East Yorkshire Rivers Trust

Dealing with Invasive Non - Native Species (INNS)

The East Yorkshire Rivers Trust has been undertaking surveys along our watercourses to identify, map and ultimately deal with INNS on our rivers.

Japanese Knotweed is one of these species that has a minor foothold on the Gypsey Race from the Wolds to Bridlington town centre.

The Trust has been involved in starting to eradicate this plant. Japanese Knotweed can damage structures as it can grow through brick work and tarmac. It is very difficult to eradicate and can require several treatments.

Japanese Knotweed

Giant Hogweed

HELP NEEDED

If anyone spots Giant Hogweed or Japanese Knotweed within the Derwent catchment (in particular near the watercourses) our Derwent Restoration Plan Officer would appreciate the information with as detailed a location and description as possible. If you would like to take it one step further and volunteer to carry out a survey there are many public footpaths that create pleasant walks. All help would be greatly appreciated!

N.B. Please be careful if surveying or walking on public footpaths where Giant Hogweed is present. Touching the plants can cause painful blistering and severe skin irritation as the hairs contain poisonous sap.

www.eastyorkshireriverstrust.org.uk

Giant Hogweed also targeted

The Trust is also coordinating the control of Giant Hogweed in the Derwent catchment. This species can out-compete other species reducing the biodiversity of the river banks and, when it dies back in late summer, leaves bare erodible banks exacerbating the sedimentation inputs into the river. Liaising with landowners and farmers along the Derwent, Giant Hogweed is being mapped between Malton and Stamford Bridge. High river levels have delayed work but the Trust are now back on track in continuing the control programme of the species in partnership with the Environment Agency and Natural England.

Above: Giant Hogweed

LOTTERY FUNDED
supported by Environment Agency

RIVER DERWENT (BROMPTON INGS) REHABILITATION RECOMMENDATIONS

This stretch of the Derwent, around Brompton Ings, is failing under the Water Framework Directive (WFD) and measures need to be investigated to ensure that it at least meets 'Good Ecological Potential' whilst retaining its other economic functions – principally flood risk (to properties) and maintaining the status quo in terms of drainage/flood conveyance (affecting adjacent intensive agricultural land-use). Various internal assessments by the EA have been made in the past in relation to possible rehabilitation (primarily by John Shannon) and contracts for external advice have resulted in a report from the Wild Trout Trust (WTT) in September 2012.

The WTT reports that the section has been classified under the WFD as 'Good' for Chemical Water Quality, but has been classed as only 'Moderate' for Ecological Potential (failing fish element). Quite inexplicably they report that the section has been classified as 'High' status for hydromorphology, yet it is highly modified in both structure and flow regime. The former can be changed relatively easily, the latter almost impossibly so.

Character (river channel): There are a number of common characteristics throughout the reach. The river has an almost ruler-straight (with a little kink in the middle) planform. The gradient of the bed appears very even, as do cross-sections. There appears to be a relatively constant water depth of around 0.75m during low flows. Spoil on the bank suggests the bed

Upstream section at Brompton

Grazed and recently dredged reeds

is dominated by small pebbles and gravel. The words 'suggest' and 'appear to be' are used because insufficient information is available to describe the variations in water depth that will occur as discharge changes, and the channel has not been walked or 'cored' to ascertain definitively the nature of the bed.

One thing that is not in dispute is that pool/riffle/run/slack sequences which would be present in a more natural channel, are totally lacking. There is a marginal lower lip present along the edge of the river for the majority of the reach on both banks. No large trees are present but shrubs are present on the banks locally. Banks and riparian bank top areas are grazed (by sheep in August 2012). Management of channel vegetation may include removal of some bed gravel, and of even greater concern the removal with it of native white clawed crayfish (Austropotamobius pallipes) – a protected species. It is clear any encroachment of reed from the marginal lips of the channel has been routinely curbed by dredging out and dumping on the bank. In a channel with such a uniform long and cross-section, and minimal morphological diversity, this represents a significant reduction in potential habitat that could be used for a variety of wildlife.

It is not surprising that under the WFD the reach is failing for fish, but not for invertebrates. The latter metric mainly relates to water quality, and the water quality is assessed as being of good status. For the former, the lack of many habitat features vital for the production of healthy salmonid and rheophilic coarse fish stocks are lacking: deep pools and slack water refugia during floods or deeper water to escape predation; 'cover' of any kind; marginal tree roots or warmer

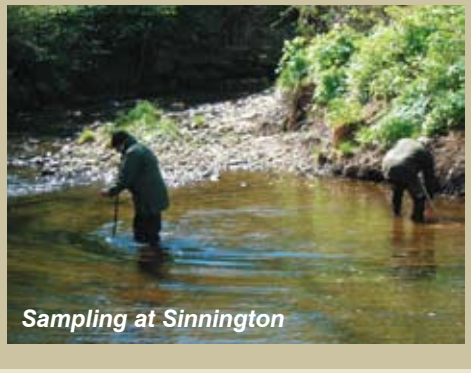
SINNINGTON SAMPLERS

Two unique long term studies are being undertaken by members of Sinnington (North Yorkshire) Angling Club of the grayling population in the water above Sinnington village and of the distribution of aquatic life in the club water.

The ongoing grayling study (reported previously) is being conducted by EYRT members Dr Ryan Taylor of Hull University and Dave Croft. SAC members taking part in the study record some basic details of grayling they catch and also submit three scales from each fish. Using this information the age of each fish is calculated by Dr Taylor and an estimate of the health of the fish at the time of being caught is given using a set of universal tables. All information is recorded and results sent to the study group. Further analysis of results are given in separate reports and sent at intervals to those involved, with an annual report presented to the club at the AGM. Later in 2013 it is hoped to extend the study and collect additional information to give a further insight into this grayling population

The aquatic life study, led by Dave Croft, is formed in two parts. Part one follows the Anglers Monitoring Initiative (AMI) procedure and records results on a format used throughout the UK. Part two extends the official study into recording everything collected in the net at each sample point and these are recorded separately. Water temperature and dissolved oxygen (and pH occasionally) are also measured. Results of both parts of the AMI study are forwarded to the AMI coordinator, Dave Southall, and to the designated EA officer. The AMI study has shown the River Seven at Sinnington to be healthy in terms of variety of species although the number of trees lining the banks, and dynamics of the watercourse, possibly limit population numbers.

A small grayling



Sampling at Sinnington

backwaters for fry; turbulent and disrupted flow patterns to create variations in current velocity and substrate materials through discrete, yet minor, deposition and erosion areas; and no significant shade from bankside trees.

The uniformity of character also means there is complete dominance of a single macrophyte species, unbranched bur-reed Sparganium emersum. As has been proven by many research projects, the structural diversity of different macrophyte species is important for invertebrate diversity, so macrophyte uniformity is severely compromising the whole animal community of the reach.

The description of the present status has been brief due to a desire to highlight key characteristics that require change if the WFD failures are to be remedied.

Recommended Approach to Habitat Enhancement: Relatively simple changes are recommended. The measures recommended will greatly improve habitat for fish and other wildlife without any detriment to other interests and responsibilities such as flood risk management.

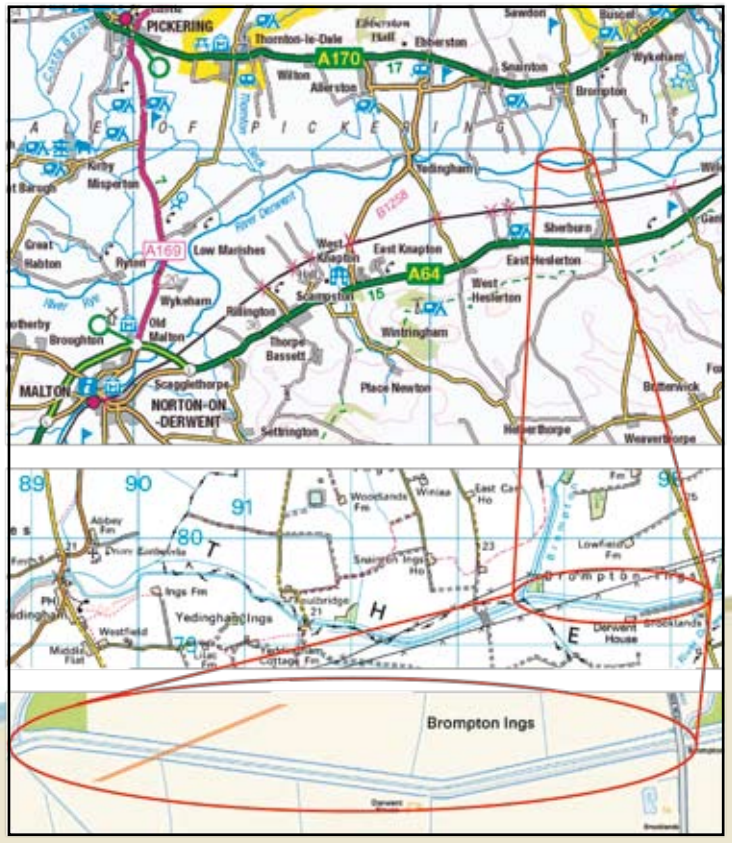
In essence the following measures are recommended:

- Re-distribute material from the existing flat bed to form undulations in the long profile that incorporate the initial creation of pools and upstream runs; over-time gravel riffles downstream may develop.
- Re-profile the banks, in places on one or other bank only, and in others both banks. The aim is to create a narrower low-flow channel in places so that velocity is locally increased; the 'shoulders' that create the low-flow narrowing also create improved wetland edge habitat in themselves.
- Creation of backwaters away from the main current, thus providing contrasting habitat (substrate, water velocity and temperature etc.) so important in the life cycle of fish and many invertebrates that are at present failing to thrive due to lack of shelter at times of spate, and having no quiet habitats in summer for recruitment of juveniles.
- Incorporate large tree-trunks into the channel to deflect current and shape new habitats over time; these would need to be extremely well secured to the bed and 'slotted' well into the bank.
- Local tree/shrub planting on the river margin/up the banks – this is a minor measure that can be determined after any project plans for major works have been developed, and fitted around the implemented plans.

The recommendations for in-channel and bank re-profiling can be achieved through either retaining the exact same channel planform, or through slight meandering. It is not considered sensible to do any slight re-meandering without the creation of backwaters – these latter are considered absolutely essential for addressing the present failure under WFD for fish.

It is suggested that the different approaches be tried in discrete locations, and their relative costs and effectiveness assessed. There is much of the Derwent in need of help to recover previous ecological interest, so such information will be very valuable. Use of log deflectors in close proximity to the bank and bed re-profiling creating the low-flow channel is also strongly advised against; the features need to stabilise and vegetate, and the log deflectors could create too much turbulence and destroy them.

As part of the monitoring it is strongly recommended ecological surveys are carried out pre-implementation. Having control site data from upstream is also very important. It is also imperative that water levels through the reach are recorded during different flow events prior to implementation, during implementation, and afterwards. The first set of data will help determine the precise levels to set the shoulders of the low-flow channel and other aspects of the bank re-profiling. The measurements taken through the implementation will show how little levels alter as a result of carrying out the project. Later monitoring will help provide assurances of the effect of the measures in terms of flood conveyance, and thus help provide much needed evidence for flood risk effects of such works in other, more sensitive sites.



Dr Nigel T.H. Holmes
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Michigan State University

Two members of staff and twelve students from Michigan State University (MSU) spent two days with the EYRT as part of their visit to the UK to learn fisheries management.

On their first day in Yorkshire, Ian Cowx took MSU on a walk along the River Hull, explaining the problems and solutions to rivers e.g. barriers to migration and flood engineering. On their second day, MSU were accompanied by John Shannon on the River Derwent pulling Himalayan Balsam and learning river restoration techniques.

The visit aligns with the objectives of the fisheries course run at Michigan State University. All the students had a good time (despite the nettles!) and learnt a lot from their time with John and Ian. They also were very impressed with John Shannon's passion for restoration.

LOWTHORPE WET WOODLAND PROJECT

A collaboration between the Yorkshire Wildlife Trust (YWT) and The East Yorkshire Rivers Trust (EYRT) has been agreed to provide background information on the proposed works and remedies for two discrete blocks of woodland in the headwaters of the River Hull catchment, in the East Riding of Yorkshire.

The works are funded through the EU Water Framework Directive (WFD) and administered by the Environment Agency (EA). The two main drivers, as defined in the submission to the EA, are to reduce siltation into the main chalk stream, that is Lowthorpe Beck, and to improve fish spawning habitats. The reduction in siltation is also identified as a primary target in the River Hull Headwaters Restoration Plan as set out in the report commissioned by the EA and Natural England (NE). Achieving a reduction in siltation will also lead to an improvement in the condition assessment of the chalk stream SSSI adjacent to Neat Holmes Wood.

Neat Holmes Wood

This woodland can be divided into two areas:

The upper (northern) block of 9.4ha, running upstream from the New Road to Bracey Bridge, and the lower (southern) block of 3ha, running downstream of the New Road. At the southern end of this block is a sluice structure allowing for control of water levels and monitored flow of water in the smaller stream known as Rattling water.

The following management is proposed in these two areas:

- Improve the sluice structure – thus improving water control and level management in the southern block of SSSI woodland. Natural England is in support of this action. General benefits include wider control of water levels in the wood and surrounding land. Wildlife improvement for snipe, woodcock and other wading birds.
- Removal of non-native plant species including Himalayan balsam, poplar and sycamore, with the tree species used as Large Woody Debris (LWD) and Coarse Woody Debris (CWD) for in-stream habitat improvements. The LWD and CWD work will improve channel morphology for fish including brown trout and brook lamprey, which in turn will increase fry recruitment and survival.
- Improvements to the current network of smaller side channels within the northern block to create a mosaic wetland habitat within the woodland, through the use of stop logs, re-meandering, LWD and CWD.
- In the northern block, the woodland area known as The Island (a part of the SSSI) will have skylighting work done using a 360 tracked machine brought in on mats to minimise ground impacts. This work will reduce stream shading along Lowthorpe Beck SSSI. In-channel works using green engineering (LWD, CWD, willow/alder spiling and mattresses) will accompany this work to reduce siltation.

Quintin Bottom Wood

This area of woodland is to the north of Bracey Bridge and is in one discrete block of 14.4ha. Work will be undertaken to build upon successful works carried out in 2009/10. This work was done to improve recruitment of wild brown trout and the proposed work will enhance this.

- Further skylighting to the wood, to increase light to the chalk stream in turn leading to improvements in fish habitat.
- A fish ramp installed at Bracey Bridge (where the stream passes under the lay-by road) will improve passage for fry and young fish into the upper headwaters where mosaic stream habitat is greater.
- Use of LWD, CWD and cover logs within the braided stream network will further improve fry survival and increase areas of fish refuge.
- Reduction in erosion and repair of eroded area of stream at Bracey Bridge Mill field corner.

For further information or queries please contact either:
Jon Traill (YWT Regional Manager & EYRT Trustee)
jon.traill@ywt.org.uk or telephone 07968 125902
Alan Mullinger (EYRT Trustee)
alan.mullinger@virgin.net or telephone 07771 803142

Part of the pre-project survey being carried out

Large alder log felled into the stream creating bankside habitat

The Environment Agency provided this 22 tonne excavator to position heavy logs in the stream

'Cover log' pinned to the stream bed to scour the gravel and create habitat for fish and invertebrates

Lowthorpe Project Work Schedule - winter period 2012 – 2013

Up to Christmas 2012

- Work in Quintin Bottom wood fell/skylight and carry out in-channel works/LWD/CWD.
- Created a more open section on the south of the stream as it runs east-west across the woodland.
- Felled Sycamore, Elder and coppicing of some Alder and Willow. Detail agreed with the landowners.
- Brash from the felling used in the stream as bank protection.
- Material remaining placed in wind rows for pheasant cover.

January 2013

- Investigated repair of ancient sluice – required hand work with no heavy machinery.
- Identified and repaired leakage, provided new weir boards in an effort to gain control of the water level within the Keld area.
- End Jan/early Feb (after last shoot day).
- Work carried out in lower area of Neat Holmes Wood (SSSI) to improve species composition and remove non-natives (sycamore saplings) in line with NE wishes.
- Where re-growth was a problem, all stumps were be treated with an approved herbicide.

February 2013 onwards

- Work in upstream area of Neat Holmes and 'The Island' for river narrowing, skylighting in the Island and LWD/CWD.
- Agreed with the Estate the route into this section of woodland. Pollard and coppice trees as agreed to allow light into the river.
- Following the 'skylighting' operation, the Trust carried out the introduction of Ranunculus from a lower part of the river.
- The soft nature of the ground within this wood dictated the eventual extent of this part of the project.

The very high flows from the aquifer during the project made much of the work difficult. However, on the good side, it enabled large timber to be floated into position in the river and saved a lot of carrying.

FOSTON MILL EEL PASS

Foston Beck is one of the country's most northerly chalk fed rivers. It rises from springs near Kilham at the foot of the Yorkshire Wolds. During 2005 the EA fisheries department gained consent to install an eel pass at this site. This structure was not completed and no further construction was undertaken.

The Hull Headwaters are designated a SSSI and are deemed to be in unfavourable condition. As part of an investigation by the EA & NE, Royal Haskoning (consultants) were appointed to look at all structures on the headwaters with a view to either removal or modification. The weir on this site incorporates a gauging station. This has continuously monitored flows since the early 1970s and the Environment Agency considers it important for the management of the water in the chalk aquifer.

As removal was not a consideration, the EYRT made a bid to Phase 3 RIF of the Rivers Trust River Improvement Fund. This bid was successful and the process began in gaining consents and competitive bids for the installation of an eel pass. The EYRT worked with Aquatic Control Engineering (ACE) to design and build an eel pass to fit into what proved to be a difficult location.

One important change in EA policy was that a small proportion of the river flow could be pumped from above the gauging structure to provide the necessary attracting flow in the eel pass.

The stream flows over the gauging weir and continues for 40 metres over a very shallow brick conduit finally falling into the old mill pool. The stream below the weir is constricted to a bricked out channel for about 25 metres before it turns at right angles for a further 15 metres and finally enters the stream channel.

Project aims and progress

Following meetings with the Environment Agency, Natural England and the pass suppliers, the route of the pass and positioning of ancillary equipment was agreed. Full plans, method statements and risk assessments followed and installation began in late September 2012.

The submersible pump is solar powered from a system mounted on the telemetry building. All pump controls are also located within the same building.

Following a very wet summer, the river flows when installation began were high. It was a welcome result when the ACE engineers finally managed to complete the 'wet' side of the installation successfully.

The pass was completed and commissioned on 16 October 2012.

Continuous monitoring began at the end of April this year. No significant recordings of eels have been seen to date. Some modifications have been made to the solar power system to improve the operating during the hours of darkness.

Monitoring will continue until late July when the system will be shut down until the 2014 spring eel migration.

Installation above the gauging weir. View of the pass header box with the engineers fitting the cables and pipes to supply water to the pass

As each section of pipe was installed the media was inserted that would enable the eels to move through the pass

The header box with lockable lid in the open position. The camera is visible in the middle of the left hand section at the top

COSTA BECK REHABILITATION PROJECT

Background and Purpose: Rehabilitation work was carried out on a c1km stretch of Costa Beck, Pickering, in August 2012. The headwater stream is located directly west of the town, with upstream and downstream limits SE774836 to SE770829.

For ease of reporting, and subsequent monitoring, the location of 'features' created were pin-pointed on aerial images of four sub-sections of river. The sub-sections are shown opposite.

In total 21 'features' (F-Z) were created: one low-flow channel narrowing, one willow over-hang and 19 'pools and runs'. Work was completed over a four day period August 13-16th 2012.

Feature J was the simplest feature created; it was merely the driving in of live willow stakes into the bank just above water level to create sheltered overhangs once the poles take root and sprout.

Feature F was the simplest re-profiling feature as the location was within 50m of a gas main crossing the Beck. Thus no bed re-profiling was possible, and habitat enhancement was limited to re-profiling the right bank (RB in schematic drawings) and spoil arising from this used to slightly narrow the channel by the formation of shallow 'berms' or shoulders.

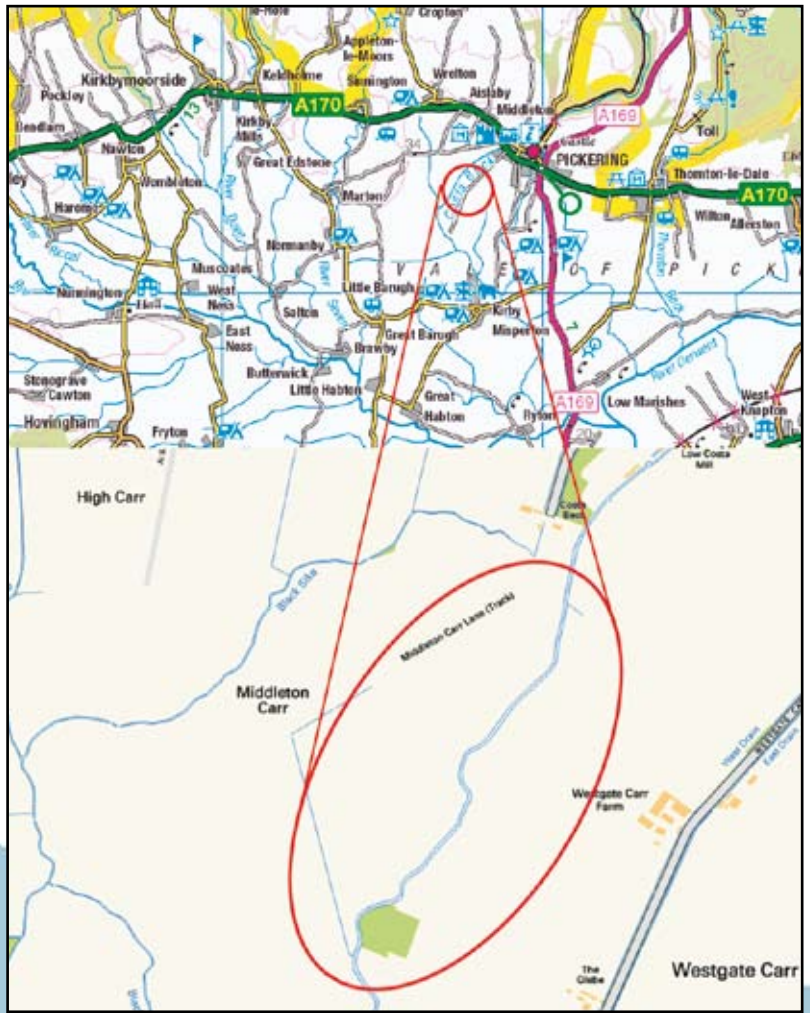
Features G-N are located through Sub-section A and most of Sub-section B. Here the Beck has been subject to the installation of several deflectors in attempts to clear silt and expose gravel. The gradient of the Beck is probably marginally greater here (but still only a gentle one). All these seven features created involved the formation of pools and upstream 'runs' of faster-flowing water. Most of the 'runs' were formed by a combination of pushing existing reeds into the channel to narrow the low-flow width by at least half, and back-filling the voids with material won from the re-profiling of the banks in combination with using the arisings from the pools dug downstream. What makes these seven features different is that the pool arisings contained some shale and gravel, the best of which was used to raise the bed of the Beck where it had been narrowed upstream; this results in a better head difference on the bed between the 'run' and pool, and thus should ensure the pools remain deep and scoured of silt in perpetuity. One of the features, K, also had stakes driven into the bank above the pool to create an overhang in the future (as per Feature J).

Features O-Z are broadly similar to those of G-N but did not have material dug from the downstream pools which was suitable for use in bed-raising of the upstream 'runs'. Feature O was short and sub-optimal in being very deep water, so the dug pool may silt up quickly and not be sustained. In creating Feature V, Y and Z, the absence of reed on the left bank (LB) edges meant narrowing on these margins was created solely by placing here clay and other material dug from the downstream pools together with material from re-profiled RBs at the same locations.

The implementation worked as well as could have been expected, and there is no reason why what was constructed should not, in general terms, improve over time.

It should be noted that where the channel was narrowed with existing reeds, it was only at feature locations P and Q that the reed fringe (*Phalaris*) was rooted to the river bed. In all other locations, however wide the fringe, the reed simply hung from the steep bank over the water and formed seasonal cover only.

Some features were created where the Beck had already been deepened to create silt traps, but only on the location of Feature O was it felt that insufficient narrowing took place to ensure continuous future scouring of the downstream pool. In all other cases it was deemed to be sufficient to sustain deep pools, especially within the majority of



'Before and after' images showing some of the work carried out – in this case the creation of a 'run' of faster-flowing water resulting in a 'pool' below

Sub-sections A and B where bed-raising of the 'runs' was also possible. It should be noted that some pools were dug deeper than was needed to provide suitable material for upstream narrowing (because the cohesive clay was deep below more than 1m of silt in places); these may shallow over time, but deep pools should be sustained.

As the completed work enabled the creation of planned changes to take place, there is great confidence that the re-energising of the Beck in the form of many pools and 'runs' will be sustained and improve over time. The biological response cannot be so confidently predicted. It is hoped that fly-life and other invertebrate diversity and abundance will increase as there has been a great improvement in the diversity of habitat for them. Conditions for holding and recruiting fish has also been enhanced, and suitable conditions for spawning grayling, and possibly brown trout, have been created. There is a big 'however'. During construction it was noted that there was a great paucity of fish seen, and only two eels were observed in the dredging bucket during the whole process of doing the project; this is highly unusual. Also the starwort in the channel did not have the density of shrimp normally seen in such streams. Past water quality problems have been reported, and concern still remains; the paucity of animal life, but presence of relatively sensitive species, suggests recovery is taking place from a possibly devastating low oxygen event in the past. The physical work will encourage aeration.

Thus if water quality problems do not arise in the near future it is anticipated that invertebrate numbers (species and abundance) will increase dramatically, and if fish species can establish themselves here from elsewhere, their numbers and biomass should immeasurably improve also.

Dr Nigel T.H. Holmes
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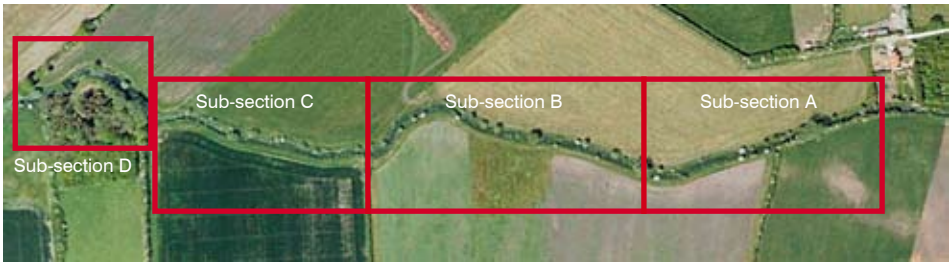
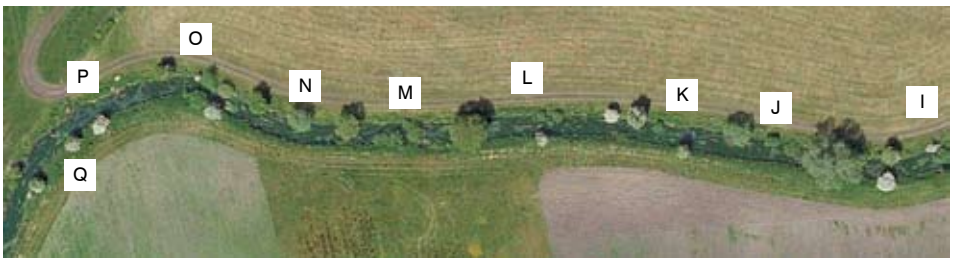


Sub-section A



Sub-section B

Sub-section C

Sub-section D

The long-reach excavator at work re-profiling the far bank and using the material to backfill the void left after dragging the reed beds into the stream to narrow up the channel

East Riding of Yorkshire Steering Group Update Spring 2013

Capital Grant Scheme 2013/14
With approximately £15 million nationally in this year's pot, nearly 4000 farmers have applied for a CSF Capital Grant Scheme. Early estimations suggest that the budget could be spent twice with this amount of applications. Locally there has been a lot of interest in the grant, more so than in other years. I put this down to the amount of rain in 2012 and everybody finding out where the water is running to or not! This has lead to 15 applications: 2 in the Gypsey Race catchment, 3 outside the target area, but feed into the River Hull below the SSSI and 10 in the Kelk Beck catchment.

The applications cover a range of activities from covering muck stores, guttering, fencing off watercourses, hard standing, improved tracks and concreting yards with associated drainage. The applicants should hear by mid-July if they have been successful.

2012/13
With DEFRA's agreement, CSF carried over £11 million from 2012. This allowed the capital grant work delayed due to weather to be completed. Usually claims should be in by end of February; however this was extended until the end of April. Seven applications were accepted in 2012 with five going ahead. All applicants took advantage for the extended deadline.

November 2012 – present
Farmer attendance at events has been very good. The twelve events have focussed soil and nutrient management, precision farming, rainwater harvesting and digestate & metaldehyde application. The events have been a mix of CSF and partner events working with HGCA, Farming Advice Service, WRAP, Voluntary Initiative and Campaign for the Farmed Environment. I've used many different formats from show stands, workshops, farm walks and evening meetings. Alongside the farmer events I've put on nutrient training for independent agronomists and Bishop Burton Foundation Degree students. Ten farmers have taken up one to one training covering slurry storage & handling, nutrient planning, machinery calibration and farm infrastructure reports.

Rachel Webster
Catchment Sensitive Farming Officer (NE)

Elmswell Farm Open Day

At the beginning of June the Trust took part in a local farm open day.

The children from Bridlington Bay Primary School visited the farm and along with seeing the arable fields, animals and farm machinery they were shown a display by the Trust of animals and fish that could be found in a chalk stream on the Estate.

Trays were set up to enable the children to have a 'hands on' experience and identify the 'mini bugs' found in the stream.

A particularly sharp-sighted participant spotted a young frog in the grass during the following river walk which lead to great excitement in taking turns to hold the slippery customer!

WATER VOLE

The water vole is now recognised as one of Britain's fastest disappearing mammals, but still has a stronghold in the River Hull valley. Water voles are similar in size to a small guinea pig, have a blunt-nose, chestnut brown fur, short rounded ears and a long hair-covered tail.

If disturbed, water voles dive into water making a plop sound and usually head for an underwater burrow, but will resurface once they feel confident. The presence of water voles can be identified by food remains; reed stems 15cm long in neat piles, with the stems cut at a 45 degree angle; latrines (water vole toilets) are used during the breeding season and are piles of trampled faeces to scent mark terrorises.

Water voles usually have a low density with colonies dispersed over a wide area. Lowland rivers and streams, drainage ditches, reed beds and offline ponds all provide possible habitat. Water voles are semi-aquatic, using waterways as motorways. Breeding occurs between March and October; a female can have up to 2 to 5 litters in a season, with 5 to 8 young which are weaned for up to 2 weeks. Young can breed in their first season if born early. In autumn territories break down as individuals stop breeding, however 70% of a population can die during winter.

So next time you visit the river, listen out for the plop sound as a water vole dives under water, but if you wait quietly you will probably see it resurface.

Water vole (courtesy Jon Traill)