



Rive Kennet – Stonebridge Lane, Marlborough



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

1. Introduction

This report is the output of a Wild Trout Trust advisory visit undertaken on the River Kennet at Stonebridge Lane, Marlborough.

The advisory visit was undertaken at the request of Charlotte Hitchmough from the Action for the River Kennet group (ARK). ARK is a community based group who care passionately about the River Kennet. Their members include local people who enjoy having a healthy river as part of their living environment; tourists and visitors who enjoy walking by and fishing in the Kennet; and environmentalists who want to see a valuable chalk stream protected. For more information about ARK visit their web site at www.riverkennet.org.

The 300m stretch of river Kennet downstream of Stonebridge Lane is in private ownership and ARK are currently discussing potential options with the owners with a view to opening up the section for controlled public access. A key element of the project proposal is to use the site, which is on the downstream outskirts of Marlborough, as a demonstration site, highlighting the ecological, recreational and educational value of a well managed chalk stream. ARK are in negotiations with other key partners, including Worldwide Fund for Nature, Thames Water Utilities PLC and the Environment Agency over possible funding to improve both in-channel and riparian habitats and are hoping to improve access for people wishing to learn more about the chalkstream environment.

The comments and recommendations made in this report are based on the observations of the Trust's Conservation Officer, Andy Thomas, and discussions with Charlotte Hitchmough, John Lawson, Richard Clark and Martin Gibson from ARK.

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 Kennet is a lowland chalk stream. The flora is rich and diverse with the highest known average species richness of any lowland river in Britain. Upstream of Newbury, the Kennet is typified in the more 'natural' reaches by the presence of stream water-crowfoot *Ranunculus spp* communities. The Kennet has a high diversity of aquatic invertebrates including nationally scarce species. A number of internationally, nationally and locally rare/protected invertebrates, mammals and birds are also present within the river corridor. This fact is recognised by the designation of the river between Marlborough and Woolhampton Bridge as a Site of Special Scientific Interest (SSSI).

The river at Stonebridge Lane lies a short distance downstream of the perennial head of the Kennet that dries up, on average, once every ten years. Dry riverbed can extend towards the upstream outskirts of Marlborough at such times. During the inspection, the river was flowing strongly following a wetter than average autumn/winter.

There are a number of public water supply bore holes that operate locally which are known to exacerbate low flow conditions particularly following periods of low winter rainfall. Habitats on the main Kennet, as well as its local tributary, the Og, which joins the Kennet a short distance below the Stonebridge Lane reach, can be seriously impacted during these low flow periods.

Problems associated with heavy growth of filamentous algae have also at times blighted the river below Marlborough, especially during low flow conditions. Thames Water Utilities have made efforts to reduce phosphorous loads to the river by installing nutrient stripping equipment at their Marlborough Waste Water Treatment Plant which discharges into the river a short distance downstream of the Stonebridge Lane section.

The location of this reach, being very near to the town centre but lying within a green corridor, makes it an ideal candidate for developing into an exemplar demonstration site. Local habitats may be adversely affected following a long, dry period but good quality water and an improved channel form that can be designed and managed to be able to cope with variations in annual discharge will add value to the site as an educational resource.

3. Fishery overview

The River Kennet above Hungerford has the reputation for providing high quality chalk stream fishing for brown trout (*Salmo trutta*) and grayling (*Thymallus thymallus*). In recent years the quality of the fishery has been of concern to many due to issues such as low flows, exacerbated by local abstraction, poor water quality linked to high nutrient levels, elevated levels of suspended sediments and the impact of non native species such as the signal crayfish *Pacifastacus leniusculus*. This combination of factors has resulted in some reaches having slightly turbid water and associated poor weed growth.

Many sections of the River Kennet are regularly stocked with hatchery derived trout to sustain angling activity. Where good quality habitats are present, self sustaining populations of wild trout can be found. Grayling populations on the Kennet have been historically prolific but are considered by some to have declined. It is widely believed that grayling stocks have suffered as a direct result of increased cormorant predation pressures.

The Kennet below Stonebridge Lane has not been actively managed as a fishery for many years. In addition, the reach below the Og confluence has also not been let to any angling groups. As a consequence no trout have been stocked into this section for some considerable time. ARKs vision for the fishery is for it to become a good example of a sustainable wild fishery, managed in a way that is totally compatible with nature conservation objectives for the site as a whole. To this end it is hoped that some controlled access, potentially aimed at introducing young people and novices to a chalkstream fly fishing experience can be built into the overall plan.

4. Habitat assessment.

The top section of the reach is marked by the footbridge that crosses the river at the end of Stonebridge lane. The river here is very wide and shallow for the given average discharge, flowing over a bed of cobbles, finer gravels and soft sediments. There was evidence of one or two redds having been dug but generally, despite the section having considerable potential for trout spawning, there was little evidence of spawning activity. The marginal zones on the RB were considered to be good for juvenile trout with a nice gentle graduation from the riffle habitat in the centre of the channel rising up to a shallow margin characterised by low stands of overhanging dead annual plants and small pieces of woody debris. The first 30m of the LB was dominated by stands of mature trees before giving way to a more open section interspersed by the odd low willow and shrub.

Weed growth within the centre of the channel was relatively sparse with small beds of water crowfoot *Ranunculus sp* and starwort *Callitriche stagnalis*. There was evidence on the RB of marginal emergent plant-beds including common sedge *Carex nigra*, reed sweet grass *Glyceria maxima* and reed canary grass *Phalaris arundinacea*.



View of the wide, shallow gravel run above the top boundary. The river bed here was very flat and gravels poorly sorted. This could be developed into a high quality spawning site for trout



The light patch of gravels indicate some trout spawning activity just above the bridge



A large bullhead *Cottus gobio* rescued from an old abandoned crayfish trap. This species likes fast shallow water over a coarse gravel or cobble bed.

In the centre of the reach it was very noticeable how wide the channel was. Here the river was slightly deeper with a slow glide over a predominantly silt substrate. This section of river would benefit enormously from some radical narrowing of the channel and the introduction of some large woody debris (LWD) to promote localised river bed scour.



Wide channel with laminar flows over a flat silty bed – Ripe for enhancement

The benefits of using LWD to create habitat is discussed in more detail in the conclusions and recommendations section.

Towards the bottom of the reach it was apparent that the left bank was quite high in places and relatively hard. This probably indicates that the river was dredged and river bed gravels side-cast to increase channel capacity and raise the banks. Much of the dredging carried on rivers like the Kennet was undertaken for land drainage purposes rather than to effect direct flood defence benefit. The net result is often a hard, steep sided margin that is unable to support a thick fringe of valuable chalkstream herbs and marginal plants. Locally lowering the banks to create a wet soft margin and occasionally pinching the existing channel width to create more in-channel diversity will radically improve this stretch.

A noted feature of the reach were the tall, mature crack willow trees *Salix fragilis* on the RB. Trees growing on this bank could have the potential to shade the channel, however, the section did not appear to be excessively shaded. Some of the trees would, however, benefit from pollarding which will preserve the tree and often creates a highly attractive landscape feature as well as a valuable

habitat. Big branches could also be usefully used to improve in-channel habitat (see conclusions and recommendations)



Bottom half of reach (facing upstream). Note the large mature willows on the opposite RB.



A deep water run under the LB – good holding water for adult trout



Some locally fallen trees. A good source of material for in-channel enhancement

At the bottom of the reach the river swings gently round a right hand bend. Here the channel width is considerably narrower, with most of the flow concentrated under the LB margin. The additional flow has scoured out the bed to create a deeper glide with excellent cover provided by some thick beds of crowfoot. This is good adult trout holding water and is an important habitat particularly in the autumn when fish may well hold up prior to moving up onto the shallower water above for spawning.

5. Conclusions

Overall this comparatively short reach has considerable potential as a demonstration site. The location is ideal and the basic channel form could easily be enhanced - providing good quality habitats for all life stages of brown trout. The three key actions required are:

- To improve the quality of the spawning habitat on the top 50m of channel through the introduction of LWD to help sort, loosen and clean river bed gravels.
- To lower the hard margin on the LB in the middle/lower section to create a wet, soft margin more suited to wet meadow plants.
- To use the material to locally pinch and narrow the channel in one or two locations to promote increased water velocities and a more varied channel planform.

The simplest method of improving the trout spawning potential of the reach is to peg down pieces of LWD to promote scour of the gravels. 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.

One of the biggest problems associated with chalkstream salmonid populations is the poor survival of eggs laid in gravels. Chalkstream gravels are often naturally concreted together due to the high calcium content of the water. Because the rivers are low gradient, low energy systems water often sheets over silt laden gravels without moving or flushing the sediments out of the small gaps between individual stones. Trout will partially remove silt through the action of redd digging but will preferentially seek out spots where the gravel is loose and lying on a gentle upslope, i.e. at the tail of a pool before the water breaks into a riffle. Pegging pieces of LWD onto shallow flat sections at the top of the reach will promote local scour and create ideal environments for spawning trout. An additional benefit is that the natural wood provides a superb habitat for a variety of aquatic invertebrates as it rots down.



A good example of how a large tree trunk can promote good quality habitat by causing a scour pool to form which has in turn thrown up a gravel ramp ideal for spawning

The middle to lower section could be substantially improved by pushing the current margin out by 2 to 3 metres into the channel. Creating a low soft marginal berm by cutting into the existing high bank and using the material to backfill a newly created area behind a revetment of faggot bundles or tree branches will not only improve in-channel diversity but will enhance the riparian zone by creating a low wet area ideal for specialised chalk stream and wet meadow plants. These and other techniques are set out in the WTT Chalk Stream Habitat Manual. Work of this nature will require careful design and planning and will require a consultation and consent from both the Environment Agency and Natural England.

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 Development Control Officer.

In narrowing the channel in one or two locations there will be scope for utilising the extra velocities to create scour pools and improved holding habitats for adult trout and other fish species. A combination of narrowing and the use of LWD will often provide fish with an ideal lie as well as additional cover from predators. Extra depth in a few locations will also help to make the section more resilient against the adverse effects of low flow conditions, providing vital pools when water levels shrink during prolonged drought period.

Careful thought needs to be given to future maintenance requirements. As an exemplar site it might be worth considering a low density grazing regime. There is currently a big debate in progress surrounding the benefits and problems associated with livestock grazing on chalkstream river banks. It is vital that low soft margins are not allowed to scrub up too much and the careful use of livestock can be an effective method in keeping the low, wet margins in optimum condition. Over grazing and bank trampling by too many animals is to be avoided at all costs.

Advice on suitable species and stock density can be obtained from Natural England.

5. Recommendations

- Improve the spawning potential of the reach by strategically pegging down LWD onto the shallow gravelly section on the top half of the beat.
- At two locations on the LB create some low marginal berms of approximately 30 m in length by pushing the existing dry bank out into the channel for a distance of 2 to 3 metres. Revet the outside edge with faggot bundles or locally procured tree trunks and branches. These shelves should not be designed to walk on and must be low and boggy to succeed.

- Undertake some tree works by pollarding some of the mature willows on the RB and use some of the materials to create some marginal brash bundles of coarse woody debris and peg into shallow margins to create refuges for juvenile trout.
- Consider creating more low scrubby cover by planting a few whips of goat willow or sallow *Salix caprea*.
- Retain as much LWD within the channel as possible and consider importing large tree trunks or branches that could be pegged into the areas where the channel has been narrowed to promote some local pool habitats
- Retain some refuge areas where fish can hold up without necessarily being available to anglers.
- When planning access paths for visitors it is imperative that they are not constructed on the edge of the bank. Paths should be set well back from the river with several spines leading off to key vantage points. These could be used for angling or as areas to set out educational signage and messages for visitors.
- Any proposals to construct a footbridge at the upstream end of the beat should ensure that it is of a clear span design to keep all margins soft and natural.

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 an 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.

Alternatively the Trust may be able to help in the development of possible project plans for the creation of new spawning and nursery habitats.

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.

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