

RIPARIAN EXAMINER



THE NEWSLETTER OF THE WYRE RIVERS TRUST
AND THE WYRE WATERS CATCHMENT PARTNERSHIP

ISSUE 03

Foreword

Phil Robson- Chairman, Wyre Rivers Trust & Wyre Waters Catchment Partnership

Welcome to the third edition of the Wyre River Trust and Wyre Waters Catchment Partnership newsletter.

I write at a time of great uncertainty for our beautiful river. For the first time in a hundred years or more the catchment faces multiple threats to its estuarine waters. New industrialization of the estuary is planned by at least 4 separate schemes whilst a fifth threat rests in the unstudied, combined effects that our river faces from the other four.

The principle and earliest threat to be faced is the consented discharge of super saturated brine from the creation of up to 19 new salt caverns by the Halite company for the high-pressure storage of natural gas beneath Pressall and Hambleton. Discharging close to the shoreline at Rossall Point the brine will sit on the seabed waiting for tidal action to dilute it into the Irish Sea. The effect of this Brine will be to kill all life forms that it is in contact with until dilution reaches background salinity concentration.

These works could be happening for the next 10 years and the subsequent movements of the Brine Plume within the coastal waters of the Fylde coast and the wider area will require constant monitoring to avoid a food chain collapse which would include all species from marine worms up to migratory fish and bird-life.

During this same timeframe plans are maturing for a Tidal Energy project based upon a barrage across the Wyre Estuary the effects upon migratory fish stocks, birdlife and flooding have not been studied in their relationship with the Halite Salt cavern washing operation and the license awarded to Halite to Abstract up to 80 megaliter's of water per day from Fleetwood docks.

A barrage, abstraction and Brine discharge combined during the same decade would be a great pressure upon a modest catchment like the Wyre.

Add to this the planned and financed 900 MW Gas Powered Electricity plant at the Hillhouse International Industrial Estate and its potential warm water discharge and we have the ingredients for an environmental disaster within such a small body of water

Again, no studies have been performed upon the combined effects of these parallel developments' urge interested parties to press for a wide-ranging study and a baseline survey of all our current coastal and estuarine species.

Finally, the combination of all the above industrial processes as yet unstudied in relationship to each other remains an urgent need and the principle concern of the Trust.

Our projects are supported by a wide variety of organisations including;

The Environment Agency, Natural England, United Utilities, The Forest of Bowland AONB, Wyre Council, The Wild Trout Trust, The Lancashire Environmental Fund, LOVEmyBEACH and our highly valued volunteers

We would like to thank them all for their continued support.

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How do we monitor the outcomes of our projects?

Wyre River Trust – Registered Charity Number: 1161776

Registered in England, Company Number: 8008486.

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In Brief

Catterall Fish Passage Project

We have completed our first major fish passage project., the creation of a rock-ramp at Catterall Weir, which is situated on the River Calder, will allow all fish species to pass over this barrier as they travel on their migrations up and down the River Calder. See page 16

Tidal Wyre

11 Farms are now signed up to the project and delivering a comprehensive scheme of interventions which will enhance water quality in local watercourses by reducing the amount of diffuse and point source pollution which reaches them. In turn, this will promote improvements in bathing water quality at each of the Fylde coast bathing waters. See page 8

Fisheries Improvement Fund

Following on from two successful fishery improvement fund projects we have continued to deliver works which will improve watercourses for all species of fish. Works on Woodplumpton Brook included fish easement and the installation of woody deflectors. On the river Calder we have installed a number of deflectors which will help to create habitat for fish immediately downstream of our rock ramp. See Page 10

Wyre Waters Catchment Partnership

The Wyre Waters Catchment Partnership continues to go from strength to strength. A further 24 beach cleans have been delivered across the Wyre Estuary. Working in partnership with Wyre Council we have injected over 750 Japanese Knotweed Stems across the catchment and we have also delivered river walks for the public and the Royal Society of Biology. See Page 12

The Wyre Rivers Trust and Wyre Waters Catchment Partnership will be hosting a number of events in 2019.

Our website will be updated with information on these events as it becomes available.

Beach Cleans

Knott End - (10:00 - 12:00) - April 9th, May 7th, June 11th, July 9th, August 6th, September 3rd, October 8th, November 5th, December 17th - Meet at Knott End Ferry Car Park.

Ecology for All - Short courses introducing the ecology of the Wyre Catchment - See back page

River Walks - **Friday 10th of May, 10:00 - 12:30 - River Calder**- Meet at Catterall Parish Hall for a short walk along the river Calder, one of the Wyre's biggest tributaries and one of the most impacted rivers in the north-west of England. Booking Essential - Contact Wyre Council

Please check our website for further information on any of the events listed.

News

Natural Flood Management Competition

The Wyre Rivers Trust has received news that we were one of 34 successful applicants to an open competition for community Natural Flood Management (NFM) projects. £50,000 was up for grabs as part of £1million fund which had been put aside for community projects following the 2016 Autumn Statement, Working in partnership with Churchtown Flood Action Group, Abbeystead Estate and the Wyre Waters Catchment Partnership we devised a three pronged application which focuses on the uplands, lowland tributaries and on Ainspool, which is a particularly problematic watercourse for the residents of Churchtown. Project Delivery will begin in 2018 and will focus on the delivery of low cost and high impact interventions which will slow, attenuate and divert flood flows. The competition will also focus on the monitoring of these interventions to provide evidence to DEFRA that NFM can be used as part of an integrated catchment approach.

Wild Trout Trust Conservation Awards

September 2017 - The Wyre Rivers Trust were shortlisted for the Medium-Scale Habitat Enhancement Scheme Award. This was for our continued efforts to improve Woodplumpton Brook and the habitats which surround it. On the awards night we were beaten fairly and squarely, by bigger and better projects from the south of England which were really impressive. Nonetheless this can be considered a great learning experience for us and as Paul Gaskell (Wild Trout Trust Awards Judge) noted; *"It is absolutely vital to stress what an achievement it is both to complete a successful habitat improvement project and also to be shortlisted for these awards. The margins of difference across all projects are slim and the projects themselves are already exceptional before/without being entered into the awards process. In fact, subjecting any of these projects to a standardised process of assessment is actually almost insulting, given that all submitted projects deserve huge accolades....Well done to all shortlisted and winning projects and congratulations for having the grit and creating/riding the luck necessary to complete your works."*

The “Cucumber” Fish

Transitional and Coastal Waters Study

As part of the Wyre Rivers Trusts ongoing work within the estuary of the River Wyre, we have completed a small study which focuses upon the movements and habits of one of the most secretive fish found within our catchment. The European Smelt (*Osmerus eperlanus*) was once a common resident of many rivers within the UK and formed one of the largest fisheries on the river Thames until its population collapsed in the late 1800's. Unfortunately this collapse was mirrored across the UK as water quality declined in our estuaries due to the rapid expansion of industry and scant regulation on the discharges from factories, chemical plants and sewage works.

As regulation improved and the industrial revolution waned, the fortunes of the smelt improved and over the last 50 years this fish has begun to return to its native estuaries once again. The smelt is a distant relative of the trout and salmon, and like them, it is a migratory species of fish which moves up river to spawn near the tidal limit where waters become less influenced by sea and become gradually less salty. The smelt spawns on gravel and weeds in fast flowing waters, its eggs are equipped with a “sticky” parachute which allows them to adhere to the substrate. Anecdotal evidence from members of the St Michaels-on-Wyre Angling Association suggests that the migration of the smelt was once quite the spectacle on the River Wyre as hundreds of fish would sit at St Michaels-on-Wyre waiting for the next high tide to push them over the gauging weir. One little known fact about the smelt, is that it smells much like cucumber, making it very easy to identify .

In the winter of 2016-17 the Wyre Rivers Trust were funded by Natural England to complete a study of the spawning habits of the Wyre smelt population. Using fyke nets which were set at St Michaels we awaited the return of the adult smelt as they prepared for spawning, the nets were set on particularly high spring tides as these are known to be preferred by the smelt. We also monitored river temperature as the increase of water temperature during the spring is known to be a trigger for the start of the smelts migration.

NATURAL
ENGLAND



Tom Myerscough (Wyre Rivers Trust) setting fyke nets at St Michaels-on-Wyre, January 2018.

Between December 2016 and April 2017 we set our nets 13 times and although we caught a wide range of species we didn't manage to capture a smelt. Although this was a disappointing result we were not perturbed and continued to plan for a further study in the winter of 2017-18.

Using a slightly different methodology we started our survey at the mouth of the river Wyre and attempted to target groups of smelt as they congregate before starting their migration.

In October 2017 we set out from Fleetwood on Orion (FD10) and using a 3m beam trawl we fished from the end of the Wyre Channel to the Fleetwood RNL Station. Initially results were poor but as we approached Fleetwood we captured our first smelt, this was

promptly followed by 6 more specimens, and a further 16 smelt were recorded in November. This result combined with further anecdotal evidence from the skipper of our boat, about his captures of smelt in the interim period indicates that there is a population of smelt within the Wyre and that they were congregating in readiness for their migration.

Buoyed by these results we will continue to set fyke nets at St Michaels in the hope that we are able to capture one or more of these fish as they make their spawning migration toward the tidal limit of the River Wyre



Sorting and recording fish captured in the trawl. Other species included; bass, European eel, cod, plaice, sandeel and pipefish



European Smelt (*Osmerus Eperlanus*), captured at Fleetwood on the 15th of October 2017.

Tidal Wyre

A project supported by United Utilities, delivered in conjunction with the Environment Agency and Ribble Rivers Trust.

Improving Infrastructure for Surface and Bathing Water Quality

In 2016 we embarked upon our biggest project to date, 10 farms were set to receive funding to reduce the impact of their activities on water quality, both in the watercourses which surround their farms and in the bathing waters of the Fylde Coast. One year on, all farms are signed up to the project and are beginning to deliver the works which were identified for their farm in free, confidential farm visits which identified win-win solutions for farmers and the environment.

Due to a very wet summer much of the work that has been delivered to press has been related to the separation of clean and dirty water in farmyards. The separation of clean and dirty water is paramount to improving water quality as many farmyards have drains which go directly to the watercourse and drains which direct dirty water to a tank which can be emptied. If dirty water ends up in the clean water drain this can reduce water quality in the receiving watercourse and have a profound impact on aquatic life.

Simple interventions such as replacement guttering can have an immediate and highly effective impact. Guttering allows rainwater to be directed straight to a clean water drain, which can drain to a watercourse with little impact. This will reduce the amount of rainwater which ends up on the yard and in turn this will reduce the amount of dirty water that the farmer has to store and spread on his land.

Along with traditional interventions such as fencing, guttering and concreting we have sought to deliver more sustainable, novel interventions as part of this project. At one farm we are on track to create a farm wetland or reed bed which will act to improve water quality and biodiversity on the farm. The wetland will receive dirty water from the farmyard, whilst the dirty water is travelling through the wetland microbes within the root structure of the plants will remove bacteria and pollutants allowing much cleaner water to exit the system into a nearby watercourse.



An example of a midden in construction. This has been built as part of the Tidal Wyre Project and will help the farmer to separate clean and dirty water on his farm.

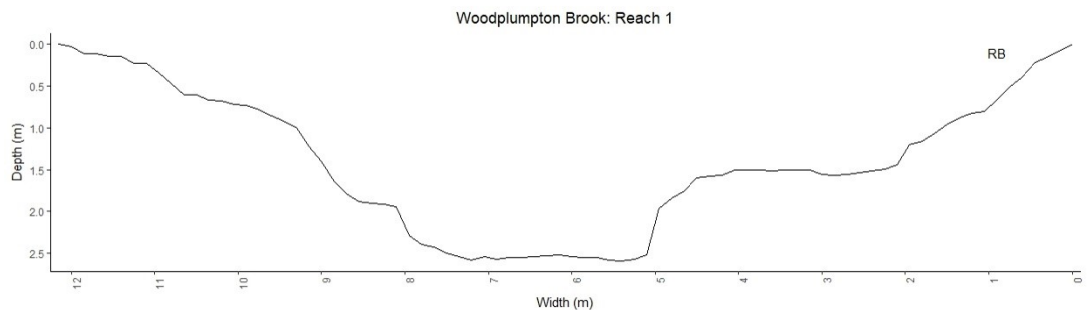
Monitoring - Has water quality improved as a result of the works?

To assess the benefits of the work that we have delivered we have used a number of monitoring strategies. The primary focus of the Tidal Wyre Project is to improve water quality, to investigate whether we have achieved this we have used water sampling, kick sampling and water quality probes. Up to press, water samples have been collected at eight sites to assess the number of bacteria in the watercourse. These samples have been collected over three periods (Winter & Summer 2017 and Winter 2018) this will provide an indication of the water quality prior to and during the works. By undertaking this analysis in the years which follow the completion of the project we will be able to assess the impact of our project. These samples have been augmented with the collection of flow data which allows us to produce data which is comparable across all years.



In the summer of 2017 and working in conjunction with Lancaster University Masters Student Charlotte Aitchison. Charlotte is studying for her Masters in Ecology and Conservation. at Lancaster Environment Centre, Lancaster University. Her dissertation, supervised by Dr Crispin Halsall, investigates the effect of the Tidal Wyre interventions on water quality, namely Phosphates, Nitrates and Pesticides, with a case

study on Woodplumpton Brook. With a keen interest in Biology, Charlotte is also surveying the river invertebrates to look at the effects of improved water quality on the ecological health



An example of a river bed profile which is created in order to quantify the amount of flow within a watercourse on any given day. This allows water quality data to be compared accurately between years

of the brook. Phosphates and Nitrates are essential nutrients for plant growth and are used in agriculture to fertilise productive land. However, the surface application of fertilisers is inefficient, and much of what is applied washes into the rivers. High concentrations of these nutrients in rivers create conditions toxic to aquatic life and are very costly to remove from our drinking water, similarly with pesticides. Charlottes work complements the Tidal Wyre monitoring program by contributing to knowledge on the effect of capital works on farms in reducing diffuse pollution from agriculture and the benefits for the ecological health of watercourses. Invertebrate sampling is a widely used method for assessing water quality, by analysing the communities of invertebrates within the watercourse we can gather a great deal of information about water quality, many species cannot withstand fine sediment or chemicals within the watercourse and will be absent where water quality is moderate or poor.

Fisheries Improvement Fund

Projects funded through rod-licence income via the Environment Agency

Woodplumpton Brook

Following a successful application to the second round of the 2016 Fisheries Improvement Fund, we were able to complete four small projects to complement our previous work at the site. In 2016 and early 2017, in partnership with Jonny Grey at the Wild Trout Trust, we completed works that eased fish passage through a small culvert, increased watercourse sinuosity in a previously impounded section and restricted livestock access to ~330 metres of watercourse.

Fish Passage

To create further fish passage at the site a series of 8 wooden baffles were installed in a culvert which allows the brook to pass under School Lane. In low flows the culvert acts as a significant barrier to fish movement due to the water level and nature of the flow through it. The baffles were installed according to the Environment Agency Fish Pass Manual and were installed to increase depth and to create variable flows throughout the culvert. The baffles will facilitate passage for a wide range of fish species which live within the brook. By creating eddies, slack water and cover within the culvert we will allow smaller species and those with poor swimming abilities to make their way through the culvert and take advantage of the improved habitat upstream. Further fish passage works were delivered on the River Calder. More information on these can be found on page 16 and 17.



Jonny Grey (Wild Trout Trust) installing green oak baffles at the head of the culvert.



Woody deflectors on Woodplumpton Brook.

Woody Deflectors

The straightening and dredging of river channels was a widely practiced management technique throughout England between the 1950s and 1990s. There were many reasons for doing this and fortunately we have now seen the error of our ways but the legacy of such management has left rivers which are devoid of life and look like canals. The use of woody deflectors forces watercourses to become more sinuous, causing the scouring and deposition of sediment.

These are both crucial processes for the creation of varied habitats which can be used by a wide range of species at various stages of their lifecycle. In short; Woody deflectors are an archetypal low cost, high impact solution and we installed around 15 of these in a 250m stretch of Woodplumpton Brook.

Deflectors are typically willow which is 30cm in diameter and been cut to 2 metres in length, these pieces of willow are then pinned to the river bed using three lengths of reinforcing bar which are sunk to around 70cm depth. Scour and deposition can be controlled by strategic placement of the deflectors, in turn varying habitats are created which support fish and invertebrates throughout the different stages of their life cycle.



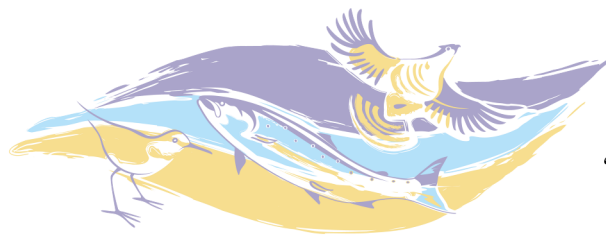
Before (left) and after (right) shots of the river Calder at Catterall. Willow deflectors were installed in the reach directly below our new rock ramp. It is hoped that this will provide habitat and cover for fish in what was previously a barren reach.

Riparian Fencing



Riparian fencing on Woodlumperton Brook, the creation of a buffer zone is evident in this image.

Riparian fencing is a hugely effective method of improving the habitats which are present on river banks. By restricting the access of livestock to the river bank we allow a wide variety of plant species to flourish. By promoting the growth of larger species, shrubs and saplings the surface roughness of the bank is increased, this creates a buffer which slows surface flows, forcing them to deposit fine sediment which would otherwise end-up in the watercourse. Although fine sediments are crucial for a number of species, too much fine sediment can smother gravels and make them uninhabitable for invertebrates. There are a wide range of benefits derived from fencing - these include: improved water quality, improved habitat quality, increased biodiversity, the development of overhanging cover for fish, reduced soil loss and reductions in soil compaction. The impact of fencing and the buffer zone which is created is clearly demonstrated by the image to the left which shows the buffer zone on the right and a heavily trampled area to the left.



WYRE WATERS
“from Bowland to Bay”
A Catchment Partnership

Wyre Waters Catchment Partnership

The Wyre Waters Catchment Partnership is supported by the Environment Agency and through the Natural Course, LIFE Integrated Programme. Here we have a snapshot of their activities, which included ecology days, catchment walks and plenty of beach cleans.

Ecology Days

The Wyre Waters Catchment Partnership hosted a series of ecology days for people that were eager to learn about the distinct coastal habitats that are present within the Wyre catchment. The events were planned with Wyre Council and hosted by Jean Wilson MBE, who is a former Head of Science and lecturer in Marine Biology and Coastal Zone Management. The habitats which were studied were the Muddy Shore (Knott End-on-Sea), Saltmarsh (Wyre Estuary Country



Jean Wilson explaining the beauties and dangers of the muddy shore to her class on the first ecology day at Knott End-on-Sea

Park) and Sand Dunes (Rossall Point). Each of these habitats forms a home for thousands of species, they also act as second homes for a myriad of migratory bird species. The importance of these habitats is recognised via national and international ecological designations such as SSSI (Site of Special Scientific Interest),

SPA (Special Protection Area) and SAC (Special Area of Conservation).

On each of the days, participants were given a short insight into the keystone species of each habitat and how they have evolved to their niche. Working in teams they undertook small, scientific surveys of the habitats. The



Participants delivering a short transect survey of the plant species which inhabit the sand dunes at Rossall Point

The data which were collected have been compared to data which was collected between 2005 and 2015 to assess the changes which have occurred within each habitat. The ecology days were well attended throughout and were welcomed by locals who are interested in the ecological processes which are taking place on their doorstep. We expect that the ecology days will be repeated in the future.

Catchment Walks - In September 2017 we hosted the Royal Society of Biology for a catchment tour and insight into rivers and their ecology. Jean Wilson kindly penned a short report on the day:

“On Sunday September 24th, members were guests of Wyre Waters Catchment Partnership and their hosts were Thomas Myerscough (Programme Manager) and Melanie Hartley (Tidal Wyre Project Officer) from the Wyre Rivers Trust. The source of the River Wyre lies in the Bowland Fells . Like many rivers in the United Kingdom the River Wyre has been heavily modified, including modifications to flow (canalisation and channelisation) as well as the import of faecal matter, herbicides, pesticides and fertilisers. The result has been in the main, loss of habitat,

reduced biodiversity and pollution, but now there is change and optimism. Under the guidance of our hosts we visited a number of sites along the river as it wound its way towards Morecambe Bay at Fleetwood. We observed the many interventions carried



Tom Myerscough (WRT) explaining the importance of upland tributaries and their role in the life cycle of a wide variety of species.

out over the past 3 years to reverse the trend; these included removal or notching of weirs and the introduction of woody debris creating a more sinuous water channel resulting in the dissipation of energy, the erection of stock-proof fencing to improve biodiversity in the riparian zone, improvements on farms with regards to slurry storage and disposal, soft engineering to increase bank stability. All changes are monitored with before and after surveys including kick sampling and electro-fishing, the results are incredibly positive and optimistic. The day was summarised by one member who messaged “Great RSB trip along the Wyre valley with the highly knowledgeable and impassioned Tom”!”

Beach Cleans

Now in their fourth year of cleaning, our Knott End Beach Clean Group have completed well over 40 beach cleans, removing large amounts of plastic and other litter from the beach. They form part of a wider Fylde Beach Care Network which is made up of voluntary groups that clean beaches along the Fylde Coast. Our group has received support from LOVEmyBEACH in the form of additional litter pickers and hoops, the group were also provided with a Christmas lunch after their final clean of 2017.



The Knott End Beach Clean volunteers enjoying a well earned Christmas Lunch at Knott End Golf Club



Monitoring

How to assess the impact of our projects?

Partnering with the indefatigable and intrepid Jonny Grey at the Wild Trout Trust, we have installed baffles, deflectors and more fencing on Woodplumpton Brook. All of these interventions amount to considerably improved habitat for fish and invertebrates, but how to monitor the results? Here, we discuss two methods that we have used to show the impact of the interventions that we have delivered.

Electrofishing

Using a link forged through academia, Queen Mary University of London MSc students have now visited this site twice in order to learn and develop their electrofishing skills and provide us with the start of valuable long term monitoring data. They also volunteered to write a short piece on their experiences for the Wild Trout Trust Blog.



Tom Myerscough (WRT) explaining the intricacies of electrofishing to a team of MSc students.

“On Woodplumpton Brook, a road-bridge culvert speeds up the water as it glides over a concrete slab. Under normal flow conditions, this creates a very shallow and uniform area of fast water for 15m which hinders the free movement of fish upstream, especially larger individuals. Structures like this impair other restoration efforts upstream, such as fencing off livestock, addition of woody debris and planting of willow, by preventing recolonisation by larger fish. Even seemingly small obstructions like this can have a large effect.

A restoration intervention was put in place last year to reduce these connectivity issues. Baffles, large pieces of wood anchored to the concrete, were fitted in the culvert. They slow the flow by increasing sinuosity and creating slack water refuges, and increase the water depth, allowing fish to make their way from baffle to baffle and hence upstream. To determine whether the baffles are actually helping, electrofishing was carried out both upstream and downstream of the culvert.



To gain a representative population estimate, 50m stretches containing similar habitat features were cordoned off using stop nets, and 3-run depletion sampling was conducted in each section. Each fish was identified and its length carefully recorded. After each run, the caught fish were released outside of the survey area to prevent recounts of the same individuals.

Last year, i.e. prior to the baffle installation, the group surveying the fish community in the Brook found that the communities downstream and upstream were significantly different, and that the average fish size upstream was significantly smaller than downstream. This implies that bigger fish were discriminated against, i.e. that they struggled to swim upstream through the culvert. This year, however, we discovered that the fish communities were more similar upstream and downstream. In addition, the fish were of similar size downstream and upstream. Together, this indicates that the fish can move more freely up and down the Brook.



Additionally, the overall community was quite different from last year. One of the most exciting discoveries was that we recorded a brown trout – the first in Woodplumpton for twenty years, and perhaps a sign of the overall recovery of the Brook.

However, chub and dace were found in abundance last year, whereas this year there were very few. Furthermore, this year stickleback and stone loach were most abundant, whereas last year they were not present or found in very low numbers. These differences, in conjunction with us collecting several recently dead chub specimens (including larger individuals in the upstream section), suggest that although the restoration works are improving connectivity and habitats within the Brook, pollution events are undermining the work and altering the community structure.”

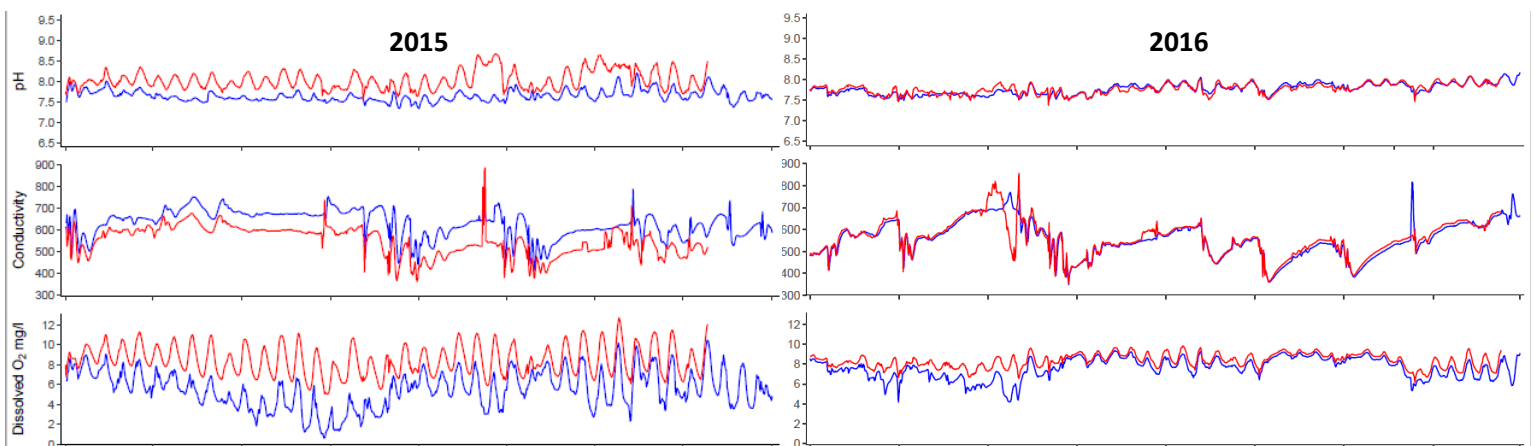
Many thanks to Liam, Abbie, Thomas, Pascaline and Alice for taking the time to write this article, to the remainder of the Queen Mary Students for working with us to deliver this monitoring and of course to Dr Christophe Eizaguirre for volunteering his students for such a task.



The first brown trout discovered in Woodplumpton Brook for 20 years

Water Quality Monitoring

Using water quality probes, spot sampling and walkovers, we have monitored the makeup of the water within Woodplumpton Brook. Thanks to the Environment Agency we have had two water quality probes at our disposal for the last three years. These probes measure a range of parameters, which, when combined can show the impact of river restoration projects. The graphs below show data which were collected before (2015) and after (2016) over 1km of fencing was installed on Woodplumpton Brook. Trends which are beginning to emerge from the data show that there has been a reduction in pH and conductivity at the downstream site along with an increase in dissolved oxygen. These improvements to water quality show the benefit of riparian buffer-zones which are created by restricting livestock access. Long term water quality datasets like these, allow us to create a compelling case to grant funders by showing that the work is both highly cost effective and beneficial to the environment.



Graphs showing pH, Conductivity and Dissolved Oxygen data from upstream (red line) and downstream (blue line). The difference seen between the two reaches in 2015 is reduced considerably in 2016 this indicates that the upstream fencing has had a positive impact on downstream water quality. Water quality data were collected by a YSI 6600 SONDE.

Ecology for All Courses 2019

With support from the Wyre Rivers Trust the Wyre Estuary Group will be offering introductory ecology courses in 2019.

These courses will focus on the most iconic habitats of the Wyre catchment and will take place from 10:00 - 15:00.

- 14th May 2019 - Muddy Shores @ Knott End**
- 6th June 2019 - Saltmarsh @ Wyre Estuary Country Park**
- 13th June 2019 - Small Mammals, Birds & Wildlife Photography @ Wyre Estuary Country Park**
- 4th July 2019 - Freshwater Ecology @ Scorton**
- 11th July 2019 - Morecambe Bay Food Web @ Fleetwood, RNL Station**
- 18th July 2019 - Sand Dunes @ Rossall Point Tower**

If you would like to take part in the courses advertised below, please contact us, using the details at the front of this newsletter.