Shreen Water, Mere, Wiltshire

An Advisory Visit by the Wild Trout Trust, July 2014
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Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the Shreen Water (National Grid Reference: ST 81404 31692 to ST 81219 29816) near Mere, Wiltshire in June 2014. The visit was requested by Mr. Fred Scourse of the Shreen Fly Fishers (SFF) syndicate and primarily focussed on assessing the river and identifying options to improve habitat for wild trout (*Salmo trutta*).

Comments in this report are based on observations on the day of the site visit, and discussions with Mr. Scourse, Mr. David Ogilvie and Mr. William Price of SFF and Jim Allan of the Environment Agency.

Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank or Right Bank whilst looking downstream.

![Figure 1: A map showing the section of the Shreen Water](image-url)
Catchment and Fishery Overview

Shreen Water rises out of the chalk on the southern extent of Salisbury Plain which bestows the stream with many chalkstream characteristics such as calcium richness, crystal clear flows and chalkstream associated floral and faunal communities. An overlaying superficial geology of ‘head’ (mixed gravel, sand and clay) also provides a steady input of coarse and fine sediment including flint gravels. Although fed by a chalk aquifer, the majority of the river below Mere flows over a Kimmeridge Clay Formation (mudstone), so it is likely that the riverbed is clay overlain with sand and gravel. The clay geology of the majority of the catchment also makes the river more susceptible to spate flows and colouration during periods of wet weather, compared to a true chalkstream.

The river rises at Well Head near the A303 and flows south through the small town of Mere where it is confluenced by Ashfield Water, a small stream flowing from neighbouring Burton. From Mere, the river continues in a generally southerly direction to Gillingham where it joins the Dorset Stour.

Whilst water quality issues are thought to have hindered trout populations in the past (especially in the upper reaches of the river), a strong population of wild trout is known to migrate between lower sections of the Shreen Water and the River Stour at Gillingham and the Upper and Middle Stour is yielding exceptionally good numbers of trout at present (Pers Comm. Jim Allan of the Environment Agency).

The effects of abstraction on flow levels in the river has been a concern of local residents and in 2013 Wessex Water ran a trial examining the effects of abstraction on the river which concluded that reducing the export of water from the Shreen/Ashfield Water system would be beneficial but may not necessarily fully protect the river from low flow problems during exceptionally dry years.

http://www.wessexwater.co.uk/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=11005

The river is presently classified as being in ‘Moderate’ ecology quality. This means that certain criteria need to improve in order for the river to meet all of
its ecological targets. The river is presently meeting its targets for freshwater invertebrates and has good levels of dissolved oxygen and an appropriate pH. Concentrations of specific heavy metal pollutants are also very low. However, the river is failing its water quality targets for phosphates (classified as poor) and ammonia (classified as moderate).

Table 1: Water Framework Directive Information for the Shreen Water (Environment Agency)

<table>
<thead>
<tr>
<th>Site details</th>
<th>SHREEN WATER (including Ashfield Water)</th>
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<tr>
<td>Waterbody Name</td>
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<tr>
<td>Waterbody ID</td>
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<td><strong>Biological Quality:</strong></td>
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<tr>
<td>Macro-invertebrates</td>
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<td><strong>General Physico Chemical Quality:</strong></td>
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<tr>
<td>OVERALL PHYSICO CHEMICAL QUALITY</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Copper</td>
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</tr>
<tr>
<td>Zinc</td>
<td>High</td>
</tr>
</tbody>
</table>

**Habitat Assessment**

For the purposes of this report, each river visited is described from the upstream extent of the water visited, to the downstream extent.

The top boundary of the waters visited is located just upstream of Mere Sewage Treatment Works (STW) and is accessed via a small footbridge on a public
footpath. An abundance of aquatic and emergent plants were observed including water crowfoot (Ranunculus sp.), starwort (Callitriche sp.) and cutleaf water parsnip (Berula erecta). As a habitat, the river also benefits from an abundance of woody debris (Figure 2) which provides plentiful cover for fish and introduces diversity of flow, which in turn helps to diversify depth and bed structure. Riverbed gravel was poorly sorted (graded by size) and compacted by fine, sandy sediment over long sections of the river bed. Only where flow was energised were gravels found to be in good condition and suitable for spawning (Figure 3). This short reach where the footpath meets the river would benefit from some simple habitat enhancements utilising the existing woody material to improve the distribution of bed material. The site is probably popular with local residents and could be a good location for a community-based habitat project.

Figure 2: An abundance of woody debris provides excellent cover habitat
Downstream of the STW the river is relatively straight and the LB is heavily shaded by bankside trees in the small patch of woodland near Rook Street. Fencing on the RB has helped to protect the RB margin and retained a rich and varied marginal plant community (Figure 4). This ‘shaggy’ margin will provide an excellent refuge habitat for juvenile trout and other small fish, as well as helping to boost the abundance and diversity of river invertebrates. A rotation of occasional tree works on the LB would help to let a little more light into the river which would promote the growth of water crowfoot and also give rise to woody material that could be used as flow deflectors to mitigate the uniformity of the channel.
Downstream of the woodland at Rook Street the river becomes more sinuous as it begins to flow out into open meadows. The increase in sunlight has allowed marginal plants to flourish. Large beds of water parsnip and branched bur-reed (*Sparganium erectum*) have established and although these provide excellent refuge for fish, waterfowl and small mammals alike, they can be prone to choking the channel during long periods of low flow (Figure 5). Planting of occasional bankside trees, ideally small goat willows (*Salix caprea*) would help to naturally regulate some of the more tenacious marginal species and prevent a mono-culture developing. It must be noted, however, that planted trees such as willow will at some future point need maintenance to retain their ecological and fishery management value.
After a short distance the river once again becomes straightened. The channel appears to have been modified to hold up a head of water that probably fed a water meadow system or powered a mill. In either case the sluice that impounds the flow at this location appears to be redundant and should be removed. A close inspection of the sluice was hindered by deep water but a cursory inspection suggested that the sluice posed a complete barrier to fish passage under the flow conditions observed on the day of the visit (Figure 6).
The pool downstream of the sluice, a short reach had collected a thick accumulation of dark sediment coated in a thick bloom of filamentous algae. The sediment smelt strongly of sewage when disturbed. These factors, combined with the proximity of the STW upstream hint at periodic water quality problems (Figure 7).

Moving downstream from the sluice the river becomes shallower and faster-flowing as it returns to its natural course and flows are unimpounded, helping the river to self-purify any effects of the STW. The Shreen Water here resembles a classic small chalkstream with a wide bowl-shaped cross section that facilitates a gentle transition between aquatic and terrestrial habitats. Floral diversity is good and (water quality permitting) this should equate to good invertebrate diversity, resulting in plenty of food for wild trout.

The riverbanks appear to have been heavily cattle-poached in the past which may account for the shallow gradient of the banks. It is almost certain that the density of grazing livestock required to trample the banks to the extent observed would have resulted in both a significant point-source of fine sediment and a constraint on marginal biodiversity. However, now that the field holds just a few heavy horses, the marginal habitat has recovered well and is benefitting from the shallow gradient of the poached banks (Figure 8).
The low density of horses now occupying the field appears to be helping to keep marginal growth at a manageable level for angler access without reducing the overall performance of the ecosystem. However, a few more bankside trees would help to improve biodiversity in areas where the banks appear to be dominated by a monoculture of water parsnip (Figure 9).
From the meadows the Shreen Water flows under Woodlands Road at Swain’s Ford Bridge. A short distance downstream from the bridge the river is impounded to divert flow through Swainsford Fish Farm/Wood Stock Trout Fishery. Under the flow conditions observed during the visit, no flow was passing over the impoundment (Figure 10).

Figure 10: The impoundment at Wood Stock trout Fishery is impassable to wild trout.

However, the river had eroded the bank around the outside of the concrete wing wall on the RB, possibly facilitating passage (Figure 11).

Figure 11: The river was eroding around the structure on the RB. Temporary efforts to halt the erosion were failing.
From a river habitat perspective the best scenario would be to remove the impoundment completely. However, as the structure is presently providing a vital function for the fish farm, this is unlikely to be a viable option in the short-medium term. However, the poor condition of the structure may give rise to an opportunity to replace it with a more passable alternative that can serve both the interests of the still water fishery and the fish (and anglers) of Shreen Water.

Much of the reach between the fishery and Hinckes Mill Farm could not be accessed on the day of the visit as the channel is deeply incised and the banks densely wooded. It is likely that this reach could be made more accessible and habitat improved via a programme of tree works followed by a more manageable 5-10 year rotation of further, light tree works. However, considering the resources available to the SFF and the challenge of the existing tree canopy, this reach should not be considered a top priority and works would be better focussed where efforts will have the greatest immediate impact.

At Hinckes Mill, the river cascades down through the remnants of the old mill workings (Figure 12). Under the conditions observed on the day of the visit the structure was passable for most adult trout but the turbulence of the water and the resultant volume of entrained air would make this a hostile environment for fish.
Most juvenile trout and other small fish would find the structure very difficult to pass. Under lower flows there may not be sufficient depth of water for fish to pass upstream and under spate conditions flow velocity is likely to increase, requiring substantial exertion on the part of any fish attempting to move upstream. Fish passage could be significantly improved by the installation of a low-cost easement. An example of such an easement is discussed in the Recommendations section.

Downstream of the old mill, both banks of the river are significantly overgrown compared to the stream through the meadows above Wood Stock Fishery. The bed is noticeably more sandy but good patches of clean gravel and crowns of water crowfoot are present in the shallower sections. An abundance of woody debris provides excellent cover and refuge habitat and has helped scour some deep pools that provide very good lies for adult trout (Figure 13). Some clearance of bankside shrubs would improve angler access but great care should be taken to retain as much in-stream woody habitat and low-lying tree cover as possible.
The river throughout the reach downstream of Hinckes Mill to Springfield Lane would benefit from a wide (at least 3m/10ft), fenced buffer to protect the riverbanks from excessive grazing and poaching (Figure 14) and to filter surface run-off from ploughed fields. Ideally, riverbank fencing should include gated access to allow for annual maintenance or even once-yearly light grazing to help retain plant species diversity.
At Springfield Lane near Huntingford the river flows under a bridge. The river was accessed for a close inspection of the bed and to check under stones for invertebrates. Many of the large stones in the river margins were coated with sewage fungus, a periphytic growth of algae, cyanobacteria and other microbes (Figure 15). This is further indication of nutrient enrichment. However, blue-winged olive (*Serratella ignite*, Ephemerillidae) nymphs were found clinging to cobbles in the channel (Figure 16). Blue-winged olive nymphs have a very low tolerance to organic pollutants and their presence suggests that the enrichment may not be unduly problematical, at least in the period leading up to the visit.

![Figure 15: Blooms of algae and sewage fungus indicate a high level of nutrient enrichment](image)
Conclusions

Throughout the day a good number of wild trout were observed in all the reaches visited. Some signs of nutrient enrichment were observed but these were localised and the presence of pollution sensitive invertebrates suggests that water quality problems are not systemic. Habitat was generally good but could be improved with some light tree works and clearance in the reaches downstream of Swainsford Fish Farm/Wood Stock Fishery, and some tree planting in the reaches upstream.

The issue of most concern is habitat connectivity. Impoundments at ST 8121 3108 (Figure 6), ST 8135 3078 (Figure 10) and ST 8128 3043 (Figure 12) impede trout migration, making populations vulnerable to possible future water quality problems and limiting the availability of different habitat types such as spawning gravels. The structures also reduce habitat quality locally by creating uniform conditions and inhibit natural sediment transport, limiting natural morphology and causing fine sediment to accumulate upstream.

Ideally, these structures should be removed but in all cases fish passage can be improved in the short-medium term.
**Recommendations**

In order for the SFF’s waters on the Shreen Water to achieve their full potential as a good quality habitat for wild brown trout, the following actions are recommended:

1. Engage with land owners/tenant farmers and the Environment Agency to explore the option of removing the impoundment in the meadow downstream of the STW (Figure 6) and at Hinckes Mill. Also engage with the fish farm and discuss the option of replacing the deteriorating impoundment (Figures 10 and 11) with a modern, fish passage friendly alternative. The Environment Agency should also be involved in these discussions at an early stage.

Should removal be unfeasible in the short-medium term, low cost fish passage easements could be installed at the meadow impoundment and at Hinckes Mill. However, the loss of head could impact on the working of the fish farm and further investigation may be required in order to find a suitable fish passage solution.

![Figure 17: An example design of a low-cost notch and pre barrage fish passage easement](image-url)
2. Continue to clear sections of the bank downstream of the trout fishery to facilitate angler access and introduce occasional ‘skylights’ in the canopy. Aim to introduce light over shallower, faster-flowing sections and retain overhead cover over deeper pools. Be sure not to be too zealous with clearance works and try to retain as much woody debris habitat as possible.

http://www.wildtrout.org/content/how-videos#tree

3. When cutting back bankside trees, try to win some long live willow stakes that could be driven into the bank either side of the river through the meadows between the STW and the trout fishery where overhead cover is sparse and shade is lacking. If possible, try to use goat willows as they are naturally low-growing and shrubby, providing excellent cover and requiring a minimum of maintenance.

4. Engaging with the land owner/tenant farmer below Hinckes Mill and explore options to fence the bank. Consider alternative means of providing water for livestock such as pasture pumps. These are small portable
devices that do not require power and allow cattle to pump their own water supply up to 50 metres.
Photovoltaic (solar) pumps and ‘ram pumps’ can also be a good alternative to cattle drinks and like the pasture pumps require no mains power to operate. All of these devices have allowed farmers to water cattle where riverbanks are completely fenced off.

5. Consider working with the local community to enhance the section of the river where the footpath crosses the channel (Figures 2 and 3). Some very simple woody debris habitat enhancements and flow deflectors could greatly improve the riverbed as a trout spawning habitat. By improving the gravel at the top of the reach, and improving fish passage throughout, the SFF should be able to maximise trout recruitment and help safeguard the existing population for future generations.

http://www.wildtrout.org/content/how-videos#gravel

6. It is recommended that the club continues undertaking regular riverfly monitoring kick-sampling. Regular monitoring of invertebrates in the Shreen Water will help ascertain if there are any water or sediment quality issues impacting river ecology. Special attention should be given to just below the STW and trout fishery as well as anywhere where agricultural run-off is likely to enter the river.

Making it Happen
The creation of any structures within the river or with 8m either side will require formal Flood Defence Consent (FDC) from the EA. An FDC application will have to be submitted to the EA, usually along with a methodology and drawings detailing the proposed works. This enables the EA to assess possible flood risk, and also any possible ecological impacts. Contacting the EA early and informally discussing any proposed works is recommended as a means of efficiently processing an FDC application.

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
The Wild Trout Trust has 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 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](http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0) or by calling the WTT office on 02392 570985.

There is also the possibility that the WTT could help via a Practical Visit (PV). PV’s typically comprise a 1-3 day visit where WTT Conservation Officers will complete a demonstration plot on the site to be restored.

This enables recipients 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 attendees.

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.

**Disclaimer**

This report is produced for guidance; 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 guidance made in this report.