, limiting primary productivity and marginal diversity. Felling a few carefully selected alders into the river (and securing as cabled kickers) would greatly increase river geomorphology and create some much-needed habitat diversity, but also increase light levels.

Figure 4: Bankside willows could easily be hinged cut and laid into the river downstream whilst still remaining firmly attached to their roots (these too, can be cabled as a redundancy). This would provide excellent marginal cover habitat and flow deflection whilst also keeping the tree alive and secure.

Figure 5: The riverbed profile is uniform and offers little diversity. The LB is still armoured with large boulders, providing minimal habitat diversity. Mature alder trees again, are casting a dense shade over the river.

Figure 6: An example of natural LWM. Localised scour off this natural feature has carved out a deep pool and the flow deflection has allowed a gravel bar to form in the lee of the LWM. This is an excellent example of how simple interventions, like installing LWM can have a big effect on habitat locally.

Figure 7: The River Sid towards the downstream extent of the reach inspected. Again, uniformly straight and lacking physical diversity and habitat.

Figure 8: The riparian trees in the Byes waterside park have a greater amenity value, limiting the scope for habitat works. There is one low value alder tree that could be used to create a tree kicker to improve habitat. In a location with high public footfall, this single tree kicker would help educate locals about the river and could promote enthusiasm for more habitat works in the catchment.

Project Proposal

The Wild Trout Trust (WTT) in partnership with the Sid Valley Biodiversity Group (SVBG) are proposing to deliver a habitat improvement project within the reach in between Fortesque Weir and School Weir (NGR SY 13425 89093 – SY 12790 87896).

Seven trees have been identified as suitable candidates to fell into the river and secure as cabled tree kickers and two small willow trees earmarked to be hinged D/S into the river margins (See Appendix I for proposed plan view map).

Tree Kickers

Entire trees can be hinged and/or felled into the river and repositioned into the margins using a winch. Once in the desired position the hinged/felled tree is then secured back to its bankside stump. The width of the structure will be no more than 30% of the channel. A chainsaw or augur is used to bore a hole through the felled/hinged stem and the stump, then steel cable (12mm approx. 9.4 tonne b.s.) is fed through the holes in the stem and stump and steel cable clamps used to secure the kicker in place. This provides valuable in-stream woody habitat that is extremely resistant to spate flows, however, some branches may have to be trimmed after securing to allow high flows to pass over. The length of the cable must be set so that flow will naturally push the limb out of the main current during spate flow conditions but not so long that the limb can be lifted out of the channel during flood flows.

Figure 9: An example of an alder tree kicker on the Flasby Beck, with steel rope used to secure the felled tree to its stump.

Figure 10: A cabled tree kicker in high flows. The cable allows the limb to move out of the main flow during spate conditions.

Hinged Trees

Riparian trees and tree limbs can be partially-felled and laid into the river downstream whilst remaining firmly attached to their roots. This provides excellent marginal cover habitat and flow deflection whilst also keeping the tree alive and secure.

In many cases, the hinge holding the felled tree or limb will be sufficiently strong to withstand spate flows but a variety of techniques are available to introduce additional security to the feature or provide a secure 'back up' as a redundancy should the hinge fail (Figure 10).

Hinged trees should be laid downstream and manoeuvred to maximise habitat value and achieve a good level of flow deflection whilst minimising their potential flood risk. The distance that hinged features protrude into the channel will depend on the existing channel width in relation to average flow and the local level of flood risk. As a general 'rule of thumb', features should not protrude more than 1/3 channel width.

Figure 10: An example of a hinged alder tree laid into the margins of a spate river. Rope has been used to secure the tree as a redundancy, however steel wire may also be used where there is greater flood risk concerns.

Figure 11: An example of hinging willow trees on the River Test.

Additional Information

Hinged or felled trees in the river have the potential to increase flooding risk. If the woody features become displaced, they may become lodged downstream, leading to increased flooding risk. Although hinged trees are usually strong enough to survive spate flows, additional measures of using braided steel wire can further secure the tree in place adding a greater degree of resistance to the woody feature.

All works will be undertaken outside of the salmonid spawning season. A workforce in the river will undoubtedly stir up sediment in the channel and it is important not to silt up spawning gravels. Additionally, the woody features installed will help river geomorphology and promote localised scour of the riverbed, leading to improved spawning habitat.

Works will be undertaken outside of bird nesting season if possible. In any case, all trees marked for use will be assessed for nesting birds and signs of roosting bats. Tree with nesting birds or roosting bats, or showing good potential for roosting bats, will be left standing.

An Environmental Risk Assessment has been complied and is appended to this report.

Appendix I: Proposed Plan View

Appendix II:

Environmental Risk Assessment

Hazard	Receptor	Pathway	Risk management techniques	Probability of exposure	Consequence	Overall risk
Release of fine sediment as a result of bed disturbance	Fisheries	Waterborne	Timing of the project (post salmonid spawning season) and habitat enhancements as part of the project will more than mitigate any potential risk of degradation of spawning sites downstream.	Very low	Degradation of spawning habitat.	Low provided management techniques are used
Release of petrochemicals from plant machinery or power tools	Aquatic flora/fauna	Waterborne	All refuelling to be undertaken in designated area away from watercourse. Bio-oil to be used in chainsaws.	Low	Pollution of watercourse	Low provided management techniques are used
Transfer of waterborne pathogens and/or invasive species	Aquatic flora/fauna	Waterborne	'Check-clean-dry' protocols to be adhered to. No boots, waders or equipment to enter the water if dirty or suspected of contamination from another waterbody. All waders to be cleaned, submerged in warm (+45 degrees C) water for 30 minutes and dried before project. All tools to be clean and dry to prevent possible transmission of Aphanomyces astaci.	Low	Introduction of pathogens or NNIS from other waterbodies	Low provided management techniques are used

Hazard	Receptor	Pathway	Risk management techniques	Probability of exposure	Consequence	Overall risk
Increased flooding risk	Human & Infrastructure	Human vector	Securing woody features with a 12mm braided steel wire to ensure they are not displaced once installed.	N/A	Increased flood risk	Low provided management techniques are used
Unlawful disturbance or harm to roosting bats or nesting birds	Fauna	Human vector	Works to be undertaken outside of bird nesting season if possible. All trees felled to be assessed for nesting birds and signs of roosting bats. Trees with signs of nesting birds or roosting bats, or showing good potential for roosting bats, will not be felled.	Low	Harm to protected species	Low provided management techniques are used