



River Test – Wherwell



An advisory visit carried out by the Wild Trout Trust – January 2012

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on beats of the River Test at Wherwell.

The request for the visit was made by Mr William Sleeman, who is the Land Agent acting for the fishery owner, the Marquess of Camden. Comments in this report are based on observations on the day of the site visit and discussions with Mr. Sleeman and Mr. Robert Loseby, who is the Head River Keeper.

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.

2. Catchment overview

The River Test is nationally recognised as the quintessential chalk river and is designated for most of its length as a Site of Special Scientific Interest (SSSI).

The Test has a world-wide reputation for being a first class brown trout (*Salmo trutta*) fishery. Much of the middle and lower river is heavily stocked with hatchery-derived trout to support a high level of angling activity. Where good quality habitats are maintained, the river has the capacity to produce abundant numbers of wild fish. A major bottleneck to enhanced wild trout production is thought to be through poor in-gravel egg survival. Comparatively small areas of nursery habitat for juvenile fish also restrict the development of wild stocks. Where good habitat does exist, survival rates of fry are usually very good in the food-rich environment.

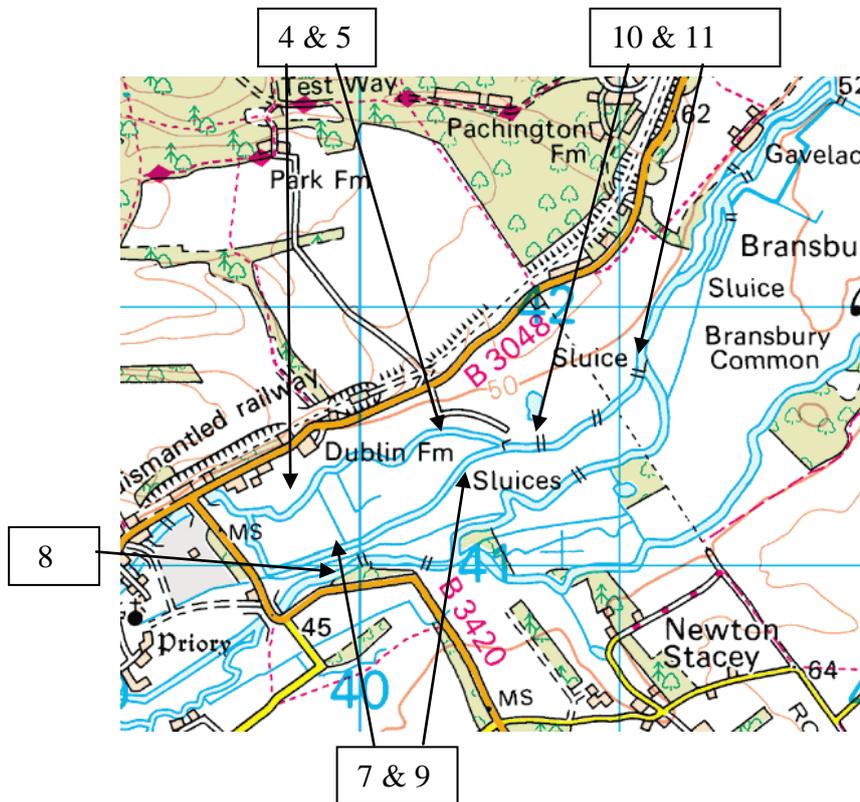
Habitat quality on the Test varies enormously. The river channels are virtually all heavily modified, and originally constructed for milling or water meadow irrigation. Flow is rarely contained within a single channel and frequently flows are diverted via a plethora of channels, many of which are impounded (dammed) or perched (raised above the level of surrounding land), and controlled by a multitude of structures, weirs and hatches. This situation has enabled many historical landscape features to be preserved and has also allowed many riparian habitats to benefit from raised water levels. It has, however, also resulted in poor and fragmented in-channel habitats for flow loving fish species such as trout and salmon (*Salmo salar*).

In the last 150 years, the character of the river has largely been moulded by management regimes designed to facilitate fly fishing, primarily for farm-reared stocked trout. Estimates vary for the economic value of the fishery but the river is undoubtedly an important economic resource for land owners and the local rural economy in general. Some of the middle beats of the river in particular are very intensively managed and fished. On some beats this has reduced the overall quality and diversity of in-channel and riparian habitats.

3. Fishery overview

The Wherwell fishery consists of approximately four miles of single and double bank fishing on main River Test and carrier. Reasonable numbers of wild trout are present in the fishery and the stock is augmented with farm reared triploid browns, which are brought in and grown-on in stews located on the estate. The Wherwell beat has a reputation for providing first class winter grayling (*Thymallus thymallus*) sport, the provision of which is a Wherwell specialty.

Some concerns have been expressed regarding habitat quality. A comparatively recent reduction in weed growth has resulted in poor in-stream cover on some beats. The Wherwell management team is keen to explore options for enhancement that will see improvements for both wild and stocked trout, as well as grayling.



Wherwell beats inspected.

4. Habitat assessment.

4.1 Top main river beats 10 & 11

Habitat quality found on the very top end of the fishery was heavily influenced by the main river hatches. Upstream of the hatches the channel is comparatively wide and uniform with the habitat consisting almost entirely of smooth shallow glide over a mixed gravel and silt bed.



Wherwell beat 11

Weed growth was patchy and dominated by water parsnip (*Berula spp*), fools cress (*Apium spp*), marestail (*Hippuris spp*) and starwort (*Callitriche spp*). Some water crowfoot (*Rannunculus spp*) was found on the upper beat but generally this iconic chalkstream plant was conspicuous by its absence.

Any rooted submerged plant in a chalkstream environment is considered to be valuable, however, the lack of the flow-loving crowfoot was indicative of the prevailing low flow conditions and exacerbated by the physical shape and gradient of the channel. It is thought that the impounding hatches found near to the bottom of beat 10 are having an adverse impact on weed growth and habitat quality in general, particularly on beat 10 itself.



The hatch structure at the bottom of beat 10

The hatch structure at the bottom of beat 10 that regulates flow splits between the northern channel (beats 4 and 5) and the middle channel (beats 7 and 9) is having a profound effect on habitat quality upstream.

Currently the habitat quality found within the upper beats is not suitable for any significant recruitment of trout or grayling stocks. These beats will hold adult trout and shoals of grayling but the shallow glide will have limited ability to support strong populations of fish, especially during low flow periods when weed growth is poor and cover limited. During such periods fish stocks will congregate in areas with cover and any disturbance can result in fish bolting long distances before settling again. Improved lies for fish within this reach can be created by reducing the height of the impoundment and harnessing the increased water velocities and energy upstream of the hatches to promote local areas of bed scour using large woody debris flow deflectors. A simple reduction in head height will help, but will be even more effective when coupled with measures to promote bed scour. This technique is discussed in more detail in the conclusions and recommendations section of this report.

Increased water velocities will promote improved crowfoot growth and radically change the physical characteristics of the beat from predominantly slow glide to one where more variety in flow patterns and depth can be achieved. The level of success will be dependent on how low the impounding levels can be taken.

Before embarking on a change to upstream water levels by drawing the hatches, it is advisable to check the backwater effects of the structure. It is possible that, as a result of drawing the hatches, the most southerly channel will be deprived of some flow, which may lead to conflict with your neighbours. In addition the

dropping of water levels may also temporarily impact on bank stability and the quality of riparian habitat, which may have some stewardship agreements in place. If it is essential to keep riparian meadows wet, either because of nature conservation designations or stewardship agreements, then all is not lost because water levels can still be maintained by radically pinching the channel width in places. This will have the effect of raising water levels locally and increasing in-channel water velocities.

In summary, the basic methodology is to promote a river environment where the depth required to support adult fish is derived from encouraging the river to scour down, rather than a situation where water levels are impounded, or held up. This is not an instant process and requires the flow to be harnessed against hard large woody debris (LWD) flow deflectors (tree trunks) where the energy of the river can be forced down to blow soft sediments and fine gravels away to create a plethora of individual pots and lies for holding fish. An additional benefit will be that the material sorted by the flow deflectors will form ramps of suitable spawning material and provide shallow areas for juveniles thus building a bigger wild component to the stock.

4.2 Beat 9

At the time of the site visit in November, work was underway to trim the margins back ready for re-growth the following spring. Carrying out the traditional autumn fringe cut removes all the dead annual plants that would otherwise flop into the channel. It is now widely accepted that this traditional form of management is not in the best interest of fish, or invertebrates.

The fringe is a critically important habitat in its own right and provides a biologically rich environment for both fish species and the adult phase of many of our river flies. The thicker and more luxuriant the fringe that can be managed and maintained then the more valuable it becomes. On commercially important fisheries a sensible balance between habitat and access has to be struck. An important aspect of the fringe that is often overlooked is the role that dead and decaying annual plants play when they fold into the channel. This is especially the case in areas where the margins are shallow. When allowed to fold into shallow sections of channel in the winter and early spring, the fringe provides a critically important refuge area for juvenile trout and grayling. When trout fry emerge from the gravels in February or early March they inevitably move sideways, where they seek shallow, well covered margins, where flow velocities are low and there is overhead cover from predating herons. As they grow on from fry to parr they increasingly seek more space and start to migrate back into shallow mid-channel areas, provided there is cover for them. For these reasons alone it is recommended that the fringe should be left in a shaggy condition and not be cut until a few weeks before the start of the season. Some consideration should be given to leaving some sections alone, particularly adjacent to very shallow areas which might not be attractive for angling.



A section of channel on beat 9 where the tradition autumn fringing has begun.



Potentially good spawning and juvenile habitat adjacent to a luxurious fringe

An additional benefit of leaving the fringe unmanaged in the winter is that it also helps to protect the banks during the late winter period. Many sections of perched chalkstream bank were badly damaged and some breached during the wet winters of 2000 and 2001. It is believed that some of the damage incurred was exacerbated because the channel fringes were thin and heavily strimmed.

In summary, thickly vegetated fringes absorb the erosive energy of fast moving water, their root systems stabilise the soil, they provide refuges from predators for juvenile fish and valuable habitat for insects.

On a few sections, the odd sallow (*Salix caprea*) has been left to provide some extremely valuable low level cover. Areas beneath the trailing branches can provide superb holding habitat for adult trout over deeper water, or a high quality refuge area for juvenile fish where the water is shallow.



A low goat willow providing a valuable refuge area for juvenile trout

Scope exists for cutting further whips from a tree like this and planting them in at a shallow angle in the toe of the bank to create a series of high quality lies. Scrubby cover such as this is particularly useful for over-wintering trout, providing good cover from fish eating birds such as heron and cormorant, despite the obvious management requirements such tree cover necessitates.

4.3 Beat 8

Beat 8 supports some reasonably good quality trout and grayling habitat. The RB is largely un-managed and given just an occasional trim to facilitate angling. In some areas a fringe of low willow branches provided a good refuge for fish from fish-eating birds. The LB was traditionally managed and would undoubtedly benefit from a thicker fringe and the occasional tree planted to provide enhanced cover.



Single bank fishing only on beat 8. The RB supports a high quality river margin habitat.



A large early redd on beat 8. The presence of crowfoot on this beat suggests a sustainable channel width and depth promoting vigorous water velocities.

In-channel habitat was also quite good on beat 8 and there were numerous beds of water crowfoot, some of which had been heavily swan-grazed. Further improvements to this beat can be made through some tree planting, the promotion of a thicker fringe on the LB and the creation of a more varied channel topography through the imaginative use of LWD flow deflectors. It might also be possible to vary the channel profile through this reach using the “dig and dump” technique, which is described in detail in the conclusion and recommendations section.

4.4 Beats 4 and 5

Beats 4 and 5 supported some good quality habitat for trout. On beat 4 the remains of collapsed stone structures have formed valuable sub-surface groynes, which in turn have promoted bed scour and valuable surface turbulence. In general both beat 4 and 5 were quite open and lacked any significant tree shading. The provision of some randomly planted willows would locally control excessive cress encroachment and provide enhanced lies for fish. The type of benefits derived from the sub surface stones groynes can easily be provided by pegging in tree trunks, or tree root wads in other selected locations.

Beat 5 has been skilfully managed by the keeper, where some encroachment of cress beds has been left and resulted in a pinched channel, with vigorous flows and lots of marginal cover. Fishing from the bank on beat 5 would undoubtedly be more difficult than many of the other beats but it is highly likely that this beat supports good numbers of wild trout and provides an excellent challenge for the discerning angler.



The remains of a collapsed stone weir providing some variation in channel form.



Beat 5 where the marginal cross beds have usefully kicked the flow from side to side.

5. Conclusions

The Wherwell beats 4,5, 7, 8 and 10 have all got significant potential for enhancement.

The top beats above the main hatches are severely impacted by the impounding effects of the structure and would benefit from a reduction in the water level. The lower this level can be set, the more benefit can be derived; however, a full rehabilitation of the channel will take a season and will also require additional work to make the most of the elevated water velocities generated by any reduction in levels.

Initially when lowered, the channel will look awful and it is vital to set expectations with your rods. There is no doubt, however, that if the water was pulled through faster and shallower, then a series of features could be created within the existing channel that are guaranteed to hold fish and provide enhanced opportunities for both trout and grayling recruitment.

Once levels have been lowered, several methods to create enhanced holding water can be employed. Installing LWD flow deflectors by dropping and pinning tree trunk deflectors into the channel is a proven method for promoting bed scour. The deflectors should be at least half the current channel width and be configured to point slightly upstream to promote scour within central channel areas, rather than bankside erosion. Trunks must be well keyed into the margins and can be secured with stakes or drilled and pinned with steel rebar.

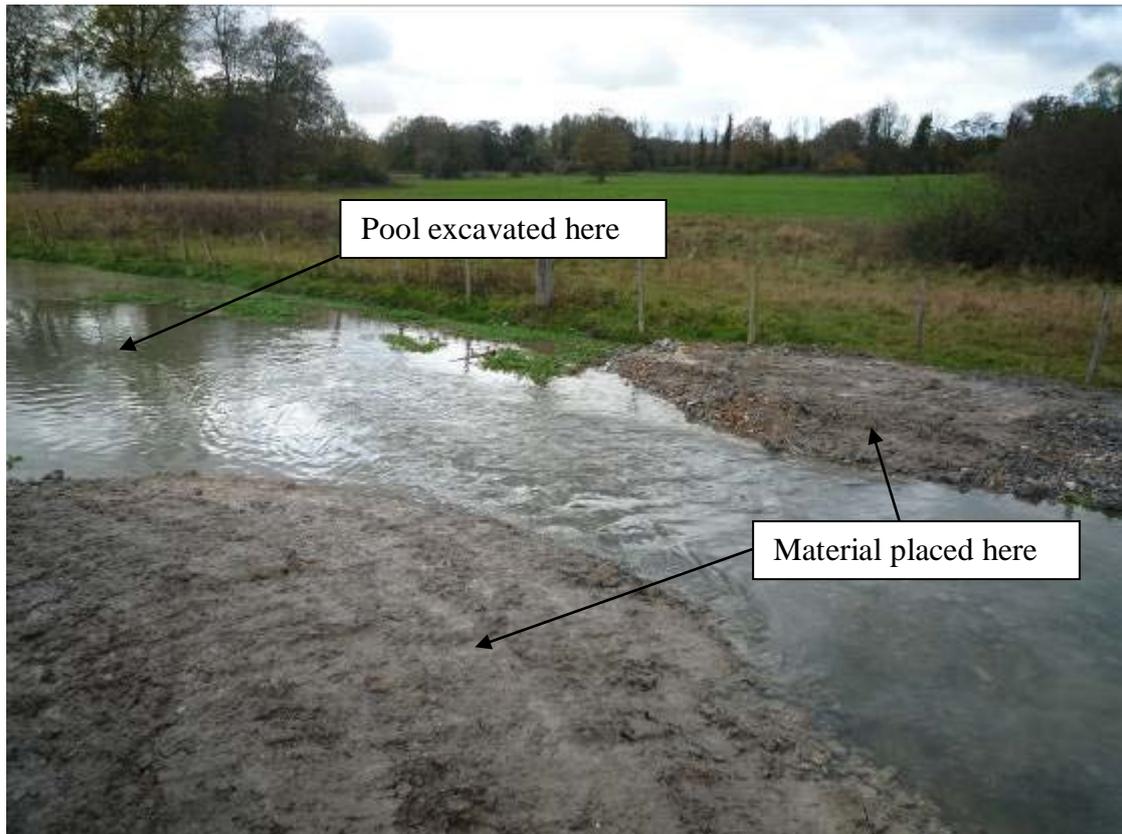


A newly planted "live willow" deflector placed into the upper Itchen to promote local bed scour

Clearly, the installation of LWD deflectors into the Test will result in the structure catching large amounts of cut weed. This will entail additional work for the keepers. More modest sized deflectors can be very effective and obviously will catch less weed.

If the use of LWD flow deflectors is deemed unacceptable then an alternative technique is the "dig and dump" method, which has been successfully employed on several chalk rivers in England. The technique involves redistributing the river bed material using a long reach excavator and skilled operative. In essence bed material is excavated to create deeper pool habitat and the material dumped just upstream of the pool to form shallow side cheeks, shelves or berms. These then act as a flume, or flow deflector thus keeping the newly dug pools viable. The key to success is the quality of the underlying bed material. If there is precious little gravel available below the existing bed then extreme caution is required. Some man-made chalk stream channels have been diverted over areas where there is little or no underlying gravel.

It is recommended that the machine operator is supervised by someone who has experience in using the technique. The advantage of this method is that it does not require the import of materials and so is no additional flood risk.



["Dig and dump" employed on the River Meon to promote "pool riffle" habitat](#)

Non fishing banks are sympathetically managed, however there is scope to improve habitat quality from the banks reserved for angler access. The provision of a thicker, more luxuriant fringe and a change in the timing of maintenance could help to boost wild stocks. Some sections can still be traditionally managed where it is essential to provide easy access for some anglers.

A good method of introducing better quality habitat is through the introduction of brash bundles. These can take many forms, from hinging in any marginal thorn or willow trees to pegging large tethered bundles into shallow bare sections. This method is particularly useful in years when weed growth is poor. If the brash is a nuisance during the fishing season then it can be removed but it is particularly valuable in shallow water and can be located in areas which are unattractive to many anglers.



A thorn tree hinged into the channel – brilliant winter cover



A brush bundle tethered to a stake. A method to use where temporary cover might be more desirable.

6. Recommendations

- Reduce the height of the impoundment below beat 10.
- Harness the increased water velocities using LWD flow deflectors to create more variation in the bed topography.
- If there are concerns over cut weed accumulations on flow deflectors then consider installing a limited number as a trial.

- A combination of flow deflectors and a redistribution of in-channel material (dig and dump) could radically improve habitat quality throughout the fishery.
- Change the timing of fringe management so that valuable marginal scrub is still available as winter cover for fish.
- Use tethered brush bundles installed in the margins either permanently or temporarily for winter cover.
- Provide more overhead low scrubby cover by planting sallows near to the toe of the bank and at shallow angles so that they grow out over the water rather than upwards.

It is a legal requirement that some works to the river may require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank. Any modifications to hard defences will require a land drainage consent on any river designated as "main river". Advice can be obtained from the EA's Development Control Officer.

7. Making it happen

There is the possibility that the WTT could help to start an enhancement project. We could potentially help to draw up a project proposal (PP) which could be used to support any application for Land Drainage Consent. The PP might also be used as a document to be shared with potential partners as a vehicle for raising project funding.

Alternatively, physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). This approach is probably more appropriate for works to the side carriers. 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 expenses of the contractor.

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 clubs, syndicates and landowners through guidance and linking them up with others that have had experience in improving trout fisheries.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programmes.

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