Advisory Visit

River Dove, Ludwell Farm

19th June, 2010

1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the upper River Dove, on 19th June 2010. Comments in this report are based on observations on the day of the site visit and discussions with Gary Walker of Leek & District Fly Fishing Association (inc. Sheffield Trout Anglers, Est. 1893) and Andrew Heath (Trent Rivers Trust).

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Catchment / Fishery Overview

This section of the River Dove is located in the upper catchment upstream of Hartington. The river forms the boundary between Staffordshire and Derbyshire and is located on the edge of the White Peak area of the Peak District National Park. The river here also forms an approximate boundary between two distinct areas of geology, the left (Derbyshire) bank being Carboniferous limestone and the right (Staffordshire bank) being gritstone and shales.

This section of the Dove is located from Ludwell Farm (National Grid Reference SK115624) upstream to Pilsbury Castle and has long been fished by Sheffield Trout Anglers (STA). This year, STA merged with Leek & District Fly Fishing Association (LDFFA) which also has the fishing immediately upstream to Bridge End Farm, Crowdecote (SK102649). LDFFA (inc. STA) has around 160 members and continued STA's policy of introducing annually 100 takeable trout to this section (downstream of Pilsbury) this season; these fish were infertile triploid brown trout.

Wild brown trout are present here, along with a small population of grayling. Other fish species present include bullhead and brook lamprey, the latter in large numbers as recorded by the author during Environment Agency electric fishing surveys.

Land use has a great influence on rivers. The land use surrounding this part of the Dove is largely grazing and grass production for livestock. A large

part of the surrounding land is in agri-environment schemes – see the map in Appendix 1.

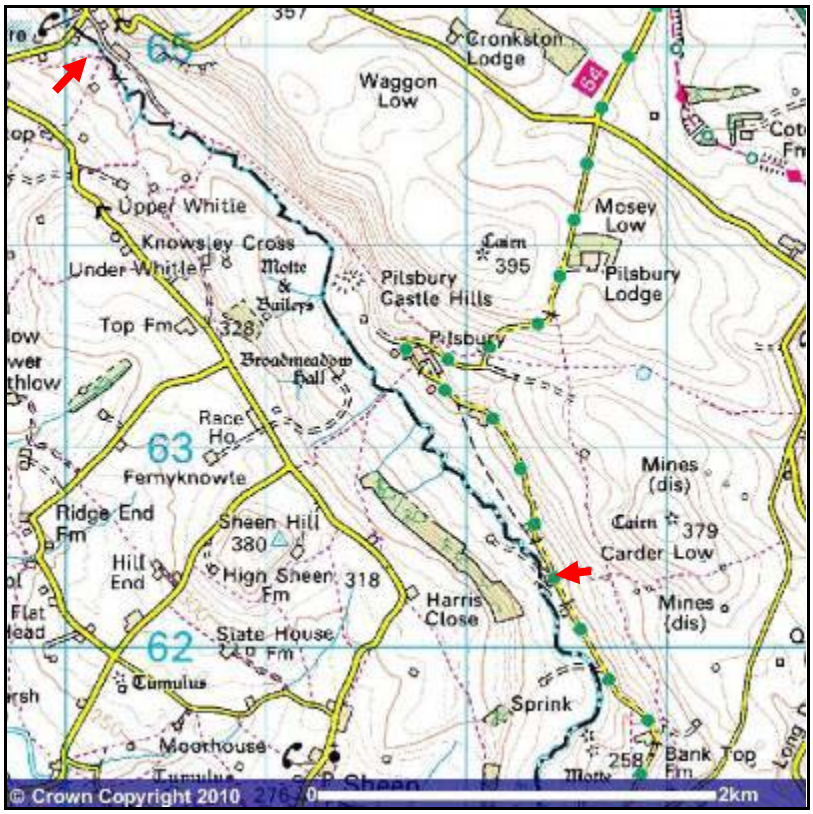


Figure 1 Location showing approximate upstream (north) and downstream boundaries

Land use Land on the Staffordshire bank (RB) of the River Dove is included in the South West Peaks Environmentally Sensitive Area (ESA) scheme. The majority of the agricultural land is designated as ley grassland, enclosed permanent grassland or permanent rough grazing. On the left bank of the river some of the land is in Countryside Stewardship and includes areas of traditional hay meadow and traditional pasture; there are also some excellent wet flushes at the base of the valley sides which provide superb riparian habitat.

This section of river has been affected by sheep dip pollution (synthetic pyrethroids or SPs) in the past (late 1990s). The author was involved in restoring the mayfly (*Ephemera danica*) population following this problem.

3.0 Habitat Assessment

The river is impounded by a weir adjacent to Ludwell Farm. Head loss over the weir is approximately 2 m, with the upstream channel width some 4-5m. The backwater effect of this structure affects approximately 350m of the river upstream, with a significant detrimental impact on in-stream habitat; flow velocity is low, the depth generally shallow and the bed covered with deposits of fine sediment. The weir is also a considerable barrier to the free movement of fish such as trout and grayling which need to access different habitats at different times in their life cycle; for example, spawning, feeding, refuge and over-wintering habitat.

As the backwater effect of the weir diminishes with progress upstream, a pool-riffle sequence occurs and the true nature of the river bed can be observed (Photos 3, 4). The hard bed is composed largely of unsorted alluvial shale gravel, with a large volume of entrained fine sediment present (Photo 5). The river is moderately shaded by riparian trees, particularly alder *Alnus glutinosa*, the submerged root structures of which provide valuable refuge habitat for fish (Photo 4). Many of the alder trees had infections of the mould *Phytopthora*, with some trees in the advance stages of die back.

Further upstream, there is overgrazing of sections of the river by livestock. This has caused the loss of valuable fringing vegetation, and localised erosion of the riverbank. In some locations, previously erected fences are now redundant due to localised erosion. It is likely that these fences were erected too close to the water's edge in order to maximise the area of grazing land; as a consequence, the development of coarse vegetation with strong root systems, capable of binding banks together, has not been possible (Photo 7).

Where the grazing is less intensive, the banks of the Dove are well vegetated; there is some excellent riverside vegetation in places, including wet, spongy margins with wetland plants (Photos 9, 10). Beyond the influence of the weir, good examples of the rivers response to geomorphological processes are apparent, including well developed pool-riffle sequences, the presence of un-vegetated point bars and a meandering planform. Despite this, riffle areas remain relatively uniform, with imbedded, poorly sorted gravel dominating the substrate which does not favour successful trout spawning (Photo 6). The undifferentiated nature of

the riffles is largely due to the general lack of Large Woody Debris (LWD) in the channel.

There are one or two areas with better gravel substrates which are more suitable for spawning. These should be protected from livestock access; there is evidence of this starting to occur on one of the best examples (Photo 8).

The river was very low at the time of the visit following several weeks without substantial rainfall. Despite this it was evident that much of this section is shallow and lacks deep pool habitat. Refuge habitat is also sparse, and limited to submerged tree roots. LDFFA have noticed that small trout are relatively scarce in the section below Pilsbury compared with the section at Crowdecote, and catches in the former section tend to comprise low numbers of larger fish.

During the visit, two broods of goosanders were observed on the river. Predation pressure from these birds (and other sources such as herons, mink, and otter), in combination with the general lack of depth and refuge habitat could easily explain the dearth of small fish.

Photo 1 Weir adjacent to Ludwell Farm

Photo 2 The impounding effect of the weir produces a slow-flowing, shallow, silty channel for a considerable distance upstream – not good habitat

Photo 3 The accumulated fine sediments as a result of the weir can be seen at the point where the backwater effect diminishes – a shelf of sediments is visible where the river is cutting down into them.

Photo 4 Further upstream, beyond the backwater effect of the weir, more natural river habitats are evident which favour wild trout, such as riffles and pools with submerged cover like alder roots.

Photo 5 On riffles, the river bed is comprised of fine shale and gritstone gravel, but with high levels of entrained fine sediment

Photo 6 Point bars and riffles tend to be relatively unsorted, fine shale which is not conducive to good spawning for trout or grayling.

Photo 7 In some areas an insufficient margin has been left between stock fences and the river, resulting in grazing pressure exacerbating erosion and the loss of the fence.

Photo 8 A relatively rare (for this stretch) good riffle habitat is threatened by livestock access from the left bank.

Photo 9 A superb example of how sensitive land use produces an excellent riparian zone alongside the river which consolidates the banks, provides fringing vegetation cover, protects water quality from run-off from the land, and buffers flows by acting as a "sponge".

Photo 10 A wet flush at the base of the valley slope provides some excellent riparian habitat and contrasts with the grazed field in the foreground.

In the reach upstream of Pilsbury, the gradient of the river increases noticeably. The substrate comprises more bedrock, with outcrops forming natural weirs. As a consequence, the pool-riffle nature of the river becomes even more apparent, with small pockets of gravel suitable for spawning trout present at the tails of the pools. Generally the in-stream habitat in the reach upstream of Pilsbury is very good.

The channel is moderately shaded in places due to the canopy of alder branches, with the extensive alder tree root systems providing valuable instream cover for trout, and the shade helping to keep water temperatures cool in low water, summer conditions.

Some tree management has been sensitively carried out by LDFFA in the form of coppicing; this has been undertaken in conjunction with Trent Rivers Trust (and formerly the EA) on the section of river downstream of Bridge End Farm. This has reduced channel shading in some areas, promoting the growth of fringing marginal vegetation. Re-growth of the coppice stools is occurring and is generally strong. New fencing has been installed on sections of the river here which has helped to protect the coppice re-growth and allow fringing vegetation to develop. Sections of the right bank remain un-fenced and some bank poaching by cattle is still occurring here.

A significant point source of fine sediment is located on the left bank downstream of Bridge End Farm where a narrow track provides access to the river for cattle. This has been recognised as a problem for a number of years and recently an agreement has been struck between LDFFA and the farmers involved to provide an alternative mains-fed drinking area away from the river. Cattle access has been restricted, although the track remains heavily poached and covered with faeces. This area should be monitored to ensure the situation does improve as a result of the agreement, and maybe further steps considered such as diverting rainfall run-off from the track into a soakaway in the field.

Photo 11 Track on Left bank below Bridge End Farm which is the subject of a recent agreement to reduce fine sediment run-off.

4.0 Recommendations

- The greatest influence on this section of the river is the weir at Ludwell Farm. It is recommended that this structure is removed and the river upstream allowed to re-grade. The accumulation of fine sediment upstream of the weir is a potential problem, and releasing it in one go by removing the weir could affect downstream sections of river. It is recommended that the removal is done in stages, lowering the crest of the weir by about one third of its height each year over three years, until the natural bed level is reached.

  Large woody debris structures should be installed in the channel upstream of the weir to moderate the effect of its lowering; these should provide checks to slow the re-grading of the river bed.

  Discussion between the owner of the weir, LDFFA and Trent Rivers Trust should be held to explore the possibility of weir removal and potential costs. There do not appear to be any abstractions dependent

upon upstream water level, but this should be determined as part of a feasibility study. Funding for a weir removal project may be available from bodies seeking to achieve targets for Good Ecological Status under the Water Framework Directive (e.g. the Environment Agency).

- Riparian habitat should be protected from grazing livestock. There are some excellent examples along this reach of river where this has been achieved through sensitive land use (hay meadows) and limited grazing pressure, without resorting to fencing the river; these areas are in the Countryside Stewardship scheme.

  However in other areas, grazing of the bankside is a problem affecting the quality of the river habitat. The author previously (2005) attempted to install fencing (when working for the Environment Agency) in the field on the left bank which is grazed by cattle, but could not secure the support of the Peak District National Park Authority. PDNPA considered the fencing would be visually intrusive and the project was postponed pending the result of this land being managed with reduced livestock levels in the new CSS agreement. The situation does not appear to have markedly improved in the intervening years.

  More recently, riverside fencing has been carried out in a number of locations on the Dove and Manifold by the Trent Rivers Trust (TRT), and this work has been funded by DEFRA in recognition of the impact of livestock on riparian habitats. For example the section downstream of Ludwell Farm has recently been fenced and included in the Peak Passport angling scheme.

  It is recommended that LDFFA liaise with the landowners on the banks which are grazed to explore the possibility of achieving a more sensitive grazing regime alongside the river. This could be achieved using options under the various agri-environment schemes available in this area, in combination with sensitively located fencing schemes (e.g. at the break of slopes where it will not be too visually intrusive). LDFFA should make use of TRT's good local contacts to facilitate this.

- Instream habitat should be improved through the use of large woody debris (LWD) in various forms. The aims should be to create localised

scour to deepen parts of the channel and to provide cover for fish from predators.

The introduction of tree trunks, branches and root wads sourced on site (through tree coppicing) or imported from elsewhere will achieve these aims, and have been carried out in association with the Wild Trout Trust on other LDFFA waters (e.g. River Hamps, Dove at Dovedale). The principles of LWD positioning described in the previous advisory visit report on the Hamps for LDFFA are also applicable here.

Photo 12 Installing LWD on the River Hamps

The use of soft bank revetment techniques is recommended for areas where bank erosion is occurring (e.g. Photo 7). These techniques have been used successfully on the River Manifold and have also

provided valuable marginal cover, promoting a notable increase in the numbers of small trout. Ideally these techniques should be carried out in conjunction with riparian fencing to stabilise the river bank and prevent livestock damage.

Photo 13 Soft revetment using brushwood on the River Manifold – this has provided excellent marginal cover for small trout as well as for riverfly species such as the southern iron blue.

- If trout stocking is continued by LDFFA then it should continue to be with triploid trout to avoid any interbreeding with wild fish which will depress the numbers of the latter.
- It is a legal requirement that all the works to the river require written Environment Agency (EA) consent prior to undertaking any works, either in-channel or within 8 metres of the bank.

5.0 Making it Happen

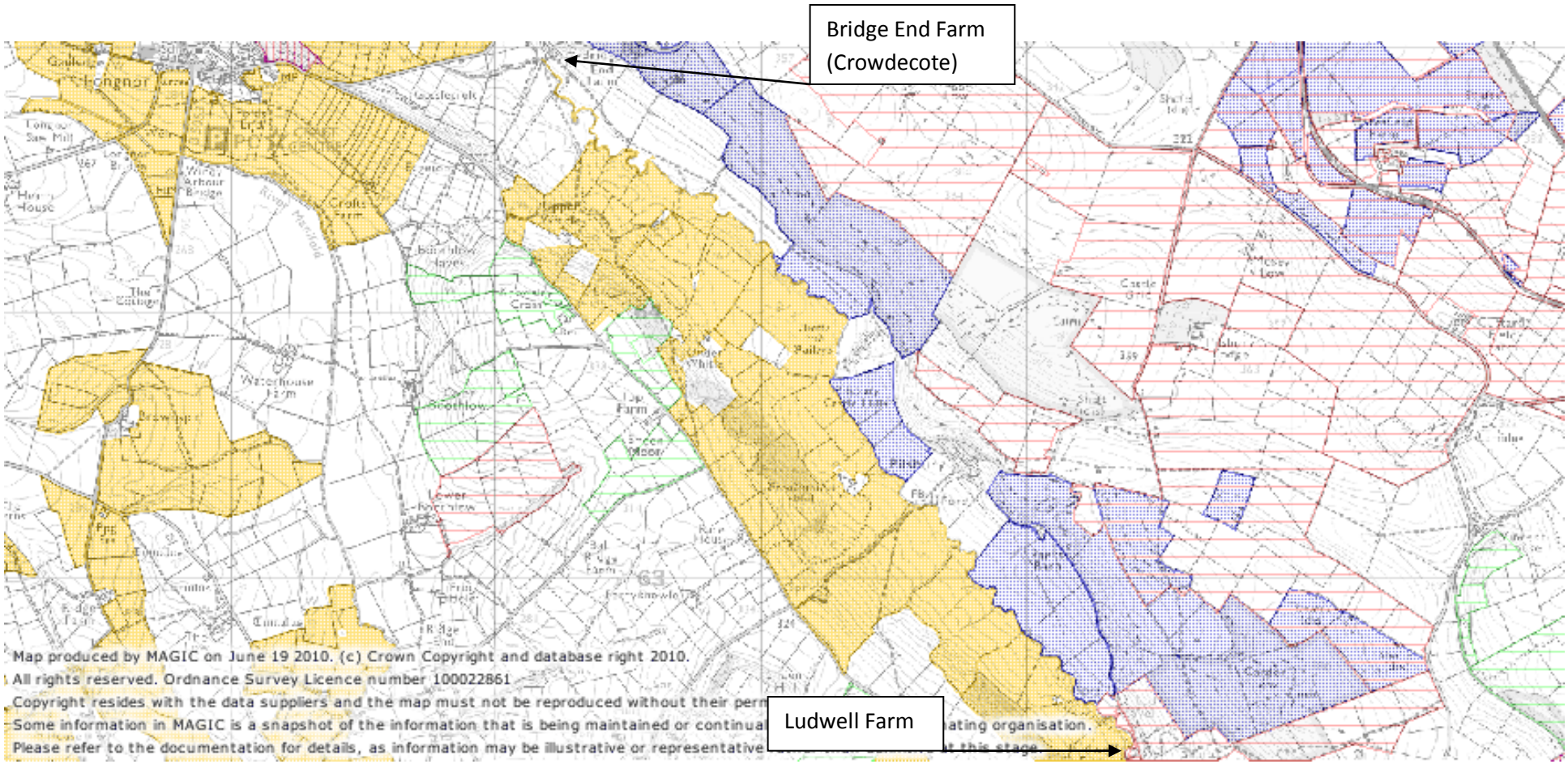
The ongoing work of Trent Rivers Trust and the Wild Trout Trust on the upper Dove catchment provides an opportunity to take forward the above recommendations. TRT and WTT can provide support and assistance in implementing in-stream habitat improvements through Practical Visits in association with club working parties. Riparian habitat improvements involving fencing and agri-environment schemes could be taken forward in conjunction with TRT. The weir removal project could be taken forward with assistance from TRT and WTT and if agreement can be brokered with the landowner, then a proposal for funding could be put together and an approach made to potential funders such as the Environment Agency. LDFAA should be willing to make a reasonable financial contribution towards any of these partnership projects.

6.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for the support which made this visit possible.

7.0 Disclaimer

Appendix 1



Map from Magic website (http://www.magic.gov.uk/website/magic/opener.htm?startTopic=magruralland&xygridref=411089,363661&startScale=25000) showing the environmental stewardship schemes applying to land alongside the River Dove upstream of Ludwell Farm. The light brown shading is Environmentally Sensitive Area (ESA) scheme; the blue stipple is Countryside Stewardship Scheme; the horizontal red hatch is Entry Level Stewardship (ELS); and the horizontal green hatch is Higher Level Stewardship (HLS).