



River Lark – Bury St. Edmunds Trout Club



An advisory visit carried out by the Wild Trout Trust – December 2010

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on a section of the River Lark in Suffolk controlled by the Bury St. Edmunds Trout Club. The advisory visit was undertaken at the request of the committee who are keen to develop and improve the fishery.

Comments in this report are based on observations on the day of the site visit and discussions with John Lankaster, Mike Mann and Glenn Smithson representing the fishing club. 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 Lark rises in a narrow band of late Cretaceous chalk. It drains northwest to the fens, whereas the majority of rivers rising on this area of chalk drain to the east coast (e.g. Waveney, Deben and Stour), but in common with those rivers the catchment has relatively low rainfall compared to the chalk streams of Southern England, and hence the mean flow rates are comparatively low. Beyond the chalk headwaters, the Lark flows across a surface blanket of material that was deposited during the last half million years.

Long sections of the River Lark, including the reaches controlled by club have been extensively modified in the past to facilitate navigation. Some of the history behind the construction and operation of the navigation can be found on the East Anglian Waterways Association website at: www.eawa.co.uk. Like many navigations constructed during the Industrial Revolution, the Lark navigation became largely derelict with the development of the railways during the late Victorian era.

It is not clear how far upstream the navigation was constructed but the channel, on inspection, appeared to be heavily modified over long sections. Some additional channel re-sectioning and dredging has also been carried out during the post war years for land drainage and flood risk purposes. It is understood that property in the Mildenhall area is still considered to be at risk from flooding which has prompted the Environment Agency to commission a study on flood risk. This has proposed possible solutions that could potentially provide opportunities for some channel and flood plain restoration.

3. Fishery overview

The fishery run by the Bury St. Edmunds Trout club extends to approximately 1 mile of fishing. At the top end of the beat there is a large impoundment and the fishery runs between a network of old gravel pits, with the West Stow Country Park bordering the RB and the club's own still water trout fishery adjacent to the LB.

The river is very lightly fished with most angling activity carried out on the lake. An annual introduction of approximately 150 farm reared sterile brown trout (*Salmo trutta*) are stocked into the river annually to augment catch but it is thought that wild fish now make up a significant percentage of the catch. Trout stocking is discussed in more detail in section 5 of this report.

4. Habitat assessment.

The club's section of the Lark supports some good quality habitat for all life stages of trout, particularly on the bottom half of the beat. The river channel is deeply incised in places but despite this the bed topography is quite varied with a good mixture of shallow pools, glides and riffles. Where the flows quicken over shallow runs there are valuable beds of water crowfoot (*Ranunculus aquatilis*) and water moss (*Fontinalis antipyretica*) present.

Most angling activity on the fishery is undertaken via wading. This has resulted in a relaxed approach to river bank maintenance and allowed some good quality cover for trout to develop. Over long sections of channel there was a good mix of dappled light and shade provided by a mixture of bank-side trees. Shade is an extremely important component of trout habitat and overhanging trees play an important role in regulating water temperatures. Low scrubby trees also provide a refuge from predators and a source of terrestrial invertebrate food items. Root systems also provide great habitats for fish and help to tie in soft soils and protect banks from erosion.

Obtaining a balance between light and shade can be difficult but a good regime to aim for is 60% shading. Some tree planting on the banks, particularly adjacent to the long shallow bottom section is recommended. Goat willow or sallow (*Salix caprea*) provides low bushy growth and good cover over the river margins without growing too tall. Tree planting is also worth undertaking to help control excessive weed growth.

There is evidence of dredging works having taken place in the past. This may be a legacy of the navigation or possibly more recent measures designed to drain adjacent meadows or reduce local flood risk. Despite these works the river has, to some extent, recovered over much of the reach and now appears to have settled down into a sustainable regime. On the more open sections, emergent plants such as reed mace (*Typha latifolia*), sweet grass (*Glyceria maxima*) and branched burr reed (*Sparganium erectum*) have colonised the soft marginal berms, which in turn has pinched the channel and promoted faster water within central channel locations. Managing the marginal emergent plants to help maintain a thick fringe will ensure that central channel locations remain comparatively silt free and therefore ideal for flow loving fish species. The emergent fringe is also an important refuge area for the adult stage of many of the river flies that are a vital component of trout diet and which are crucial for a healthy viable dry fly fishery. Large clumps of emergent plants should be discouraged from forming in central channel locations. These plants will trap sediments, which is extremely valuable in the river margin but on low gradient stretches they sometimes cause a reduction in flow velocity by backing up the water levels, particularly if allowed to colonise in the centre of the channel.

Some recent work carried out by the Environment Agency's Operations Delivery Team further upstream has been unsympathetic to the ecological needs of the river. It is thought the work was carried to combat excessive emergent plant growth on the top half of the fishery. Rather than retain a thick fringe of vegetation in the margins, and ensuring there is a clear channel of faster water in the centre, the entire channel has been scraped out with an excavator. All that has been achieved is to make the channel wider and hence slow down flow, making conditions even more favourable for emergent plant growth across the width of the channel. This is not a sustainable method for reducing flood risk and is enormously damaging to the overall ecology of the river and has made no significant difference to hydraulic conveyance which is limited by the old lock structure located approximately 200m downstream



The top section of the beat where all the plants have been scraped out mechanically, destroying valuable habitat and not achieving an improvement to hydraulic conveyance.

Throughout the reach the river runs through a very rich seam of alluvial gravels. The presence of numerous old pits on both sides of the river valley indicates that gravel is not a scarce commodity. A cursory inspection of river bed material did not suggest that the gravels were excessively compacted or concreted, which can be the case on rivers fed from calcareous ground water. The comparatively flat gradient and low energy of the river however can lead to an excessive build up of soft sediments in the top layers of gravel which can compromise trout egg survival.

Potentially some of the best spawning and nursery sites were located near to the bottom end of fishery. These areas will be particularly important for your downstream neighbours, who may well be benefitting from wild trout production in this area as trout tend to migrate downstream as they mature. Fortunately there were other good spawning and nursery sites located further upstream and a large redd was seen in the section immediately above the old lock cutting. An important aspect of habitat management is to ensure that good quality spawning

habitat is linked up to plenty of available nursery sites for swim-up fry (post gravel emergence) and then for parr (up to yearlings).



Two views of the downstream section which both support good spawning and nursery habitat



A good sized redd on the section above the lock with superb cover for fry located on the shallow shelf under the willow branches.

There was some discussion about tree works that have been undertaken in the old lock cutting. This structure is a very impressive piece of engineering and is likely to have significant industrial archaeological value, although fortunately it no longer functions as a lock as the gates have been removed. A line of trees that were growing from cracks in the brickwork have been cut down removing any significant cover for fish. It might seem strange to suggest that the inside of a lock could provide good quality habitat for trout, but the long shallow riffle that has formed since the gates at the bottom end were removed has potentially created some excellent habitat for juvenile trout. A vegetated gravel shoal has formed a low island within the lock structure and the fringe of live and dead annual plants is providing some superb cover for juvenile fish.

Unfortunately the removal of any vestige of bank-side cover from the LB has severely limited the potential of this section as a whole. Some ideas for mitigating against the loss of trees and suggestions for improving the holding capacity of the reach are discussed in the conclusions and recommendations section of this report.



The old cutting where tree cover has been removed, presumably to protect the integrity of the wall

Upstream of the lock there is some excellent quality spawning and nursery habitat up to the point where the recent dredging/weed clearance work was undertaken. From this point right up to the top boundary the habitat quality for trout and indeed all flow loving species is very poor. The top boundary of the fishery ends at a large weir. No inspection was made of the heavily impounded reach above but the weir looks to be a significant block to any upstream fish migration and will undoubtedly be having a severe impact on habitat quality upstream.

There was some interesting signage adjacent to the river looking downstream from this point describing the wildlife value of the Lark as it passes through the country park. Unfortunately the artist's impression does not reflect the reality, although it does illustrate what the river would look like if restored to good quality habitat. This particular reach is ripe for wholesale river restoration and would be a wonderful project to tackle (see appendix 1).



A partially fallen tree providing fantastic cover on the section just above the lock.



The long straight section – poor habitat for flow loving fish species



The short section immediately below the weir is the only reasonable habitat for flow loving fish for hundreds of metres both up and down from this structure.



The long straight running down from the weir is ripe for wholesale river restoration.

5. Trout stocking.

There was a discussion about trout stocking. The lower section of river certainly has the potential to sustain a viable wild trout fishery. The club will need to consider the implications of stocking farm reared trout into these lower beats to avoid competition for suitable lies. Reducing the instantaneous density created when a large number of fish are stocked into a relatively short section will ensure that more fish (both stocked and wild) are likely to stay within the reach rather than moving off downstream to search for suitable lies. Considerable cost savings with no appreciable loss in returns might be achievable if fewer fish overall were stocked, particularly if the stocking frequency was increased and efforts made to spread the fish out over a longer stretch of river.

There is mounting evidence that interbreeding between domesticated farmed trout and wild fish can lead to lower fitness and survival amongst the offspring, reducing the numbers of river-bred fish in the population. Recent changes to the Environment Agency's National Trout & Grayling Strategy reflect this concern, and by 2015 all farmed trout stocked to rivers will be required to be sterile all-female triploids, or derived from local broodstock.

It is understood that the club are already stocking with sterile fish, which is a sensible move that will provide local Lark wild stocks with the best opportunities for development.

6. Conclusions

The section of Lark belonging to the Bury St Edmunds Trout Club can be broadly divided into two discrete sections. The bottom half of the fishery from just upstream of the old lock to the bottom boundary provides some excellent quality habitat for all life stages of brown trout. Despite some rather unsympathetic work carried out in the lock cut, the rest of the beat has been sensitively managed.

The Lark is a comparatively low gradient/low energy river. As such, most of the river bed gravels tend to be flat and infiltrated with fine sediments. Any measures taken to improve the quality of gravels are likely to have a significant impact on the number of trout eggs that survive to become fry. Boosting spawning success even by a few percentage points is well worth the effort. A programme of autumn gravel cleaning and pegging down sections of large woody debris onto flat shallow glides will help to scour and sort gravels into favourable spawning sites and ultimately boost trout numbers.

When undertaking gravels cleaning, select the tail of shallow glides and break up the crust of the bed with a heavy fencing spike or similar and blow the silt out of the gravel with a high pressure pump or a backpack leaf blower. Cleaning should be restricted to areas of 2 to 3 m² blocks at a time to limit the disturbance to aquatic invertebrates. Work should always be carried out working in a downstream direction to avoid silting up the sections already cleaned. Always consult the local EA Environment Management Team before undertaking gravel cleaning projects where plumes of sediment are likely to be put into suspension.

These and other techniques are set out in the WTT Chalkstream Habitat Manual.

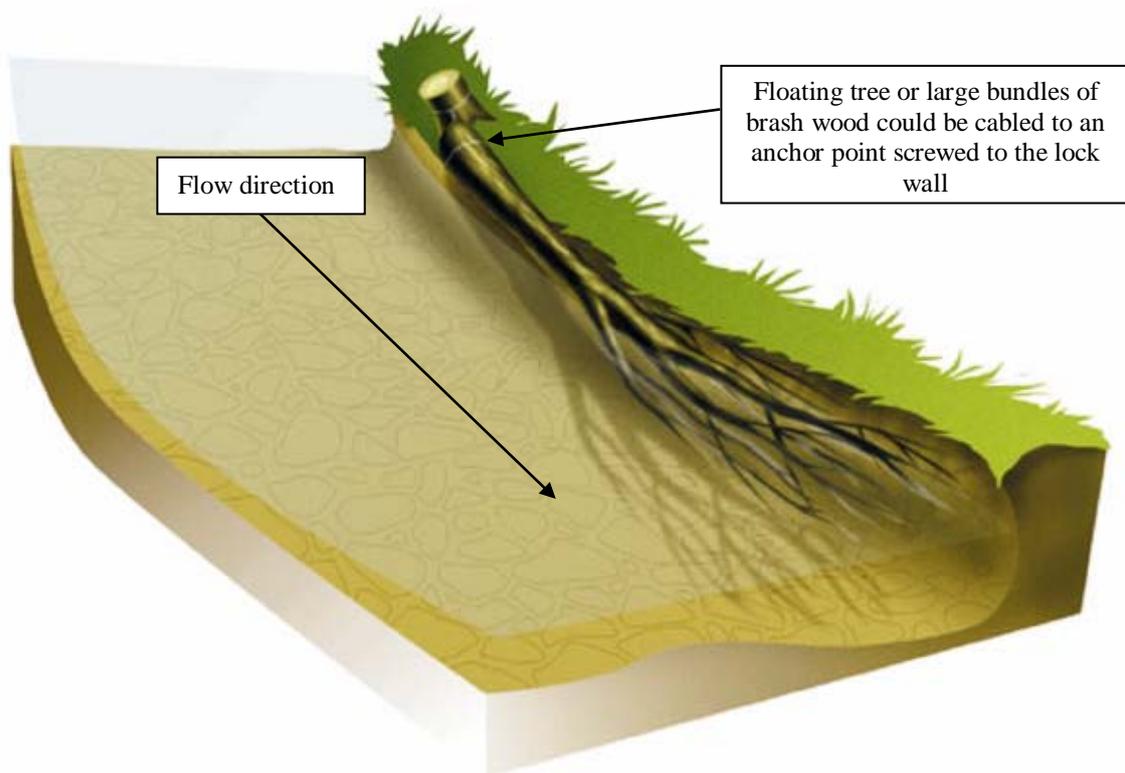


Blasting silt from a likely spawning glide on a small Wiltshire chalk stream



Large woody debris pegged onto a flat gravel riffle.

The provision of more low scrubby cover is desirable on some of the more open sections. The removal of tree cover from the old lock chamber has severely restricted the holding potential of this section. One possible remedy here is to install refuges into the margins by securing small trees or saplings to an anchoring ring screwed to the lock wall. An advantage in adopting this method is that when the river is in spate the "tree sweeper" floats and does not reduce the capacity of the channel for flood flows. If there are sensitivities with regard to flood defence then adopting this technique is often a way of obtaining the necessary consent for providing in-channel cover.



The long straight section of channel on the top half of the beat is in poor condition. The channel looks like a shallow canal and recent works to remove emergent plants has further damaged the ecological potential of this section. This section is ripe for a large scale restoration scheme that would necessitate some radical changes to the current channel width and bed profile. A project of this magnitude will require careful planning and considerable resources. A possible way forward is to approach the EA with a rough project proposal and seek to build a partnership between between the club, the EA and possibly the owners of the country park. This section of river has direct public access, it runs adjacent to the country park and currently requires unsustainable maintenance

works to keep emergent plants from growing in central channel locations. The possibility of creating a self cleansing and ecologically valuable reach of river should make this a high priority site for enhancement. It is suggested that the club seeks to have a meeting with the EA to explore partnership options. The WTT is able to help with a project proposal if necessary. To help kick start this process, this information is contained in an appendix to this report and can be easily extracted and distributed to interested parties.

It is understood that the Lark has suffered from several pollution incidents in the past, some of which have caused significant fish mortality. The location of a waste water treatment plant located a short distance upstream of the top boundary will always be of potential concern. It would be very sensible for the club to participate in the Anglers' Monitoring Initiative and train one of two members to be able to undertake simple invertebrate monitoring surveys. Obtaining some base line data and periodically checking the presence and abundance of aquatic invertebrates could potentially flag up any issues associated with poor water quality at an early stage. This is an excellent initiative and will give a much better understanding about the productivity of your fishery and an indication of long term water quality performance. For more information go to www.riverflies.org

7. Recommendations

- Leave as much fallen woody material in the channel as possible.
- Control emergent burr reed when it starts to grow in central channel locations potentially blocking the channel and backing up flows, but retain as much as possible in marginal locations.
- Consider introducing LWD flow deflectors onto shallow gravel sections to help scour pots and promote ramps of loose gravel for improved holding and spawning opportunities.
- Implement an autumn programme of gravel cleaning on the tail of likely spawning glides.
- Plant some additional willows (sallow) or thorns to promote low overhead cover on long open sections, particularly on the very bottom section.
- Consider the option of introducing floating "sweepers" into the lock chamber to provide cover for juvenile trout.
- Speak to potential partners and explore options for a large scale restoration scheme for the bottom straight.
- If not already involved, consider signing up for some training in undertaking simple surveys as part of the Anglers Monitoring Initiative

with the Riverfly Partnership. For more information go to www.riverflies.org

- Raise awareness amongst any anglers fishing the river over the importance of catch and release for wild trout conservation.
- Try reducing the overall number of fish stocked and monitor catches more closely. Some huge savings can be made by making more space for wild fish.

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.

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

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

Disclaimer

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