HABITAT ADVISORY VISIT TO THE RIVER MEDWAY, EAST SUSSEX/KENT

UNDERTAKEN BY VAUGHAN LEWIS, WINDRUSH AEC LTD ON BEHALF OF THE ENVIRONMENT AGENCY, SOUTHERN REGION AND ROYAL TUNBRIDGE WELLS ANGLING SOCIETY.

DECEMBER 2007

The Wild Trout Trust in conjunction with the Environment Agency, Southern Region

1.0 Introduction

This report is the output of an advisory visit undertaken by Vaughan Lewis, Windrush AEC Ltd to the River Medway, East Sussex/Kent, on behalf of the Wild Trout Trust, Royal Tunbridge Wells Angling Society, and the Environment Agency (EA), Southern Region.

The EA requested the advisory visit to review opportunities for habitat enhancement along a length of the Upper River Medway, running through East Sussex and Kent.

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.

2.0 Habitat Assessment

A large weir upstream of Ashurst Bridge, effectively prevented upstream migration of fish except in very high flow events. The head loss across the weir was in the order of 1.5m.

Ashurst weir

The reach upstream of the weir has been subject to a number of separate pollutions and chronic water quality problems. As a consequence of this and the impact of the weir, this reach had very poor fish stocks, a fact confirmed by electrofishing survey.

At Ham Farm, the channel was heavily incised, perhaps by as much as 3m, with a clay dominated substrate and banks. There were some small sections of shallower water

with a thin layer of shaley–gravel substrate. Evidence of one or more recent high water events was clear, with debris strewn more than 2m up the banks. Work was underway to remove Large Woody Debris (LWD) and overhanging branches from the channel (probably by the Environment Agency, although there were no identifying marks on the excavators being used). As a consequence of this work, there was little or no instream cover left in the channel, reducing its holding capacity for all species of fish, with early life stages particularly vulnerable.

LWD recently removed from the channel at Ham Farm.

There were small numbers of riparian trees along this reach of the river, predominantly alder *Alnus glutinosa* and hawthorn *Crataegus monogyna*. However, in general long reaches of the river had little tree cover, with limited shade cast over the channel. There was an abundance of Himalayan balsam *Impatiens glandulifera* present along the banks of the river, with consequent bare sections of soil revealed during winter dieback. Land use was arable on the LB with semi-improved pasture/arable on the RB.

There were some small stands of starwort *Callitriche* Spp and water crowfoot *Ranunculus* Spp present on one or two of the riffle zones. There was some light marginal cover provided by overhanging vegetation in areas that had not yet been subjected to ‘de-snagging’.

Further upstream the gradient of the river increased, with gravel and sandstone bedrock increasingly abundant. The banks were primarily friable sandstone, which was easily eroded during high flows periods, a process exacerbated by the presence of Himalayan Balsam.

Water crowfoot on shallow riffle. Note easily eroded sandstone bank

There was an increasing amount of LWD in this lower reach, with the naturally occurring timber increasing habitat diversity and cover for a range of species.

Upstream of Ball's Green Bridge, trout stocks were dominated by brown trout and grayling *Thymallus thymallus*, with a few chub *Leuciscus cephalus* and other mixed coarse fish also present.

The channel was incised, with short riffles present in areas of bedrock or gravel. Flow velocity was low/moderate. There was limited cover in the channel, generally provided below overhanging bushes and brambles *Rubus fruticosus*. A stream from Buckhurst Estate entered the river in this reach. This was lined with willow *Salix* Spp and sycamore *Acer pseudoplatanus* trees.

There were a number of LWD dams and 'groynes' in this reach, providing excellent cover and promoting habitat diversity.

LWD in the channel resulting from a fallen tree.

And a naturally occurring LWD groyne in a LB tributary

Downstream of Hartfield, the river was narrower, with less incised banks. The gradient was relatively steep, with habitat quality excellent for adult salmonids. However, the limited abundance and poor quality of gravel and stone was probably limiting habitat availability and quality for spawning and juvenile trout and grayling. There was some starwort present in the channel, with sedge *Carex* spp. and reed canary grass *Phalaris arundinacea* present in the marginal zone.

Upper Medway Flyfishers (UMFF) had undertaken a considerable amount of work on the river, constructing a number of small stone groynes, 'skylighting' overshaded sections of the river by careful coppicing, and re-introducing water crowfoot with some success, from the Rivers Test and Itchen. Some sections of this reach had been damaged by agricultural stock grazing. This had reduced the availability of bankside cover, caused overwidening of the channel and introduced large amounts of fine sediment into the channel.

3.0 Fish stocks

The River Medway contained good stocks of mixed coarse fish, including large individual barbel *Barbus barbus.* Moderate stocks of wild brown trout *Salmo trutta* were also present, with locally good recruitment. Sea trout are apparently occasionally caught following very high water, which allows fish to surmount the large weirs present in the lower/middle reaches of the river.
In addition to wild trout, some 100 triploid brown trout, averaging 30cm in length are stocked to this reach annually.

Grayling *Thymallus thymallus* were introduced into the river from the Rivers Test and Itchen over 30 years ago. They have colonised successfully, with good catches and large individual fish falling to rods, particularly during the winter period. Catch and release of wild brown trout and grayling is nearly universal.

4.0 Recommendations

· Providing an easement for passage of fish over Ashurst weir would be of significant benefit, linking the presently isolated reaches upstream and downstream of the structure. Ideally, the weir would be breached or demolished, not only allowing passage of fish, but also reducing the retained head upstream with an associated improvement in habitat quality and probably water quality. This option should be reviewed as to its practical and financial viability.

In the event that partial or total removal of the weir proves unacceptable, then the provision of a near natural bypass channel through the LB field represents a robust and viable option. Provided that a gradient of <1:100 can be achieved (i.e. an excavated channel length of approximately 150m) then all species and length of fish should be able to utilise the bypass. The longer the channel, the greater the length of good quality habitat created. However, increasing the length of the excavated channel clearly has significant cost implications.

Excavated spoil could be disposed of by incorporation into the adjacent arable field under a Waste Exemption licence. Depending on the need to maintain a guaranteed flow over the existing weir, it may be necessary to construct a formal off-take structure to an agreed specification. If flow over the weir is not an issue, then it may prove possible to merely re-divert the channel from its existing course. A very similar

bypass channel has recently been successfully constructed on the Upper River Thame in Buckinghamshire.

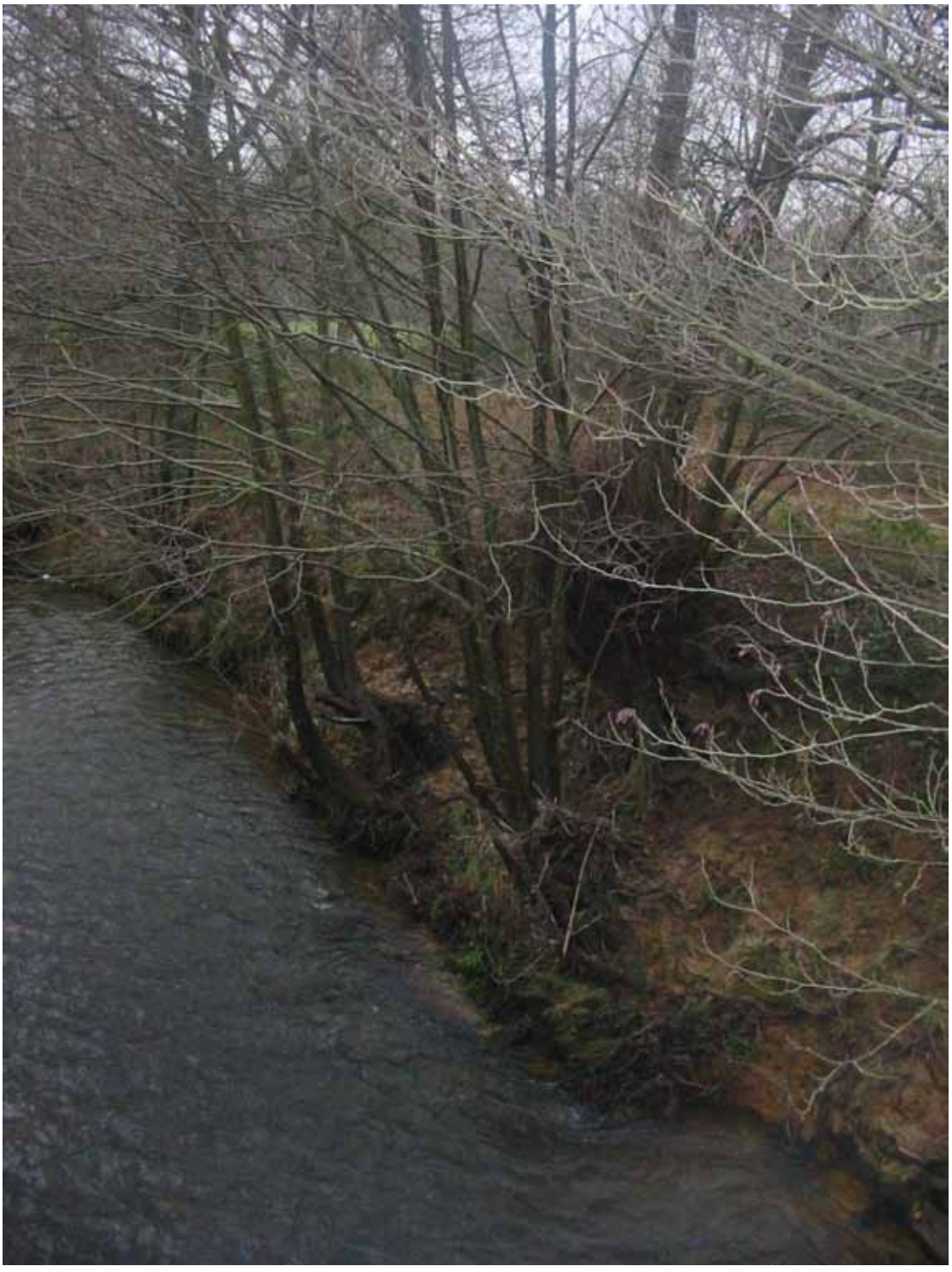
Newly constructed bypass channel on R.Thame. Note partially submerged off-take structure

· There was a lack of Large Woody Debris (LWD) in the channel throughout the river system. This was probably a consequence of the paucity of riparian trees, the extreme flood events experienced in the river, and management aimed at removing LWD from the river. It is important that where flood constraints permit, LWD is encouraged to remain within the channel. Judicious use of high tensile/cabled wire could be used to stabilise LWD so that it remains in place during all but extreme flood events. The value of LWD in headwater streams is very significant. It acts to increase diversity within the channel, it helps to detain fine sediment, provides cover for a range of species and can provide valuable protection to banks from erosion. If allowed to accumulate, it would also have the potential to increase the level of the retained head of water, increasing the valuable hydrological connectivity with the flood plain.

If angling groups and landowners are to promote the retention of LWD within the channel, it is vital that the EA co-operate with this policy. The regime of routine removal of LWD should cease, with only those limbs and trunks that pose a clear threat to increased flooding of property removed. Where possible, the LWD should be stabilised within the channel using stakes and high tensile wire, with the latter material being used to attach the timber to bankside tree stumps or strategically located ground anchors where appropriate. Not only would this approach improve

habitat quality within the channel, it may also prove to make a substantial financial saving.

An alternative approach to increasing the amount of LWD is to partially cut through the trunks of riparian trees, and 'hinge' them into the channel. They can then be additionally secured using wire and stakes. This approach allows the trees to continue growing, whilst providing valuable instream cover.



Bankside sycamores on the Buckhurst Stream that could be usefully 'hinged' into the channel to provide cover.

Current EA policy nationally is to encourage spilling of water onto floodplains in headwater areas in order to attenuate flood peaks and reduce flood risk to property further downstream. EA practice on the Upper Medway appeared to run counter to this philosophy.

· Given the general lack of riparian trees in some reaches, and the associated paucity of LWD, it would be useful to plant small clumps of trees along the bank top. These will need protection from grazing stock and deer. Recommended species include ash *Fraxinus excelsior*, goat willow *Salix caprea*, field maple *Acer campestre* and hawthorn. Alder is not recommended due to the incidence of *Phytopthora* infection, which will, in time, result in extinction of most of the individuals of this species.

· The relative paucity of good quality spawning gravel and shallow riffle areas was probably playing a key role in limiting recruitment and subsequent survival of brown trout and grayling. Ideally, gravel would be introduced to the river in order to create riffles suitable for spawning salmonids and rheophilic coarse fish species. The creation of gravel dominated riffles will also increase the availability of this valuable and under-represented habitat type, with a range of species associated with gravel riffles, in particular water crowfoot.

Riffles should ideally be a minimum of 25m in length, and should occupy the full width of the channel. Optimum conservation benefit is obtained if the depth of gravel in each riffle exceeds 50cm, with a range of macroinvertebrate species requiring a hyporheic zone of this depth to reproduce successfully. In order to optimise spawning conditions for brown trout, water velocity should be between 25cm/sec – 75cm/sec, with a water depth of between 25cm and 60cm.

The riffles should be constructed from large blocks of as-dug local stone (if available), overlaid with a layer of pebble reject gravel. Stone and gravel for the riffle construction will need to be imported onto the site from the nearest quarry, unless on-site investigation show a source locally within the floodplain. If this is the case, then possibilities exist to create additional wetland habitat as a result of the excavation of gravel/stone.

Assuming that stone/gravel had to be purchased from a quarry and could be transported to the river's edge by lorry without double handling, then the estimated cost for a 25m riffle would be in the region of £4,000.

Part-constructed riffle showing base layer of large stone with partial covering of smaller gravel

· Despite the excellent work undertaken by the UMFF, the abundance and quality of the gravel in the river remained poor. It would be of great benefit to introduce gravel in the upper reaches of the club's holding, in order to create more riffles suitable for trout spawning. In addition, the quality of existing and introduced gravel could be improved by careful placement of LWD in order to increase scour and hence sorting of the generally uniform substrate.

· Where grazing pressure had damaged the banks, it is recommended that stock proof fencing be erected. This should ideally create an ungrazed buffer strip of >10m. If this is not possible, then the widest possible strip acceptable to the agricultural interests should be fenced off. Where necessary, either purpose built stock watering areas need to be provided or Pasture Pumps installed (see 'Wild Trout Survival Guide' provided with this visit for details). Cost of 3-strand barbed wire fencing should be in the region of £4/linear metre. Access stiles (£40 each) should be erected at regular intervals, with an agricultural gate provided into each section to allow access for machinery where needed.

· The presence of Himalayan balsam is undesirable. It is classified as an alien invasive weed species. There is no policy for its control on a catchment basis, with no authority having a remit to undertake this work. Despite this, it may be possible for the limited control of the large stands of balsam present along the banks of some areas of the river. Chemical control with the herbicide glyphosate when the plant is actively growing in early spring should be effective. Alternatively, the plants can be cut at

ground level before the flowering stage (June) or they can be pulled up by the roots and disposed of by composting or burning unless seeds are present.

Note that the use of glyphosate or any other herbicide on or near water requires the consent in writing of the Environment Agency.

· The Wild Trout Trust may be able to provide 'seed-corn' funding and/or a Practical Visit (PV) for implementation of some of the proposed works. The PV would general consist of a 2 day visit from an experienced river habitat contractor, who would undertake to explain and demonstrate practically some of the useful techniques discussed in this report. Angling groups should then have the knowledge and confidence to reproduce these techniques in suitable locations elsewhere on the fishery. Contact Tim Jacklin projects@wildtrout.org for further details. Further more substantial funding may be available via the Landfill Communities Fund. See for more details http://www.wren.org.uk/ and http://www.entrust.org.uk/

It may be possible for Royal Tunbridge Wells Angling Society to apply for the Landfill Tax funding under EA guidance and enter into a partnership project with the Agency and the WTT.

· Note that all works to the bed or banks of the river or within 8m of its banks may require the written consent from the Environment Agency under the Land Drainage legislation.

· This report is produced for guidance only and should not be used as a substitute for full professional advice. Accordingly, no liability or responsibility for any loss or damage can be accepted by Windrush AEC Ltd as a result of any person, company or other organisation acting, or refraining from acting, upon comments made in this report