



## River Lyde – Manor Farm



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

## 1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Lyde at Manor Farm. The advisory visit was undertaken at the request of Mr. John Lewin on behalf of his father, Mr. Colin Lewin who is the owner of Manor Farm. Comments in this report are based on observations on the day of the site visit and discussions primarily with John and Colin Lewin.

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

Rising from chalk aquifer near Mapledurwell and old Basing in North Hampshire, the River Lyde is a delightful chalkstream tributary of the River Loddon. The Lyde is approximately 8km in length and joins the Loddon about 1km upstream of Sherfield on Loddon. The Manor Farm beat is approximately 1km in length and lies roughly in the central section of the river.

The Lyde is a true chalkstream and along with the Loddon and Whitewater form a network of north Hampshire chalk rivers. Although these streams are not as famous by reputation as some of the larger Hampshire chalkstream fisheries, they are, none the less, extremely valuable and productive.

The Lyde has been assessed as having excellent quality water and is rated as class A under the Environment Agency's General Quality Assessment. Abstraction pressures are mainly confined to a non consumptive abstraction supplying water for the Andwell Mill Trout Farm. Under the EA's Catchment Abstraction Management Plans the Lyde has been identified as a river with surface water potentially available for abstraction, unlike the Whitewater which has been identified as a river that is over abstracted. Fortunately the chalk aquifer that drives the Lyde has been identified as one requiring protection from any further licensed abstraction in recognition of its importance for maintaining sites of high conservation value. Small chalk streams can be particularly vulnerable to local groundwater abstractions so the EA's policy of not issuing any further licenses for groundwater abstraction is good news for the Lyde.

For much of its length the river displays the classic chalk stream characteristics of clear water, low soft margins and an abundance of in-channel macrophytes dominated by water crowfoot (*Ranunculus* sp.), starwort (*Callitriche* sp.) and water moss (*Fontinalis antipyretica*). As with most chalk rivers the channel is heavily modified and in-channel habitats are extensively influenced by various structures and milling impoundments found throughout its length.

The Lyde is noted for supporting good numbers of wild brown trout (*Salmo trutta*) as well as other Biodiversity Action Plan (BAP) species including bullhead (*Cottus gobio*) and brook lamprey (*Lampetra planeri*). Some coarse fish species are also present further down the Lyde near to the Loddon confluence. Historically the Lyde also supported strong populations of the native white clawed crayfish (*Austropotamobius pallipes*), which have unfortunately given

way the non native signal crayfish (*Pacifastacus leniusculus*), now present throughout the Lyde in large numbers.

Although the Lyde does support good numbers of wild trout, stocking does take place on some sections by landowners and fishing clubs wishing to augment the number of trout present. Trout stocking will be discussed later in the report.

### **3. Fishery overview**

The Manor Farm fishery extends for approximately 1km and runs from the upstream boundary at the railway bridge (National Grid Reference SU695 534) down to just above Lyde Mill (SU695 540). The fishery has been in the ownership of the Lewin family for approximately ten years and has been largely unmanaged in fishery terms and only very lightly fished. The family is very keen to manage the whole estate in a manner that is compatible with nature conservation and are keen to develop and improve the fishery potential of the river.

### **4. Habitat assessment.**

Two local features have had a big impact on in-channel habitats for trout within this section of the Lyde. Firstly, the impounding impact of the Lyde Mill, which lies just downstream of the bottom boundary and, secondly, what looks to be post war drainage works, which have adversely impacted many rivers in the area.

The lower section of river looks to have been diverted and perched above its natural level in order to promote extra head for milling power. This impoundment is thought to be ancient and references can be found of a mill on the Lyde in Newnham dating back to 1086. During the 17<sup>th</sup> century there were apparently no fewer than five mills operating on this river. The legacy is of a comparatively deep, slow flowing channel (not good trout habitat) in the section upstream of the Lyde Mill, which extends well up into the Manor Farm beat.

This section of the Lyde also appears to have been heavily dredged, probably during the early post war years in the drive for intensification of agriculture. The result is a channel devoid of any significant morphology which would normally result from gradient induced water velocity. The oversized channel and uniform planform is further compounded by the 'backing up' effect of the milling structure. The result is a long section of fairly wide and deep channel, with large deposits of settled sediments. Where the channel is open to direct sunlight, dense beds of marginal emergent plants, dominated by bur-reed (*Sparganium* sp.) and reed sweat grass (*Glyceria maxima*) have grown right across the channel in places.

Thick stands of emergent vegetation can provide excellent habitat for a range of bird and invertebrate species. The plants also help to protect soft margins from erosion and act as natural current deflectors. They often pinch the channel and locally increase mid channel water velocities. This in turn helps to maintain a clean gravel river bed. Unfortunately the position of some of these plants,

growing in the central areas of the river, rather than the marginal fringes, also promotes further deposition of sediments.



A wide channel with "marginal" bur-reed growing in the centre of the channel. Note the high opposite (LB) bank, probably a legacy of post war dredging and the dense alder shading on the downstream section.

Many chalk stream fisheries are often too enthusiastically managed in terms of tree clearance, weed cutting and hardening of naturally soft margins and banks. The Manor Farm beat is unusual in that there has been virtually no bank or in-channel maintenance for many years. Some sections are virtually devoid of any tree cover while other sections are densely shaded, mainly by alder (*Alnus glutinosa*), some of which had been coppiced many years ago. Various species of willow (*Salix sp*) and sycamore (*Acer pseudoplatanus*) as well as a plantation of what looked to be poplar trees also provided considerable shading.

Some shading of the channel is very welcome. The overall aim should be to achieve 'dappled shade' (about 60% shade / 40% light is generally a figure to aim for). There should not be a prescriptive approach to achieving this balance and having some long shaded sections and some further lengthy reaches devoid of tree cover is perfectly acceptable.

Large individual trout, like some other predatory fish species, often thrive under a little bit of benign neglect! The lack of active management coupled with the presence of the substantial signal crayfish population (on which larger trout are known to predate) might suggest that the Manor Farm beat could hold a low density of exceptional specimens.

For wild brown trout populations to thrive in substantial numbers there is a requirement for access to a range of habitat types suitable for all life stages of the trout. The Manor Farm beat was not short of good quality holding spots for large adult trout. Habitats for spawning and juvenile trout were, however, in short supply apart from one short 20m section at the very top of the beat.



Ultimately this is not a disaster for this fishery because long sections of the Lyde upstream of the railway bridge have excellent spawning and juvenile habitats (shallow riffles over clean loose gravel with shallow margins with associated low scrubby cover). The presence of this habitat a short distance upstream will always ensure that some trout will drop back and find their way into the Manor Farm reach, particularly as they grow bigger and require an individual territory for holding and feeding. That said, it makes sense to put some effort into improving the spawning and nursery habitat at the very top of the fishery to guarantee a constant supply of trout stocks.

Trout egg survival laid down in chalk stream gravels is notoriously poor due to silt infiltration and natural concretion of gravels. Putting some effort into maintaining gravel riffles in good clean condition is discussed further in the conclusion and recommendations section of this report.



Multi branched alder stool – evidence of old coppicing regime



Shallow riffle habitat just below the railway bridge. Potentially good spawning habitat



A leggy willow that will provide better quality habitat if it is subjected to pollard treatment.

## 5.0 Trout stocking

The introduction of hatchery reared trout does take place on some sections of the River Lyde. The amount of fishing effort that is likely to take place on the Manor Farm reach means there is no requirement for trout stocking. Concentrating efforts on improving spawning habitat on the upper section and providing good quality lies on the middle and lower sections will ensure an adequate supply of juvenile trout will always be available to drop back and take up residence. The introduction of hatchery derived stocks can have an adverse

impact on wild stocks through competition, predation and dilution of stock fitness through spawning interactions.

## 6. Conclusions

Big improvements to trout habitat might be achievable through a change in the management of the hatches at Lyde Mill. As this structure is not within the ownership, or the control of the Lewin family, it would be worth trying to establish some contact with the owners and explore options for opening the hatches and reducing the 'holding back' effect. This will reduce the upstream water depth and provide a corresponding increase in velocity, resulting in better habitat for trout. If some stability can be achieved in level control then improvements to in-channel habitats can rapidly establish.

Even without securing any increased water velocity, improvements to in-channel habitat can be achieved through sympathetic tree maintenance, particularly on the lower half of the fishery where the channel is currently heavily shaded. Some of the large woody debris (LWD) materials won from tree works could be usefully used within the channel to promote some local narrowing of the channel and the reestablishment of defined flows on some of the excessively wide and deep sections. Effort should be concentrated on stretches where the water velocity has been lost and sediments have settled right across the bed rather than on the inside of bends or in the margins. Any significant amount of tree work may require a consultation with the local authority.

The presence of LWD has been shown to be extremely important in several respects:

- An increase in the variety of flow patterns, depths and localised velocities.
- Development of high in-channel physical habitat diversity
- Significant benefits to the control of run-off at the catchment scale, as Woody Debris helps regulate the energy of running water by decreasing the velocity. Thus the 'travel time' of water across the catchment is increased resulting in a less 'flashy' regime.

LWD is a general term referring to all wood naturally occurring in streams including branches, stumps and logs. Almost all LWD in streams is derived from trees located within the riparian corridor. Streams with adequate LWD tend to have greater habitat diversity, a natural meandering shape and greater resistance to high water events. Therefore LWD is an essential component of a healthy stream's ecology and is beneficial by maintaining the diversity of biological communities and physical habitat.

Traditionally many land managers and riparian owners have treated LWD in streams as a nuisance and have removed it, often with uncertain consequences. This is often unnecessary and harmful: stream clearance can reduce the amount of organic material necessary to support the aquatic food web, remove vital in-stream habitats that fish will utilise for shelter and spawning and reduce the level of erosion resistance provided against high flows. In addition LWD improves

the stream structure by enhancing the substrate and diverting the stream current in such a way that pools and spawning riffles are likely to develop. A stream with a heterogeneous substrate and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.

If a tree trunk or branch is causing a severe problem then by all means move it but try and retain as much within the channel as possible. This will ultimately mean that some sections of river will be unfishable. The chances are, however, that trout stocks will improve. It is without doubt the simplest and easiest way to promote improved habitat on a stream like the river Lyde. Further advice on this area is available from the Wild Trout Trust.

On those sections of open channel where marginal plants have encroached into the channel it may help to promote some local shade by planting the occasional willow whip, particularly on the outside of any slight bend or where there is potential pool habitat. This will help to break up the habitats into weed dominated runs interspersed with covered holding areas. Thick fringes of marginal plants should be encouraged but where plants become established in the centre of the channel they should be removed and if possible re-planted where they will help form a margin rather than as a collection zone for sediments in the middle of the channel. The strategic positioning of LWD deflectors will also help to promote local scour not favoured by marginal plants thus maintaining some channel definition.

At the very top of the reach there is a shallow riffle that should provide some spawning and nursery habitat. Although some gravel was seen here it did appear to be quite thin and compacted. Initially this section should be thoroughly cleaned using high pressure pumps or a back pack leaf blower to remove as much soft sediment as possible. Ideally this work should be undertaken in October prior to trout spawning season. The natural concreting effect caused by deposits of calcium carbonate will also be gluing some of the bed material together. Breaking this up with fencing spikes or heavy rakes prior to jet washing will help to boost production of trout and other flow and gravel loving species.

If, on cleaning the riffle, there is so much sediment removed that the bed significantly drops to a point where the riffle is lost it may well be worth considering top dressing with imported gravels. These should be sourced from a local pit and be angular flood plain gravels of approximately 15 to 50mm in size range. Occasional larger reject stones are not a problem and will also help to lock the gravels together, increasing stability during high flow periods. Further advice on the creation and introduction of spawning gravels can be found in the WTT Chalk Stream Habitat Manual.

**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.**





Gravel cleaning using a back pack leaf blower. Cleaning gravels on the very top section is recommended

## 6. Recommendations

- Open up a dialogue with the owners of Lyde Mill and find out if there is any scope for lowering the impoundment by removing a board or raising hatches to promote increased upstream water velocities.
- Undertake a programme of early autumn gravel cleaning on the section below the railway bridge. Guidelines for gravel cleaning are attached as an appendix to this report. If the bed level drops too much then consider raising the bed to the original depth to reform the riffle using imported angular gravels.
- Remove marginal emergent plants where they appear in the centre of the river to try and re-establish a defined channel.
- Undertake a programme of sympathetic pollarding and coppicing of willow and alder to preserve the trees, promote dappled light and shade and to provide LWD material to peg into the channel.
- Undertake a programme of tree planting with sallow or goat willow on long open sections of channel to promote some weed free holding areas.
- Do not be tempted to augment the wild stock with hatchery derived fish. With the projected level of fishing effort the river will provide enough wild stocks to provide excellent sport.

## **6. 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**

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programmes.

### **Disclaimer**

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