Harting Stream – Hill Ash Farm

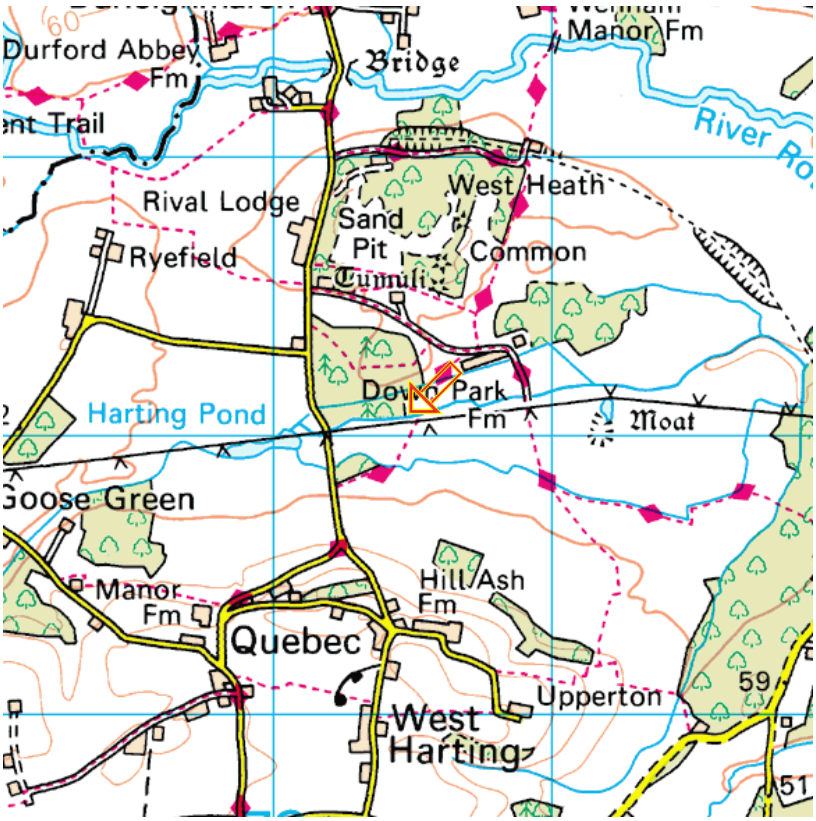
An Advisory Visit by the Wild Trout Trust August 2014

1. Introduction

This report is the output of a site meeting and walk-over survey of a section of the Harting Stream at Hill Ash Farm near West Harting in West Sussex.

The request for the visit came from Nick Heasman, Western Area Manager for the South Downs National Park Authority. Nick is liaising with the owners of Hill Ash Farm where the game keeper, Mr. Chris Rogers, is keen to explore options for enhancing a section of stream that runs through the estate.

Comments in this report are based on observations on the day of the site visit and discussions with Mr. Heasman and Mr. Rogers.



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.

The contents of this report cover a 200m section of the stream running from NGR SU 784 220 down to an old bridge crossing at SU 788 221.

The stream is not listed as a distinct waterbody under the Water Framework Directive but feeds into the Rother Waterbody ID GB107041012810.

2. Catchment and fishery overview

The Harting Stream rises from chalk springs located at the foot of the northern slopes of the South Downs near Nursted. The spring source is collected into an on-line lake very near to the source and flows for approximately 2km before again being intercepted by another impounded stillwater (Harting Pond), currently managed as a stocked trout fishery. From here, the stream flows east and north for a further 3km before joining the Western Rother just upstream of Habin Bridge.

Despite the barriers to free migration, the stream supports a healthy and diverse fish community, including brown trout (*Salmo trutta*) which can be found in the stream both above and below the Harting Pond Fishery. Migratory sea trout are also known to push up the main river as far as Sheet following exceptionally high flow conditions when a few fish are able to bypass the in-channel milling barriers at Stedham, Iping and Dumpford. It is highly likely that occasional sea trout spawn in favourable locations in the Harting Stream; however, this is very much reliant on exceptionally high flow conditions during the critical autumn migration period.

The Harting Stream itself is too small to sustain regular angling activity but in a few sections the stream provides some good holding opportunities for trout and larger coarse fish species and could be used for some occasional angling activity on a catch and release basis. The stream is hugely valuable as a spawning and nursery site, augmenting fish stocks for the main River Rother.

3. Habitat assessment

The Harting Stream in this location is heavily modified and was used to provide a source of water for an old milling structure. The old impoundment has collapsed but relict channels associated with the milling operations remain, albeit carrying little, or no flow.

The very top section of stream meanders through an area of woodland before opening up into a long straightened reach which bisects arable fields (now in pasture) to the south and a parcel of woodland to the north. The top reach is heavily shaded but the combination of some in-channel cover and a slight gradient in the stream bed at this location has promoted some good holding areas for adult for fish.

The course of the stream on leaving the woodland is mainly straight. Here the channel has been heavily dredged and straightened, presumably for land-drainage purposes. Very little tree shading currently exists along this section. Previous dredging activity has provided a sink for soft sediments and with high light levels the result is a channel choked with emergent branched burr reed (*Sparganium erectum)*. At the time of inspection, the banks had been heavily strimmed in an attempt to open up the reach.

Photo1. Typical section of the Harting Stream where a combination of channel modification, heavy nutrient loading and lots of direct sunlight has created more of a low-flow ditch-like habitat than a small stream environment.

Photo 2 A pool habitat under overhanging shade provides a safe refuge for fish and a hostile environment for emergent plants but with some clues as to how the channel could be managed more sustainably.

Approximately halfway along the straight section the stream passes through a short section of culvert pipe, which was installed to facilitate a stream crossing. Culvert tubes are often very hostile environments for both fish and mammal migration. The increased water velocities generated by the pipe constriction often erode the stream bed downstream of the pipe exit, often leading to a small weir forming. Small fish wishing to migrate upstream have to try and jump into the tube and then negotiate the increased velocities generated by the pipe constriction before making upstream progress.

The culvert is also having an adverse effect on in-channel habitat in the section above by impounding the reach, slowing upstream water velocities and promoting sediment deposition.

Photo 3. Culvert pipe crossing is adversely impacting on fish migration and habitat quality.

A similar problem is being caused by a low impoundment which is located immediately downstream of an abstraction point (photo 4). The low weir has obviously been installed to back up water levels to provide sufficient water depth for pumping. A better solution would be to lower the stream bed adjacent to the pump to create depth and flume the water through the deeper section by pinching the neck of the pool (immediately upstream of the abstraction point) with a wooden groyne or flow deflector.

Photo 4. Abstraction point where the stream levels are currently impounded.

4. Conclusions

Habitat quality in the section of Harting Stream at Ash Hill Farm could be significantly enhanced by promoting increased water velocity by reducing stream bed impoundments. This action, coupled with locally reducing the cross-sectional area of the wetted channel will help to combat the excessive emergent reed growth which currently chokes the stream. The provision of further shade, via some tree planting adjacent to the southern bank will also help to keep sections open and provide valuable cover for fish, as well as helping to moderate water temperatures. Planting low, overhanging trees species such as thorns or sallow, especially on the outside of bends and over any slightly deeper sections will not only provide valuable habitat but also help to promote improved flow conveyance by restricting reed growth.

Increased flow velocities can also be generated by removing the culvert and replacing it with a clear span bridge. The small stone weir structure installed just downstream of the irrigation pump pick-up is also backing up flow and reducing velocities.

Locally pushing in the stream banks to pinch the channel width in some sections will also help to elevate water velocities and help to combat excessive reed growth.

Strimming the top of the bank is not recommended. Marginal herbs and grasses provide valuable bank protection during flood flows and help to reduce bank erosion and stop the channel from becoming too wide for the given average flow. These plants are also responsible for providing a valuable habitat for many adult stages of river invertebrates, a crucially important element in maintaining a productive food web.

Sections of channel that are currently shaded and free from reed encroachment could also be further improved through the provision of more in-channel cover. Large pieces of woody debris (LWD) can provide cover and promote river bed scour, thus providing important holding habitat for adult fish such as brown trout and chub.

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. 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 varied bed material and pools and riffles is ideal for benthic (bottom dwelling) organisms as well as for fish species like wild trout.

5. Recommendations

- Consider the replacement of the culvert crossing with a clear span bridge.

- Take opportunities to reduce any backing up of the channel by removing the bed impoundment downstream of the abstraction pump.

- Undertake some tree planting with low scrubby native species such as thorns and goat willow (sallow) on the south bank to promote channel shading.

- Consider pegging in woody debris into the existing shaded sections of channel to provide enhanced cover. Details of how this can be achieved can be found in the WTT habitat management manuals which can be accessed via our web site www.wildtrout.org

- When mowing or strimming, leave as wide a buffer strip as possible adjacent to the top of the existing stream bank.

- There is the opportunity to completely remodel the existing channel by either modifying the physical shape of the banks, or by creating a new, naturalistic meandering channel running parallel to the currently heavily modified channel. With either option, it is recommended to draw on expert help to design a scheme to ensure

the new channel is sustainable and functions over a wide range of flow conditions. Creating a much narrower low-flow channel within a bigger two-stage channel will provide the necessary capacity to carry heavy winter flows. The provision of increased shading will be essential in helping to combat excessive reed growth, especially on the inside of bends, or in areas where the flow velocities are low.

Note: All work within 8m of the top of the bank will require a consultation with the EA and may require a formal written Flood Defence Consent prior to any work being carried out.

Acknowledgement

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

Disclaimer