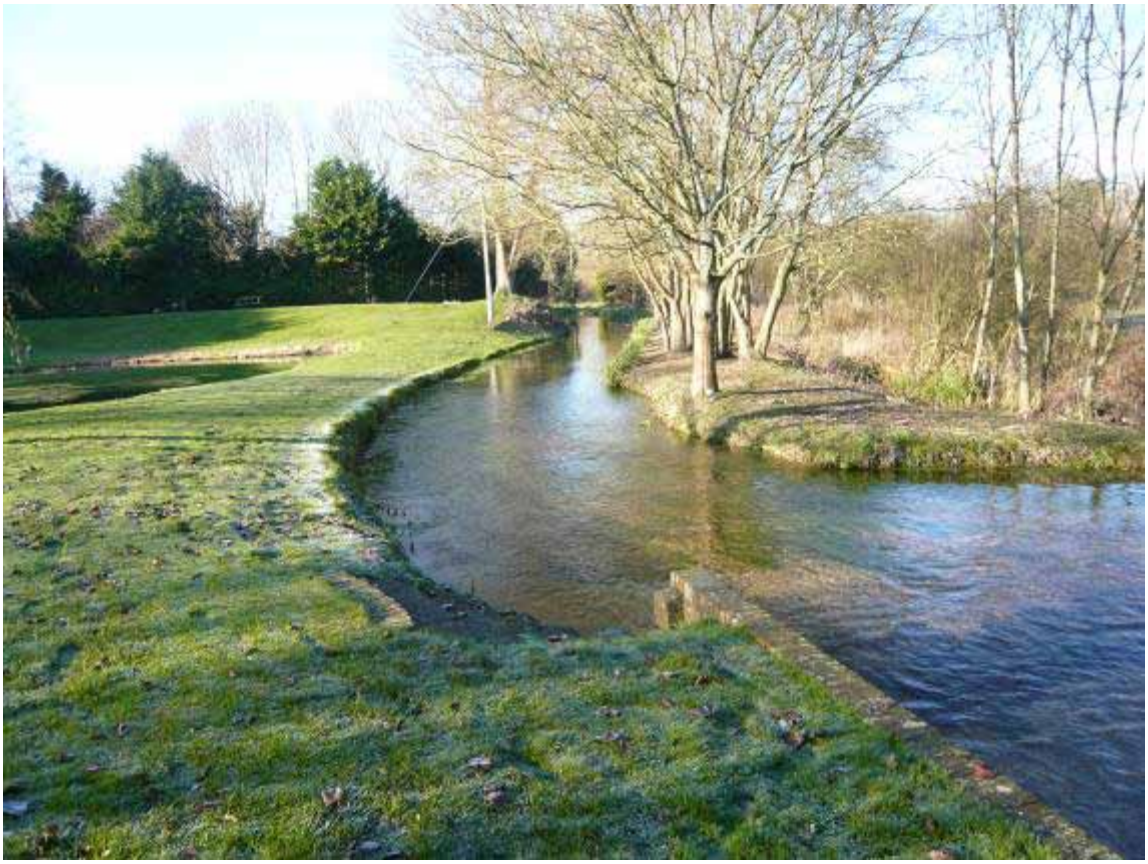
River Alre – Bishop's Sutton



An advisory visit carried out by the Wild Trout Trust – January 2009

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Alre at Bishop's Sutton.

The advisory visit was undertaken at the request of Mr Karl Borges. Mr Borges owns approximately 300m of double and single bank fishing on this headwater stream of the River Itchen.

Mr Borges is passionate about the river and its stock of wild brown trout. He is particularly keen to ensure that the fishery is managed and maintained in a way that helps the wild stock to flourish.

The River Alre is one of three streams that make up the headwaters of the River Itchen. The Itchen is one of the most highly valued and protected chalkstreams in England and is designated as a Special Area of Conservation under the European Habitats Directive. The Alre itself is a relatively short chalkstream or bourne and rises from the chalk aquifer just to the east of Bishop's Sutton and flows west for approximately 5km before joining the Cheriton Stream and Candover Brook where it becomes the main River Itchen. The Alre is fragmented by the Alresford Pond which is a large, on-line medieval stew pond and also a Site of Special Scientific Interest.

Wild brown trout *Salmo trutta* stocks are present on all three upper Itchen headwater streams. Unlike the Candover brook, however, the Alre does not have a grayling *Thymallus thymallus* population, which was introduced into the upper Itchen comparatively recently. The Cheriton Stream is one of only two designated Wild Fishery Protection Zones in the country under the Environment Agency's National Trout and Grayling Fisheries Strategy. Stocking of hatchery derived brown trout will not be consented by the EA under this classification.

The comments and recommendations made in this report are based on the observations of the Trust's Conservation Officer, Andy Thomas and discussions with Mr Borges.

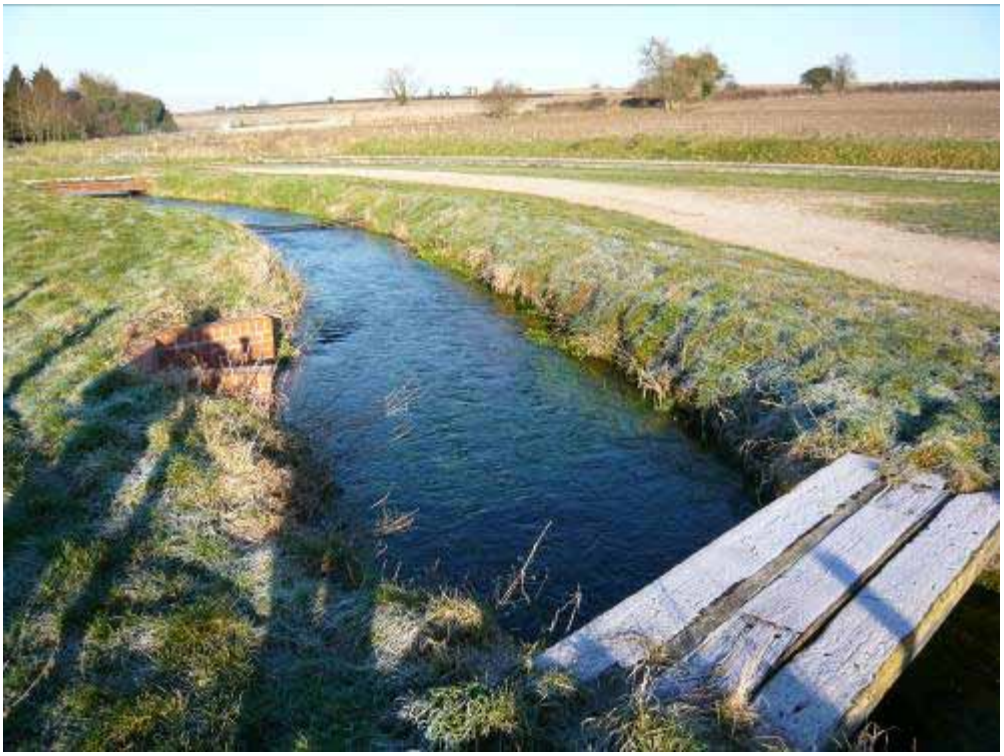
Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.

2. Habitat assessment.

The Alre at Bishop's Sutton has been extensively modified to cater for a range of anthropogenic activities including cress and fish farming, milling and agricultural irrigation. The biggest single influence on the river is the large on-line pond at Alresford which was constructed in the 12th century. The pond was used as a stew pond to provide fresh fish for the Bishop of Winchester but may also have been used as a balancing pond for a navigation channel constructed downstream.

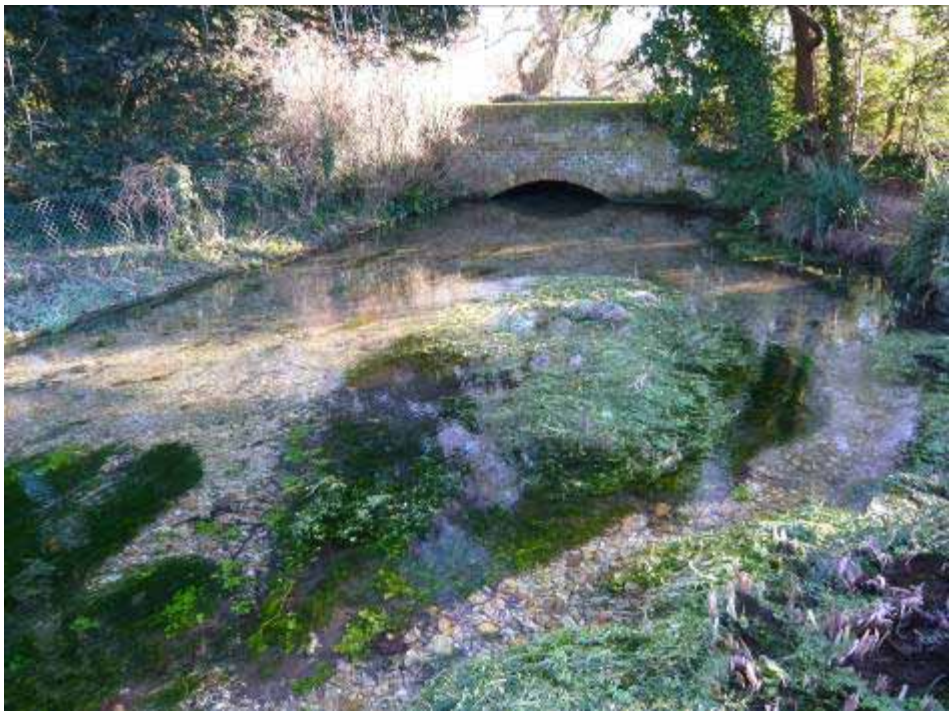
The pond is now considerably smaller than it once was and has succeeded back to a large reed bed at the top end of the pond where the Alre now cuts a narrow channel through the reeds down into the lake. The Pond itself supports a coarse fish population including roach *Rutilius rutilus*, carp *Cyprinus carpio* and pike *Esox lucius*. Due to the large impoundment on the dam of the pond there is no prospect of trout migrating freely between the upper Itchen and the headwaters of the Alre. The fragmented nature of the river and the comparatively short reach that exists upstream of the pond leaves any wild fish population vulnerable to collapse.

The top boundary of the fishery lies just below a water cress farm. A quick inspection of this reach revealed the channel to be a highly managed carrier with featureless margins. The channel does however have a good gradient and supports decent in-channel habitats for juvenile brown trout. High quality spawning and adult holding water was at a premium.

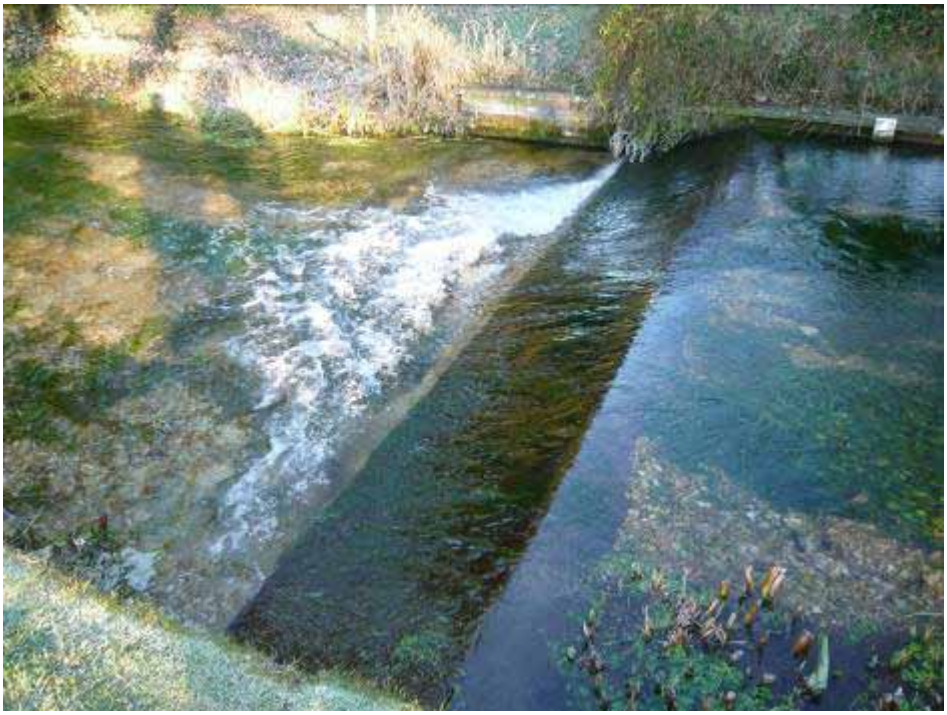


The channel running through the cress farm above the main fishery

At the very top of the fishery there is an area of gravel riffle and glide habitat. Some recent spawning scrapes and redds were noted at this location. A short distance from the top boundary there is a flow gauging weir of the “crump” design. These structures can be notoriously difficult for fish to pass through.



Bridge at the top boundary. Some evidence of spawning activity was seen here



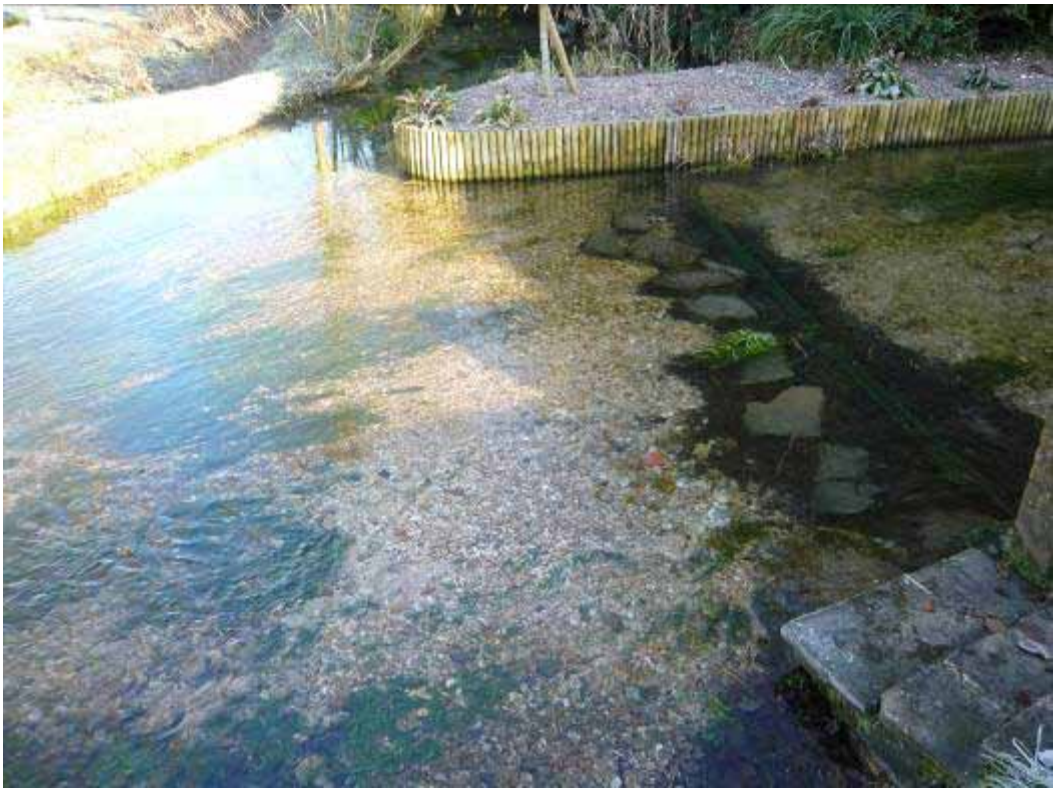
Flow gauging weir

This particular structure has a modest head-loss of approximately 250mm and during a high flow year should not deter upstream spawning migrations. It is recommended that a dialogue is opened with the EA to find out if the structure is redundant. If the structure is no longer in use then it could be removed or “notched” in the centre to provide improved access for trout. It was noted that there is a small take-off point above the structure which feeds water down into

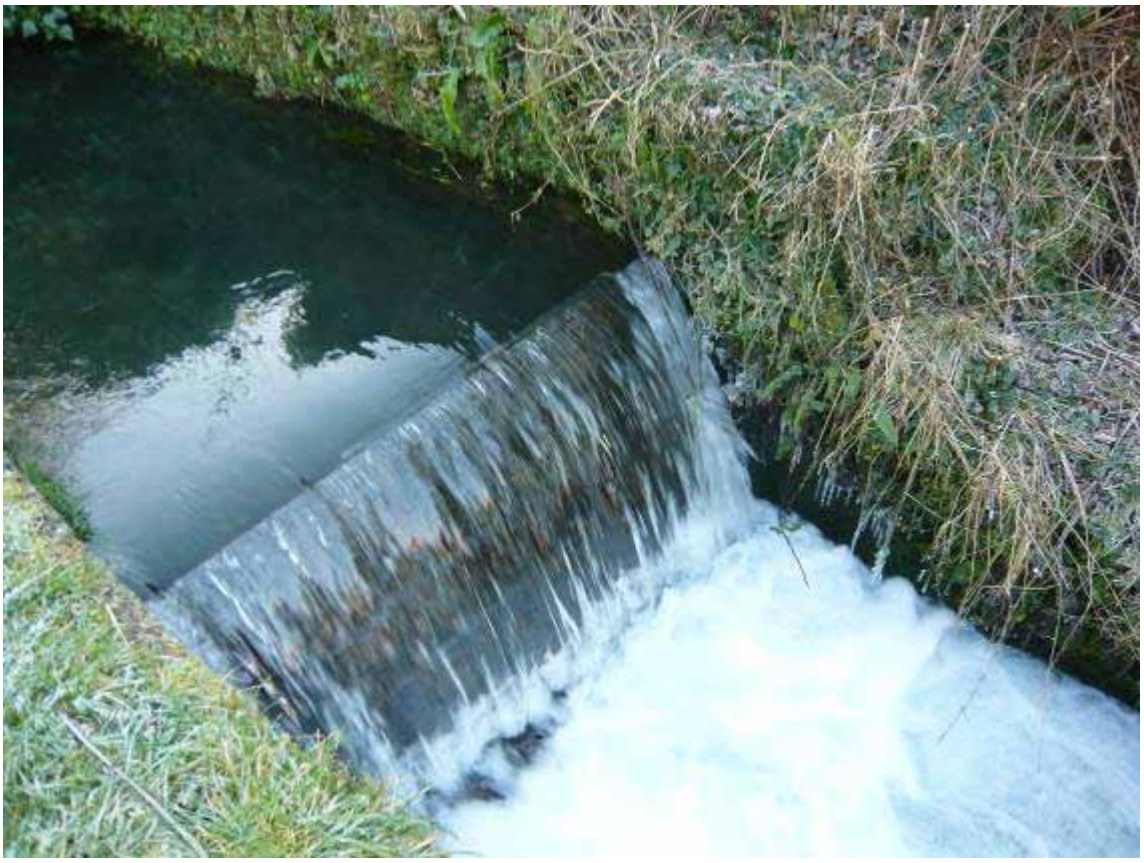
an ornamental lake on Mr Borges's property. A reduction in head at the weir may impact on flows through the lake.

From the weir downstream the river passes the main house and borders an area of formal gardens (cover photograph). Much of the LB margin adjacent to the house is either hard engineered or maintained as part of the formal garden. Despite the lack of marginal cover the river was well populated with trout which were observed during the visit.

The section of river from the main house down to some old mill hatches a hundred metres or so below has been made slightly deeper by the installation of extra boards at the mill sluice. Much of the river is quite shallow and Mr Borges was concerned that trout in the reach were being heavily predated upon by heron and egret. Since modifying the structure he has noticed an increase in the numbers of fish holding up in the reach.



Remains of an old stone weir now flattened. Note the hard revetment on both banks



Boards in the old wheel race at the bottom boundary impound the water above. This structure will stop some fish from reaching good quality spawning habitats upstream.

3. Conclusions

The river Alre at Bishop's Sutton is a delightful small chalkstream trout fishery. The river has in the past suffered from low flows following a prolonged drought period. The lack of natural connectivity between trout populations on the lower Alre and those found above Alresford Pond does mean that the upstream stock is particularly vulnerable and improvements to habitat quality will potentially give more resilience to the population during adverse conditions. When water resources are plentiful, as they have been during the last few years, improvements to habitat quality will also help to build a high quality wild trout fishery.

Despite this section of river only being comparatively short, it does have the scope to provide all the habitat types required to sustain a viable wild trout fishery. There is a danger that the installation of additional boards into the downstream mill sluice to raise water levels above, will potentially solve one problem (reduce avian predation) but create several others. The structure as it currently stands can delay, or even completely restrict access for fish on upstream spawning migrations.

Another impact of raising upstream water levels will be a corresponding reduction in water velocities. This often causes the upstream section to accrete

sediments much faster and could eventually lead to the section becoming much shallower over time as the river bed re-grades itself. The reduction in water velocities and subtle changes to river bed composition will also see changes in in-stream plant communities. Flow loving plant species such as water crowfoot *Ranunculus aquatilis* and water moss *Fontinalis antipyretica* will give way to ribbon weeds and emergent plants such as *Sparganium sp* and mares tail *Hippurus vulgaris.*

A recent study was undertaken at Fovant on the River Nadder under the guidance of the Avon STREAM project. On this site two large hatch gates were permanently lifted and the habitat upstream monitored over a two-year period. The net result was a marked change in plant communities and available habitats for flow loving species. I have attached a brief summary of the study to this report in appendix 1for information.

If retaining the current height of the impoundment is considered imperative then it is worth considering a temporary lowering of the structure in the autumn and winter to ease fish migration and to help flush through excess sediments. An alternative to ease fish migration might be to put a half board or a 200mm sq hole in the bottom of the structure so that fish can swim through. The downside of a constant change in upstream water levels is that it is often difficult to establish valuable marginal plants. Further advice on improving fish passage at the structure can be obtained from Dr Adrian Fewings from the Environment Agency who is based at their Colden Common Office.

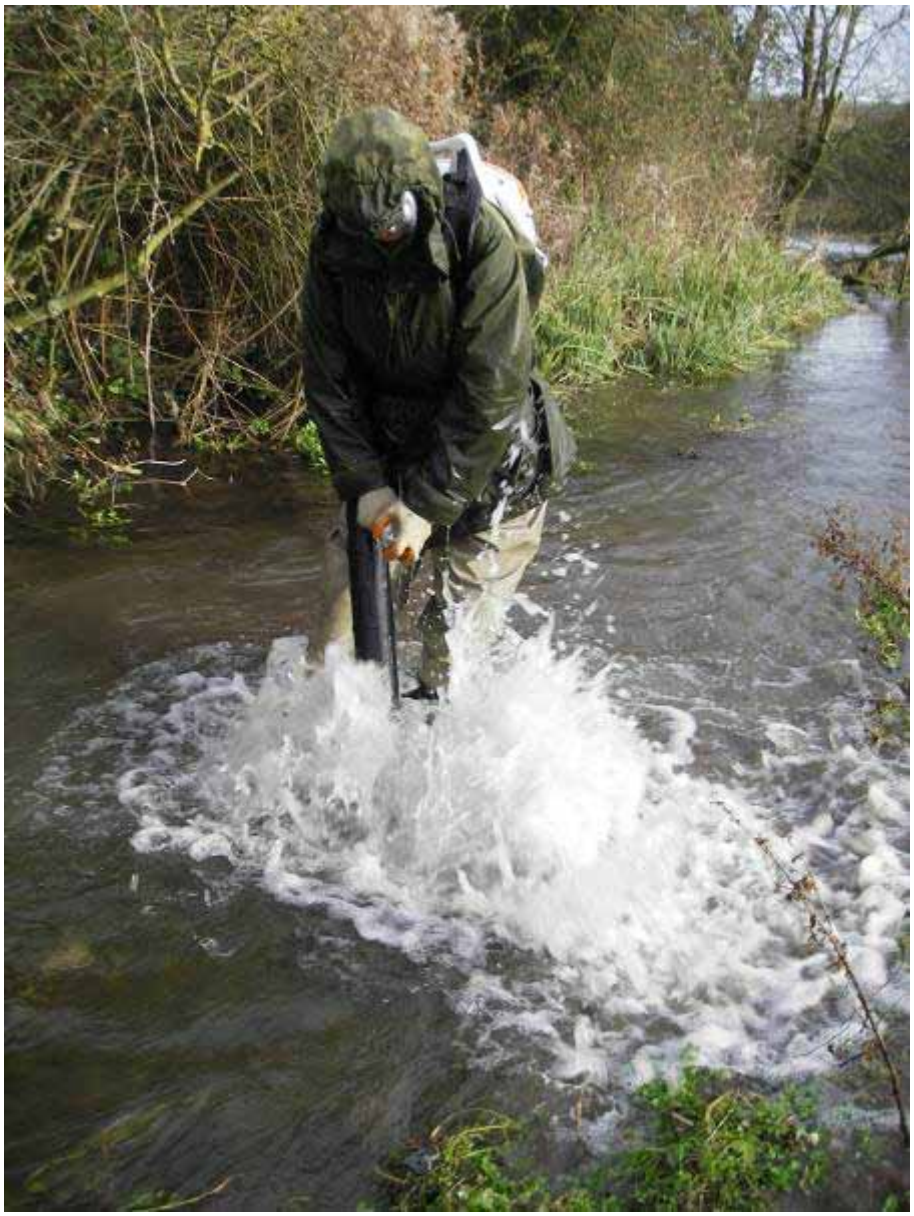
A more sustainable method of managing avian predation and creating some deeper lies suitable for adult trout is to run the river as fast as possible by reducing the height of the impoundment and harness the additional flow to scour pools and lies by introducing current deflectors. This method coupled with a programme of marginal tree planting to promote some low scrubby cover will produce excellent habitat for trout and provide improved cover for trout against predators.

Creating and providing holding habitat for adult trout throughout the whole reach is obviously very important but a balance needs to be struck to ensure that shallow and well covered spawning and nursery habitats are not lost as a consequence. Some downstream drift of juveniles may well help to keep the fishery topped up in the future but the perennial head of the river is only a very short distance upstream. In a dry year there will be precious little habitat above to provide enough stock for your fishery. Setting aside areas specifically for spawning and juveniles is therefore essential for the long term health of the fishery.

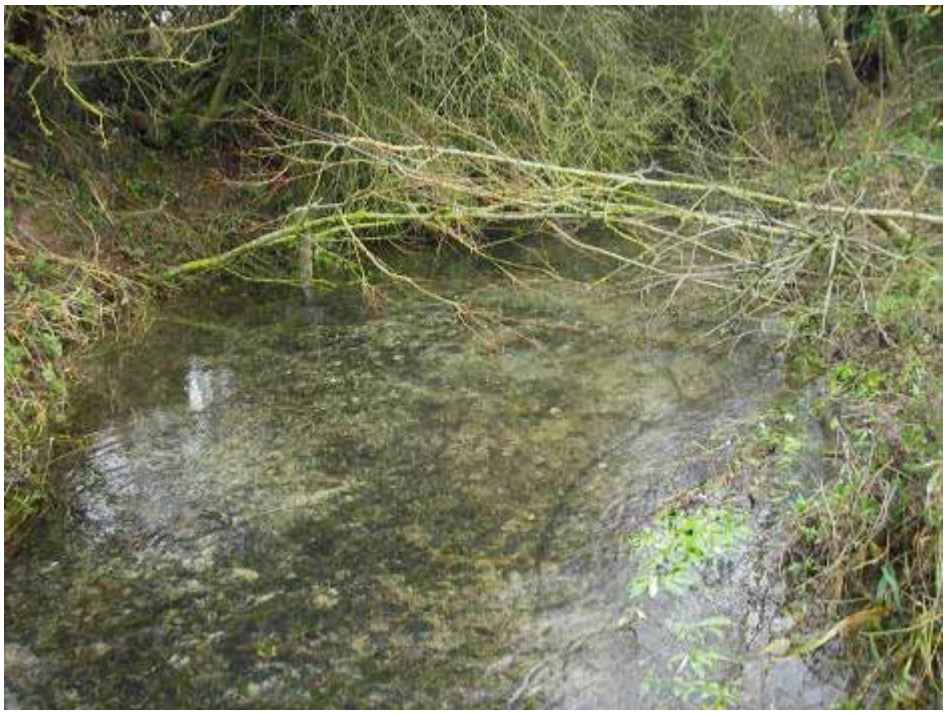
Currently the top section offers the potential for good spawning habitats in the area from the upstream boundary all the way down to just below the collapsed stone weir. Protecting spawning fish and juveniles from avian predation is just as important as providing summer cover and holding habitat for adult trout. Introducing and supporting some low cover in the form of tree brashings over key spawning sites can make a big difference in not only protecting spawning fish but also in encouraging fish to stay within the reach. As much of the upper half of the river lies adjacent to the formal garden of the house it may not be acceptable to retain brashings within the channel all the year round but it would

certainly help to increase spawning success by maintaining some late autumn/winter and early spring cover on these very open sections.

Spawning success can be notoriously poor on chalkstreams due to the poor survival rates of egg to swim-up fry. This is often due to the organic nature of the soft sediments that infiltrate redds. The high calcium content of the water can naturally concrete the gravels, often making it difficult for trout to cut adequate redds. Breaking up the gravels with a fencing spike and cleaning known spawning sites in the early autumn with high pressure water pumps, or a leaf blower, is well worth considering.



Cleaning gravels on a chalk stream with a back pack leaf blower



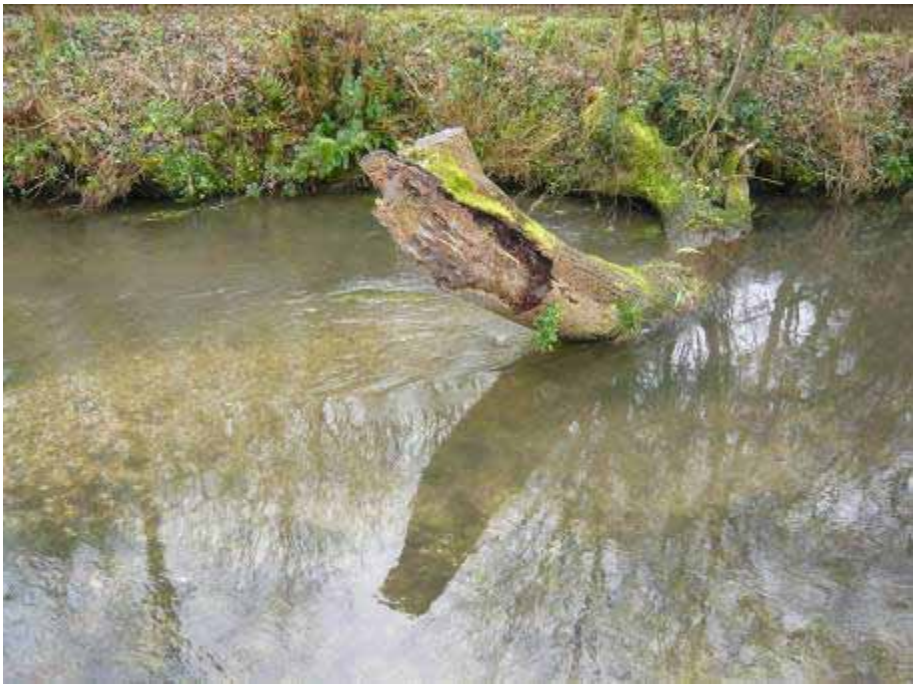
Temporarily pegging brashings over a known spawning site will give some protection fish from heron and egret predation and encourage fish to use the available habitat.

The marginal areas on the LB immediately downstream of the house could be improved. Planting some goat willows or sallow *Salix caprea* to provide some low scrubby cover not only provides cover from predators but is also a valuable source of terrestial food items such as beetles and aphids. Currently the margins provide precious little cover for trout. Marginal strips of water cress *Rorippa nasturtium aquaticum,* or in the winter the dead and dying fronds of chalk-stream annual plants and herbs, provide crucial cover for juvenile trout. A relaxed approach to bankside trimming and strimming usually benefits wild fish on chalk streams.

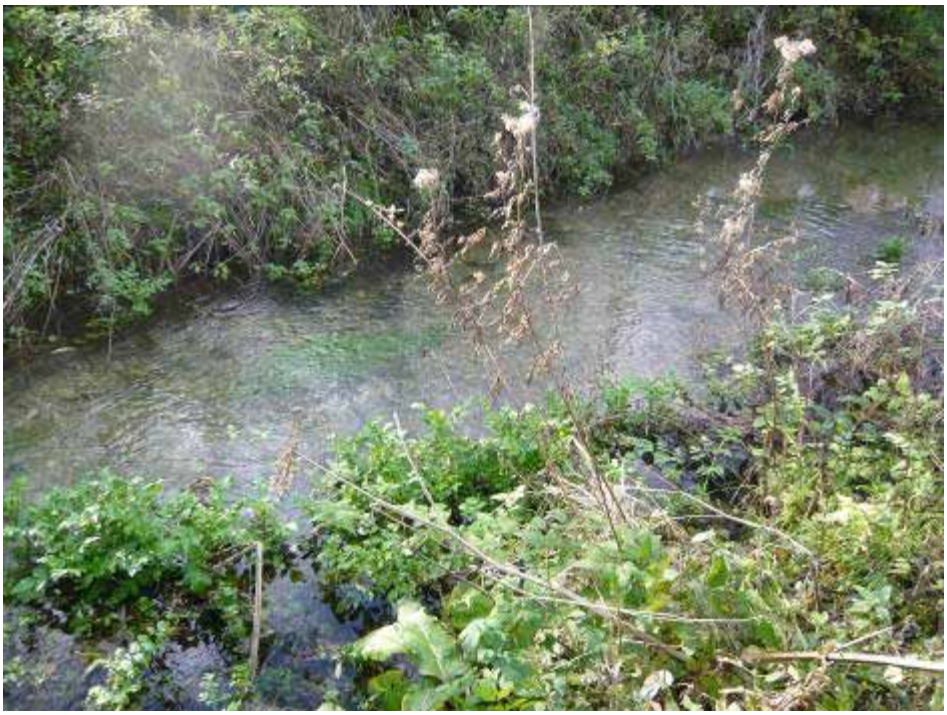
In-channel habitat can also be enhanced by using pegged down pieces of large woody debris (LWD) to kick the flows around and promote local scour and sorting of river bed gravels. LWD is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams is derived from trees located within the riparian corridor. Streams with adequate LWD tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. Therefore LWD is an essential component of a healthy stream's ecology and is beneficial by maintaining the diversity of biological communities and physical habitat.

Traditionally many land managers and riparian owners have treated LWD in streams as a nuisance and have removed it, often with uncertain consequences. This is often unnecessary and harmful: stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will utilise for shelter and spawning and reduce the level of erosion resistance provided against high flows. In addition LWD improves the stream structure by enhancing the substrate and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A

stream with a heterogeneous substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.



A good example of how LWD can create both holding and spawning habitats by blowing out and sorting river bed gravels



A good example of excellent marginal cover on a loop of the River Wylye

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 Development Control Officer.

4. Recommendations

- Consider a permanent or temporary lowering of the impoundment on your bottom boundary.
- If the retention of boards is imperative then consider the construction of a slot or notch in the bottom board to ease fish migration.
- Undertake a programme of marginal planting throughout the fishery with goat willow or sallow to promote some much needed low scrubby cover.
- Try and promote a low, soft marginal strip more suited to chalkstream herbs and marginal emergent plants.
- Take a relaxed approached to marginal strimming and trimming to promote a more shaggy look.
- Retain as much LWD within the channel as possible and consider importing tree trunks or branches that could be pegged onto shallow sections to enhance and sort in-channel gravels.
- Retain some refuge areas where fish can hold up without necessarily being available to anglers.
- Carry out an autumn programme of spawning improvements by breaking up and gravel cleaning known and potential spawning sites and protect with brashings.

5. Making it happen

There is the possibility that the WTT could help to start an enhancement programme. Physical enhancement works could be kick-started with the assistance of a WTT 'Practical Visit' (PV). PV's typically comprise a 1-3 day visit where an 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.

The WTT can fund the cost of labour (two/ three man team) and materials (max £1800). Recipients will be expected to cover travel and accommodation expenses of the contractor.

Alternatively the Trust may be able to help in the development of possible project plans for the creation of new spawning and nursery habitats.

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 Environmnet Agency for supporting the advisory and practical visit programmes.