



**ADVISORY VISIT TO THE RIVER WYE AT  
WOOBURN GREEN, BUCKS  
UNDERTAKEN BY VAUGHAN LEWIS,  
WINDRUSH AEC LTD, ON BEHALF OF DAVID  
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## **1.0 Introduction**

This report forms the output of a site visit undertaken to the River Wye at Wooburn Green, Bucks on 1 November 2005 on behalf of David McHugh. Information for the report was gathered during the site visit. Additional information was provided by David McHugh.

Throughout the report, normal convention is followed, with banks identified as RB (right bank) and LB (left bank) when facing downstream.

## **2.0 Habitat assessment**

The River Wye is a small Chiltern chalkstream, rising from springs near to West Wycombe Park, and flowing downstream through the conurbation of High Wycombe before joining the River Thames near Marlow. Formerly known as the Wick (or Wyck), it was an historically famous river, having produced large individual trout up to 7lb in weight. It was also the source of some of the trout ova used to establish a population in Tasmania in 1864 (from: Chalkstream by Charles Rangeley-Wilson).

During the mid-late 20<sup>th</sup> century, a combination of abstraction and poor water quality combined to limit fish stocks in the river. However, the decline of some of the more polluting industries in the area (electro-plating, paper production) has improved water quality. More recently, the sewage treatment works have closed at High Wycombe, with the effluent being treated at Little Marlow and a proportion pumped back and discharged in the upper Wye following treatment. These changes, in combination of localised habitat enhancements, including the provision of fish passes at former mill sites, have combined to improve instream conditions for fish.

The upper limit of the reach surveyed during the advisory limit was marked by 2 small weirs erected as part of the development of an adjacent industrial site. These were easily passable by trout during most discharge conditions. A large mature brown trout was noted above the upstream weir.

Downstream of the weir, the river ran through a partially reveted channel, with abundant shallow riffle habitat present. The gravel in this section was, in common with much found in the reach, of suitable size for trout spawning. However, it was heavily imbedded, with a large volume of entrained silt and sand, reducing its value for spawning trout.



### **Upper section of the reach**

Further downstream, the river became increasingly shaded, with the channel totally tunnelled in places. The lack of light penetration was significantly reducing the growth of marginal vegetation. As a consequence, the channel was overwide in places, with poorly sorted substrate and a lack of fringing cover valuable for trout fry. At these locations, unconsolidated silt bars were apparent along the marginal zone. The hard substrate was also very imbedded, with little loose gravel of a suitable quality for spawning brown trout.



**Overshaded section of river**



**And a more open section showing good growth of marginal vegetation**

On the sections of gravel that was not heavily shaded, there were strongly growing stands of Water crowfoot *Ranunculus* spp, starwort *Callitriche* Spp., lesser water-parsnip *Berula erecta* and unbranched bur-reed *Sparganium emersum* in the channel, with reed canary grass *Phalaris arundinacea*, fool's water cress *Apium nodiflorum* and water cress *Rorippa nasturtium-aquaticum* dominating the marginal zone.

Invertebrate populations in the river appeared to be relatively healthy, with numbers of adult upwinged (Ephemeroptera) flies noted during the visit.

The lower end of the reach was delineated by two small weirs, splitting the river into two channels around an old mill site. It is likely that both weirs could affect upstream migration of fish over a range of discharges, with the RB weir appearing to offer the largest obstruction. This may increase the spatial isolation of the fish stocks of the reach from those downstream.



**RB weir likely to obstruct upstream migration of trout**

### **3.0 Fish stock management**

The fishery has not been stocked for a number of years. There was some natural recruitment of brown trout to the fishery, with numbers of fish observed on the day of the advisory visit.

### **4.0 Management recommendations**

The key issues limiting the Wye fishery were over-shading of the channel and compaction and lack of sorting of spawning substrate. Mechanisms for addressing these and other issues are detailed below.

- Much of the potential spawning gravel was heavily imbedded and laden with sand and fine sediment. The quality of the gravel could be improved by establishing a regime of cleaning spawning gravels each September. This can be achieved by either manual or mechanical (tractor mounted cultivator) raking, or by the use of high-pressure water jets. Care must be taken to clean riffles rotationally, with only short sections being treated annually. The EA may be able to undertake this work on behalf of the fishery, or to lend the appropriate equipment. It is important that the EA are contacted prior to any cleaning of gravel, due to the possible discoloration of water in the river resulting from the operation. The same concerns dictate that downstream neighbours should also be forewarned of the operation. In order to monitor the success of any gravel washing, it is further recommended that an annual count of spawning redds is undertaken. Key spawning areas should be walked during November- January and observed redds logged and counted.

- Sorting of the bed material could also be improved significantly by the careful use of Large Woody Debris. Practical management options to increase LWD include making use of fallen timber in order to create simple flow deflectors by wiring/staking these to the bank. These can be used to scour relatively homogeneous riffle areas in order to create deeper pools used by adult fish. These small pools can provide shelter areas adjacent to riffles during spawning periods, increasing the numbers of spawning fish. In addition, timber arising from pollarding and/or coppicing (see below) could be used to create small wooden deflectors or upstream facing 'v' groynes. These will not only help to sort the substrate, but will create deeper pools suitable for holding adult trout.

- One of the most significant impacts on the fishery is the heavy shade cast in places by riparian trees, particularly those growing on the LB. This shade is restricting the growth of marginal vegetation, with associated damaging impacts on the rate of erosion, the provision of marginal cover for fry, and water flow velocity. In order to address overshading, the establishment of a regime of limited, rotational coppicing and pollarding would be of great benefit. Increasing light penetration into presently overshadowed river sections would be of benefit to instream vegetation and valuable fringing marginal vegetation. The conservation value of the existing trees should not be under-estimated and great care should be exercised in the selection of trees to be cut. A felling licence may be required from the Forestry Authority for the larger trees. It is possible that the farmer may be prepared to enter the riparian fringe on the side of the river into some type of agri-environment or woodland management scheme. It would be worth pursuing this idea with him and DEFRA.

- The quality of the existing spawning gravel could be improved by selective narrowing of overwide riffles by the installation of faggot bundles. Narrowing of the channel can significantly increase water velocity, increasing scour and hence decreasing the amount of fine sediment deposited on the gravel, whilst increasing the abundance of valuable marginal cover for swim-up fry. The arisings from the coppicing should be used to create faggots, roughly 2m long with a diameter of approximately 300mm-500mm. Once manufactured, the faggots can be used to locally narrow the channel. They should be pinned in place using wooden stakes and backfilled with secured brushings. The top of the faggots should be set at approximately 100-150mm above mean summer water level.



**Faggot bundles installed to narrow stream. Note the growth of emergent vegetation behind the faggot line**

- The use of a deep substrate incubation box is recommended in order to help rapid improvements in the stock of trout in the river. Basically, these are gravel filled boxes, approximately 0.6m in each dimension that are filled with suitably sized gravel and seeded with 10,000 - 20,000 trout eggs. A water feed at the bottom of the box allows the eggs to incubate and hatch. Once they reach the swim-up fry stage, they leave the box via the overspill pipes, stocking themselves into the river. Alternatively, a small trap could be placed on the outlet, allowing fry to be transferred throughout the fishery. In effect, they are naturally reared fish without the unhelpful behavioural modifications associated with hatcheries. Such a system could be established using the existing impoundment at the downstream end of the fishery, provided that the co-operation of the upstream riparian owner could be gained. More details on incubation boxes can be found on the Wild Trout Trust web site [www.wildtrout.org](http://www.wildtrout.org) or in Volume 2 of the Trust's magazine, *Salmo trutta*.



**Deep substrate incubation box in use**



## **Paired wooden ‘v’ groynes being used to scour and sort substrate**

It is important that the Environment Agency is made aware of any adopted policy to retain LWD in the channel, in order to prevent its removal during routine management operations undertaken by the Agency.

- Water quality within the Wye will always be of potential concern given the large volume of treated effluent entering the river. Regular samples are taken by the Environment Agency. The results of these samples are placed, along with the consent standard, on a publicly accessible register at the EA offices. On payment of an administrative fee, members of the public can inspect the register and obtain copies of data. I would strongly recommend that the club approach the Environmental Management team at the Wallingford offices of the EA, Thames Region and ask for a copy of the data from the public register. The EA should also be asked in writing whether the works has met its discharge standard over the past 5 years.
- The Chilterns Chalkstream project (Tel: 01844 271308) is co-ordinating efforts within the area in order to optimise the ecological interest of the Chiltern streams. The project is very interested in making contact with individual landowners.
- Note that all works to bed or banks of the river or within 8m of its banks require the written consent from the Environment Agency under the Land Drainage legislation. The introduction of any fish or eggs into any inland water requires the consent of the EA under the Salmon and Freshwater Fisheries Act, 1975. It is imperative that all relevant consents are obtained by the club.
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