



River Stor – Storrington (Meadowside)



A Project Proposal by the Wild Trout Trust - June 2015

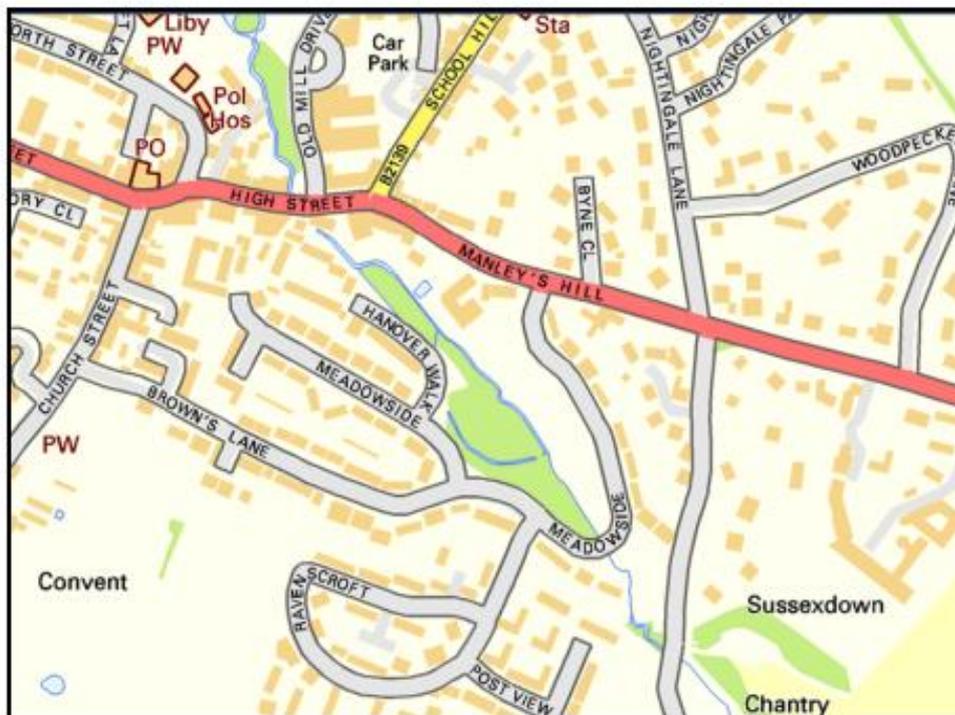
1. Introduction

This report is the output of a site visit to the River Stor in Storrington, an important tributary of the tidal River Arun in West Sussex. The visit was initially requested by Mr. Jacob Everitt who is a Senior Countryside Warden working for the Horsham District Council.

The 0.5-km section of stream inspected runs down from National Grid Reference TQ 088 142 to TQ 091 138. This section of the Stor is not designated under the Water Framework Directive but does join a section which has been assessed as being of "moderate status" (water body ID no. GB107041012100).

The reach inspected flows through a nature reserve which is maintained and managed by the local authority with support from local voluntary groups. The site inspection was commissioned to help identify any possible enhancement work that could be tackled via a River Habitat Workshop event.

On the day of the visit, the stream was walked in the company of Mr. John Marder, a Landscape Architect working with Horsham District Council. Comments in this report are based on observations on the day of the site visit and discussions with Mr. Marder and subsequently with Mr. Everitt. 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.



Map 1 River Stor, Storrington ©streetmap.

2. Catchment overview

The Stor rises from chalk and emerges from springs located on the northern slopes of the South Downs. The Stor is made up of several small headwater streams which flow north and meet near Poreham before flowing north for a further 4km to join the tidal Arun just south of Pulborough.

Despite flowing through the centre of the Storrington conurbation, the stream enjoys good water quality and is known to support a range of important fish species including bullhead *Cottus gobio*, brook lamprey *Lampetra planeri* and trout *Salmon trutta* in both resident (brown) and migratory (sea trout) form. It is not known if migratory sea trout are able to penetrate as far upstream as the Meadowside reach.

The Stor itself is not utilised as a recreational fishery but it is known to be a very important nursery site for migratory trout running into the tidal Arun.

3. Habitat assessment

The section of Stor running through the Meadowside park is typical of many of the small chalk-derived streams that flow north from the foot of the South Downs and flow into the Western Rother or tidal Arun. These little chalk streams represent incredibly rare habitat due to a combination of the local geology and the steep gradient, which has enabled many of the streams to form valuable geomorphological features of pool, riffle and glide, sometimes quite rare features in the more common low-gradient chalkstream environments.

The majority of the chalk rivers of England are heavily modified with structures and man-made channels, having been utilised for agricultural irrigation or power generation for hundreds of years. The Stor too has been heavily modified and the channel appears to be slightly perched above the valley floor, albeit through a gently meandering planform (photo 1). Deeper pool habitat was at a premium and might constitute a habitat bottleneck for large fish species.

Despite the modifications, the channel has a natural channel shape and supports most of the classic physical features associated with a healthy watercourse. The stream bed is rich in coarse gravel deposits, providing ample opportunities for gravel-spawning fish species such as trout, bullhead and lamprey to complete their respective life cycles.

The margins are studded with valuable emergent plants such as sedge *Carex* spp. and support occasional stands of alder trees *Alnus glutinosa* with both tree root systems and emergent plants performing a useful role in defending the banks from excessive erosion. That said, bank erosion would appear to be a key issue for the Stor in several locations. These pressures are generated mainly via footfall and dog swimming on the bank tops, rather than any major concerns associated with flow generated bank erosion (photo 2).



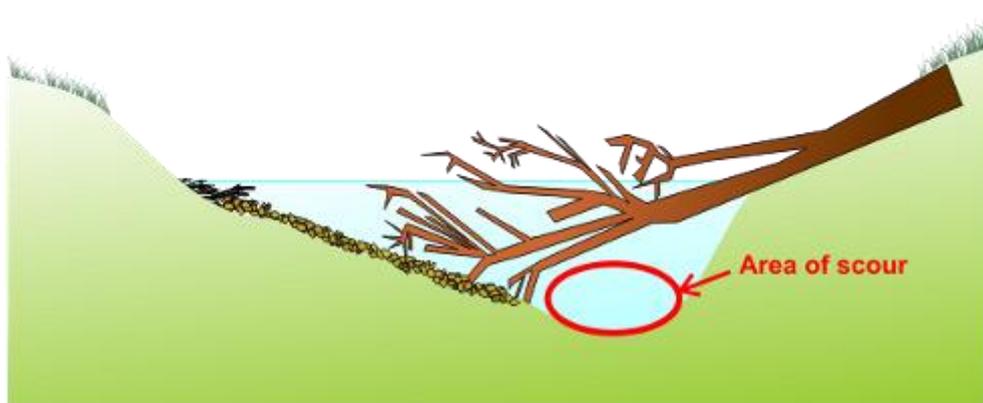
Photo 1. Suggests that the channel is perched above the valley floor, possibly to create a head of water for milling downstream.



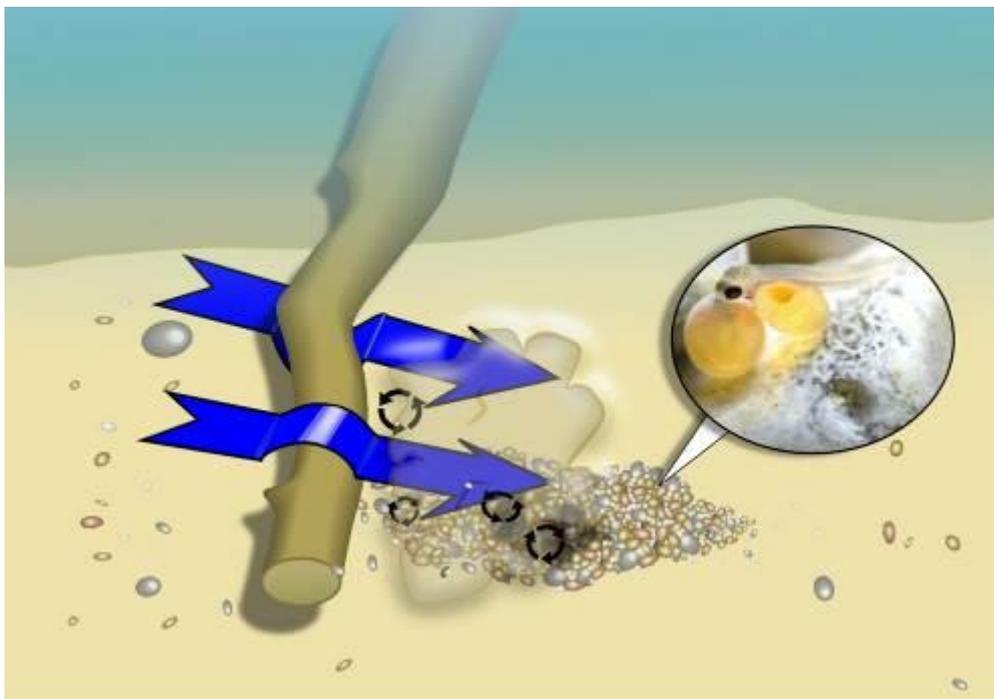
Photo 2. Banks and river margins eroding via heavy foot fall/dog slides.

4. Habitat improvement options

A number of key improvements could be undertaken using simple methods associated with winning locally available woody debris and using it to promote vertical bed scour and arrest bank erosion pressures. The lack of deeper pool habitat could be addressed using large woody debris flow deflectors to locally squeeze the channel and drive flow velocities downwards to promote river bed scour. Slightly deeper pools and the creation of ramps of clean loose gravel suitable for fish spawning (drawings 1 & 2) will benefit local fish communities.

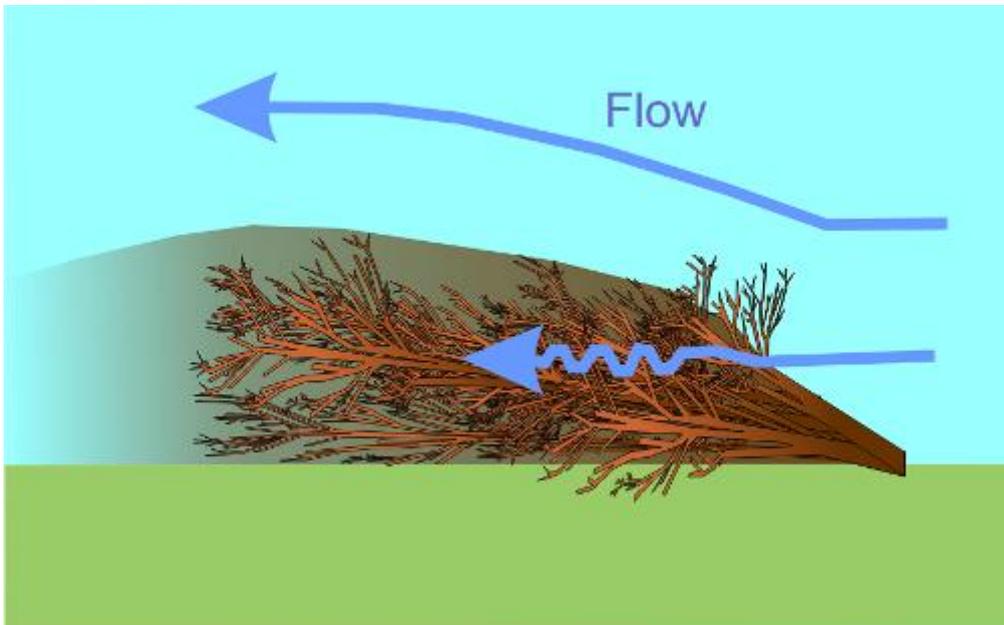


Drawing 1. Naturally fallen woody debris can promote downward bed scour.



Drawing 2 Managed woody debris pegged into the channel can have the same effect by eroding the bed and blowing eroded river bed gravels into sites ideal for fish spawning.

Where unwanted lateral bank erosion occurs, coarse woody debris (brushwood or brush) can be used to peg into the toe of the bank and against the eroding bank face (Drawing 3). Photo 3 depicts a typical piece of eroding bank that has been packed with secured brushwood designed to reduce erosion pressures and provide improved in-channel habitat for fish and invertebrates.



Drawing 3. Depicts a brushwood bank toe designed to slow down erosive flows and collect sediments.



Photo 3. Depicts an eroding bank packed with brushwood.

One site near to the top boundary has significant bank erosion against the face of the RB that could be ripe for some of the measures outlined above. The site is located adjacent to a children's play area and the top of the bank is very close to the footpath servicing this area of the park.

A combination of a single flow deflector, keyed into the RB and angled to kick the flows away from the eroding bank, coupled with packing the eroded bank face with brushwood is an ideal method for addressing the issue as well as creating favourable habitat.

This project could be delivered via a WTT River Habitat Workshop day, where WTT staff, together with representatives from the HDC and Sussex Wildlife Trust could get together to demonstrate the full range of techniques that can be deployed.

A Flood Defence Consent is required from the Environment Agency to deliver any work within 8m of a main river watercourse. The WTT can help with the process of applying for the necessary consents. Some national funding via the Environment Agency is available to enable the WTT to be able to offer this training day, together with the supply of materials and the provision of tools.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England, through a partnership funded using rod licence income.

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