



River Wylfe, Wylfe, Wiltshire



An Advisory Visit by the Wild Trout Trust July 2014

Introduction

This report is the output of a Wild Trout Trust visit undertaken on the River Wylve (Waterbody ID GB108043022550) at Wylve (national grid reference (NGR) SU 00317 38275). The visit was requested by Mr Philip Lush, who is the riparian land owner of the Left Bank. The visit was primarily focussed on assessing Mr Lush's management of the river and banks for angler access and wildlife, including wild brown trout (*Salmo trutta*).

Comments in this report are based on observations on the day of the site visit and discussions with Mr Lush and Russell Spencer of the Environment Agency.

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.



Figure 1: Map showing location of reach visited

Catchment and Fishery Overview

The Wylde is a tributary of the Hampshire Avon and is designated as a SSSI and SAC as part of the Avon system. It rises on the southern outskirts of the village of Maiden Bradley and flows north through the Deverill valley to Warminster. The river arches east across the southern boundary of the town and flows south west through the Wylde valley between the A36 and the Wessex Main [railway] Line towards Salisbury. The Wylde joins the Nadder at Wilton, subsequently flowing into the Hampshire Avon at Salisbury.

The Wylde rises from aquifers in chalk and greensand and the bed is characterised by sand and flint gravel. The waters are often not quite as gin-clear as some other English chalk streams and are sometimes coloured by surface run-off. Long reaches of the Wylde have been modified and diverted over the years and it no longer follows its natural course through some parts of its valley. There are several pumped groundwater abstraction sites within the Wylde catchment and abstraction is a major concern for fishery and wildlife interests.

Along with classic chalk stream plant communities of water crowfoot (*Ranunculus spp.*) and starwort (*Callitriche spp.*), the Wylde is noted for its wild brown trout (*Salmo trutta*) and grayling (*Thymallus thymallus*) populations, as well as abundant hatches of river flies. Much of the river is managed as a wild trout fishery although some reaches are stocked with triploid brown trout.

The middle Wylde is presently failing its Water Framework Directive (WFD) targets for fish, phosphates and overall biological quality. In order to meet WFD targets for the River, a number of actions have been proposed by the Environment Agency as part of the *Strategic Restoration of the River Avon* (SRRA). These actions range from full-scale restoration works to simply assisting natural recovery. The reach visited is labelled as Reach Code W_37 in the SRRA. Listed restoration options include bed raising and channel narrowing works, and diverting the river to flow through its historic natural course.

Wylie (Middle)	
Waterbody ID	GB108043022550
Waterbody Name	Wylie (Middle)
Management Catchment	Hampshire Avon
River Basin District	South West
Typology Description	Low, Medium, Calcareous
Hydromorphological Status	Not Designated A/HMWB
Current Ecological Quality	Moderate Status
Current Chemical Quality	Does Not Require Assessment
2015 Predicted Ecological Quality	Moderate Status
2015 Predicted Chemical Quality	Does Not Require Assessment
Overall Risk	At Risk
Protected Area	Yes

Habitat Assessment

Mr. Lush's present management of the riverbank and adjacent land is a good example of ecologically responsible chalkstream fishery management. Low-lying branches and woody debris have been left in place as far as possible ensuring that there is a good abundance of habitat for fish and freshwater invertebrates.

The riparian land along the lower extent of the reach is densely wooded whilst the rest of the reach flows alongside grazing pasture. The entirety of the RB is fenced-off from grazing livestock, allowing a dense and species-rich marginal community of marginal plants to establish where the bank is not shaded by tree cover. The width of the marginal 'buffer' between the fence line and the top of the riverbank varies considerably along the reach; from several metres wide towards the woodland, to a narrow 2-3m strip towards the upstream extent of the water visited.

Angler access is via a narrow footpath cleared through the woodland and along the upper bank. This path is maintained by mowing a narrow strip a short distance back from the top of the bank, leaving the lower bank uncut.

In order to access the footpath anglers must first wade the river at the downstream extent of the woodland. The fact that the river must be waded helps to limit the number of anglers that fish from the RB and minimises the intensity of bank maintenance required to facilitate access.

Near the upstream extent of the reach, the bank has eroded over recent years and the top of the bank is now relatively close to the fence (Figure 2).



Figure 2: Towards the upstream boundary of the reach, the margin between the fence and the top of bank is narrower than downstream

Erosion is a natural part of river morphology and there are a number of factors that contribute to the rate of bank erosion. The most pertinent factor in this situation is probably the shape of the channel cross-section. Much of the course of the Wylfe has been historically modified and the channel dredged and straightened for land drainage or modified to flood water meadows or to power mills. These modifications often result in parts of the river being incised with steep, almost vertical banks. Steep banks are more vulnerable to erosion as they are less-easily colonised by plants and can become undercut by fast flows.

The fact that the bank is on the outside of a slight bend in the river will also contribute to the rate of erosion. Secondary flows (turbulent flows and corkscrew-like eddies within the main flow) transport material from the outside of a bend to deposit it on the inside of the next bend downstream (Figure 3). This is what causes meanders to form and increase in amplitude over time.

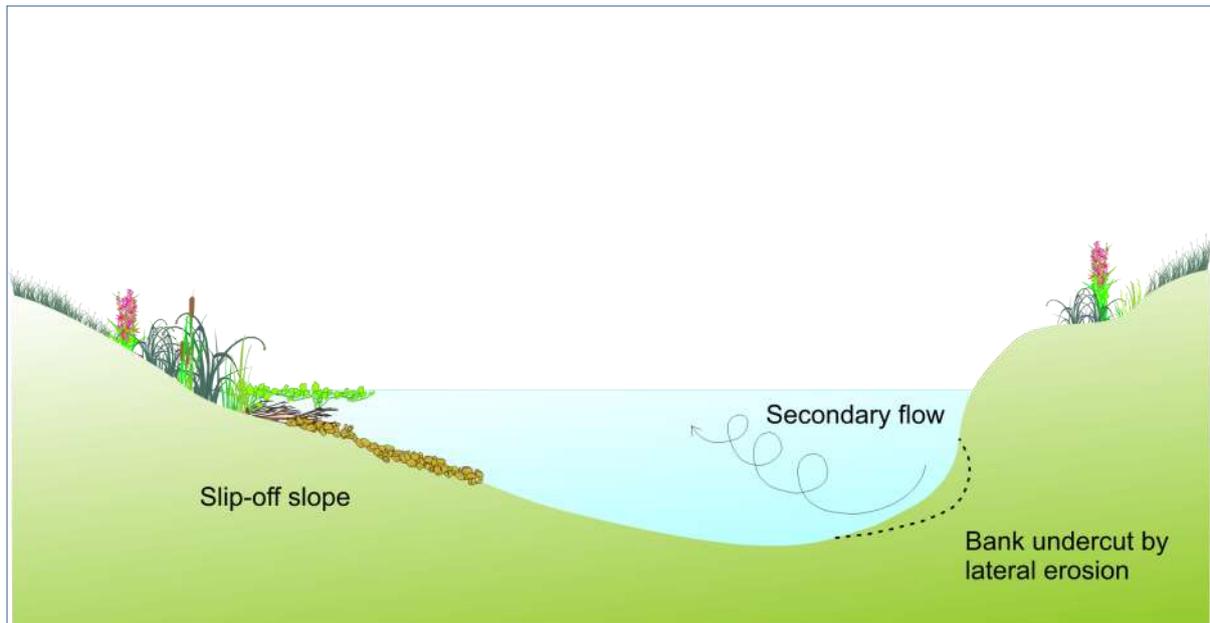


Figure 3: An illustration of a river cross section. The river is bending to the left causing erosion on the Right Bank and deposition on the Left.

The rate of erosion may also have been accelerated by an increase in deposition on the opposite bank. A soft-engineered channel-narrowing and habitat creation project installed in 2007, involving the installation of a woven hazel spiling revetment on the LB has led to an increase in deposition and the development of a bed of branched bur-reed (*Sparganium erectum*) (Figure 4).



Figure 4: A woven hazel revetment on the LB is facilitating deposition which may be contributing to erosion on the RB as the meander amplitude increases.

The final factor that was observed contributing to the rate of erosion was the presence of water vole (*Arvicola amphibious*) activity in the bank. A close inspection from the water was not possible on the day of the visit but a cursory examination of the lower bank revealed water vole latrines and a series of well-used tracks along the bank and through the vegetation, known as 'runs'. Holes in the bank amongst the runs were probably burrows (Figure 5).



Figure 5: Scratched mud around a hole amongst a water vole run suggests that water voles are burrowing in the bank.

Recommendations

In order for good angler access to be safely maintained without unduly damaging the river and bankside habitat, the following actions are recommended:

1. Whenever operating any machinery (even a small ride-on mower) on top of a steep bank, it is important to consider the '45 degree rule'. When weakened banks are subjected to weight or vibrations they can fail and slump forward. To minimise the risk of a sudden bank slip taking anyone operating machinery into the river, machinery should be operated at least as far back from the top of the bank as the height of the bank above water level. In other words the machine should be positioned approximately 45 degrees back from the water's edge.
2. Consider moving the fence back from the top of the bank to create so that a path can be mown further back from the top of the bank. This is essentially a 'managed retreat' option and may be worth doing in combination with other options to reinforce the bank and reduce the rate of further erosion.
3. The presence of water voles, a nationally protected species, limits the available options to reclaim and reinforce the bank. Under the Wildlife and Countryside Act 1981 (as amended in 2000) It is illegal to intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place.
(<http://publications.naturalengland.org.uk/file/86043>)
It is recommended to contact Fergus Mitchell at Natural England (Fergus.Mitchell@naturalengland.org.uk) to discuss options to protect the bank from erosion without causing too much disturbance to water vole habitat.
4. In order for good angler access to be safely maintained without unduly damaging the river and bankside habitat, the following options should be explored:

- Install a log flow-deflector upstream of the eroding bank to deflect high-energy flows away from the bank as much as possible. This option will however involve keying a log into the bank and so will require finding a suitable location near the eroding bank that does not have signs of water vole occupancy.



Figure 6: A simple log deflector installed pointing upstream and keyed into the bank will deflect flow out into the centre of the channel.

- Reinforce the toe of the bank with brushwood revetment. This will slow flow along the bank toe, absorbing energy and reducing the rate of erosion. Translocating some emergent/marginal plants into the structure will further help to strengthen the bank and prolong the lifespan of the revetment. Driving whips of live willow into the structure may also significantly increase its lifespan. However, it should be noted that live willow will require a certain amount of annual maintenance.

This type of structure is in-line with Natural England's water vole mitigation guidelines.

(see p32: <http://publications.naturalengland.org.uk/file/128029>)

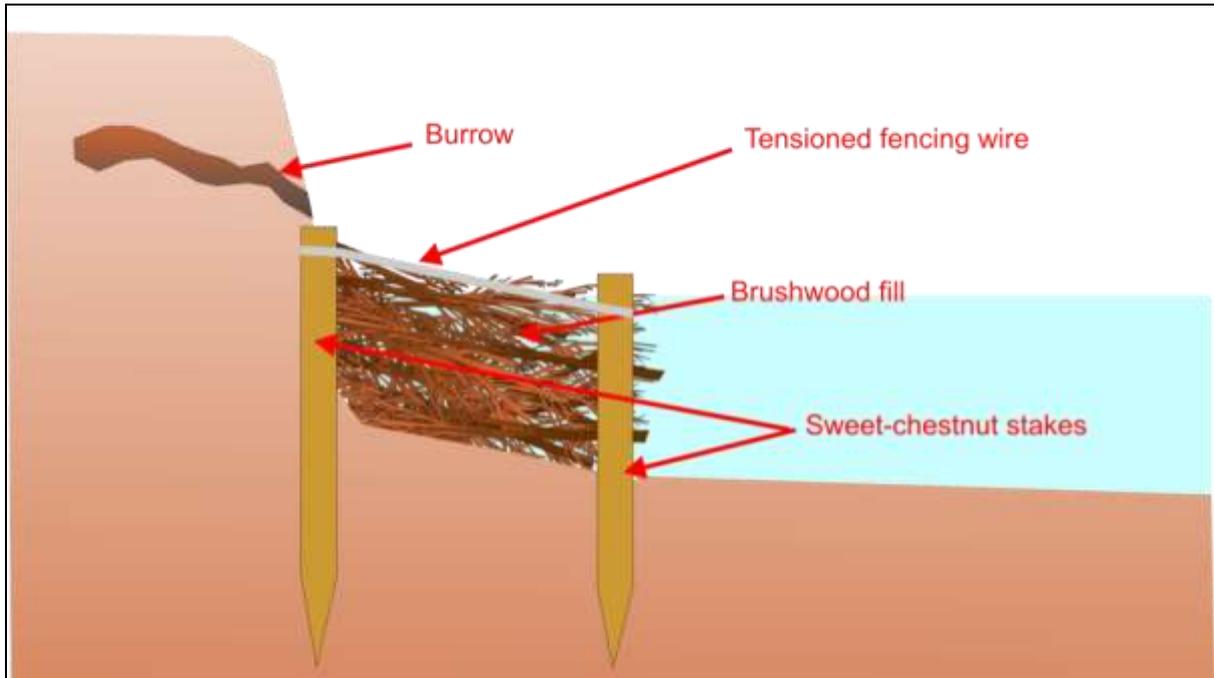


Figure 7: A cross-section illustration of a brushwood revetment constructed at average summer water level

- Create a sloping toe of large flint gravel rejects along the toe of the bank. This could be achieved by bringing gravel across the adjacent field with a tractor and trailer and placing gravel against the toe of the bank with an excavator bucket. This option may be more expensive than a brushwood revetment but is much less labour intensive and will involve less disturbance of vole habitat.

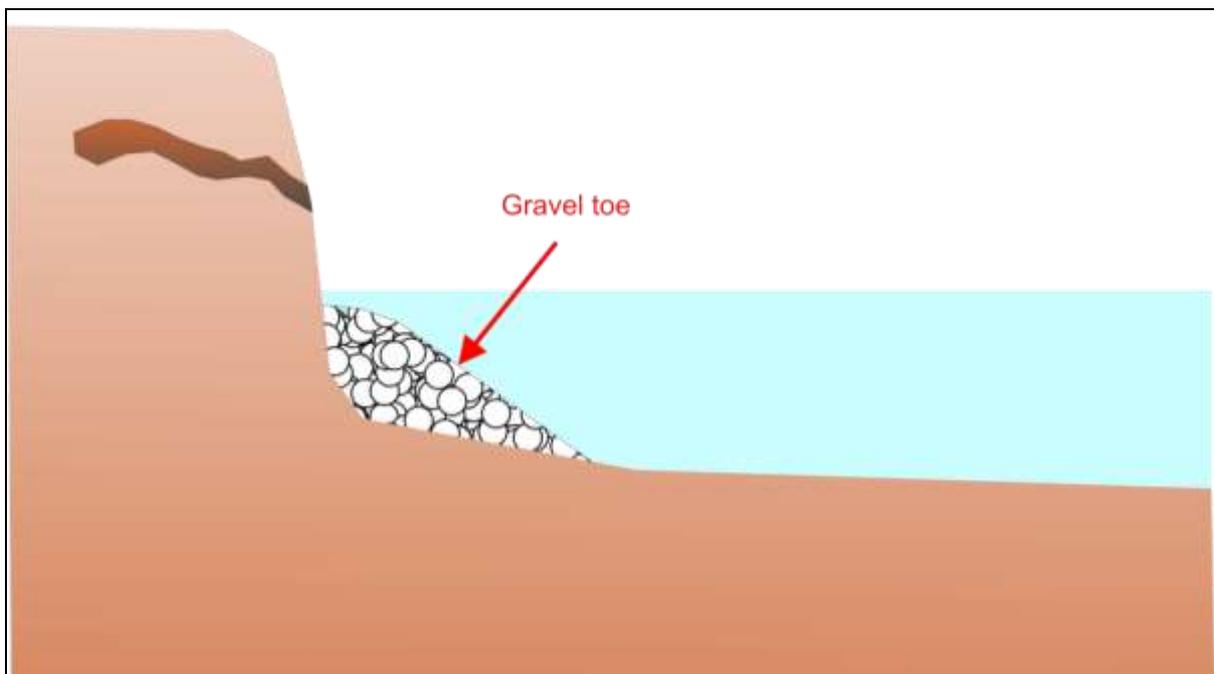


Figure 8: A cross section illustration of a gravel-reinforced bank toe

- Consider using a combination of the above techniques, using brushwood (possibly in the form of a woven revetment), gravel and live willow to create a shallow margin in front of the bank that will protect the toe from erosion whilst also enhancing the existing water vole habitat and minimising disturbance. This involves techniques similar to those used in other structures on the Wylfe that the fishing club will be familiar with.

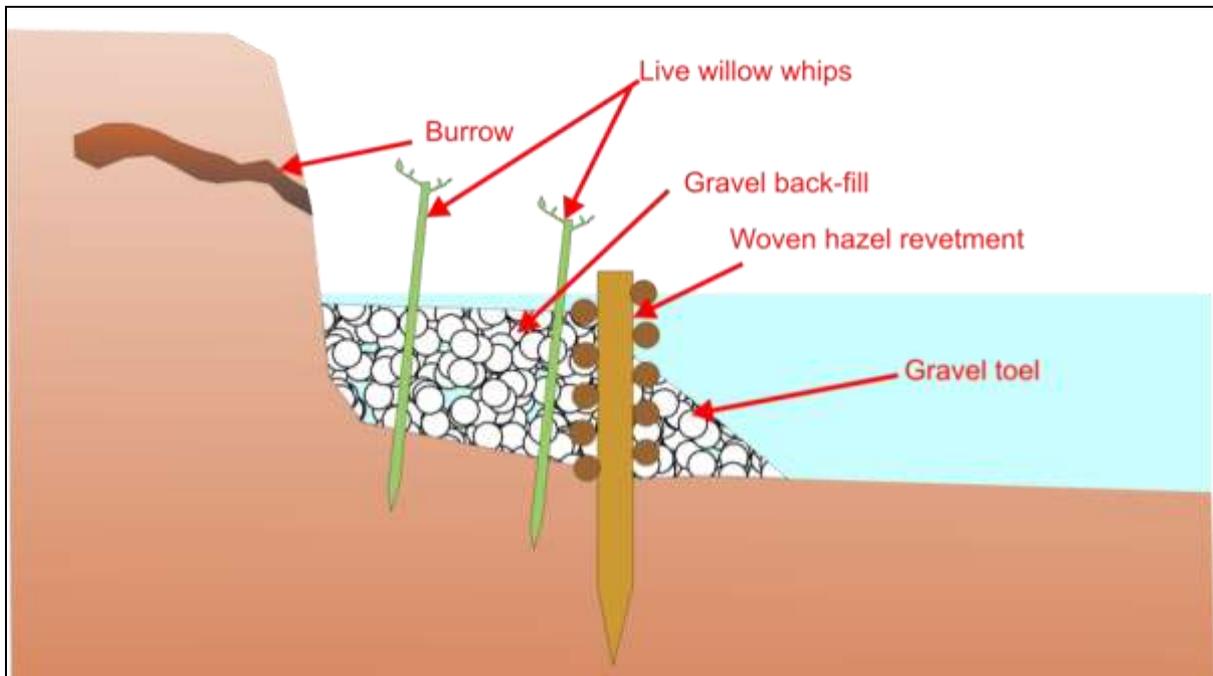


Figure 9: A cross section illustration of a woven hazel revetment back-filled with gravel and with a gravel toe. Live willow has been driven into the back-fill.

Making It Happen

The creation of any structures within the river or with 8m either side will require formal Flood Defence Consent (FDC) from the EA. An FDC application will have to be submitted to the EA, usually along with a methodology and drawings detailing the proposed works. This enables the EA to assess possible flood risk, and also any possible ecological impacts. Contacting the EA early and informally discussing any proposed works is recommended as a means of efficiently processing an FDC application. In this particular case, early contact with Natural England is also recommended.

The WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement:

<http://www.wildtrout.org/content/index>

The Wild Trout Trust has also produced a 70 minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop <http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0> or by calling the WTT office on 02392 570985.

There is also the possibility that the WTT could help via a Practical Visit (PV). PV's typically comprise a 1-3 day visit where WTT Conservation Officers will complete a demonstration plot on the site to be restored.

This enables recipients 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.

Recipients will be expected to cover travel and accommodation (if required) expenses of the WTT attendees.

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 organisations and landowners through guidance and linking them up with others that have had experience in improving river habitat.

Disclaimer

This report is produced for guidance; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report.