



**ADVISORY VISIT TO THE NORBURY FISHERY
RIVER DOVE, STAFFORDSHIRE,
UNDERTAKEN BY VAUGHAN LEWIS,
WINDRUSH AEC LTD, ON BEHALF OF
NORBURY FLY FISHING CLUB
JUNE 2008**

1.0 Introduction

This report forms the output of a site visit undertaken on 2 June 2008 to the Norbury Fishing Club section of the River Dove, Staffordshire, on behalf of the Norbury Fishing Club. Information for the report was gathered during the site visit. Additional information was provided by club member Tim Pearce. Throughout the report, normal convention is followed, with banks identified as RB (right bank) and LB (left bank) when facing downstream.

2.0 Overview of the fishery

Norbury Fishing Club controls some 5km of the River Dove at Norbury, with a mixture of owned and leased fishing rights. The club has a total of 30 members.

The fishery extends a few hundred metres above Norbury Bridge, with the bulk of the fishery downstream of the bridge. On the day of the advisory visit, there was slight milky green tint to the river, typical of many base rich streams throughout England. Studies on other limestone streams have indicated that this is a diffraction colouration due to, variously, particulate calcium carbonate and colloidal clay. The intensity of the 'colouration' can fluctuate depending on the proportion of base flow to surface water flow, pH, temperature and a range of man-made chemicals.



Downstream of Norbury Bridge

The RB of the river was grazed by agricultural stock (no fences were present), with some localised bank erosion visible. The LB was densely tree lined, with consequent light/moderate shading of the channel. There were extensive stands of water crowfoot *Ranunculus* Spp., particularly on the extensive gravel shallows. These provided

abundant spawning and juvenile habitat for brown trout *Salmo trutta*, grayling *Thymallus thymallus* and increasingly Atlantic salmon *Salmo salar*.

The banks of this reach of the river were partially reveted in the past using local stone, presumably as part of the operation of the downstream mills. Much of the revetment has fallen into disrepair and been eroded away. However, some sections remain in place. Instream habitat along the reveted sections of the river was dominated by a mix of shallow and deep glides with moderate flow velocity. These areas provided abundant habitat for adult fish.

Many of the alder *Alnus glutinosa* trees along the bank appeared to have *Phytophthora*, a waterborne fungal disease that will eventually result in the death of many individual trees. The LB remained more heavily treed than the RB, with grazing pressure here restricting the tree growth to small numbers of mature alders.

A small tributary stream entered the main river on the LB. This had a substrate dominated by heavily compacted gravel. It was also heavily shaded by bankside trees.

Further downstream on the main channel, there was an abundance of water crowfoot. There were significant areas of eroding bank, with the erosion exacerbated by grazing pressure from agricultural stock. In at least two locations, the eroding banks were being used by breeding sand martins.

Derbyshire Wildlife Trust (DWT) has just embarked upon a 3-year project funded by the Sita Trust and the Tubney Charitable Trust to improve wildlife habitats in the River Dove catchment and are logging the presence of species of conservation interest including sand martins. They are also undertaking a water vole recovery project (<http://www.derbyshirewildlifetrust.org.uk/index.php?section=watervole>) by actively trapping mink *Mustela vison* using rafts and cage traps, with the assistance of angling clubs. If Norbury Fishing Club are not already involved, they can contact Charlie Horsford of DWT on 07967 192911 for advice. DWT are also undertaking practical habitat improvement projects and may be able to assist with delivery of the recommendations in this report.

A considerable amount of habitat improvement work has been undertaken by Birdsgrove Fly Fishing Club on their reach of water upstream of Norbury Fishing Club. This resulted from a WTT advisory visit, with much of the work was funded by the Environment Agency via the Fisheries Project budget.



Sand martin breeding colony in a section of eroded bank

Maize had been planted in a number of LB fields. Adequate grass buffer strips (8-10m wide) had been left alongside these fields to minimise the risk of excessive run-off of fine sediment into the river. There were significant stands of Himalayan Balsam *Impatiens glandulifera* present along the length of the fishery. This introduced alien species can be a significant problem, dominating and shading out other riparian vegetation. It dies back completely during the winter period, resulting in sections of bare banks, very vulnerable to erosion by high flows.

There were some significant pieces of LWD present throughout the middle/lower fishery. These had been retained by the club and were providing not only excellent areas of cover for fish and invertebrates but were also acting to scour the substrate, thus increasing habitat diversity.



LWD in the Dove. Note the milky hue to the water.

The tree growth alongside the river generally provided a good mix of ‘dappled shade’ across much of the channel. However, in the short sections of the channel that were more shaded, the growth of water crowfoot was clearly reduced. The relatively deep incision of the channel (approximately 2m) also provided a degree of shading to marginal areas of the river.

A key issue of concern to the club is the practice of agricultural muck spreading and slurry injection that takes place in LB fields along approximately 800m of the middle/lower fishery. There is a real concern that the potential for nutrients to leach into the river as a result of these operations may result in an increased growth of benthic algae. Recent research has suggested that this may reduce spawning success, particularly in grayling.

The middle/lower reaches of the fishery had been particularly badly affected by sheep grazing. As grazing has weakened the sward and damaged the banks, increased amounts of erosion have taken place, resulting in significant loss of land. On one bend for instance, up to 8m of bank have been lost over the past 10 years.



Significant area of erosion of the inside of a bend

At Rocester weir, there are two key issues. The firm JCB have an aspiration to abstract a larger volume of water along a RB mill leat in order to generate electricity from low head hydropower. The Environment Agency are examining the application with view to imposing suitable 'hand off flows' to protect the ecology of the main River Dove.

The Environment Agency also wishes to install a fish pass in Rocester weir in order to improve upstream passage for migrating salmon. The Norbury fishing club has a number of concerns regarding this proposal, mainly centred on the potential for ingress of coarse fish into their fishery.

3.0 Fish Stocks

The Dove holds good stocks of wild brown trout. In addition, the club stocks approximately 600 farm origin brown trout of between 1lb –1.5lb annually.

There are excellent stocks of grayling in the reach, with individual fish in excess of 1kg present. Club members are increasingly operating a voluntary policy of 'catch and release' for both species. The Environment Agency has removed (and subsequently returned) small numbers of grayling from Norbury in the past, in order to provided broodstock for its Calverton fish farm. Both grayling and trout were noted in the river, with fish rising to take flies in some locations.

An increasing number of Atlantic salmon are migrating up the River Dove. As fish passes are provided at major obstacles to migration, it is expected that numbers of fish will increase further.

The Trent Rivers Trust (<http://www.trentriverstrust.co.uk/>) and Environment Agency have introduced considerable numbers of salmon parr to the River Dove downstream of Rocester Weir since 1998. Adult salmon have been returning to the river since 2001 and natural recruitment was first recorded in 2003. All salmon parr upstream of Rocester weir are the result of natural recruitment, and it is important these are handled carefully and returned if caught as they have a significantly greater chance of surviving to adulthood compared with stocked parr.

Norbury weir presents a virtually impassable barrier to migrating salmon, as well as to trout and grayling that also undertake more limited upstream migration at spawning time. The weir has a steeply sloping face with fast, shallow water, and a crest with an elevated lip. Observations of migrating salmon show that at low to moderate flow they can swim up the face of the weir, but cannot pass the lip; at flows sufficient for the lip to be drowned out, the salmon have difficulty swimming against the speed of flow on the face of the weir. Hence there is a very limited window of opportunity for salmon to pass this obstruction and this is reflected in the very small number of salmon parr caught on EA electric fishing surveys upstream of Norbury weir.

The accumulation of adult salmon in Norbury weir pool at certain times of the year is undesirable in terms of both restricting the access of salmon to good spawning habitat upstream, and in attracting unwanted attention from poachers. The lack of upstream access will also restrict brown trout and grayling spawning opportunities and lead to a diminished population of these species in this reach of the river.

Predation by piscivorous birds (cormorants and goosander) has been a significant issue on the River Dove in recent years. Clubs in the Norbury area have obtained a licence to shoot a limited number of birds as an aid to scaring, and it is understood that the Norbury Fishing Club keeper participates in this. The introduction of large woody debris is also an effective way of reducing the foraging efficiency of these birds and increasing survival of juvenile trout, grayling and salmon.

4.0 Recommendations

- In sections where increased pressure from agricultural stock has cause excessive bank erosion, stock proof fencing should be erected. Ideally, an ungrazed buffer of 10m should be created between the new fence line and the existing bank. This will both allow the development of coarse grasses and emergent vegetation that will slow down the rate of erosion, and will optimise detention of fine sediment from surface run-off. If it is not possible to create a 10m buffer strip, then the maximum practical width should be protected.
- There was a moderate amount of LWD in the river. Retention of as much timber that falls into the river as possible is a good policy. In addition, deliberately felling individual trees and anchoring them into the channel would further increase the amount of LWD present in the channel. Particular benefit would be obtained by felling trees onto the relatively uniform sections of shallow gravel riffles, where the

consequent scouring of the bed would increase the availability of spawning and juvenile habitat. Introduction of LWD would also provide valuable cover for fish from avian predators.

Fixing of timber in the channel can be achieved in a number of ways. The simplest involves wiring felled trees to the remaining stump on the bank, and stabilising the outer limbs of the trees in the water using wooden/metal stakes driven into the bed. Where appropriate, trunks can be drilled through and high tensile wire passed through in order to create a firm fixing. Similarly, lengths of 20mm-25mm diameter reinforcing bar can be driven through pre-drilled holes into the riverbed in order to hold trunks in place. Where possible, trees to be felled should be only cut through for 75% of their diameter and then 'hinged' into the river. This 'laying' technique maintains a firm fixing to the tree stump and in many cases, allows the tree to continue growing. The dying alder trees will provide an abundant supply of 'donor' LWD.

It is of the utmost importance that the Environment Agency is contacted prior to the introduction of LWD into the river, both to ascertain whether Land Drainage consent is deemed necessary and also to ensure that they do not remove the LWD during subsequent routine management operations.

- In reaches where the alder trees are dying, it would be prudent to consider undertaking some local replanting in order to replace them. All trees planted will require protection from rabbits (tree guards) and where appropriate, from agricultural stock. Suitable species include ash *Fraxinus excelsior*, and goat willow *Salix caprea*.
- The tributary stream entering joining the Dove on its LB in the upper fishery appeared to provide potentially good spawning and juvenile habitat for trout. Selective coppicing would not only reduce shading of the channel, but would also provide abundant LWD that could be introduced into the channel in order to increase scour of the shallow gravel areas. This would help to loosen the presently very compacted gravel, improving the opportunity for successful trout spawning and incubation of deposited eggs.
- 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 club to undertake limited control of the large stands of balsam present in some areas of the fishery. 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.

- Concerns regarding the disposal of slurry and agricultural muck along the banks of the fishery should be addressed with the Department of Environment Food and Rural Affairs. (DEFRA). Under the terms of the Single Farm Payment, each farming enterprise must adhere to certain 'cross compliance' conditions. These include, amongst others, soil conservation plans. If cross compliance measures are not

achieved, then DEFRA has the power to withhold some/all of the Single Farm Payment. In the first instance, Tim Jacklin (WTT conservation officer) has suggested that you should approach Bob Marsden who is the Catchment Sensitive Farming Officer for the River Dove. Officially, Bob's area of responsibility ceases at the Manifold/Dove confluence. However, he should be able to put you in touch with the appropriate DEFRA officer and should also be able to provide independent expert advice about the best way to tackle this issue. Bob's number is 07901 957124.

- Additional funding for some of the work recommended might be forthcoming from the Wild Trout Trust who hold small 'pump priming' pots of money for projects of this nature. The Trust also operates a 'Practical Visit' scheme whereby a river restoration specialist undertakes up to 2 days work at the site in order to demonstrate techniques that are suitable to address the issues raised in this report. Contact the Tim Jacklin of the WTT at projects@wildtrout.org at for further details. Other potential funding sources include the Environment Agency or the Sharegift charity. This is a charity that collects unwanted share allocations and donates the profits to smaller groups undertaking a variety of work. Contact them at <http://www.sharegift.org/>
- The proposal to abstract water at Rocester has the potential to cause significant damage to the ecology of the main River Dove if adequate provision is not made to protect both the flow rate, and passage of fish through any turbine installed. Tim Jacklin of the WTT has dealt with this application in detail and should be able to offer advice to the club regarding positive input into the consenting process for the proposed scheme. Contact Tim on 07876525457.
- With regard to the concerns raised regarding the proposed fish pass at Rocester weir, it would again be worth contacting Tim Jacklin for a rounded and objective view of the scheme. Empirically, the club's concerns regarding ingress of coarse fish do not seem valid. The Uttoxeter club who occupy the fishery immediately below Norbury, have good stocks of trout and grayling and do not seem overly concerned regarding coarse fish numbers in their reach of the river (see recently undertaken advisory visit on the WTT website www.wildtrout.org). The composition of species in a given reach of river is a product of the gradient, width and flow of the river and their effects on habitat. Rocester weir is not a particularly significant barrier to fish at elevated flows and could be passed by coarse fish such as barbel and chub; these species would already be present in the Norbury reach if the habitat were suitable for them, but they are not because the habitat favours grayling and trout.
- The club should support Environment Agency and Trent Rivers Trust efforts to improve fish passage at Norbury weir to benefit salmon, trout and grayling populations in the River Dove. Simply removing part of the lip on the crest of the weir to concentrate flows at a given point would be a good start and would improve the prospects for migrating salmon.
- It would be useful if the club contacted Derbyshire Wildlife Trust to discuss the recommendations in this report and how they could dovetail with DWT's aspirations for the Dove catchment. Sending a copy of this report to Helen Perkins (HPerkins@derbyshirewt.co.uk) would be a good first step. Charlie Horsford of DWT may also be able to advise on mink trapping and practical implementation of the habitat improvement recommendations.

- Similarly, the club might benefit from contacting Desmond Anley of Birdsgrove Fly Fishing Club to discuss the work carried out on their stretch of the Dove , and arrange a site visit. Mr. Anley is a friend of Mr. Tim Clowes, the owner of some of Norbury Fishing Club's water, so could be reached through him.

- The club should also consider undertaking some basic monitoring of macroinvertebrate populations in the river. This involves taking a series of three minute 'kick-samples' of the riverbed. A fine meshed net is placed on the bed of the river, which is then disturbed using the sampler's feet for a total of three minutes, sampling all habitat types in proportion to their abundance in the channel. The samples are then placed in a labelled container (they can be preserved with alcohol if required for future sorting).

Samples are then subsequently sorted into invertebrate families. Each family is assigned a score under a system known as the Biological Monitoring Working Party (BMWP) with the highest scores reserved for the most pollution sensitive families. Scores for all families are then added together, to give a total for each sample taken. This score can then be compared to a predicted score based on elevation, geographic location, gradient, and general habitat of the site. Deviation of the sample from the predicted score would be indicative of a water quality or perhaps flow, perturbation. Further details of 'DIY' sampling strategies can be obtained from the Riverfly website at <http://www.riverflies.org/> Suitable nets for sampling macroinvertebrates can be obtained from Alana Ecology www.alanaecology.com Tel: 01588 630173

- Where possible, fishing should be undertaken by wading, reducing the need for extensive bank management in order to allow access for angling.

- 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.

- 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