River Beane – Beane Valley Fishery

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

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Beane at Bengeo, just north of Hertford. The advisory visit was undertaken at the request of Mr. Luke Gifkins and Mr. Mike Perry who own approximately 1km of the river.

Comments in this report are based on observations on the day of the site visit and discussions principally with Mr. Gifkins and Mr. Perry.

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 Beane rises from springs in the chalk hills near the village of Cromer to the east of Stevenage. The river flows south for approximately 15 km before joining its sister rivers, the Rib and Mimram on route to joining the River Lee just to the east of Hertford.

The Beane has a very long history of modification with numerous structures installed to facilitate milling.The River Beane aquifer provides much of the water for homes in the Stevenage area. At one time the river supported a number of high quality trout and coarse fisheries but now the river can dry during drought conditions, occasionally as far downstream as Watton.

Despite the heavy abstraction to the aquifer, waste water from Stevenage is pumped down to Rye Meads Waste Water Works on the River Lee, bypassing the Beane altogether. This results in a substantial net loss of water which could potentially be returned to the river to augment flow.

3. Fishery overview

The Beane at Bengeo has only recently been managed again as a trout fishery. Angling opportunities are currently sustained through a bi-seasonal introduction of farm reared triploid brown trout (*Salmo trutta*). The current owners have undertaken a considerable amount of work in clearing a substantial quantity of fallen trees to create access for angling. They have also carried out in-channel enhancements by pegging in some log current deflectors in an attempt to improve holding habitats for adult fish. Catch returns against the number of fish stocked have been reasonable; however, it would appear that catch rates have dropped following the completion of some of the recent works.

The co-owners are committed to managing the whole site in a way that is compatible with nature conservation objectives and they are particularly keen to explore any options for enhancing the quality of in-channel habitats for flow loving fish species.

4. Habitat assessment.

An initial inspection of the channel and a conversation with Mr Gifkins confirmed that the whole reach is under the influence of a large impounding structure which is a short distance below their bottom boundary.

The huge fixed crest labyrinth weir downstream of the bottom boundary.

This weir is a very large and heavily engineered structure that is fragmenting species movement within the Beane system and severely restricting the formation of any natural morphology in the river upstream of the weir. The River Beane is defined as a heavily modified water body under the Water Framework Directive, as evidenced by structures such as this weir. Removal of this and similar structures is required if the river is to achieve the Directive's target of 'good ecological condition'. This will required substantial investment and political will and may be deemed uneconomic. No specific mention of removal of this weir is mentioned in the draft Thames River Basin Management plan (www.environment-agency.gov.uk/research/planning/33106.aspx)

It is understood that the weir was designed to provide a head of water for Sele Mill. Sele Mill lies on a parallel channel and was the first paper mill in this country. The site has now been redeveloped as a residential property. The owners of Beane Valley Fishery have recently been consulted over a request to use part of their land as a flood storage area to compensate for a reduction in channel capacity at the Sele Mill Syphon. This would appear to be a positive move from an ecological point of view.

An even more positive move would be to reduce the height of the weir, and so reduce the ‘drowning’ effect of the impoundment. This would encourage better quality habitats to develop further upstream. A combination of reducing the head loss of the weir and raising the height of the bed upstream could reconnect the river with the flood plain and would seem to be the ideal solution for improving the river ecology as well as reducing local flood risk.

The lower section of the Beane Valley Fishery is characterised by a deep, wide channel with reedy margins of mainly sweet reed grass (*Glyceria maxima*), burr reed (*Sparganium erectum*) and some thick stands of Norfolk reed (*Phragmites australis)*.

A typical section of the Beane Valley Fishery. A deep, wide channel with slow laminar flows

On some sections there were a few overhanging willow trees but most of the available cover was from the marginal beds of emergent plants. It was not possible to get an accurate assessment of the nature of the river bed material but it is understood that some decent gravels are present. The significant width and depth of the channel and low water velocity is not conducive to encouraging classic chalkstream plants such as water crowfoot (*Ranunculus spp*) to develop. As a consequence, classic lies for adult trout are scarce and only exist where there is either some over-head cover, or on the few sections where some tree trunk flow deflectors have been installed. The lack of any shallow, fast flowing sections over clean, loose gravel means that there is currently no scope for wild trout spawning or nursery habitat. Some wild fish will inevitably drop down from

shallow habitats upstream and providing better quality lies for these and introduced fish will be a priority. If, at any future date, the weir is lowered, then there might be scope to harness the increased water velocity to develop some local spawning habitats.

Some low, water level willow will provide some “holding” lies for adult trout

A willow log pegged into the channel providing some local cover and some slightly elevated water velocities

Further upstream the fishery reverts to single bank (RB). On the opposite LB there is a line of mature cricket bat willows. A potential enhancement could be achieved by hinging and securing two or three of these trees into the channel to help kick the flows around and provide some much needed in-channel structure.

Some of the mature poplars on LB could be topped and hinged into the channel

The water quality appears to be very good. The river apparently supports a good hatch of fly and enjoys a particularly good mayfly (*Ephemera danica*) hatch. It is understood that there have been some pollution pressures on this stream in the past. Many angling clubs now take part in the Anglers' Monitoring Initiative in order to maintain a close eye on water quality, which is reflected in the invertebrate populations. One excellent method of monitoring water quality is to link up with the Riverfly Partnership. The Partnership provides simple training and a robust method of assessing fly life through periodic sampling of macro-invertebrates. This is a simple and effective way of keeping a close eye on water quality performance. More information can be found at www.riverflies.org .

At one or two locations there was evidence of the non-native plant Himalayan balsam (*Impatiens glandulifera)*. This plant is undesirable because its suppression of other vegetation, coupled with its winter die back, combine to leave extensive areas of bare bank, contributing to excessive erosion.

The control of Himalayan balsam can be achieved by physical or chemical means:

Physical Control

The main method of control, and usually the most appropriate, is pulling or cutting plants before they flower and set seed (usually in June or July). Working parties are the best means of doing this.

Limited grazing access appears to be controlling balsam in some sections of the fishery. This could be continued, but needs to be carefully controlled and balanced with preventing overgrazing of desirable species, damage to coppice re-growth or damage to river banks. Access in late spring or early summer before the balsam has flowered would be ideal. In areas inaccessible to livestock, physical or chemical control is recommended.

Chemical Control

Before using weedkillers alongside waterways it is necessary to contact the Environment Agency and obtain their written consent via form WQM1 (http://www.environment-agency.gov.uk/homeandleisure/wildlife/31350.aspx). It can also advise on suitably qualified contractors.

Himalayan balsam can be controlled with a weedkiller based on glyphosate, such as Roundup. Glyphosate is a non-selective, systemic weedkiller that is applied to the foliage. It is inactivated on contact with the soil, so there is no risk of damage to the roots of nearby plants, but care must be taken that the spray doesn't drift onto their foliage. Glyphosate is most effective when weed growth is vigorous. This usually occurs at flowering stage but before die-back begins; with most weeds, this is not earlier than mid-summer.

It may take a couple of seasons to obtain good control due to the germination of more weed seedlings.

5. Conclusions

The Beane Valley Fishery has scope to develop better quality habitat for flow loving fish, including trout, but this will involve substantial investment and a change to the structure located just downstream. If at some future date there are plans to re-instate a more natural flow regime by removing, or substantially lowering the impoundment located below the bottom boundary then it may well be possible to raise the bed with imported gravels and potentially harness the gradient to create some high quality habitat on the lower half of the fishery.

In the interim, a comparatively cheap and simple way of improving the holding capacity of the fishery is via the use of large woody debris flow (LWD) deflectors. Some log flow deflectors have already been installed but perhaps the best results could be achieved through “whole tree” hinging. This technique is possible on mature marginal trees, particularly willow, where the trunk can be sliced down at the rear and the tree winched over into position. The trunk and any large branches can then be secured to the river bed using stakes and wire or they can be bored out using a wood auger and secured using sections of steel reinforcing bar. Provided the tree is still attached to its root system it will remain alive and secure. A complex structure like this will collect substantial amounts of sediment and provide excellent refuge from fish eating predators, particularly cormorants.

This technique can also be used with cut LWD material, which can be pegged into the channel and will promote local bed scour and cover for fish. LWD

material must be securely fixed as there is a risk that it can break away in high flow conditions and cause an obstruction further downstream.

Where low, scrubby willow (sallows) exist, these should be managed to maintain overhead cover for trout by retaining low level branches trailing into the river. Planting of some additional sallows, particularly on the LB towards the bottom of the fishery, would enhance the available cover for adult trout and give some protection from predators.

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.

6. Recommendations

- Lobby the EA over plans for dealing with the impounding structure downstream. There are potentially huge environmental benefits associated with removing or lowering this impoundment. This work coupled with some reduction in water depth by raising the bed could reconnect the river with the flood plain and create habitat for flow loving plants and fish.

- Continue the sympathetic management practice of leaving fallen timber in the stream wherever possible.

- Control the invasive Himalayan balsam through pulling or spraying.

- Plant some additional willows (sallow) to give overhead cover.

- Consider introducing more structure into the channel using LWD flow deflectors, or by hinging whole trees into the channel.

- Consider signing up for some training in undertaking simple surveys as part of the Anglers Monitoring Initiative. This is an excellent initiative and will give you a much better understanding about the productivity of your stream and an indication of long term water quality performance.

7. 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 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.

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

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