



## **River Misbourne – Upstream of Amersham Old Town**



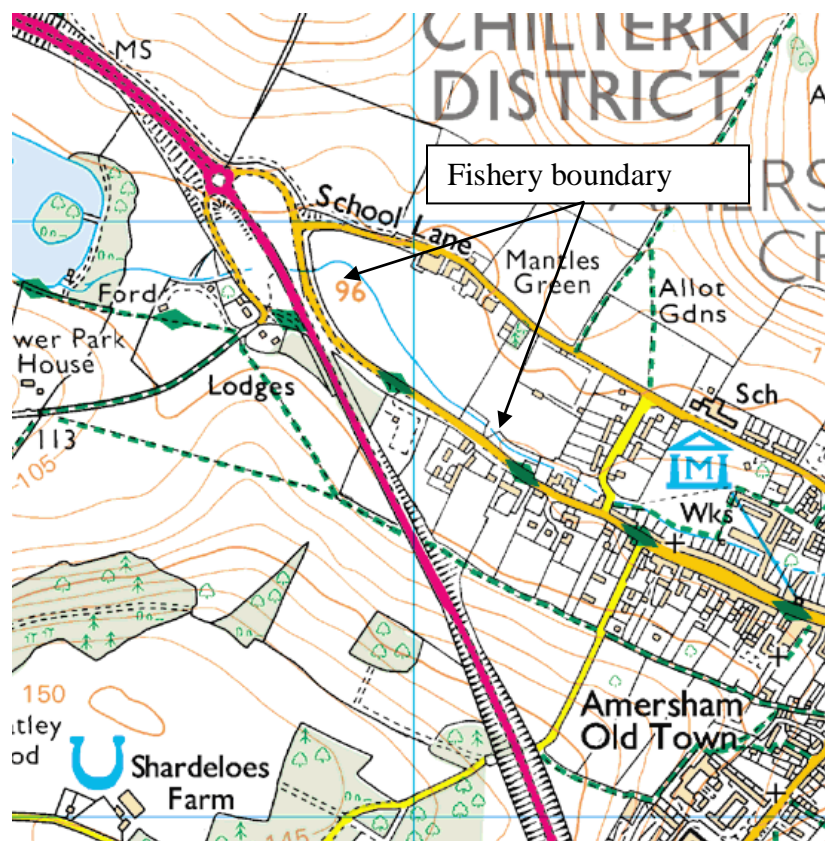
**An Advisory Visit by the Wild Trout Trust – April 2014**

## 1. Introduction

This report is the output of a Wild Trout Trust visit to the River Misbourne on a reach located approximately 1km upstream of Amersham Old Town. The request for the visit came from Mr. Andrew Coles, who has leased the fishing rights on this 0.5km reach. Mr Coles is keen to explore options for establishing a brown trout *Salmo trutta* fishery in this section of the Misbourne. The section inspected runs from National Grid Ref SU 948979 down to SU 950976.

This section of the Misbourne has been managed as a stocked trout fishery in the past but has on occasions suffered following periods of below average rainfall. The Misbourne is one of the Chiltern chalk streams that is impacted by water abstraction pressures. Mr. Coles is keen to redevelop a fishery here and is hoping that a wild population of brown trout can be restored. It is recognised that some trout stocking will be required to provide viable sport.

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.



Misbourne above Amersham Old Town

## **2. Catchment overview.**

The River Misbourne is one of a small network of valuable chalk rivers that originate from the chalk aquifer lying under the Chilterns. Rising near Great Missenden, it flows south for approximately 28km to join the Colne near Denham, which then flows into the River Thames.

This group of small chalk rivers has been identified as generally being in poor condition due to the adverse effects of inappropriate development and over abstraction. The Misbourne was ranked within the twenty most over-abstracted streams in the country and was included in the Alleviation of Low Flows Project (ALF). The scheme to restore flow, with the general aim of restoring the native fish community of brown trout *Salmo trutta* and bullhead *Cottus gobio* was implemented by the Environment Agency and Three Valleys Water (now Veolia Water Central Ltd). Practical works comprised abstraction reduction and relocation of abstraction points.

Low flows and the subsequent impacts to river ecology, remains the single biggest threat to the Misbourne which has been flagged up as being in poor ecological status under the Water Framework Directive (Water body No. GB106039029830).

Managing the physical shape of the channel so that it is better able to adapt to fluctuations in flow, and in particular low flow, is one option for sustaining improved river ecology.

## **3. Fishery potential**

At the time of the site inspection (early March) the river was flowing strongly following one of the wettest winters on record. In places the river was out of bank, which on the Misbourne is probably a very unusual event in recent years. When seen under such conditions, it is not hard to imagine the river here sustaining a high quality chalk stream fishery.

It should be recognised that such conditions are abnormal but it is hoped that recent changes to abstraction licences will enable the upper Misbourne to maintain viable flows right through the year. There is no doubt that following a drier than average winter, the potential for sustaining a viable fishery, especially at the back end of the season will be (at best) challenging.

The river here is heavily influenced by the Shardloes Lake, a large on-line lake that straddles the Misbourne approximately 500m upstream of the top boundary. The lake will influence habitat and fishery quality in a number of different ways but most significantly it will be acting as a barrier to any upstream fish migration. Any wild trout spawning in this reach will have only a comparatively short section of channel to utilise.

It is possible that the lake will also impact on local water quality, especially during long warm spells of weather following a dry winter, when river temperatures may become elevated and dissolved oxygen depressed. On a more positive side, the lake will intercept fine sediment and it may well be

possible to develop opportunities for spawning trout in the reach running immediately downstream from the lake and into the top end of the fishery.

It is not known if this section of channel sustains any wild trout at present. A call to the Environment Agency requesting any fishery data for the upper Misbourne may help to provide valuable information.

#### **4. Habitat Assessment**

Virtually the whole reach of the fishery can be characterised as deep glide habitat. This year's significant flow velocities have swept away river sediments and long sections of bright, clean gravel could be seen. The channel itself is comparatively wide and fenced on both banks. This has allowed a dense stand of emergent vegetation to become established in all areas other than a few sections, where willow shading has restricted reed encroachment.

At the time of the visit there was no indication of any submerged weed present but with such strong flow, and a clean gravel bed, the river should support beds of water crowfoot (*Ranunculus spp.*) which could potentially provide an ideal environment for holding adult trout in comfortable feeding lies. The success of submerged plants such as water crowfoot will boom and bust and will be strongly linked with prevailing flow conditions.

In long sections of the channel, the flow is currently percolating through a diffuse mat of emergent plants of mainly reed canary grass (*Phalaris arundinacea*), sweet grass (*Glyceria maxima*) and branched burr reed (*Sparganium sp.*). The strong water velocities have maintained a narrow open channel but the flow will drop away and as spring unfolds into summer the emergent mat will grow inwards. Maintaining a vigorous flow through a narrow channel (ideally 2 to 3m max) will help to restrict the success of the emergent plants. These stands of emergent plants should be restricted to marginal zones where they will provide a wonderful habitat for invertebrates, cover for fish, as well as a natural bank defence. Restricting the flow through the emergent reed beds using large woody debris flow deflectors will help to concentrate flow through the central channel sections and maintain an open, fishable channel. Where reeds encroach too much, they can be peeled back, or if necessary grubbed up and either folded back towards the margin, or replanted.

Tree shade is at a premium. The provision of shade will help to control heavy reed growth. Where a few crack willows were present, it was possible to see how these were providing some potentially useful holding lies for trout (photo 1). At one location, the tree cover was sitting on what has become an island in the channel. One possibly way of improving the trout holding potential in this location is to block the channel adjacent to the left bank so that all the flow sweeps under the tree cover adjacent to the right bank.





Photo 1. Crack willow providing shade and restricting reed growth.



Photo 2. Tree shading where the channel has braided. Blocking the left hand channel with woody debris will result in improved habitat in the channel running adjacent to the right bank



There was some discussion regarding bank maintenance and angling access. Fishing this stream will be possible but it is recommended that rather than trying to fish over the top of an emergent fringe, it would be much easier to fish the river via wading. This will also greatly reduce the maintenance burden and allow more time for creating improved holding lies for trout, rather than trying to maintain a fishable bank for anglers.

The key to providing a sustainable fishery here is to maintain a very narrow flowing channel and restrict flow in all other marginal zones. This can be achieved with a series of large flow deflectors but ideally the flow can be kicked from side to side to promote a more meandering planform in what is currently a relatively straight, wide channel. The narrow open sections should remain silt free and the slow zones blocked with woody debris will accumulate fine sediment and be in effect dead water zones. Techniques for narrowing chalkstream channels can be found in the WTT Chalkstream Habitat Manual, available via our web site [www.wildtrout.org](http://www.wildtrout.org)



Photo 3. The very wide wetted channel should be narrowed using either large woody debris flow deflectors or brush wood shelves.

An alternative method for creating an instant change in the topography of the river bed is to use the "dig and dump" technique. This involves using a tracked excavator to redistribute the river bed material to create a series of pools and associated runs, using material won from the river bed. This technique can be very cost effective and could potentially create a series of pools on long flat,

wide sections of chalkstream channel. This job requires a detailed consultation with the Environment Agency and must be delivered by somebody with experience in using the technique.



Photo 4 & 5. The “dig and dump” technique used on the River Meon in Hampshire to create a “run and a pool”

## **5. Trout stocking.**

It is recognised that for this section of the Misbourne to sustain a viable fishery, some stocking will be required. There is lots of information about trout stocking on our website and it is imperative that no stocking is carried out which will undermine any attempts to build a wild trout population. It is assumed that wild trout are currently absent but it would make sense to have this confirmed by the EA.

Any introduction of brown trout should be with all female triploid (sterile) stocks of an appropriate size for the stream (10-11 inch). The reach under current flow conditions could possibly sustain an introduction of up to 50 trout but we would recommend an initial stocking of approximately 25 fish. An informal system of catch records will allow restocking to be carried to maintain stocks (and catches) in the river. All fish stocking into inland waters is regulated by the EA and therefore an early consultation is recommended.

If wild trout are absent due to past drought or water quality issues then there might be scope to kick start a population provided there are some safeguards that both water quality and quantity are likely to be sustained following changes to abstraction licences. If some wild fish are already present then it is perfectly feasible to build the size of the population. If there are no wild fish present than a population can be started via stocking with a selection of wild fish (both adult and parr) thinned from a healthy population. This could be a wonderful project and one the EA may wish to support. Some support may also be available via the Chilterns Chalkstream Project .

<http://www.chilternsaonb.org/about-chilterns/chalk-streams/chalk-streams-project.html>

## **5. Conclusions**

This section of upper Misbourne can sustain a trout fishery but there will be times when low flows will severely impact on the viability of the reach as a wild brown trout fishery. The river will sustain a modest number of adult stocked fish, particularly following a wetter than average winter. In an average to low-flow year, fishing may well be very challenging in the latter half of the season, due to a combination of low flows and the likelihood of heavy emergent reed growth.

It will be critically important to try and harness flow velocities to maintain a self-cleansing channel. A combination of tree planting to provide low shading over potential holding lies, as well as the use of flow deflectors to locally squirt water through constricted sections will help to keep emergent plants in marginal zones where you want them to be.

Obtaining some base line data on both the flora and fauna will help to evaluate any success with changes in how the reach is managed and maintained in the future. Some help may be available from your local EA fish and biodiversity team. Creating an improved environment for a more diverse community of chalkstream plants, bugs and fish will be a thoroughly worthwhile and rewarding project.



## 6. Recommendations

- Ask the EA if they have any fish data for this reach. With EA consent, it is possible for you to commission a simple electric fishing survey to establish whether or not the stream supports any wild trout.
- If following some trial fishing and a conversation with the EA that wild stocks are absent from this reach then some stocking with a modest number of *sterile* triploid brown trout will provide some sport. Stocking with fish farm *fertile* strains will not help to build a wild component to the stock and may well have the effect of reducing the chances of any wild born fish from building a viable population.
- If the reach maintains perennial flow, even following a very dry winter, then it might be possible to re-establish a wild trout population. This could be achieved by potentially relocating wild stocks from another population. A detailed plan can only be executed with the full support of the local EA. This option must only be explored further if the abstraction pressures which resulted in the population crashing in the first place are permanently resolved.
- Fish the reach via wading to remove the requirement for maintaining a fishable bank.
- Undertake in-channel maintenance work to maintain a narrow open channel. Restrict flow velocities in wide, reedy marginal zones with LWD deflectors or wide brushwood shelves.
- Undertake some tree planting with low scrubby species such as thorn and willow to create lies for trout and restrict reed growth. Willow can be easily planted by pushing in whips and cut stakes from live donor willows.
- If water crowfoot fails to put in an appearance then consider planting some in shallow fast runs from material taken (with the owner's permission) from the reach upstream of the lake.
- Consider obtaining some training in river fly monitoring. For further information go to [www.riverflies.org](http://www.riverflies.org)

**Note: All work within 8m of the top of the bank will require a consultation with the EA and may require a formal written Flood Defence Consent prior to any work being carried out.**

## Acknowledgement

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

## **Disclaimer**

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