East Yorkshire Rivers Trust

EAST YORKSHIRE RIVERS TRUST

Newsletter 13 - April 2020

QUINTIN BOTTOM PLANTATION

Tree removal and replanting of 4.6 hectres of land near Lowthorpe Beck

This area of woodland covers a large area of wet land that incorporates a major spring –'Bell Guy'. This spring source makes up a significant percentage of the flow of Lowthorpe Beck. This chalk-fed stream becomes Foston Beck and joins Frodingham Beck. After about 10km these streams eventually form the River Hull that discharges into the Humber estuary.

Project Aims

The object was to improve approximately 4.6 hectares of potentially wet woodland habitat. This would be achieved by the clear felling of circa 550 poplars that were planted 50 years ago. These trees had reached the height of 30 metres. There was no understory shrub species within this section of woodland, the only plants noted were willowherb, nettles and thistles.

Some of the poplars died some years ago due to being attacked by insects. Those standing dead trees were not felled as it is known that such habitat encourages boring insects which in turn attract birds.

Operation

Following the receipt of the Foresty Commission felling licence, the approved contractor, Tree Worx Ltd, moved onto site in late November 2019. Even with very poor weather conditions making this site even wetter, most of the timber was felled within a week. The contractors then proceeded to sort and remove the material to a landing suitable for road vehicles where the material could be loaded safely and removed from site.

This second part of the project was delayed due to the only route from the felling site to the landing was across an arable field with serial stubble. The field sloped up away from the felling site towards the prepared landing site – a rise in level of 40 metres.

(Continued over)

Aerial photograph of the woodland prior to felling. The open area seen on the left is where the trees were killed by insect attack some years ago. These were left as habitat for insects/birds etc.

Felled timber separated into logs and brash ready for transporting to the landing area.

supported by Environment Agency

The timber has little commercial value and is to be used in the biomass industry.

Replanting
The Trust has accepted an offer of a grant to assist in funding replacement trees from the Woodland Trust. Their supplier will deliver the agreed indigenous species in February 2020. The 550 poplars will be replaced with 3500 trees to recolonise the site. The replanting work will be undertaken by volunteers working for both the East Yorkshire Rivers Trust and the Yorkshire Wildlife Trust.

Logs above 16-inch diameter were cracked to assist the drying process.

Low ground pressure 'forwarder' being used to move logs up to the landing.

Two 360 excavators working to clear the site of logs and brash. Note the 'standing dead' trees in the background. These are being preserved to benefit insects and birds such as woodpeckers.

Watton Beck Habitat Improvement

Following a request from the tenant of the historic Watton Abbey, a visit was undertaken to look at the section of Watton Beck as it crossed the Abbey grounds with a view to suggesting any improvements to the Beck that could be delivered under the Hull Headwaters Programme.

Watton Beck flows west to east along the southern boundary of the land surrounding the Abbey. To a certain extent the course is controlled by a nearby road and wall within three metres of the right bank of the stream. This bank is heavily tree- lined resulting in over-shading to much of the stream. The land on the left bank is divided into four separate fields all down to grass with sheep and cattle grazing the lower field. This field was fenced close to the river making any intervention difficult; however, it was possible to remove some of the tree/shrub shade with a machine equipped with a hydraulic pruner.

After discussing the options with the tenant, it was decided to concentrate our efforts on the most upstream two sections.

Again, both these fields were subject to over-shading and a program of selected pruning was adopted.
A design was submitted to all parties including the Beverly & Holderness IDB as the watercourse at this point was not classed as 'Main River'. As the field had a wide left margin the plan was to install two meanders to create a more diverse flow regime. The stream bed was extremely compacted and in places had deep sediment beds above the natural gravel. This section of riverbed was deeply raked and broken up to allow natural bed movement to continue without creating any additional bank scour.

Trees being cropped allowing increased light to the stream.

Creation of the Meanders
The margins of the new bank were created with hazel bundles. These created the new bank line using 'green engineering' techniques. This method is well used to retain the soil that would be transferred from the left bank.

Hazel bundles being fixed with posts and wire. Note how far the new meander line is changing the course of the stream.

Leading edge of the new meander protected with coir sheeting, and the machine begins to transfer material from the left bank into the meander enclosure.

The new meander line being completed as it returns to the right bank.

Above: Special fitting allows the contractor to swivel the bucket to shape the new bank
Left: Backfilling the new bank. The material will be allowed to settle prior to seeding with a conservation mix.

Above: Aerial shot of the upper meander showing the standing dead willow. This tree was crown reduced and made safe. It will benefit wood boring insects and birds
Left: Upper meander – note low level ledge to accommodate high-flow conditions and zone for marginal plants. The new works will be monitored over a few years to address any unforseen erosion that may develop.

Hornsea Mere Fish Refuges FIP

Hornsea Mere is Yorkshire's largest natural lake. This freshwater lake is 189 ha in size, mostly shallow except for a small area which has a depth up to 4 metres. The Mere is used by dinghy sailing, birdwatching and angling. Boats can be hired for use on the major part of the lake, however the west end of the lake is preserved for bird watching and the privacy of the Wassand Hall. This area is very shallow and is lacking in macrophites or any other suitable fry cover.

The aim of the project was to install both brushwood and plastic reefs to provide cover for fish spawning and fry cover.

Following an initial survey of water depths it was decided to use brushwood bundles as they could be positioned in shallower water where any spawning activity would take place.

Brushwood bundles were built from alder cuttings collected from trees around the Mere. Samples of the hollow concrete blocks used to construct and anchor the bundles to the lake bed.

The holes in the blocks were filled with the brash forming a rigid structure about four metres long. The use of a looped coir textile was added to mask the block and provide additional cover. At the chosen location the blocks were rolled overboard. Water depth at the site was 0.5 metres above summer level. It is estimated that the depth around the brushwood bundles will be about 1.5 – 2 metres deep in late spring or early summer. The site is on a sheltered north facing shore with the nearby marginal reed bed consisting of lesser reedmace and phragmites. In total 8 x 4 metre bundles were installed making about 35 – 40 metres of fry/fish cover. The Trust will undertake a mid-season survey around the structure to ascertain the effectiveness of the installation.

The second part of this project was to fell and hinge the larger trees on Lady Island. As this area is a sensitive bird watching site and important for other wildlife an agreement was reached with the Estate and Natural England on the aims of this project.

The larger trees, which are all alder, are dead, mostly due to cormorant roosting. The image (right) shows white deposits from the roosting birds. The strong ammonia smell on the island floor is testament to this use.

The above image shows the main two cormorant roosting trees – both dead alders. Both of these were felled towards the mere. The tops of the trees, once felled, created valuable cover for the fish. The dead tree to the right of the picture, also a roosting site, was left untouched.
A further four alder trees on Lady Island were also felled into the mere creating a very large shelter area for fish. Dense willow planting on the south shore was also hinged into the water.
Left: This alder was hinged onto previously felled trees to force the branches under the water.
The live, hinged trees will continue to grow providing long term habitat for fry and invertebrates, and there is an option to build on this project in following years as the minor amount of habitat achieved on this occasion is quite insignificant on such a large body of water.

Elmswell Beck, Driffield

This was a project to address river bank erosion. Erosion to the outside bank on the bend in a river is a natural process. There are instances where this effect can be exacerbated and where some intervention can be beneficial. In this case the flow was concentrated more than normal by a large willow tree that had fallen into the river on the opposite bank. It was agreed between the owner and angling interests that some form of natural protection should be undertaken.
The project aims were to partially remove some of the willow that was diverting the flow and use this material to form a natural CWD (Coarse Woody Debris) barrier that would root and form long-term protection to the bank.

Looking downstream the eroded left bank has become very narrow and could take out the fence line.

The unwanted limbs and brash were removed from the fallen willow and winched across the river. This material was sorted and long sections kept for the bank revetment. The posts to retain the brash were pressed into the river bed using the machine.

Long willow brash was placed and woven through the stakes. Volunteers from the angling club and YWT helping on site.
Several large logs were stockpiled for use as deflectors to be used when river conditions improve.

River Seven, Sinnington

Improvements - Phase 3

This project was the third project undertaken by the Trust with the aim of limiting sediment from entering the Derwent system and preventing bank erosion.

The site starts above the village of Sinnington, in North Yorkshire, and the river bed along this section is comprised mainly of large gravel and cobbles. The river is tree-lined and during summer this creates dense shading. Some bankside trees were felled, and the resulting material used to create 'kickers' that divert the flow away from the eroded sections.

The river lacked any variation in flow patterns or areas of still water for fish shelter. To combat this, some short logs were drilled and pinned to the river bed using 2000 x 16mm re-bar steel pins. As the project progressed upstream it was found that due to bedrock close to the surface this method was no longer viable as pins would need to be less than 600 mm long. This was considered insecure as flood flows in this river are very powerful.

Identifying areas of erosion.

Method of fixing logs (deflectors) to the river bed.

Foston Beck - Removal of steel pile weir

This section of Foston Beck, downstream of the EA gauging station, has a very low gradient and culminated in a defunct steel pile weir about 700 metres below the gauging station. This weir had been installed in the early 70s by the Millhouse Beck Dry Fly Club. It was constructed with sheet piles and had a mechanism in the centre that incorporated a fish screen.

Much of the structure was in poor repair and since its construction had caused heavy siltation upstream towards the Foston millpool.

Several meetings were held with the angling club and it was decided that the weir had no practical benefit or reason for it to remain.

Prior to removing the weir, it was decided to remove as much silt above the weir as possible. This would be achieved by leaving some silt in the margins and creating a meandering channel. The dredged silt would be placed on the back of the left bank in one operation and would go some way to negating any massive silt transport into Frodingham Beck.

There is a shortage of bushes/trees on this lower section of Foston Beck. As maintenance is undertaken from the left bank it was proposed that more hawthorne and willow bushes could be planted on the right bank and this would improve cover and not affect machine access.

Contractors were appointed and following a delay, due to flooding in the Hull headwaters, the work was eventually undertaken.

The EYRT will advise the fishing club on the next stages to help create a more natural stream – before the 'ponded' slow flows and sediment beds detracted from what should be a chalk stream habitat.

The defunct steel pile weir prior to work commencing.

The machine could not reach the small section across the river, but it was decided that the removal of two out of the three piers was equivalent to the average river width. The reed bed fringe was covering the remaining piles.
The steelwork was crushed by the machine and carried to a point where it could be recovered by the contractors.
It was estimated that the removal had lowered the water level by up to 10 cm. This was not apparent near the weir site but was clearly visible upstream.
A discernible increase in flow velocity was also noted and some marginal silt beds had become exposed.

The central screen section removed along with toe boards and stone work.

The sheet piles being lifted. It was noted that the piles were not driven very deep and could have given way at any time.

The original reason for the weir's installation was to prevent fish from moving out of the club's section of the Beck. However, that objective was no longer tenable because of its derelict state. The section below this weir had been very over engineered – it had become slow flowing, had no marginal zones and had a 0.78m deep sediment layer covering hard river bed. This situation extended below the weir for about 160 metres, down to the confluence with White Dyke – a lowland agricultural drain.

The above image is an aerial shot looking upstream, taken from 30 metres above the Foston Beck and White Dyke confluence, showing the potential natural meander forming.

River Seven - Habitat Improvement Project

The Seven Angling Club had initially sought advice from the Environment Agency, and subsequently the Wild Trout Trust and the East Yorkshire Rivers Trust (EYRT). Their request was for advice to improve recruitment of native fish populations within the sections of the River Seven that they controlled.

Under the Water Framework Directive (WFD) this part of the river is failing good ecological status for self-sustaining native fish species.

During the delivery of the first phase it became apparent that the continuous tree cover on both banks created a dense shaded habitat that needed to be addressed. More importantly, the work undertaken to address the erosion measures would not deliver maximum effect unless more daylight could reach the river.

The riparian owner and fishing interests were involved in discussions to open up sections in the tree canopy allowing sunlight to reach the river bed.

Once agreement had been reached, the EYRT appointed suitable contractors to undertake the work.

The aim was to concentrate on the main arable field which had a river connection of over 900 metres. A contract was drawn up to remove or 'crown lift' one-third of this riparian field boundary. This was to be done in sections, allowing for a mixed habitat of light and shade.

The Trust marked the sections where tree surgery was to be undertaken and following harvest of the field the contractors moved onto site.

Note gravel bed exposed due to low summer flows now in full daylight. Many of the trees were multi-stem 'pollard re-growth' from previous clearance operations. The species involved were mostly alder and sycamore.

Looking upstream to the Sinnington WWTW outfall. Old logs were left in place as the bed scour and deep water created is beneficial to fish and invertebrates, especially at low flows. These structures were checked and made secure.

Aerial view showing cleared section. Brash and logs were separated for machine handling.

All brash was chipped. On completion of the felling the field was cleared of all brash and racked over.

Old timber removed from the river bed during the operation was stockpiled on the bank ready for future LWD projects.

Timber stack from the felled trees is made ready for removal by road.

Monitoring
The Seven is one part of the EYRT's sites for the Anglers' Monitoring Initiative. The effects of the work undertaken will show over the next season or two. Similar work done on Pickering Beck showed a dramatic increase in the invertebrate population. It is believed that allowing more light to reach the riverbed that species of aquatic macrophytes will colonise, again increasing the numbers of invertebrates and areas of fry cover. A similar project to this was undertaken on the River Rye, near Helmsley, which saw a measured increase in the invertebrate population of 60% in 12 months.

Gypsey Race - Woldgate Weir removal

Gypsey Race is ephemeral in its upper reaches (well upstream of Woldgate Weir) but the remainder of the watercourse flows all year (except in extreme drought events). It has a run of sea trout which migrate up it to spawn in the headwaters. However, just upstream of the A165 road was Woldgate Weir; this was a defunct and dilapidated gauging weir. The weir was a barrier to fish passage and to the sea trout spawning grounds. Woldgate Weir was owned by East Riding of Yorkshire Council and they gave permission for this weir to be removed as they have no operational need for the structure. The project's aim was to restore Gypsey Race by narrowing the channel and making more varied flow patterns. It would also remove Woldgate Weir and then restore the affected section of channel to a more natural condition. The project on completion would benefit a range of wildlife.

Woldgate Weir had ponded part of the watercourse upstream of the weir and this area was a mass of burr reed which requires still or very slow flowing water. However, in a natural flow regime, Gypsey Race should contain plants characteristic of a chalk stream such as water crowfoot. The combination of river restoration and the removal of the weir would allow a more natural flow regime throughout the catchment and mean that plants associated with chalk streams could colonise (or be reintroduced). Removal of Woldgate Weir would also aid the migration of lampreys and eels. Finally, restoration of Gypsey Race and the removal of Woldgate Weir would ensure that there are more natural sediment processes in the watercourse.

The Gypsey Race Project compliments, but is separate to the wider Bridlington Renaissance Project which East Riding of Yorkshire Council is managing. The Bridlington Renaissance Project seeks to improve Gypsey Race through the town and make it more natural and a place that people value and want to visit. Upstream of the A165 the Environment Agency had agreed to deliver the section of the project that will include removal of the defunct weir. The Gypsey Race Project will ensure that this watercourse is improved upstream of the area covered by the Bridlington Renaissance Project.

The contract to remove the weir was awarded to a local contractor experienced in demolition works.

Woldgate Gauging Station.

Demolition of the meter building and associated stilling well.

As with all similar gauging weirs the structure is built using re-enforced concrete.

The method chosen to demolish this type of structure is with the use of a hydraulic breaker attached to an excavator.
The re-enforcing wire is toughened steel and has a high resistance to any breaking force.

The "V" shaped gauging section can be seen on the river bed. This section of concrete was over a metre deep with many strands of re-enforcing wire.
All concrete and bricks were removed from site by the contractor. This material is crushed and sorted at their site where the steel wire is recovered for re-cycling. The crushed concrete is used for roads etc.

With the concrete removed the bank was reformed. The angle on this left bank needed to be left steeper than ideal. This was due to the position of the fence on the bank top. Care was needed to prevent undermining the posts.

Once the weir site had been completed the landscaping part of the project began.
The channel was blocked with reeds (Sparganium) that can slow river flows and cause rapid siltation.

Sediment was removed from the watercourse using a method that will allow the river to meander within its restricted course. The variations made in both depth and width will assist in promoting natural geomorphological actions to develop.

West Beck - Habitat Improvement Project

This project's aim is to improve the biodiversity of a section of the West Beck between Snakeholme and Whinhill – a length of about 6 kms.

The project was to improve sections of the river where margins had become overgrown to an extent that the flows of the river were eroding the opposite bank causing sediment to enter the system.

The second aspect of the project was to address the large number of willow trees also causing bank scour. Most of these trees had not been managed for many years.

The project began in late October 2019, starting at Wansford Bridge.

Following trimming and removal. The small willow bush on the nearside bank was part cut and hinged into the flow. This has created a meander and its associated bed scour.
The large willow log was left in place as additional habitat and cover for fish.
All unused material was removed/chipped. This wood chip was retained by the riparian owner.

As the project progressed the river level began rising at an alarming rate making the 'in-river' work difficult to undertake with any chance of long term success. Some of the tree work would therefore need to be re-visited during lower flows.

It was agreed that up to 50% would be removed to address the bank damage.This material was placed onto the remaining margin and levelled. Care was taken not to dig deeper than the original river bed.

All large timber was handled by an excavator with suitable 'grab' installed. Due to the position of the bankside fence, all material had to be lifted over into a field where it could be processed.

View showing wide glyceria margin and resulting opposite bank scour. The margins were managed using this method in five separate locations covering a total of 250 metres. At one specific location a grab bucket was used to great effect. This method gave improved control of the amount of material being removed.

Further work on improving the large old willow trees was undertaken at Snakeholme. Our advice was to 'crown reduce' these trees. This would benefit the trees and prolong their lifespan leaving them less likely to be damaged by high winds. Five long limbs were selected and stockpiled on the bank. These will be used to create 'kickers' and placed at the foot of the riverbank to prevent scouring.

DUSKY YELLOWSTREAK (*Electrogena Affinis*)
-its distribution in the Yorkshire Derwent Catchment

This survey has been part funded by Yorkshire Derwent Catchment Partnership with funding from CaBA to build a more extensive picture of the distribution of this nationally rare river fly that is uniquely found in the Yorkshire Derwent Catchment.

Electrogena affinis (Eaton, 1883)
Order: Ephemeroptera
Family: Heptageniidae
Genus: Electrogena

Identification
The nymphs of the two species in the genus Electrogena can be easily separated from the other Heptageniidae by the presence of a pale cross-shaped marking bounded by four brown patches on the femur and by the presence of a long fringe of hairs on the femur. E. affinis can be separated from E. lateralis by the presence of light patches on the head whilst the head of E. lateralis is uniformly brown. Furthermore E. affinis is associated with lowland rivers whilst E. lateralis is found in fast-flowing stony rivers/streams and rocky lakeshores, generally at high altitude.

The fly's life span is one year, spending most of this time as a nymph/larva. At this larval stage the nymphs feed on algae and diatoms, on emergent and semi-emergent vegetation (glyceria, water lilies and potamogeton species).

Adults only live for a few days. On emerging, like many river flies, they mate, lay their eggs and die. This takes place in July and August.

The adults (both sub-imago and imago) can be distinguished from other Haeptageniidae by the bright yellow streak just below the base of the forewing and E. affinis can be separated from E. lateralis by the leg colour which is yellowish with a chestnut-brown stripe leading from the body onto the femur, whilst the legs of E. lateralis are uniformly dark brown. Furthermore the body of E. affinis is a light creamy-brown with dark chestnut markings whilst that of E. lateralis is a uniform dark brown.

Distribution
Electrogena affinis (Scarce Dusky Yellowstreak) is very rare in the UK. Due to the limited records of this species it has been classified as 'Data Deficient' in the 2016 status review (Macadam, 2016). So far it has only been found in the Yorkshire Derwent catchment. It was first recorded from the Yorkshire Derwent at Norton in July 1988, only 15 metres above sea level. It has subsequently been found at several sites on the R. Rye from approximately two kilometres below Newsham Bridge down to Rye Mouth and in the R. Derwent from just above Rye Mouth to just below Stamford Bridge.

With the growth in citizen science, and in particular the Anglers Riverfly Monitoring Initiative (ARMI) and the Riverfly Census, there is now an increased chance that more may be found in routine monitoring. However, surveyors need to be given the information and made aware of areas in which it is likely to be found.

Sampling Methods
Whilst the adults are only to be seen for a couple of months (the main flight period being July and August) the nymphs are present in the river for much of the year. It is therefore far easier to sample the nymphs by netting, particularly just prior to emergence when mature (large, easily identified) nymphs will be most abundant. E. affinis is an atypical Heptageniidae since its nymphs are not associated with fast flowing rocky river beds but are found in association with emergent and semi-emergent vegetation and submerged trees in relatively deep, slow flowing margins and in faster flowing midstream locations. As a result kick sampling is impossible. Sampling has proved difficult due to limited access with some very steep, heavily-vegetated banks and very deep marginal water. Where access to suitable habitats has been possible, sweeping a long-handled net with a fine mesh through the emergent vegetation and submerged branches and tree roots from the bank has proved to be successful – although access via a boat would certainly be a big advantage.

Recent sampling started in 2016 when a number of workers resampled the original location at Norton and nearby sites on the R. Derwent and R. Rye. Limited sampling was also done in 2017 when nymphs were found in the R. Derwent just above its confluence with the R. Rye. In 2019 members of the East Yorkshire Rivers Trust (Alan Mullinger and myself) searched further afield on the R. Rye and the R. Derwent, increasing our knowledge of the known distribution. Unfortunately our sampling started late in the year (29th July). Furthermore heavy rain and high river levels in August impeded our sampling.

Conclusion and Recommendations
The Derwent catchment is very special and would appear to be unique in the UK since it contains a significant number of rare species. The Lower Derwent was the last confirmed place that the burbot or freshwater cod (Lota lota) was found (1969 at Bubwith), although two sightings were reported by anglers in 2010. The very rare caddis, Synagapetus dubitans, first discovered in the UK by Stuart Crofts at a petrifying spring near Masham on the R. Ure in 2010, has since been discovered in similar locations on the Upper Yorkshire Rye. There are a number of other rarities (Ephemeroptera, Trichoptera and Plecoptera) that have been found in the Derwent catchment. Furthermore, the Derwent Ings, bordering parts of the Lower Derwent, are the location of an abundance of the rare narrow-leaved water dropwort (Oenanthe silaifolia).

Since E. affinis would appear to have a very localized distribution and very specific habitat requirements (marginal and emergent vegetation in deep water) it is potentially vulnerable to any unsympathetic river management such as that has occurred historically on this catchment.

With present safeguards through the EA and Natural England and input from the Yorkshire Derwent Catchment Partnership it is hoped that a more holistic view is adopted towards the issues of annual maintenance.

The Natural Flood Management (NFM) regimes should benefit many of the aims towards this in protecting the rare flora and fauna of this important catchment.

Proposals
As previously stated, any sampling has been limited by the physical safe access to the ideal sites. Hopefully in 2020 we will be able to start sampling earlier in the year when we can see if E. affinis is to be found further up the R. Rye and further down the R. Derwent.

The EYRT recommend that the 'gaps' in the data to date could be addressed by the use of a suitable boat. Some of the staff and volunteers working within the Trust are suitably qualified in all aspects of boat handling.

Where the 'right of navigation' is required, riparian approval could be sort for this purpose.

This could mean that longer reaches of the River Derwent could be covered more safely enabling a clearer picture to be drawn on the true distribution of this rare species.

Produced by Dave Southall

Lowthorpe Beck Channel Modifications

The removal of the Lowthorpe Mill Sluice in 2015, although very successful, created an unnaturally steep bed gradient. Over the following two seasons this section was monitored to see what natural geomorphological influences would affect the flows across this section of the Beck.

It was believed that the stream bed was clay lined as was the practice on many water mills in this area. The clay could be seen on the stream bed and it appeared that it was breaking up. As the survey proceeded upstream this broken clay disappeared and was replaced by a thin gravel layer. To ascertain the levels of this material a study was undertaken during the winter of 2017 where several small sections were excavated to enable the make-up of the material to be determined.

It was found that the gravel layer was only seen on the surface of the stream bed and below this consisted of very hard boulder clay. The maximum depth of the excavation was 0.75 metre with no change in the material found.

The original plan to import gravel was dropped as it was thought unlikely that this material could be stabilised and would be quickly washed downstream. The final project was decided on with the approval of the owners and fishing interests. It was agreed that two meanders would be installed at this site to slow the flow and create deeper areas which would increase fish cover and flow diversity.

Photograph showing the over-wide and straight section during a low flow period. No cover and with compacted gravel bed.

Aerial shot of the same section. Flows slightly higher but still with poor cover, straight, featureless, even bed depth and very sparse compacted gravels.

New meander at the top of the project site. The photograph is taken at a higher viewpoint to enable the full length of the meander to be shown. The stream course is about 12 metres longer when compared to its original course.

Raking the gravel and with the coir geotextile in place.

The stream on the 'outside' (left bank) of the bend is 0.7 metres deeper than the right bank. It is accepted that the river will change over time depending on winter flow velocities. It is not thought that this deeper 'man-made' feature will change too much as this would naturally be the deeper part of a natural river bed.

Prior to excavation any gravel presesnt at the site was stockpiled. Once the new meander had been completed the gravel was redistributed and raked over by hand.

During excavation the material being taken from the left bank margin was all organic sediment and roots of the glyceria on which this bank was formed.

This material was placed within the new coir log margin. This will form the basis of a strong marginal growth during next spring.

A coir geotextile was pinned to the leading edge to prevent erosion in the event of very high winter flows.

Second meander completed. The material on this site was very hard clay and needed no bank reinforcement of coir protection.

View from bottom of site looking upstream across both meanders.

QUINTIN BOTTOM PLANTATION UPDATE

Felling and site clearance were completed around the middle of January. The following month turned out to be the wettest on record and the access to the site being totally flooded with as much as 0.5 metre of standing water.

As this woodland was in a depression, next to the Lowthorpe Beck, there was nowhere for the water to discharge. Draining the area relied on existing historical under-drainage that was probably blocked by the old poplar tree roots.

The trees provided by the Woodland Trust were delivered at the end of February. The consignment consisted of 10 natural wet woodland broadleaf species, comprising common alder, downy birch, hornbeam, hazel, aspen, bird cherry, common oak, alder buckthorn, goat willow and rowan. The total number of trees that were to be planted in this 2.4 hectares was 2250.

The ground was very soft and about 40% of this area was standing water in pools and tracks left by the forestry machinery. Frog spawn was seen in many of the pools.

The planting was carried out in natural groups and glades, with many of the tree species mixed to provide a natural woodland habitat. All of the trees needed protection from grazing deer, which are common in the area.

This planting was undertaken by volunteers from the East Yorkshire Rivers Trust and the Yorkshire Wildlife Trust.