

THE WESSEX WATERWAY

The Wessex Chalk Stream & Rivers Trust's biannual newsletter



In this issue

Habitat enhancement on the Till p.6

A chalk stream in the upper Avon receives a restoration boost.

Opening up the Dun p.8

Our major fish passage improvement project on the River Dun is nearing completion.

Harnham Water Meadows p.10

Find out about the origins and use of historic water meadows and why it is important to protect them.

Chalk stream indoor classroom p.13

Bringing chalk streams to life in a classroom setting.



CHAIRMAN'S INTRODUCTION

Dear Supporters,

On a grey winter's day it is hard to recall how beautiful our chalk streams look in the summer sunlight, but I hope this newsletter inspires you with hope for their future. It describes many of the activities of Wessex Chalk Stream & Rivers Trust across the Avon, Test and Itchen catchments and I am particularly pleased that WCSRT has extended its activities into the Meon Valley in the past six months with a catchment invertebrate fingerprinting project.

Much of what we do involves partnership working with other bodies interested in the well being of our waterways. You can judge for yourselves whether this approach has been successful. For my part, I have been delighted to see the project on the River Dun, an important tributary of the Test, come to fruition this year. With generous financial support from the Environment Agency and the landowners concerned, fish by-passes have been built around two mills, thereby opening up much of the Dun to migratory fish. This project has taken three years since planning began and is a good example of how persistence and cooperative working can lead to significant environmental benefits.

Dr Paul Jose, our Director, has been tireless in his pursuit of river improvements in the three and a half years he has been with WCSRT. As you will read, he will be moving on in early 2018, the weekly commute from his home near Cambridge having finally got the better of him. By the time you read this we will be well advanced in hiring Paul's successor. I would like to wish Paul the very best for the future. I am sure he will keep a close eye on the welfare of our beautiful rivers and I look forward to introducing his replacement to you in our next newsletter.

George Seligman
Chair of Trustees

BUILDING ON SUCCESS

by Paul Jose, Director

2017 has been a momentous year for the Wessex Chalk Stream & Rivers Trust. We have delivered a wide range of river restoration and water quality projects. The award of the UK River Prize for work on the River Avon, in which we were a key partner, highlighted this success. Our work with the Environment Agency at Ibsley has been commended by both landowners and anglers.

We have just completed two fish passes on the River Dun, which means that the river is now barrier free and passable to both Salmonid species and eels (page 7).

This year saw us exceed and go significantly beyond five hundred primary school students engaging with our Winchester College school education programme to date (page 14). We are looking forward to the programme starting again in February 2018.

This autumn brought news that WCSRT and Hampshire and Isle of Wight Wildlife Trust have been awarded a substantial Heritage Lottery Fund grant for work on the Test and Itchen headwaters (page 14).

We are continuing to build on our success with the development of a business case to take the next phase of the River Avon Restoration Project forward. WCSRT are also developing, with Queen Mary's College and French partners, an Interreg bid for European funding for water quality work on the Avon. This builds on the work carried out by academics who researched what we need to do to address the water quality and sediment issues faced by the River Avon.

On an 'emotional note' I have decided to step down as Director to restore my own work/life balance. The last three years have been immensely rewarding, but the weekly commute from Cambridge has been a challenge. I wish the Trust well with the recruitment of a new Director and hope you will support her or him in the role going forward and build on our success to date. As always, I thank you for your continued support.





Science update

We use science to make sound environmental decisions.

ANALYSIS OF MEON RIVERFLY SAMPLES UNDER WAY

by Rupert Kelton

The Meon Catchment Invertebrate Fingerprinting (CIF) study is nearing its completion with the autumn 2017 samples collected at the beginning of October by our Scientific Officer Jon Bass alongside Rupert Kelton and the South Downs National Park Authority volunteers.

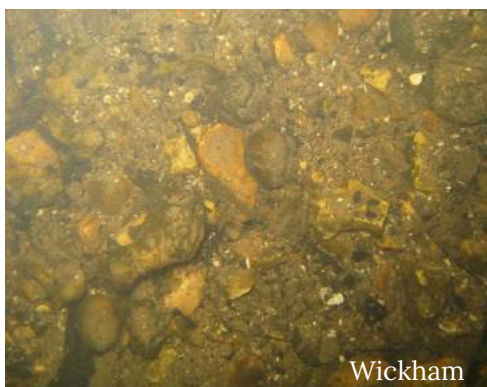
The autumn samples have since been sent to Dr. Nick Everall from the Aquascience Consultancy for analysis, the results of which are due in early 2018. Samples collected in spring 2017 were analysed during the summer and these will be combined with the results of the autumn samples to help establish the condition of the River Meon based on the health of its invertebrate populations.

The results of the analysis will be summarised in our next newsletter and will be published in a booklet format in spring 2018. For more information about this project or to view the Test & Itchen or the Hampshire Avon CIF documents, please visit our website.

Pictured below: Autumn underwater images of the Meon streambed taken at three different CIF sampling sites illustrate that there's more fine sediment within the gravel at downstream sites. *Pictured right:* Jon Bass investigating the streambed in October 2017.



Warnford Park



Wickham



Titchfield



Habitat Restoration update

We restore habitats for fish and wider biodiversity.

IMPROVING EEL HABITAT ON BROADLANDS ESTATES

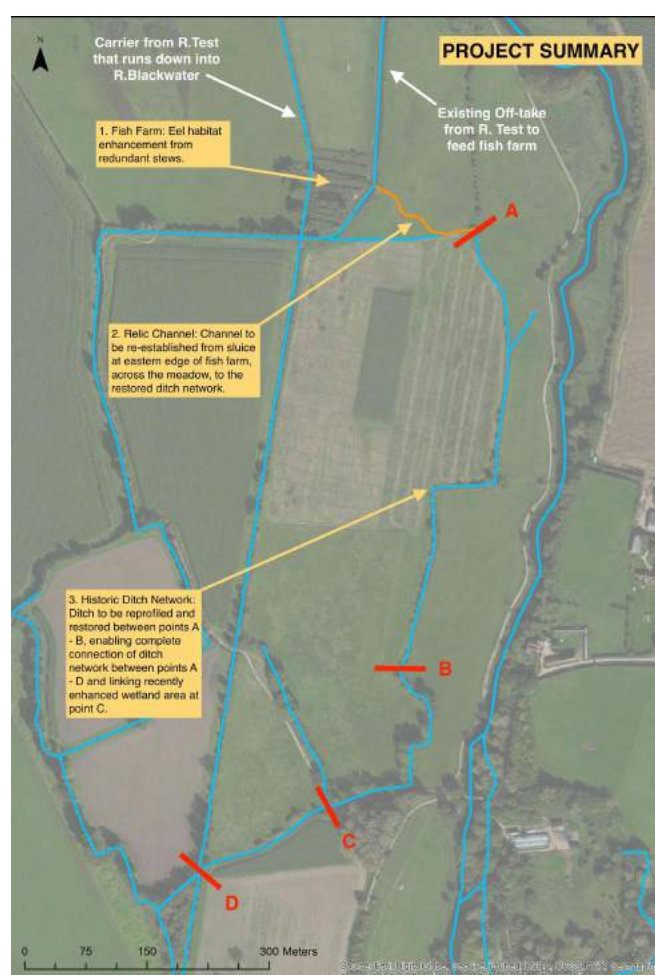
by Rupert Kelton

In summer 2018, the Wessex Chalk Stream & Rivers Trust, in partnership with Broadlands Estates, will be seeking to restore and enhance part of the Estates' historic ditch network in order to create additional habitat for eels.

In 2015 the waste management company, Veolia, commissioned WCSRT to deliver a two-year project aimed at improving the passage of eels and elvers in the Test, Itchen and Meon catchments. Under the Eels (England and Wales) Regulations 2009, there is a legislative requirement to protect eels from the adverse impact of abstraction. However, the Environment Agency's assessment of Veolia's abstraction deemed that it was not going to be cost beneficial for Veolia to upgrade the screening of their abstraction to prevent the entrainment of eels and elvers (i.e. to reduce the risk of eels becoming trapped in pumps and turbines). Instead they applied the innovative concept of 'alternative measures' whereby Veolia could pay a third party (in this case WCSRT) to deliver benefits to eels, which are deemed to be greater than the adverse impact of the abstraction.

Following successful delivery of the project with Veolia, Marchwood Power approached WCSRT at the beginning of 2017 to develop another mitigation project that would be funded through this 'alternative measures' route. Since January 2017, WCSRT have been working with Marchwood Power and Broadlands Estates on proposals to undertake a habitat improvement project that will create and enhance additional habitat for eels within the floodplain of the lower Test.

The project will be seeking to restore an element of the historic ditch network and redundant fish farm stews to enhance and create additional eel habitat and to increase connectivity between habitats (project plan - top right).



The proposal is to re-naturalise part of the estate's fish farm and provide connectivity between this and another recently enhanced wetland area by restoring a section of relic channel and ditch network so that water can flow unrestricted, enabling free passage for eels throughout the year.

The work is going out to tender in early 2018 and is scheduled to begin in the summer. WCSRT is looking forward to working with Broadlands Estates to deliver this important habitat restoration project.

RIVER TILL RECEIVES A RESTORATION BOOST

by Liam Reynolds

In autumn 2017, the Wilton Fly Fishing Club (WFFC), Wessex Chalk Stream & Rivers Trust (WCSRT), Wild Trout Trust (WTT) and a number of local landowners joined forces on the latest phase of the River Avon Restoration Project (RARP) on the River Till near Stapleford.

The River Till replicates many rivers nationwide with 90-degree 'meanders' hugging historic field margins and perched banks created from old dredging activities. Agricultural intensification has shaped this reach, but within its confinement once lay a bustling chalk stream.

In 2015 WCSRT met with partners to assess restoration options due to the river section's canal-like structure and a mixture of over-shaded and barren sub-reaches. The project was taken forward in two phases and in 2016 tree works were carried out to brighten the shaded areas and to gather woody material for in-channel works in 2017.

Following preparatory works in 2016, delivery began this September with the help of WTT, volunteers from WFFC and local contractor Woodland Water and Gardens.

Nearly two kilometres of river has been enhanced through the creation of 22 in-channel structures (brushwood mattresses and flow deflectors), bank regrading and the removal of two small impoundments. In carrying out this work we have created a diversity of habitat for fish, invertebrates and macrophytes, which will help secure the ecological richness of this chalk stream.



The installation of large and coarse woody debris on the Till has helped create a more favourable habitat for fish and wider biodiversity.

Bob Male, Habitat Manager for the Wilton Fly Fishing Club said: "We have been very happy to work with the Wessex Chalk Stream & Rivers Trust to restore and improve a significant stretch of the river this year. Overgrown banks have been cleared and woody materials introduced to the channel, with the aim of increasing weed growth and channel diversity. It has been a pleasure to work with the WTT, volunteers, contractors and with Liam Reynolds from WCSRT, who has project managed the work and kept us all on track. We shall look carefully at the improved stretch over the coming seasons and hope to see the fish give their approval to the job".

Finally, 2017 marks the end of the first phase of the RARP programme (RARP1), which after seven years of partnership-led delivery has restored approximately 36km of river throughout the Hampshire Avon catchment. The River Till project finalises WCSRT's practical involvement in the RARP1 legacy, but more river restoration is yet to come as we are currently developing the second phase of the project in partnership with the Wiltshire Wildlife Trust and many other catchment partners.



Before and after images of a small impoundment removal

Dorset Stour Fisheries Plan

Angling clubs and associations, syndicates and commercial fisheries along the Stour have one primary interest in common: self-sustaining and successful fish stocks.

In the coming months, the Wessex Chalk Stream & Rivers Trust will use the 'Your Fisheries' approach to compare the Stour fish monitoring information held by the Environment Agency (EA) with past and current anglers' catches as well as a recent report published by Bournemouth University.

The Dorset Stour Fisheries Plan will include links to fishing opportunities in terms of seasonal membership and day ticket availability. Outcomes will highlight local opportunities for improving fish stocks that also benefit neighbouring river reaches and other river wildlife.

The initiative is linked to the Stour Catchment Partnership, with national funding approved through local EA staff.

An upper and lower catchment meeting will be held with angling representatives in early 2018 to discuss information on catches (meeting details to be confirmed in due course). Some examples of other catchments where the 'Your Fisheries' approach is up and running or under development can be viewed via goo.gl/cKVMi6.

Should you have any queries, please email them to Liam Reynolds at avon@wcsrt.org.uk or Jon Bass at jon_bass@btinternet.com.

OPENING UP THE DUN FOR FISH MOVEMENT

by Ses Wright

Good progress is being made with the fish passage improvement project currently being delivered on the River Dun, enabling fish to navigate past two historic mills that are recognised as complete obstructions to fish. The project is being delivered in collaboration with the Environment Agency (EA) and landowners on the River Dun.

Since 2015 the Wessex Chalk Stream & Rivers Trust (WCSRT) has been working in partnership to improve fish passage at Holbury and Lockerley mills located along the lower reaches of the River Dun. The project has involved hydraulic modelling and design work by the civil engineering company Black & Veatch Limited (B&V) with project management provided by the Trust working in close partnership with the EA. Final design drawings were completed toward the end of 2016, agreement by the EA National Fish Pass Panel was gained in February 2017 and further planning and formal consents were ascertained over the summer. The location of the two mills along the River Dun is shown on the map below.

The River Dun is a tributary of the River Test, the latter of which is popularly regarded as being one of the finest chalk rivers in the world with its crystal clear spring water supporting a rich diversity of fish, mammal, bird, invertebrate and floral communities.

A commonality of both the Test and the Dun is that they have been modified in many ways over time, resulting in multiple in-channel structures and braided channels, which impact on flow dynamics, morphology and the resultant river qualities, including fish passage. This situation is compounded by the abstraction of water from the Test (and neighbouring River Itchen) catchment for potable supply, supporting the growing urban conurbation of Southampton and wider Hampshire towns and villages (including the Isle of Wight).

The combination of in-channel obstructions, historic land drainage and channel modification works (parts of the Dun were canalised in the 1800s) and abstraction pressures mean that it is increasingly important to ensure that all efforts are made to improve the resilience of our rivers. This includes enhancing fish migration opportunities alongside river habitat improvement works to promote improved, stronger sustainable 'wild fish' populations within the wider Test and Itchen catchment.



Much time and effort has been invested by the WCSRT and the EA alongside other key stakeholders to improve fish migration opportunities along the River Dun, with a number of small weirs having been removed and in-channel habitat improved. For example, the NatWest Flying Fishing Association's reach immediately downstream of Lockerley Mill has worked with the EA to improve channel sinuosity by creating bankside berms as well as the removal of small weirs to better energise the flow regime and hence boost biodiversity potential. These works will complement and add to the sum of benefits gained from the Dun fish bypass improvement works at Holbury and Lockerley.

The River Dun is just over 18km in length with the mills at Lockerley and Holbury located on the lower reaches that consequently limit fish access to approximately three-quarters of the remaining upstream reaches of the Dun. It is anticipated that the proposed fish bypass project will significantly open up the Dun for fish spawning and nursery areas that will yield benefits to the Dun and wider Test catchment. Many large rivers depend upon their tributaries to act as important spawning and nursery grounds for young fish and fry and the Test and Dun are no different in this respect.

The fish bypass designs for both mills involve the modification of existing mill bypass streams and includes the construction of a Larinier, i.e. a 'fish ladder' that enables fish to navigate a steep gradient over a relatively short distance. This is required in part to accommodate the artificially raised water channels at both mill sites, enabling fish to move from a relatively 'low' bed level downstream of each mill to the much higher bed level immediately upstream of the mills. The photo (top right) shows the Larinier fish bypass that has been built at Lockerley Mill. Please note the eel pass structure secured to one side of the Larinier wall, which will enable eels of different sizes to navigate the Larinier.

Five Rivers Environmental Contracting Ltd won the contract to deliver the fish bypass improvement works for the Trust and are doing a superb job. A competitive contractor tendering process was undertaken to ensure best value.



The new Larinier fish and eel pass at Lockerley

The works commenced in September 2017 and are mostly completed at Lockerley Mill with works ongoing at Holbury Mill, where the Larinier has just been constructed and new channels excavated to accommodate the new dedicated fish bypass channel set within the wider Holbury Fishery.

The fish bypass works at both locations will help both coarse and larger migratory trout and salmon to move up and down the River Dun. It was very exciting to hear the recent news of juvenile salmon being identified at electro-fishing surveys conducted along the lower reaches of the River Dun near Mottisfont in November. With salmon recolonizing the river now is the best time to be delivering a fish bypass project that will help to support and improve their survival prospects for the future.

Special Feature: The Harnham Water Meadows

The Wessex Chalk Stream & Rivers Trust recently visited the Harnham Water Meadows in Salisbury and we were so inspired by our visit and by what we learnt that we asked Dr Hadrian Cook, a trustee of the Harnham Water Meadows Trust, to write a short piece about the history and management of these special floodplain systems.

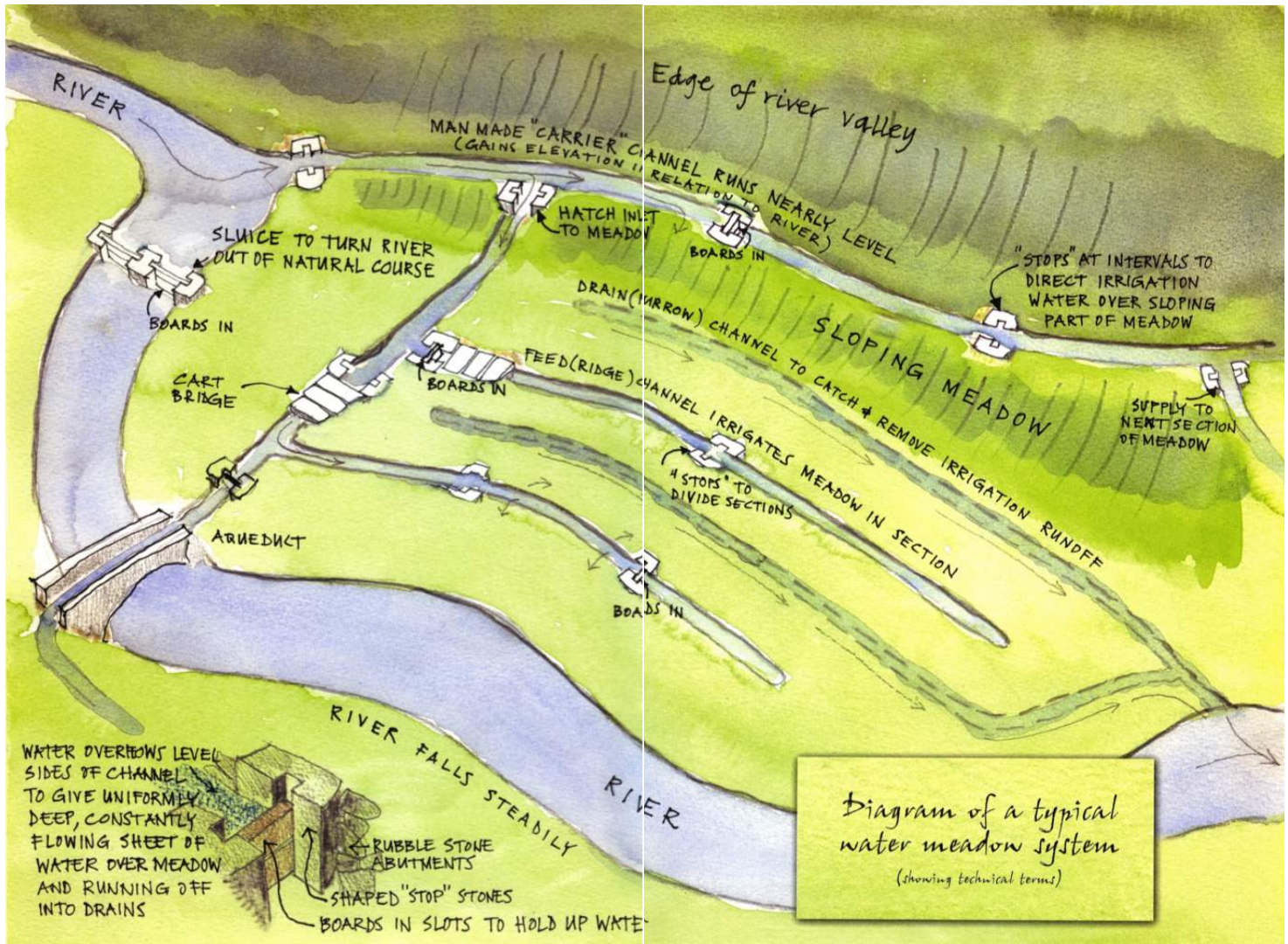
At the heart of the region covered by the Wessex Chalk Stream & Rivers Trust lie the Harnham Water Meadows. The landscape affords one of the finest views in England and provides a foreground for Salisbury Cathedral. To preserve these meadows, the Harnham Water Meadows Trust was formed in 1990 and is committed to conservation of about 34ha of historic water meadow, providing interpretation from Rose Cottage on Town Path that acts as a visitor and education centre. The Harnham Water Meadows date from around 1660. They are a complicated system located on an alluvial island, caused by a split in the River Nadder where it joins the River Avon. The meadows also provide valuable open space between Salisbury and the suburb of West Harnham.

‘Bedwork water meadows’ were constructed on alluvial floodplains and were integral to the agricultural economy of ‘Wessex’ as they operated alongside water mills, watercress beds and canals for navigation. They provided the ‘early bite’ of grass for ewes and lambs in late winter and early spring, enabling more livestock to remain alive. Through repeated irrigation two hay crops could be taken later in the year and after the hay was cut, there was aftermath grazing for cattle. Surviving water meadow systems have tended to be used for hay production and cattle grazing.

Autumn was the time to ‘right-up’ the works when hatches, banks and channels would be repaired, although irrigation before Christmas was commonplace.



Lower Seven Acres during winter irrigation



To irrigate a meadow, rivers are diverted via a main hatch along a main 'carriage' or 'carrier' and run in small channels to overtop the grassed ridges. These are the 'bedworks' constructed on the alluvial floodplain where water was ideally applied to a depth of around one inch (25mm) to flow through the grass sward. Flooding that totally covers the grass is never a management objective.

During 'drowning' mobile water carries with it dissolved oxygen from the air preventing soil stagnation. With it also comes nutrients from sediment disturbance as the hatch is pulled (typically nitrogen and phosphorous) and, importantly, even in winter water from the chalk will warm the soil above 5.5 degrees Celsius and protect the sward from frosts.

A single meadow would be irrigated rotationally within its system, typically for between three days and one week. Once drained, sheep were kept off for a week to allow drainage of the soil.

The resulting flush of nitrogen boosted growth, important during the colder previous centuries. If the meadow was grazed by lambs and ewes, these were turned on the meadow in the morning until late afternoon. The shepherd would then lead the flock up to the arable of river terraces and valley-side land. Here their dung and urine would return nitrogen, phosphorus and organic matter to the unfertilised arable soils producing wheat and barley. This was the 'Sheep-Corn System' that operated in the eighteenth century and well into the nineteenth, and there are instances of it surviving into the early twentieth century.

Water meadows provide valuable habitats for plants and animals, represent an important part of landscape heritage and traditional irrigation traps sediment, reduces phosphorous mobile in the water, allows oxygenation and does not affect river water temperature. Please visit salisburywatermeadows.org.uk for more information, including public demonstrations of drowning.



Catchment Management update

We help address wider water quality issues facing our catchments.

REDUCING SEDIMENTATION ON THE HAMPSHIRE AVON

by Liam Reynolds

Replicating the Rural Sustainable Drainage Systems (RSuDS) work undertaken by the Test and Itchen catchment partnership, as showcased in our spring newsletter, the Wessex Chalk Stream & Rivers Trust and partners have been giving advice, developing initiatives and installing RSuDS throughout the Hampshire Avon catchment. Our partners include Natural England (NE), Environment Agency and Wiltshire Council Highways and our collaborative working has led to over 20 farms, properties and highways being visited and targeted to reduce localised sedimentation.

An example of a project delivered through the Avon Sediment Pathways programme is our surface water diversion and track improvement works on the Fovant trackway. The project was managed by WCSRT in partnership with NE and ADAS Environmental Consulting and aimed to address sediment runoff from the surrounding catchment.

In periods of heavy rainfall the trackway replicated a muddy stream, delivering excessive sediment loads into the River Nadder (a tributary of the River Avon at Salisbury). In order to address the issue, six new and four existing surface water diverters and grips in the adjoining verge were installed/restored. In addition, a surface water diverter connected to a culvert was installed in the area of highest risk to transfer contaminated surface waters to a safe receiving area.

To supplement the physical works, local farmers were contacted and advised on best practise to retain soils on their fields, amongst other environmental initiatives. As a result, sediment entering the Nadder system via the Fovant trackway has declined significantly. This was witnessed first-hand by our Avon Catchment Officer during recent heavy rainfall, rendering the project a success. If you have any queries regarding the project, or would like to bring a rural, urban or domestic pollution source to our attention, please contact Liam Reynolds at avon@wcsrt.org.uk.



Fovant track improvement works



Education update

We engage with schools and communities to raise public awareness of chalk streams.

LEARNING ABOUT CHALK STREAMS

by Vee Moore

In September 2017, the Wessex Chalk Stream & Rivers Trust's Education Officer, Vee Moore, visited St Mary Bourne Primary School to give an indoor lesson on chalk streams to the very bright Sycamore class of Year 6 pupils.

First, the children learnt about chalk, the white porous limestone that helps to keep the water in our chalk streams clean and cool. Vee handed out small rocks of chalk for observation and explained that each centimetre of it is a product of a thousand years of deposition. Then the lesson moved on to how chalk streams were formed during the last Ice Age when gushing flows of melting ice carved these rivers into the landscape. When asked about the last Ice Age, one of the pupils guessed correctly that it occurred around 10,000 years ago.

It was then time to inspect a sample of invertebrates and small fish that Vee had collected from the local chalk stream, the Bourne Rivulet, earlier that day.

Needless to say the bullheads stole the show. Vee pointed out the many different insects that have developed unique structures and functions that enable them to live in water. The children keenly studied the protective cases of caddisflies and the external gills of mayflies, which allow them to breath under water.

Before the end of the lesson, the children were asked to choose and draw one of the invertebrates or fish from the sample. The children embraced the task with gusto and produced some impressive pieces of artwork.



WINCHESTER PRIMARY SCHOOLS PROGRAMME

by Vee Moore

WCSRT's collaboration with Winchester College is going from strength to strength. The aim of the programme is to provide Winchester-based primary schools with an opportunity to learn about their local chalk stream, the River Itchen, and the abundant fly life that inhabits its gravel-rich bed.

140 Year 5 and 6 pupils from St Bede Church of England Primary School took part in the programme during the summer term and a further 30 Year 5 pupils from All Saints Church of England Primary School attended the outdoor lesson this autumn.

The lessons took place on the Winchester College nature reserve, which is normally inaccessible to the public so it was a real treat to experience this beautiful stretch of the river in the centre of Winchester. The larger classes were divided into smaller groups and each one had an opportunity to learn from a WCSRT employee about the basic principles of hydrology and observe a kick sampling demonstration and then help identify the fly life found in the sample.

WCSRT now looks forward to spring term 2018 when Stanmore Primary School will participate in this fantastic environmental education programme.



Watercress and Winterbournes

The Wessex Chalk Stream & Rivers Trust is delighted by the news that the Watercress and Winterbournes project has recently secured £2.2 million (including development funding of £269,400) of Heritage Lottery Fund support to develop a five-year Landscape Partnership Scheme focused on the headwaters of the Test and Itchen chalk rivers.

The project aims to develop a community-focussed catchment approach, which will improve resilience, restore landscapes and build heritage structures, reverse species declines and reduce pollution.

The project partnership, of which WCSRT is a founding member, will take action to sustain the unique headwater landscapes of the Test and Itchen for the benefit and enjoyment of future generations. Communities will develop the skills and expertise to be able to take the long-term lead in delivering their local catchment improvements.

The project is led by the Hampshire & Isle of Wight Wildlife Trust and overseen by the Watercress and Winterbournes Landscape Partnership Board.

In Other News

WCSRT Annual Fishing Sale - 2018

For the last few years, kind friends and supporters of WCSRT have donated some exciting and rarely available fishing days for the Trust to sell in order to raise much needed funds. Many of these days are on stretches of river, which cannot normally be accessed by the public and so offer a real opportunity for keen fishermen and women. If you would like to donate fishing days to WCSRT to sell in 2018 it would be greatly appreciated and will help WCSRT continue to carry out the important work on the chalk streams in the Wessex region. Please email Lee Bush at admin@wcsrt.org.uk with details of the days you are happy to donate. Thank you for supporting us.

Goodbye and welcome - WCSRT Trustees

At the last board meeting in October, our chairman George Seligman announced that Denise Ashton would be stepping down from WCSRT's board of trustees. Denise has been a trustee for the last four years and has given a lot of her time to help and advise both the Board and the WCSRT staff. We wish Denise well with her future endeavours. At the same meeting, George introduced Dr Rose O'Neill to the Board and welcomed her as a new WCSRT trustee. Rose lead UK water policy at WWF-UK for many years, taking a special interest in protecting and restoring England's unique chalk streams. She currently works as a Principal Specialist - People and Environment at Natural England. Her expert knowledge and experience in water policy, chalk stream conservation and stakeholder engagement will be a great asset for WCSRT.

Goodbye and welcome - WCSRT Staff

WCSRT are very sorry to be saying goodbye to Rupert Kelton who has worked as the Test and Itchen Catchment Officer for the last four years. Rupert has spent his time managing the Test and Itchen catchment, working with landowners and agencies alike. WCSRT thanks Rupert very much for his dedication and hard work and wishes him well with his new venture. Rupert's replacement will be Andrew Blincow who will be joining WCSRT in February 2018. Andrew has an MSc in Biodiversity and Conservation and recent experience in ecological consultancy specialising in water environment projects. We look forward to welcoming Andrew to the team.

Website and social media

Website - Have you visited our website recently? We've redesigned it to be mobile friendly and easier to navigate, with a clean fresh style. Take a look here: www.wcsrt.org.uk. If you have any comments or feedback on the new design, please let Lee know at admin@wcsrt.org.uk.

Social media - WCSRT has recently created an Instagram account and our staff have been posting pictures and news about recent projects that they are involved in. Following WCSRT on social media is a great way to keep in touch with what the Trust is doing.

Instagram: www.instagram.com/wessexriverstrust
Twitter: twitter.com/WessexRivers



This newsletter is sponsored by the Winchester office of Savills:

1 Jewry Street, Winchester SO23 8RZ

Phone: 01622 857 426 | 07967 593 994, Email: WSleeman@savills.com

Contact: William Sleeman, Director (Rural)



Become a supporter today!

Help us protect and restore the
chalk streams and rivers of
Wessex. Please complete the
enclosed supporter's form or
download it from our website:

wcsrt.org.uk/ways-to-give



**Wessex
Chalk Stream
& Rivers Trust**

Registered charity no: 1130991

Registered company no: 06822819

Registered office: Awbridge Mead,
Dunbridge Lane, Awbridge, Romsey
SO51 0GQ