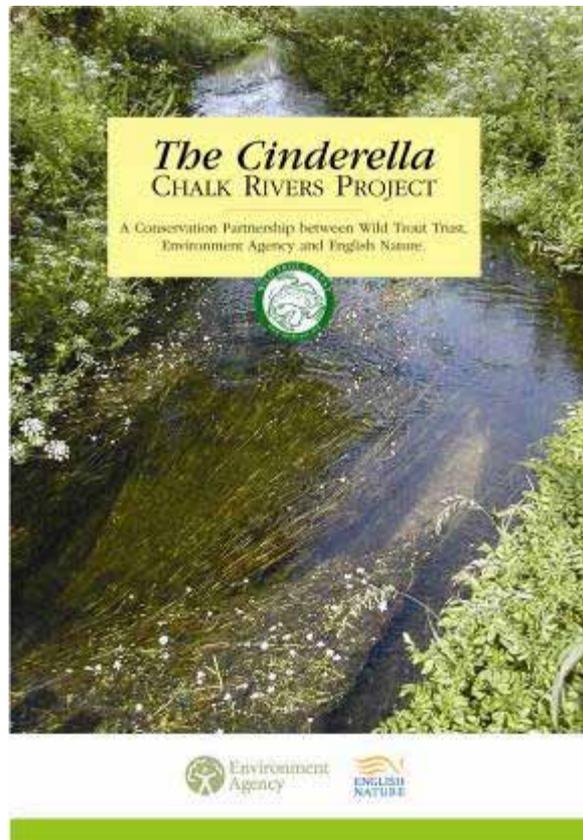


Advisory Visit
Visit to Heacham River, Norfolk
4th April 2008



1.0 – Introduction

This report is the output of a site visit undertaken by Simon Johnson, Wild Trout Trust, on the Heacham River, north west Norfolk, on the 4th April 2008.

Comments in this report are based on observations on the day of the site visit and discussions with landowner Mr Harry Buscall and his son Demonic.

Normal convention is applied throughout the report with respect to bank identification, i.e., the banks are designated Left hand Bank (LHB) or Right Hand bank (RHB) whilst looking downstream.

2.0 – Fishery Overview

The Buscall family owns and controls some 1.5km miles of mainly double bank on the Heacham River.

The fishery is not specifically managed for fishing and no stocking of fish currently takes place. There is no organised trout fishing upstream or downstream of the Estate. The family would like to improve the status of the wild trout population and manage habitats to benefit local biodiversity.

There are wild fish present albeit in very limited numbers. It is thought that minnow, brook lamprey and bullhead are present.

The Heacham River is classified as a chalk river and flows North Westerly from Fring to Heacham (3.3km). The river flows across agricultural land, is heavily modified, but not embanked and without significant flood defence structures. The lower most reaches run parallel to the coast. In these reaches the river backs up against tidal flaps, discharging to the sea at low tide.

There are no water-related conservation designated sites within this catchment unit, but the River Heacham is incorporated into the Norfolk Biodiversity Action Plan because it is a Chalk river supporting Chalk habitats. The river supports water vole, a BAP species, as well as a small breeding trout population in the upper reaches, while the lower reaches are dominated by coarse fish populations, in particular eel. The Environment Agency classifies the Heacham as 'Main River'.

This site visit was undertaken on a 1km section of the Heacham, upstream of the B1454. (see map).



3.0 – General Overview

The Heacham as with so many streams in lowland Britain has not escaped the attentions of post-war dredging and maintenance operations for land drainage and flood alleviation purposes.

This has led to the majority of the river channel visited being deep, incised, over-wide and dominated by fine silts. However, there are 'relict' gravel shallows present, indicating that the Heacham once had a functioning pool: riffle sequence. As a result the habitat remaining is in an impoverished state with only a few gravel shallows remaining, which are required for trout spawning. Brown Trout require extensive areas of clean gravel habitat to fulfil their life-cycle requirements. The dominance of silt has obvious implications not only for improvement of the wild fishery, but also the conservation status of this chalk stream.

Landuse along the river is a mixture of grazing marsh/pasture on both banks of the lower section and broadleaved woodland on the RHB of the upper section.

4.0 – The Importance of Chalk Rivers

Chalk Rivers are a unique and irreplaceable part of our heritage and the landscape of Britain. They are very important for wildlife, and many are world-famous for their fly-fishing. Their

present appearance and character reflects a long history of human intervention from urban development, agriculture, industry and fisheries.

Today these most English of rivers are in a fragile state. They are under threat from water abstraction, urban and infrastructure development, effluent discharges, land drainage and flood defences.

Despite ever increasing threats, there is optimism for the future: more local people are becoming involved in protecting and enhancing their chalk rivers.

There are 161 chalk rivers in England and Norfolk has twelve of them. To date, much conservation attention has focused on a small number of high profile rivers in Norfolk such as the Glaven, Nar and Wensum., the latter two being Special Sites of Scientific Interest (SSSI)

The Cinderella Chalk Streams project aims to initiate partnership projects aimed at improving the conservation status of the less well known, but equally important chalk rivers. The aims and objectives of this project are supported by the UK Biodiversity Action Plan Steering Group. Its report, 'The State of England's Chalk Rivers', sets out this vision:

"Chalk rivers should be protected or restored to a quality which sustains the high conservation value of their wildlife, healthy water supplies, recreation opportunities and their place in the character and cultural history of the landscape".

The Wild Trout Trust is working in partnership with the Environment Agency, Natural England and local interest groups to initiate conservation projects on the Norfolk chalk streams.



Water Crowfoot

Although the channel has been modified the river is starting to 'self-heal' itself through natural processes of deposition and scour. In many places natural silty berms are starting to form on the inside of bends, which are narrowing the river and increasing local velocities. The gradient and flow velocities may be sufficient to facilitate the formation of a series of shallow gravel riffles and pools during spate conditions. However, the natural riffles already present appear to be suffering from the ingress of fine silts and sands and as such have limited value as a trout spawning and invertebrate resource.



Formation of berm on inside of bend which is scouring silt and exposing gravels.

The bed of the river is fairly uniform and shallow with a lack of pool habitat which in-turn provides cover for adult fish. In places trees, or Large Woody Debris (LWD) as it is known, have fallen into the channel and through scouring action has created some useful pool habitat.



Excellent example of LWD, downstream scour pool and clean gravels suitable for trout spawning

However, in general terms there is a dearth of LWD throughout the reach visited. Woody debris in rivers can provide habitat for a variety of animals. Brown trout numbers increase significantly with the presence of woody debris along the banks and in the river as they provide refuge and cover. It may also offer lies for otters or perches for kingfishers. Woody debris in the river can also create pools and riffles in sections of the river that would otherwise have a poor mix of aquatic habitat types. It can also retain leaf litter and act as an energy reservoir for the river section. In the short-term LWD could be introduced in the form of logs, etc. and in the long term it is recommended that trees be planted at strategic locations to provide future LWD in a more sustainable manner.

The cattle crossing at the bottom end of the fishery is point source of fine sediment entering the river as cattle move between the LHB to RHB.



Silt is entering the river from the LHB on the hooves of cattle as they cross the river.



Improved cattle crossing on the Glaven in North Norfolk (Gravel ramps / riffle)

Above and below a small bridge the river becomes over-wide and is dominated by sands and silts until it enters a block of mature broadleaved woodland on the RHB. From here on the river narrows and resumes a meandering planform with exposed gravels and a good distribution of LWD.



Over-wide channel below and above bridge (note sands and silts in channel)



5.0 – Recommendations

It is suggested that habitat enhancement works are prioritised to the reach below the woodland. With limited manpower and available capital the lower reach offers the best opportunities for rapid and cost effective improvements.

The text in this paragraph contains some footnotes to the Wild Trout Survival Guide (WTSG) a copies of which were provided on the day of the visit.

This reach of river needs to be re-energised!

The over-wide and uniform nature lacks the habitat complexity required for wild trout and a whole host of related species to fulfil their life cycle requirements.



The wild trout's 'life-cycle' habitat requirements

Large Woody Debris

All riffles and shallow glides would benefit from the introduction of LWD. LWD should be securely keyed into the bank and secured to the bed of the river using posts and wire. LWD would facilitate bed scour, with associated sorting of substrate and creation of pools and marginal shelves. It also provides habitat for a range of species groups including macro-invertebrates, fish, birds and mammals. LWD could be sourced from coppicing work on the farm or woodlands of the estate.

Narrowing

In places the river is over-wide and would benefit from some narrowing using brushwood faggots / willow spilling with granular soil or chalk backfill¹. The aim of this narrowing would be to create a two-stage channel / berm to increase stream velocity during low summer flows whilst allowing winter flood flows to 'over-top' back into the engineered channel. The

¹ See WTSG pages 42-45

new bank should be set no more than 10 cm above summer water level to allow the development of emergent wetland plants such as sedge, water forget-me-not, brooklime, yellow flag-iris and water mint, etc. Consideration should be given to transplanting well-established emergent vegetation from adjacent areas to facilitate the colonisation process. A density of four plants per square metre should achieve rapid results. This habitat is particularly important for grey wagtails, reed warblers, southern damselfly and water voles, (which are known to forage along wet vegetated berms). Fringing vegetation will also provide cover for trout fry on emergence from spawning gravels.

The line of the faggots / spilling can be manipulated to introduce a more natural meandering appearance. Another narrowing option would be the creation of small mid-channel islands. Islands can be created from hazel faggots, willow spilling or coir rolls. Infill can be in the form of woody brush or granular sub-soil. Mid-channel islands can also be located in areas of bank narrowing. It may be necessary to protect the upstream toe of the islands from erosion with loose stone. At various points it is also recommended that flows be 'pinched' by installing paired and single faggot / LWD deflectors to allow the river to scour pool habitat².



Introduction of LWD at three locations on the Glaven in North Norfolk. (Re-energised flows)

² See WTSG pages 44-45



Faggot Islands, River Glaven (woody brush in-fill & natural plant colonisation)



Example of spilling used to narrow both banks of the River Wylde, Langford – Wiltshire Wildlife Trust Reserve.

5.0 – What next? – Making it all happen!

This report makes a series of recommendations that will improve both the biodiversity and status of the wild trout in this reach of the Heacham River. The project will connect the good quality reach upstream thereby creating valuable wildlife corridor by linking habitats.

The AV represents phase 1 of a potential 4-phase package of WTT assistance, via the ***Cinderella Chalk Rivers Project***. However before this happens it is strongly recommended that contact be made with the Fisheries/ Biodiversity and Development Control functions of the local Environment Agency to arrange a 'pre-application meeting'. Pre-application meetings are extremely useful to help scope out design work and to take into consideration any issues that could affect proposed works. Local Natural England staff should also be invited to any pre-application meetings to cover any protected species and habitats issues.

The worked-up proposal should provide all the necessary information for the completion of a land drainage consent application. This legal consent from the Environment Agency must be obtained in writing before works can commence. Consents can take up to two months to process.

It is proposed that the WTT, or its representative, attends any pre-application meetings before commencing a detailed project specification / proposal.

On successful completion of phase two of the project, an application can be made (Phase 3) for seed-corn funding to kick-start the project. Typically this is between £1000-2000.

An alternative approach may be to kick-start habitat works with the assistance of a WTT 'Practical Visit' (PV) (Phase 4). The WTT will fund the cost of labour (two-man team) and materials. Recipients will be expected to cover travel and accommodation expenses of the advisers. The use of specialist plant will be by separate negotiation.

WTT Wet-work advisers will demonstrate one or more of the following techniques that are appropriate to the site.

- Tree management (coppice, pollard, sky-lighting)
- Tree Planting
- Fencing (Installation & Repair)
- Stream Narrowing (Faggots, Coir Rolls, Spilling, Islands)
- Flow Deflectors
- Introduction of spawning substrate
- Gravel Jetting
- Introduction / Management of Woody Debris

Note: Recipients of the programme must have received a WTT AV and have obtained the appropriate consents from the Environment Agency, Natural England, etc, prior to arrangements being made to undertake the PV.

Applications for all the above should be made via projects@wildtrout.org

6.0 Disclaimer

This report is produced for guidance only and should not be used as a substitute for full professional advice. Accordingly, 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 comments made in this report.

It is a legal requirement that all the works to the river require written Environment Agency consent prior to undertaking any works, either in-channel or within 8 metres of the bank.