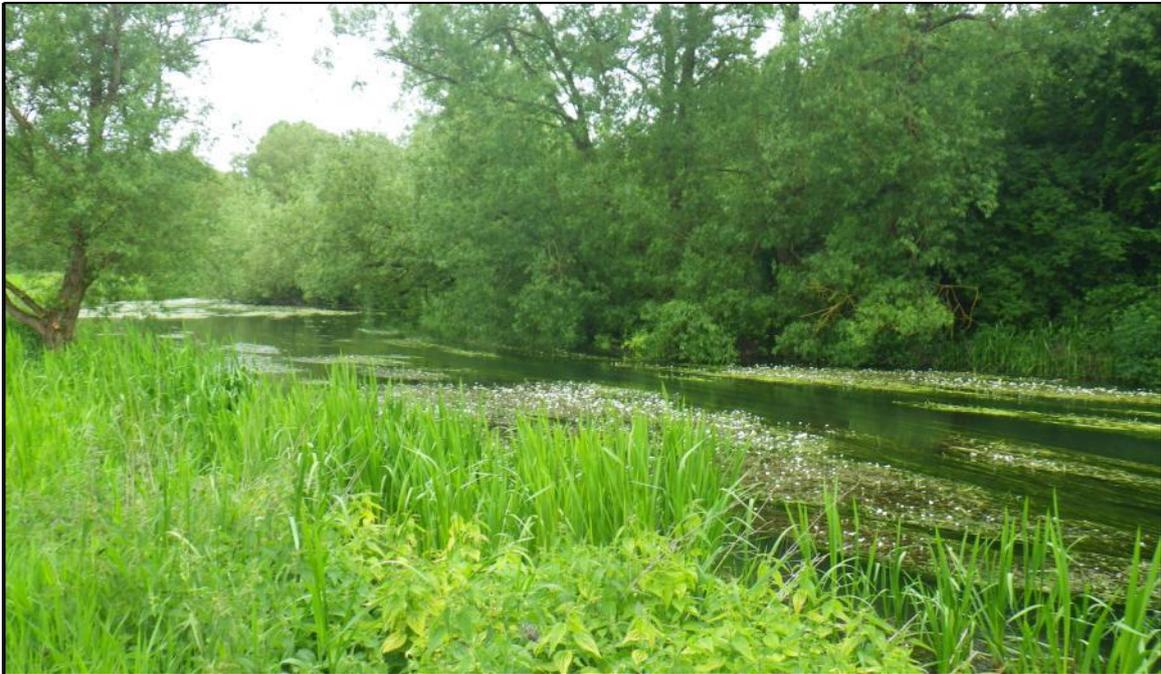




River Avon at Bulford



An Advisory Visit by the Wild Trout Trust June 2013

Contents

Introduction

Catchment and Fishery Overview

Habitat Assessment

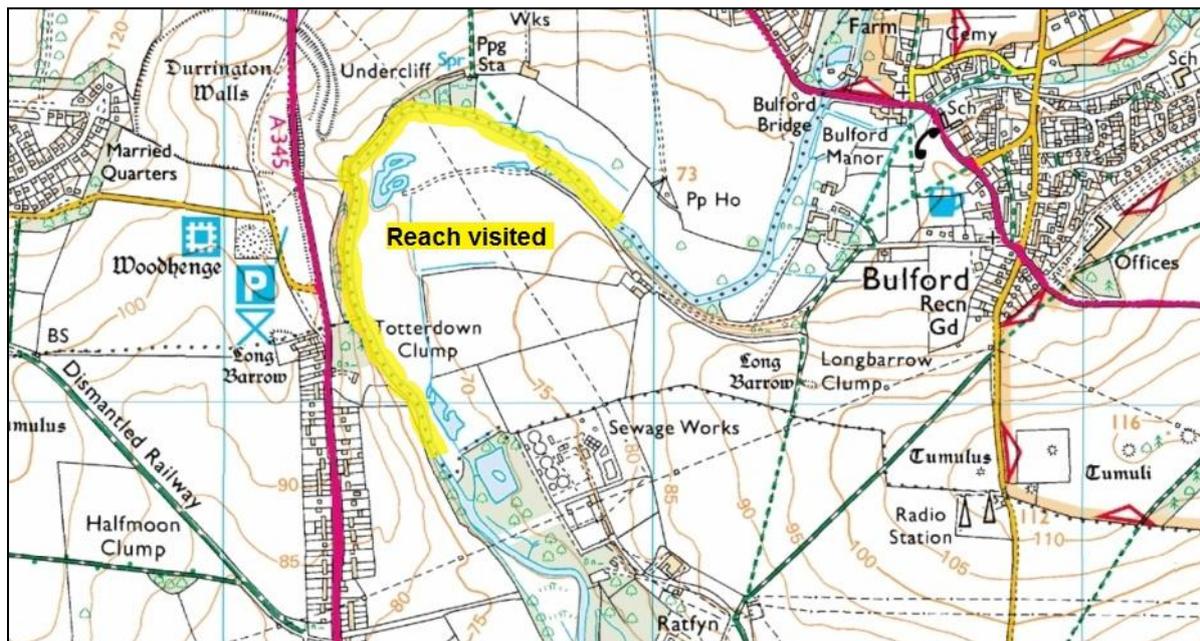
Recommendations

Making It Happen

Introduction

This report is the output of a Wild Trout Trust visit undertaken on the Hampshire Avon on the Snake Bend Syndicate's (SBS) water near Bulford, national grid reference (NGR) SU155428 to SU155428. The visit was requested by Mr Geoff Wilcox, who is the syndicate secretary and river keeper. The visit was focussed on assessing the habitat and management of the water for wild trout *Salmo trutta*. Comments in this report are based on observations on the day of the site visit and discussions with Mr Wilcox.

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.



Catchment and Fishery Overview

The Hampshire Avon is recognised as one of the most important river habitats in the UK. It supports a diverse range of fish and invertebrates and over 180 different aquatic plant species. The Avon (and its surrounding water meadows) has been designated as a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC); however, much of the Avon and its tributaries have been significantly modified for land drainage, agriculture, milling and even navigation.

The Avon begins its life as two separate streams known as the Avon West and the Avon East, rising near Devizes and the Vale of Pewsey respectively. The Avon West is designated as a SSSI whilst for reasons unknown, the Avon East is not. The two rivers meet at Rushall near Upavon. The Avon then flows south towards Salisbury through Upavon, Netheravon, Bulford and Amesbury, then skirts the western edge of The New Forest, flowing through Ringwood and meets the English Channel at Christchurch.

The geology of the catchment above Bulford is almost entirely white chalk with occasional formations of greensand and mudstone. The catchment geology creates a relatively stable flow of cold, clear, base-rich water. The SSSI and SAC designations are owed to the diverse range of plant species flourishing in the chalk stream. This diverse aquatic and marginal floral communities support a substantial invertebrate community which in turn supports a healthy wild trout and grayling *Thymallus thymallus* population.

The health of the Hampshire Avon has been an important issue for anglers for generations. Frank Sawyer's famous 'Great Clean Up' on the Avon near Bulford was pivotal in the birth of the river restoration movement. Many of the key organisations involved in river conservation and restoration were started, and continue to be championed by anglers. The Wild Trout Trust, Riverfly Partnership, Salmon and Trout Association, Rivers Trusts and Angling Trust to name but a few.

The Snake Bend Syndicate is managed as a catch and release wild brown trout fishery with an emphasis on habitat. Fishing is restricted to just a dozen or so rods and the syndicate enjoys a good relationship with the riparian farmer. The adjacent land is considerately managed to ensure agriculture has as minimal an impact on the river as possible.

Recently, a strategy has been compiled by the Environment Agency (EA) and partner organisations to restore the Hampshire Avon and its tributaries, with a goal of moving towards "*more naturally functioning and less constrained rivers that can adjust and respond to changes with minimal intervention*". This strategy means that public money has been earmarked for habitat restoration works across the Avon and its tributaries.

The 'Avon Strategy' lists the Snake Bend Syndicate's water as **Reach Code A_602 River Avon south of Durrington**. The strategy lists 'Riparian Tree Planting' as the key restoration option for the reach. This most-likely relates to the planting of mixed deciduous trees to replace riparian evergreens rather than the planting of many *additional* trees. The strategy also proposes that an organisation *other than the Environment Agency* lead such a project.

Table 1: An extract of Water Framework Directive (WFD) information on the SBS waters from the Environment Agency website

Waterbody ID	GB108043022350
Waterbody Name	Hampshire Avon (Upper)
Management Catchment	Hampshire Avon
River Basin District	South West
Typology Description	Low, Medium, Calcareous
Hydromorphological Status	Not Designated A/HMWB
Current Ecological Quality	Good Status
Current Chemical Quality	Does Not Require Assessment
2015 Predicted Ecological Quality	Good Status
2015 Predicted Chemical Quality	Does Not Require Assessment
Overall Risk	At Risk
Protected Area	Yes

Habitat Assessment

The river was visited just before the scheduled weed cut. Water crowfoot (*Ranunculus spp.*) was in full summer growth and water levels were consequently elevated.

The upper beat or Woods Beat is presumably named after the densely wooded banks on either side of the river. In places, low-lying branches from large willows provide some valuable low-level cover and introduce a good diversity of light conditions. However, dense conifer plantations on the (southern) LB locally over-shade the river, limiting the growth of water crowfoot and reducing the diversity and abundance of marginal plants.

The reach is relatively uniform in terms of channel width and flows are correspondingly uniform and laminar. Tree works to increase the diversity of light conditions over the river could help to remedy this by encouraging the uneven growth of marginal and aquatic vegetation. Additionally, woody debris arising from tree works could be fixed to the bed to deflect flows and introduce greater sinuosity into the river plan form.

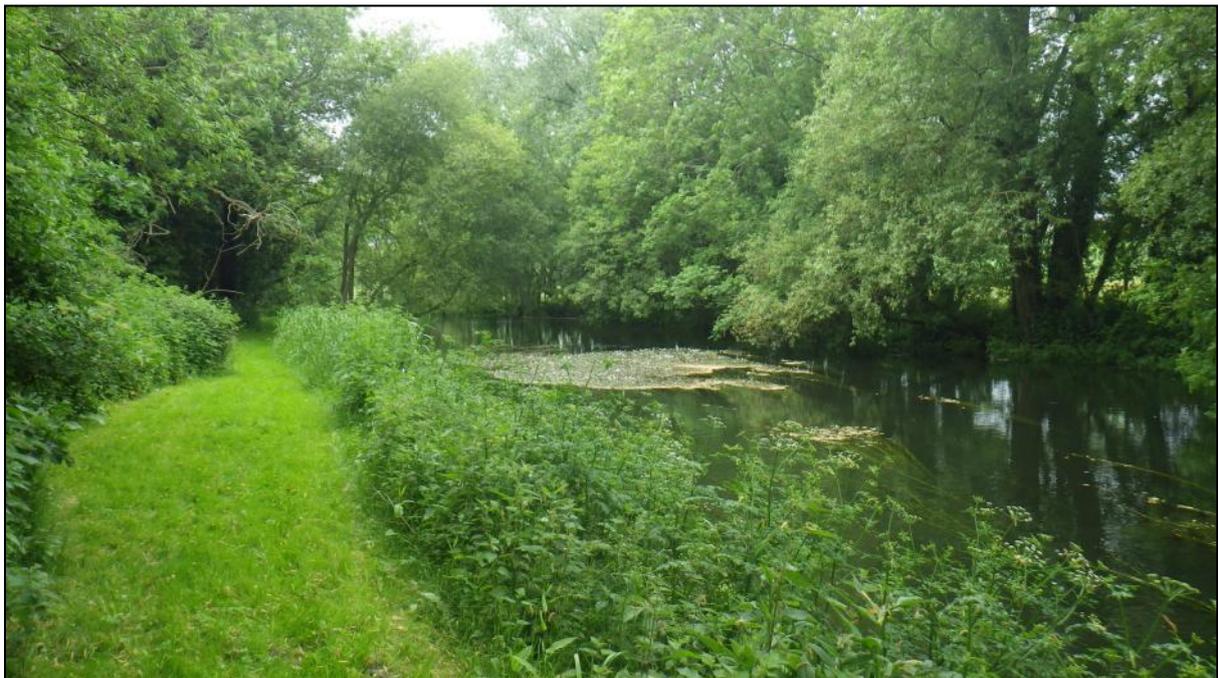


Figure 1: Low lying branches providing good overhead cover



Figure 2: Dense conifer plantations over-shade some sections of river and inhibit the growth of river plants

At the downstream extent of the Woods Beat, a section of bank is over-shaded and lacking in marginal plants. Here the river is slightly over-wide and flows are correspondingly sluggish. This has allowed fine sediment to drop out of suspension and smother the gravel bed.



Figure 3: An over-shaded section of bank is lacking in marginal vegetation, allowing the river to widen and fine sediment to accumulate

Tree works to allow more light over the bank in combination with the installation of a brushwood mattress would help to consolidate fine sediment, pinch the flow and allow marginal plants to grow.

Downstream from the Woods Beat and throughout the remainder of the SBS waters, a buffer strip of rough vegetation separates the banks from the adjacent agricultural land. This has allowed a diverse community of emergent and marginal plant species to establish, providing several key benefits to the river's ecology.



Figure 4: A dense marginal buffer separates the river from the adjacent agricultural land

The diversity of marginal plants provides a broad range of habitat and food for invertebrates, small mammals and wildfowl. Wild brown trout benefit from a larger and more diverse selection of prey as well as an increase in cover habitat. The margin also acts as a filter that helps to protect the river from excess fine sediment and pollutants. Where the bank is particularly steep, a fence that prevents livestock accessing the river has been installed several metres back at the very top of the bank. This has helped to prevent the soil on the steep bank from becoming compacted or exposed by cattle footfall and helps to slow and filter surface water run-off.



Figure 5: A fence line at the very top of the steep right hand bank protects the river from excess surface run-off

The 'shaggy' margins also influence the distribution of fine sediment within the river by locally slowing flows and ensuring more deposition occurs at the edges of the channel, reducing the sedimentation burden over the gravel bed in the centre of the channel. Emergent plants also provide an important interface between the aquatic and terrestrial habitats. This interface is important for many species of river flies that have life stages in both environments and so a rich margin may help prolong periods of good dry fly fishing.

The majority of the RB is wooded and occasional large fallen branches provide excellent cover for juvenile and adult fish alike. The fallen wood also helps to introduce flow diversity to the otherwise overly straightened channel. Large fallen branches also help to locally increase bed scour and ensure gravels remain free of fine sediment. This ensures that good quality spawning sites are available for gravel spawning fish such as trout. Fallen branches also provide excellent brushwood refuges for newly emerged fry, helping to boost juvenile survival.

The hands-off approach adopted by the syndicate with regards to fallen woody debris is most-likely a significant factor in the good performance of the river as a wild trout fishery.



Figure 6: Hands-off management of woody debris has helped to enhance the river habitat for wild trout and for biodiversity in general

At SU 15359 43586, a drainage outfall discharges directly into the river. No obvious signs of poor water quality were observed but such discharges should be closely monitored to guard against any potential future problems.

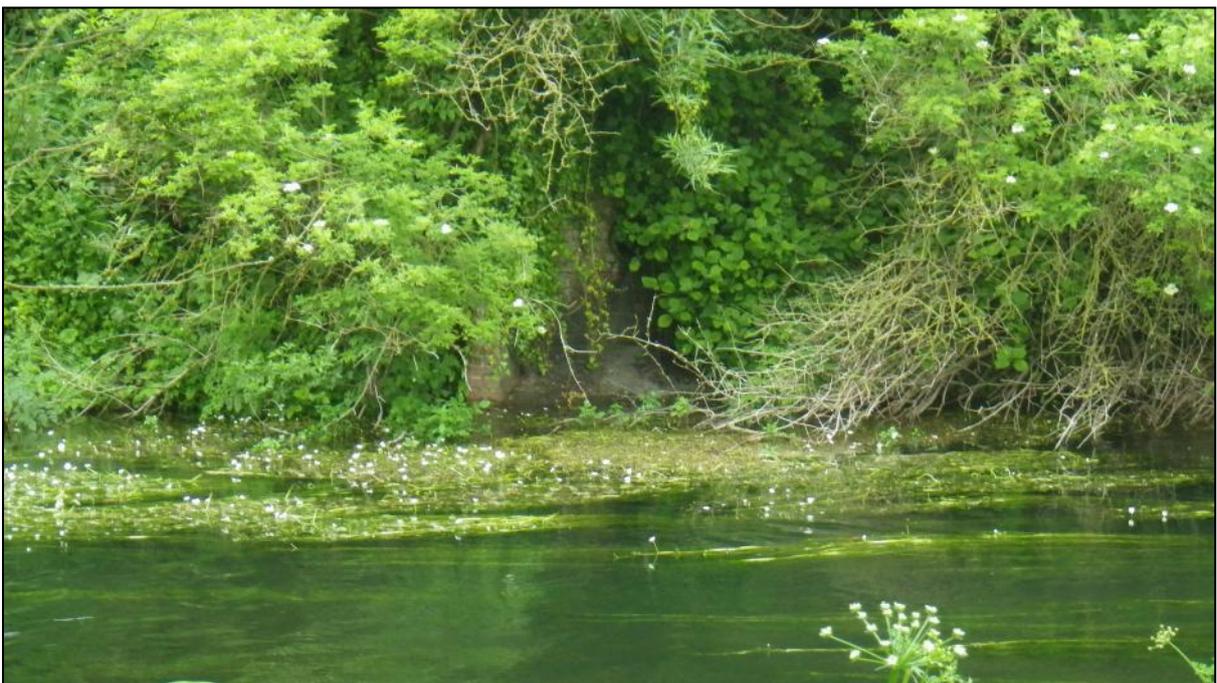


Figure 7: A small pipe discharges directly into the river. No obvious signs of poor water quality were observed but monitoring river invertebrates on the river could be a good idea

This can be achieved relatively simply through the Riverfly Partnership's Angler's Monitoring Initiative. This scheme trains anglers (and non-anglers) to sample for, identify and estimate populations of certain key river invertebrate species. Once a base-line has been established, any sudden drop in water quality will be observed in the monitoring results and the Environment Agency can rapidly react to address any problems.

The RB is quite steep in places, particularly through the Lower Beat. When riparian trees fall they will inevitably fall towards and probably into the river. The continued good stewardship of the river and its banks may depend on the land owner, farmer and syndicate's ability to judge whether or not a fallen tree poses a maintenance problem (for annual weed cuts etc.) or flood risk. Equally as important will be the ability of the syndicate to mitigate a maintenance/flood risk problem whilst retaining good habitat features.

In terms of maintenance, fallen branches and trees will usually be much less of a problem if they are lying in a downstream direction. This way any weed that catches on the branches tends to pull the branches in towards the bank. Branches facing upstream may be pulled out towards the centre of the channel by caught up weed, blocking more weed and potentially causing a large raft to form and block the river.

As a good general rule of thumb, flood risk should not increase so long as a fallen tree does not 'pinch' the channel more than a third of its width. A tree will also pose little flood risk if it is stable and unlikely to move during high flows. The Environment Agency can be contacted to advise on how much a fallen tree is or is not restricting flow conveyance.

Some sections of the river are over-straight and slightly lacking in physical diversity. Fallen large woody debris (LWD) has helped to mitigate the situation and introduce a greater diversity of flow velocity. This will have also helped to create a greater diversity of depth.



Figure 8: Where the RB is particularly steep, the likelihood of trees falling into the river is relatively high. There can sometimes be a difficult balance to strike between river maintenance and habitat

Sections of the Lower Beat where the river is lacking in LWD, are particularly uniform in width. Deliberately felling (or if possible, hinging) some bankside trees into the river and fixing them in place would help introduce greater habitat diversity.

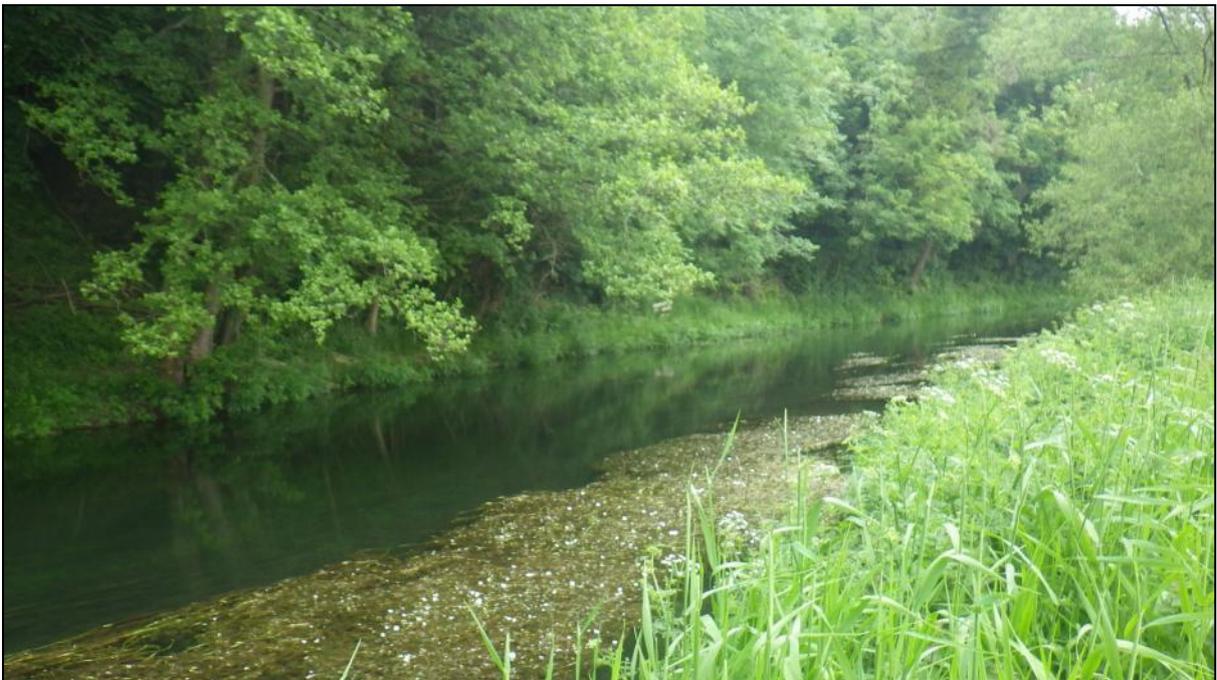


Figure 9: Some sections of the river are over-straight and slightly lacking in physical diversity

The steep bank also means that where trees have not fallen into the river, a uniform shadow is cast by their canopies. Occasional hinges or fells would also help to diversify light conditions over the river.

Conclusion

Overall the section of River Avon managed by the SBS is a good quality chalk stream that provides a very good habitat for all life-stages of brown trout. Occasional tree works to diversify light conditions would be beneficial and habitat could be further enhanced via the installation of some relatively simple, hands-on woody debris structures.

Recommendations

In order for the SBS' section of the River Avon to reach its full potential as a rich and biodiverse habitat for wild brown trout, the following actions are recommended:

- Engage with the riparian owner(s) to discuss the possibility of replacing the coniferous woodland with mixed native deciduous species. If this proves not to be a feasible option (the woods are presently used for rearing game fowl), explore the option of removing a few trees to allow a greater diversity of light over the river.
- Focus efforts to allow more direct sunlight over the bare bank at the downstream extent of Woods Beat. Use coarse woody debris (CWD) arising from tree works to create a dense brushwood mattress to consolidate fine sediment and encourage colonisation of marginal plants.

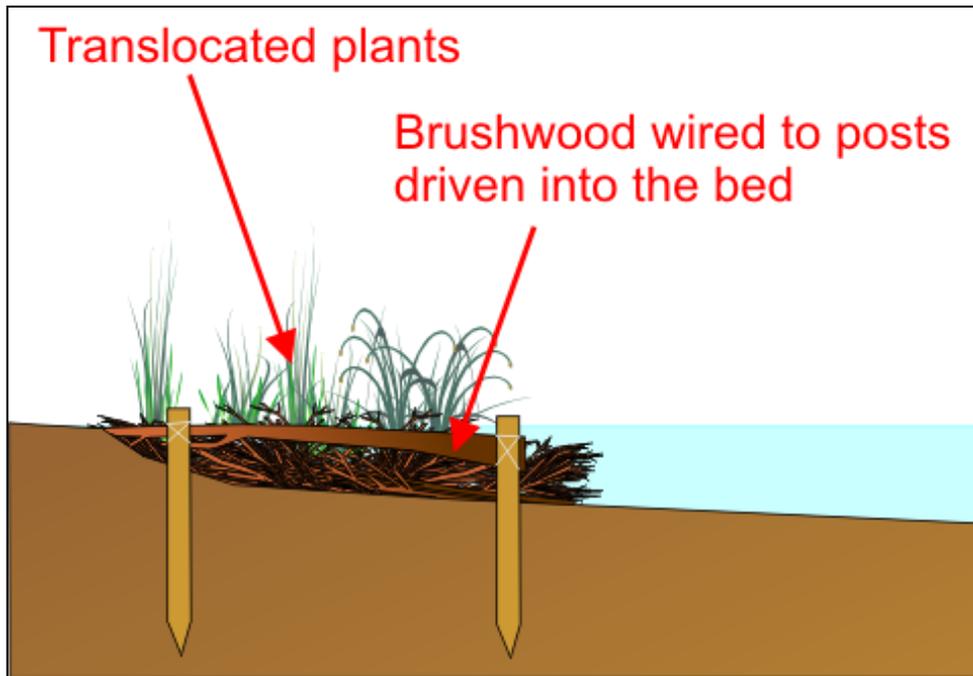


Figure 10: An illustration of a shallow CWD mattress (Cross section)

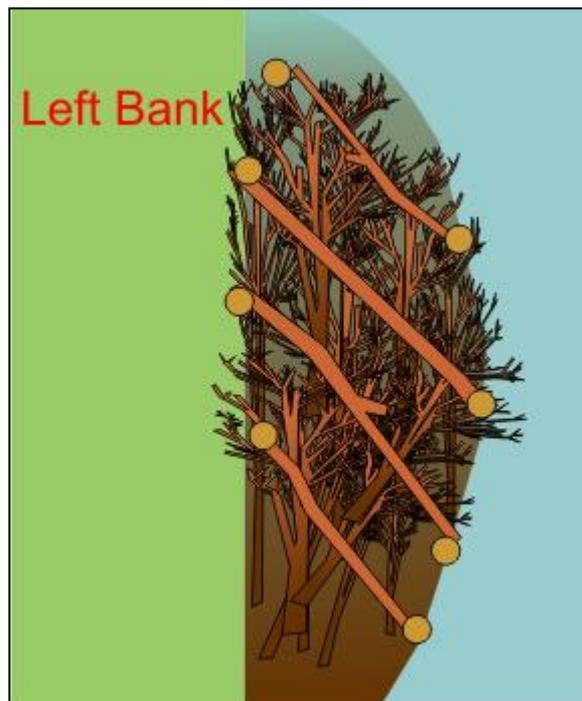


Figure 11: Shallow CWD mattress (Plan view) without plants

- Programme a rotation of occasional tree works along the length of the river to maintain a roughly 70:30 ratio of direct sunlight to dappled shade over the river. This ratio is recommended as a means of helping to keep the river cool whilst also maintaining in-stream productivity.

- Use woody debris arising from tree works to introduce a greater diversity of flow conditions in-stream. This should be initially focussed on the straightest and most uniform sections of river.
- Consider monitoring the river via the training provided by the Riverfly Partnership or allowing existing monitors to access the river to monitor on the syndicate's behalf.

Making It Happen

The Wild Trout Trust is presently attempting to secure funding to initiate a series of 'habitat workshops'. These will be focussed on providing hands-on habitat enhancement training for fishing clubs, community groups and members of the public. The SBS's water, having good access and some excellent examples of natural habitat features, could be an ideal location for one or more workshops. This would benefit the syndicate as each workshop day would deliver a number of habitat improvements that would ultimately lead to improved fishing.

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

This will enable project leaders and teams 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 PV leader.

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.

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>

A 70 minute DVD called 'Rivers: Working for Wild Trout' has also been produced which 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.

Disclaimer

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