

Ouse & Adur Rivers Trust

Winter 2014

Issue No. 12 Charity No. 1082447

A Member of The Rivers Trust



ANNUAL GENERAL MEETING

23rd. APRIL 2014 7.00 PM

PLUMPTON GREEN VILLAGE HALL

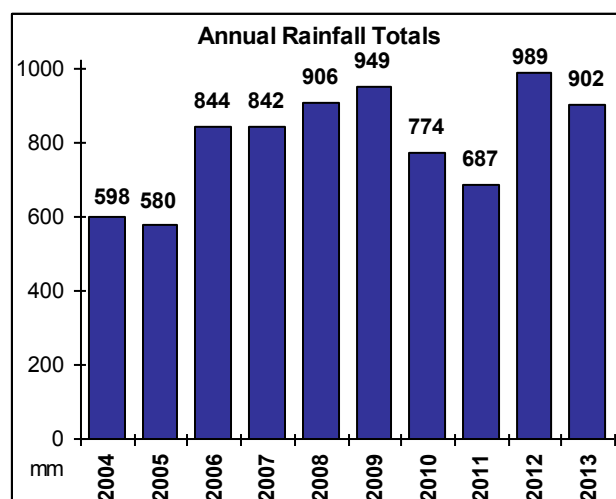
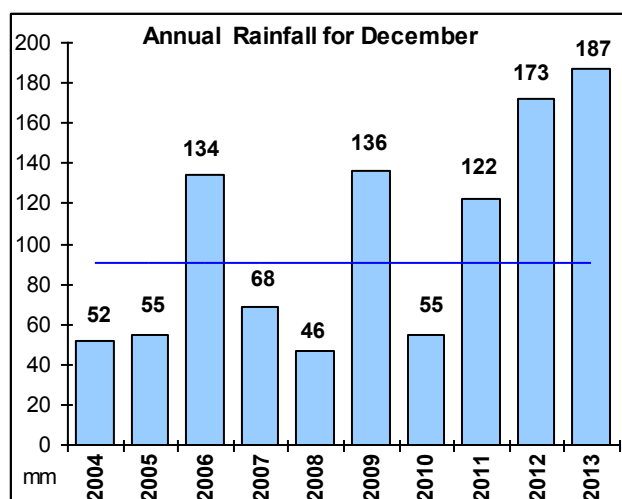
GUEST SPEAKER — GARETH DAVIES EA

OART FUTURE PLANS

IMPORTANT INFORMATION FOR MEMBERS

WE LOOK FORWARD TO MEETING YOU

Rainfall Measurement for December 2013



Rainfall Observations for December 2013

Rainfall for December was 187.3 mm compared to the mean of 85.2 mm and the previous maximum for December of 172.5 mm. November 2009 was the last time this level was exceeded when 235.1 mm was recorded.

OART is grateful to South East Water for the award in November of £2,200 from its Community Chest Fund. The funds will be dedicated to supporting our work on invertebrate monitoring through the purchase of equipment (e.g. microscopes, sample nets) and identification keys.



Dear Members

Until my arm was twisted - ever so nicely – and I became Chairman in October, I am afraid I had done rather little for OART bar pay my membership subscription, read predecessors of this issue and, last winter, take part in the sea trout watch. With its ca 160 members OART may seem like a small fish in the waterscape of Sussex but I have quickly learned how its dynamism and commitment more than make up for this.

With time I have also seen how these qualities are appreciated and recognised through OART's ever strengthening relationships with large organisations like the Environment Agency and the water companies.

Water falls everywhere, flows downhill, downstream, passing through the town and countryside and finally reaching the sea. If the Adur and Ouse and all their tributaries are to become the high quality environment we aim for – clean, full of water and full of life – OART's approach will need not just to build on these growing partnerships but to extend them to the managers and owners of this Sussex landscape.

Challenges about the use, management, quality and conservation of water are quite formidable and may require fundamental rethinks. As an example, while we may well welcome the processing of 95 million litres of water a day at Peacehaven Wastewater Treatment Works, opened last year, it is sobering to realise that all of this, rather than being recycled, then goes out to sea.

At the same time I will mention Prince Phillip! As long ago as 1965, according to my Collins Dictionary of Quotations, he said: "... the biggest waste of water in the country by far. You spend half a pint and flush two gallons."

Solutions to all kinds of water issues will have to be found at both the macro and the micro level and to involve much of the local community.

As we and others plan for the future it will be against a legislative background of the EU Water Framework Directive and a methodology which is called the Catchment Based Approach.

Trustees and the Management Committee have been developing ideas for OART's own future which they will present to members at the AGM on 23rd April for comment and input. Please, please do turn up and have your say !

It would be good to meet you too.

Many thanks.

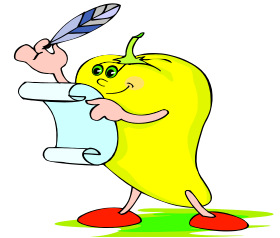
Hew Prendergast

OART Chairman



PEPPER'S POT POURRI.

You can't win 'em all.



Researchers at Lough Neagh in Ireland have noted a 75% fall in the numbers of wintering birds attributed to improvements in water quality from farm conservation measures. Historically, Loch Neagh used to freeze during the winter months but climate change in the last 30 years has resulted in a 3.8° C increase in the winter temperature in Northern Europe. The lake no longer freezes so becomes available for water birds that previously migrated further south. The number of birds using the lake resulted in it being declared a Special Protection Area. Since the 2000/2001 season there has been a 75% decline in the number of diving ducks using the lake in the winter.

Farm conservation measures aimed to increase water quality means that there is less organic matter in the lake on which the aquatic invertebrates feed. Researchers have measured a 66% decline in the numbers of insects and snails and of the algae on which they feed. With less food available, the numbers of birds have declined. Climate change may also play a part as the birds can now find unfrozen water even further north and nearer to their breeding territories. Its chief author, Dr Irena Tománková said: "Our research found there was a 66 per cent decline in the numbers of insects and snails in the lake and that this was associated with a decline of algae." "Now that conservation schemes are beginning to have an effect and reduce levels of pollution we are seeing increasing water quality and the unexpected consequence is fewer invertebrates and as a result less duck food." We are unlikely to see this effect in the Ouse catchment at the moment but it does beg the question, how much organic matter is too much? It depends, I suppose, on what it brings with it. Phosphate levels, as measured by OART, are way above the optimum and the ammonia, at times, also reaches damaging levels. Control of these lies not only with agriculture but also with sewage treatment and the maintenance of adequate water flow rates.

2014

A new year should be a fresh start but things seem very much the same as before. Already, by the 4th, we have had 41mm of rain and there are countless flood warnings in place. There are continual cries that the EA is not doing enough for flood defences. Apart from the obvious lack of funds, it seems to me that the problem is being tackled from the wrong end. The bottom up approach will only provide a temporary fix until a top down approach is adopted. There needs to be more restoration of flood plains and, definitely, no more buildings on them. This would slow down the speed at which flood water arrives at the lower reaches of the rivers. In the longer term, more tree-planting is needed. Woodlands absorb large quantities of water but, unfortunately, they take many years to create and there seems to be a lack of long term planning – governments do not look further than the next election.

P.S. The headline in The Times today – "Ancient Woodland to be axed in drive for homes". What more can I say.



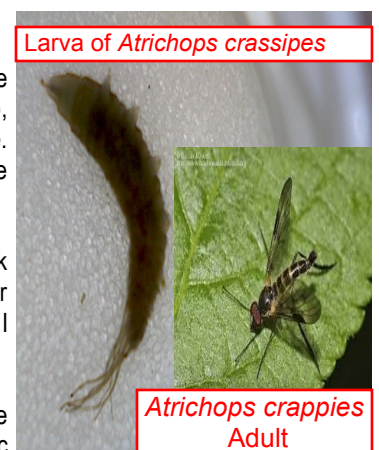
AN ODDITY - Written by Sam St.Pierre

During one of our invertebrate monitoring exercises on the Ouse at Dean's Mill last July, we found a strange looking larva that appeared to have many tails. A search through the literature and the internet failed to provide any help towards identification, so we sent the specimen to the Freshwater Biological Association (FBA) laboratory in Windermere requesting help. It transpired that the larva was of a fly from the Family Athericidae, the species being *Atrichops crassipes*, the Least Water Snipe fly. This fly is apparently not very common in the UK and the FBA asked if they could keep the specimen for their collection. We of course agreed, being rather pleased that OART was able to make a contribution, albeit very small, to the archives of such an internationally renowned institution.

Having thought that we had stumbled across something pretty rare, we assumed that we would be unlikely to come across it again in a hurry. However, at our last dipping exercise of 2013, (December), on the Plumpton Mill Stream at Ferrings Bridge, we captured no less than thirteen of these larvae. Maybe in the past we have failed to recognize this beast, but now we know what we are looking for we may come across it more often.

The common name Least Water Snipe fly is intriguing. Whilst there are Yellow Legged and Black Legged Water Snipe flies recorded, (but not in the UK) I can find no mention of Greater or Lesser Water Snipe flies. One would expect to find this in view of the fact that there is a **Least** variety. I should be pleased to hear from anyone who can shed any light on this apparent anomaly.

Various types of Water Snipe fly can be found worldwide. They are mainly nectar feeders but some feed on mammalian blood. The "tails" on the larvae are actually pro-legs, covered in microscopic hooks. These allow the organism to hold on to the substrate of fast flowing streams which are their usual habitat. They are carnivorous and feed on other larvae such as the caddis fly.

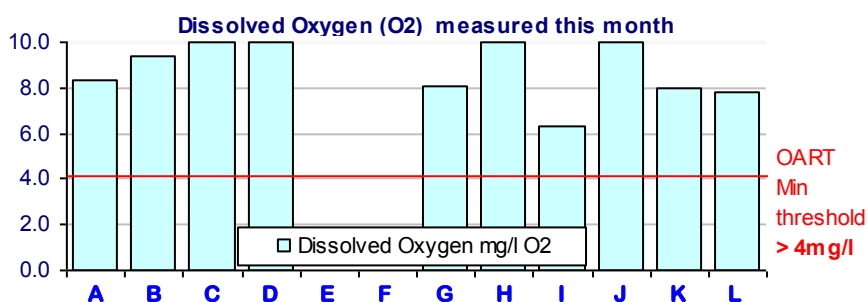
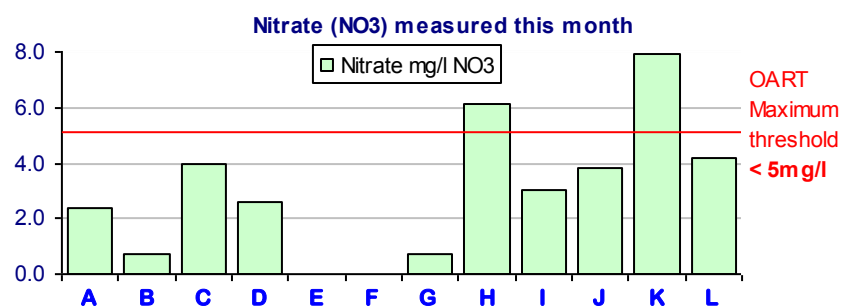
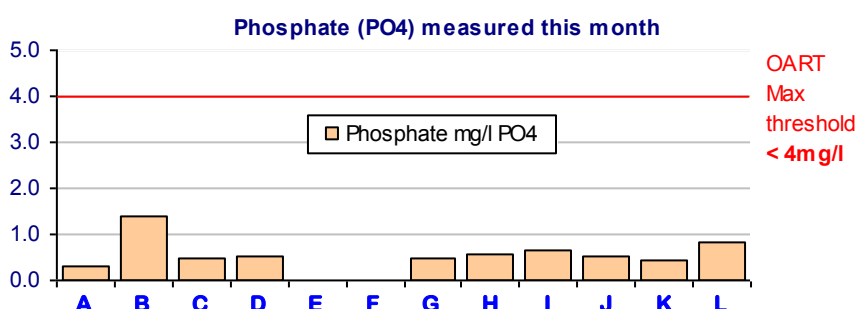
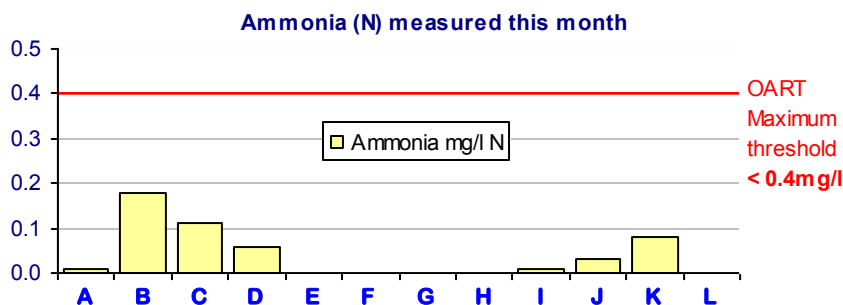


Water Quality Results - January 2014

Every month we produce a report based on the results of the chemical analysis of water samples collected from the 12 locations in the River Ouse catchment. This can be viewed in full on our website.

The values shown in the following graphs are the values measured this month and the threshold lines indicate those values set by OART. They differ from the EU mandatory values but are what we think can be reasonably expected.

Locations tested each month	
A	Bevern Stream - Ditchling Cemetery
B	Bevern Stream - Spatham Lane, nr Ditchling
C	Bevern Stream- Streat Lane, Streat
D	Bevern Stream - Plumpton Green
E	Plumpton Mill Stream - Confluence with Bevern, East Chiltington
F	Bevern Stream- Novington Lane, East Chiltington
G	Bevern Stream - Hurst Barns, East Chiltington
H	Bevern Stream - Bevern Bridge, South Chailey
I	Bevern Stream - Holmans Bridge, nr Barcombe
J	Bevern Stream - Clapper's Bridge, nr Barcombe
K	Bevern Stream - Redbridge Weir, nr Barcombe
L	Bevern Stream (lower) - Nr Barcombe Mills



Comment on the results for October 2013: The first chemical testing activity for 2014 was carried out at ten of the usual twelve sites along Bevern Stream on 5th January; samples were unavailable from lower Plumpton Mill Stream and Novington Lane. The exceptionally high rainfall in recent weeks has meant that the rivers have been at higher than normal levels and this was the case on sampling day. Samplers recorded mostly high to very high flows and moderate to high turbidity. The only stretch with a moderate flow of clear water was at Ditchling Cemetery, near to the source. With high flows on sampling day it is not surprising that nutrient levels were low to moderate, although nitrate levels were measured as higher than recent months. The nitrate figures may be unreliable due to problems encountered with the analytical procedure, perhaps resulting from the turbid nature of the samples. Phosphate levels were all moderate this month, with the highest value at Spatham Lane (1.41 mg/litre), as expected; all other values were less than 1 mg/litre. Ammonia levels were quite low this time, with the highest value at Spatham Lane (0.18 mg/litre). Dissolved oxygen levels were moderate to high, although significantly lower at Holmans Bridge which had 51.5% saturation only.

Project Officer Report— Peter King

At the end of last year OART received funding from the West Sussex County Council Operation Watershed Community Action Fund to host an event based around the issues of flooding, water quality and water usage. This event is in the process of being organised within the village of Steyning in West Sussex and is taking place at the Steyning Centre on 1st March between 10am and 4pm. For more information on the event format please see our website; www.oart.org.uk.

The ARPHA project to remove the tilting gate at Shipley had to be put on hold when the weather turned at the end of November. The weir itself has been removed and materials on site to undertake the bio-engineering aspects, however due to flooding of the surrounding floodplain it has not been possible to access the site for approximately 6 weeks and the project will be completed as soon as access becomes possible.

The MORPH project is still going through the restoration plans for both Spring Meadow and Buxted, following the heavy rainfall at the end of December it was great to see Spring Meadow operating as a functioning floodplain and a site visit in early January to Buxted showed more dramatic changes to the banks as well as increased amounts of woody debris in the river. This offered diversity of habitat as well as functioning to provide a greater diversity of flows. As the ground dries out over the next few months these projects will move into phase 2 of restoration.

The report on the River Uck has been produced and disseminated to project partners and the wider Adur & Ouse Partnership group. This pilot study of river survey methods proved to be a success and indeed has highlighted areas where work could be undertaken to improve the ecology of the river corridor through various means including the removal of invasive species, locations of weirs and other barriers to species migration and movements, areas of high erosion and sediment input and overall habitat quality scores. The full report is available online at <http://www.oart.org.uk/projects/river-uck-survey.htm> or a shortened summary document is available from peter.king@oart.org.uk. Following the success of the Uck survey and with some minor changes to the information collected we are now embarking on a strategic catchment wide series of further surveys, with the Pellingford Brook being completed just before the Christmas break. These surveys will provide OART with wide range of information on the current condition of our Rivers and will provide opportunities to develop catchment wide projects to improve the ecological status of our water bodies.

The Eel project has moved forward into 2014 and site visits have been undertaken to 6 structures on the Ouse and Uck. Fitting passes to these structures will provide eel passage to above Sutton Hall Weir as well as to the entirety of the River Uck and also into the associated tributaries. Designs are currently being considered and we hope to start getting these fitted during the first half of 2014.

As well as the ongoing projects we are also starting to form much closer links with University of Brighton and currently have 3 students undertaking projects modelling the effects of weir removal and are developing ideas for projects focused on eels, Himalayan Balsam and Brown Trout.

All in all it looks like 2014 will provide plenty of opportunities to increase our understanding of our rivers, the problems they face and the solutions to these.....watch this space!!!

Steyning Water Fair

With funding through the West Sussex County Council Operation Watershed Fund, OART is hosting an event in the village of Steyning, assisted by community engagement company Communities Matter. This event is focused on raising awareness of issues around flooding, water quality and water usage and how both individuals and communities can influence and protect our water environment as well as become resilient to the threats around flooding.

The event is due to take place on **Saturday, 1st March at the Steyning Centre, Fletchers Croft, BN44 3XZ from 10am until 4pm.**

During the course of the day there will be opportunities to talk to people from various organisations such as OART, Southern Water, the South Downs National Park Authority, Sussex Wildlife Trust, WSCC Flood Resilience Team as well as local businesses taking a novel or sustainable approach to water. There is a schedule of talks throughout the day being finalised. We are confident that the event will be a success and give us the opportunity to expand these fairs across both river catchments.

Campaign for the Farmed Environment (CFE)



Campaign for the Farmed Environment (CFE) is encouraging farmers and land managers across England to protect and enhance the environmental value of farmland through environmental measures that sit alongside productive agriculture. It was launched in 2009 in response to the abolishment of set-aside. The Campaign focused on the arable counties of England. The campaign was re-launched in 2013 and now encompasses grassland and livestock farming with a co-ordinator in every county in England. In Sussex the Local Liaison Group is led by the Chairman, Martin Hole, who is a farmer from Montague Farm and Prim Duplessis who is the CFE Co-ordinator for Sussex.

CFE – what's in it for me?

In a challenging climate and with changes to CAP and Stewardship Schemes, **leadership, responsibility, and best practice** in agriculture and the environment make good business sense. The CFE helps farmers and land managers choose the **right** environmental measures and how to put them in the right place and manage them in the right way in order to protect soil and water and benefit wildlife.

CFE is industry-led

Our **partners** (AIC, AICC, CAAV, CLA, Defra, Environment Agency, GWCT, LEAF, Natural England, NFU, The Wildlife Trusts and RSPB) recognise the importance of managing the farmed environment. CFE **collaborates** with other voluntary action (Greenhouse Gas Action Plan, Tried & Tested and The Voluntary Initiative) to demonstrate how the industry collectively can take the responsibility for achieving **environmental benefit** alongside **profitable farming** without the need for more **regulation**.

Meet the environmental challenges

The CFE has built on its success in partnership working with farmers and advisers and has advice for arable and grassland covering every county in England. CFE is about being as **efficient** as possible in your resource use; including energy and producing what is appropriate for the farm. Improving the **resilience** of land through soil management, use and protection of water, renewable energy and networks for wildlife. It also adds **quality** to the management of both food crops and conservation areas whatever the farming system.

Get in contact

County Co-ordinators work with **Local Liaison Groups** that include farmers, CFE partners and others with an interest in the farmed environment. The organisers plan and organise **events** on behalf of the LLGs. In Sussex, the organiser is Prim Duplessis. E: prim.duplessis@cfeonline.org.uk M: 07580 004645; based at Plumpton College, Lewes, BN7 3AE

Get informed

www.cfeonline.org.uk - information and **contact details** for all the Co-ordinators and LLGs, CFE event details, **advice** and news, sign up details for CFE monthly newsletter, tweets and updates, **downloadable leaflets** and **links** to partners and other **information** sources, **online training module** for agricultural advisers at www.cfeonline.org.uk/advice-and-training/

Next Event: The CFE invites farmers and advisers to a free 'feed your birds' event at Fulking, in West Sussex, on 27 February (9.30/12.30pm, plus buffet). The hosts are farmer Annie Brown and farm manager David Ellin who will be joined by speakers from GWCT, RSPB, seed specialist Bartholomews, CFE and Natural England. **Bookings e:** southeast@cfeonline.org.uk **t:** 07580 004645.



Jim's Diary

October 2013

Thursday 17th saw a bright clear start to the day after heavy overnight rain. It was time for a clean up in the upper village where I found all the usual rubbish thrown from cars by inconsiderate people who threaten the countryside roads and lanes by using them as a place to dispose of anything they like. It was a worthwhile and interesting morning seeing buzzards up on thermals and a few speckled wood butterflies.

Then the noise from a low flying Tornado GR3 speeding across the sky from east to west froze me to the spot. By the 22nd it looked as though a very unsettled wet spell was approaching. In the Playing Field a number of gulls padded for worms. The next day I walked the Ouse banks to Barcombe Mills where the water had coloured from the overnight rain. A few sea trout were getting ready for the run up to their spawning grounds. On the 24th I planted some bulbs around the new village seat to brighten up the area in the springtime and then took a quick walk to the Mills and back to check the water which was still very coloured. I saw a lone egret on a large pool of water in a field.



The onset of the rain started on the 27th when there was some very heavy rain and by the morning of the 28th the gale force winds increased and brought down trees. The prolonged heavy rain soon caused the rivers and streams to rise very rapidly. The weather that day was named the St Jude Storm but it also had other names including Cyclone Christian. St Jude was said to be the patron saint of lost causes and desperate cases. He was one of the 12 Apostles who was associated with lost causes because of a letter he wrote to the Churches of the East telling them the faithful must keep going even in the most difficult and harsh circumstances. Much of Britain was battered by hurricane force winds causing mountainous seas to crash into land. Full flood alerts were put on all Sussex rivers and many others all over the country. The 31st saw the end of the sea trout season but nobody was about because of the rapidly rising river and there was very little wildlife about too. It was difficult to see through too much coloured water to look for anything running up to spawn and the river smelt of phosphate with a lot of foam detergent.

NOVEMBER

On the 4th the Ouse-Uck were in full flood with deep water over the road at Barcombe Mills. Miraculously there was a break in the weather the next day just in time for a very enjoyable Bonfire Night in Lewes. The following day was very wet again. The 8th started with a white frost. Six goldfinches searched for seed on teasel heads and a little flock of sparrows arrived to feed in my garden.

Saturday 9th was very wet but exciting when a steam engine arrived at Uckfield Station. It was 'Braunton' a West Country Class no. 34046 which was built at Brighton Works. It used to run on the old Uckfield Line via Isfield and Barcombe Mills. It had been brought down to the Bluebell Line the previous day from East Grinstead to Sheffield Park hauling a full complement of carriages.

On Sunday, 10th November I went for a walk around the Lakes which were in full spate. The local buzzards put on an aerial display, a number of green woodpeckers were searching for food and a kingfisher flashed past in this brief window in the very wet spell of weather. Little did we know of the amount of rain to come. The next day sea trout were seen running a local weir and it was good to see the fish moving to their spawning grounds. Even the sea trout have their problems from seals to drift netting at sea. It was a dull, wet and very miserable day when even the regular wildlife seemed absent except a noisy jay which was busily stashing away acorns. I watched as he made several trips to a distant stashing point. I went on another clear up the next day and was disgusted at the amount of fast food litter that was back again which filled yet another black sack full. These outlets have a lot to answer for. As I went along I noticed that even the rabbits had been flooded and made to higher ground.

The Houses of Parliament was the effigy at the Isfield & Little Horsted Bonfire Society bonfire celebrations on 15th. The weather was fine thank goodness. A fine display of aerial shells was enjoyed by the village. A good collection was made for Help for Heroes too.

I took a long walk along the Bevern on 17th at the start of the OART annual Redd Watch but saw no redds. However, I saw the egret again and plenty of other birdlife. I noted the length of time the hazel trees had held their leaves on because of no real frost and there were even buds appearing. The alder catkins were a lovely dark purple colour and the late field maple leaves were a beautiful bright yellow. There was mixed weather on 20th with early frost followed by a thunderstorm and by the 22nd a cold north east wind arrived bringing with it small flocks of fieldfares and redwings which I heard later that evening after dark which is supposed to be a sign of cold weather to come. On the 27th there was a white frost and it was time to walk the Ouse between the weather fronts so I went past the Mills where I found 20-30 fieldfares demolishing hawthorn berries but the pink spindle berries had been left untouched. As I walked along the old railway track I saw a charm of goldfinches. I was lucky enough to see a pair of ring ouzels on the embankment near the Chalk Pit Cut two days later. It turned out that this was one of the last chances to walk the Ouse banks before the floods and wet weather took a hold. I was careful to check the ground I was walking on.

DECEMBER

There was a brief window in the weather on the 1st so, with a fellow OART member, I went to one of the more distant tributaries of the main Bevern fourteen miles away only to find no signs of spawning. Silt from the green sand ridge had covered a lot of the stream gravel. In January 1995 around 20 sea trout were found dead in this area but the National Rivers Authority would not prosecute.

I had a very enjoyable Christmas lunch with the Isfield Forget-Me-Not Club on the 4th. It is good when village people get together for the Christmas Lunch.

The next day a former Parish Councillor and I carried out a full litter pick to make our village tidy for Christmas. We started at Beeches Farm road to the boundary of Isfield parish with Uckfield and then down to Short Bridge to meet our boundary with Fletching. Next we went up Darvell Hill to Buckham Hill cleaning both sides of the road down past Lodge Wood to Isfield village. We filled eight sacks with all sorts. The cans and glass were sorted and we took the rest to landfill. Many thanks to my helper for giving up his morning from 9.30—1.00pm.

On the 6th the culverts on spawning tributaries were cleared of debris to allow fish passage. Some roach and bream were found dead on the banks near the Railway Land Nature Reserve. It was as a result of a tidal surge which brought salt penetration on the storm tide. It went all along the east coast too. It could have been worse on the Ouse if there had not been so much water coming down river to meet the incoming tide. The Port Authority showed a tide height of 7.79 metres with an extra height of 20-30 centimetres.

I went on Redd Watch again on Sunday 15th but still nothing in the murky waters. There was plenty of birdlife about though. The 18th saw quite a good run of fish heading to their spawning grounds via a weir through a fish pass. On 20th. I was joined by the Fishery Inspector at lunchtime and we walked up to look at a local weir where we found heavy water with no fish showing.

The next few days up to Christmas there was continued very heavy rain. On the 22nd and 23rd the water from the Ouse was flooding right over the road at the Mills again making the whole area a seething mass of flood water. The largest flood was yet to come on Christmas Eve when some property was flooded at the Mills. On Sunday 22nd two canoeists were at the car park. I told them they must be mad and warned them that there were very strong currents and undertows but I left them to it as the river was rising very fast. The rainfall measured 71mls in this area on 23rd. The next day the storm tank at Lewes Sewage Works collapsed and a big flood was heading for Lewes which managed to remain un-flooded.

Wednesday, 25th December—Christmas Day. I had a very nice time with long standing friends of mine but I know there were a lot of unfortunate people had problems with no power which left them with their Christmas meals in ruins.

JANUARY 2014

There was even more heavy rain and high wind on the 3rd. The fields above Lewes at Landport and around Hamsey were under water again and there was a flood warning for Lewes. There were big tides and flood warnings all over the country as the Atlantic fronts just kept on coming. Spare a thought for the poor folk in Somerset who are still in real difficulty on the Levels area which looks more like a sea. I will finish with something pleasant though. It was so nice to see the Harvey's heavy horses delivering beer to the local pubs. It reminded me of my childhood when my father worked with two heavy horses named Lion and Dobbin on Bird-in-Eye farm. Many of the locals had rides.

Finally my thanks to all our landowners and farmers in a very difficult time with all the wet weather. My best wishes and good luck for good crops in the coming year despite the sodden ground conditions.

Jim Smith - OART Field Officer

River Adur News

By Peter Chase

It is good to see that the Water Quality Testing has started in the Adur area. It started in May last year on two sites and is now expanding up to include Honey Bridge, Cowfold Stream as well as the Black Sewer and Lower Black Sewer (above and below STW outlet). The latter will be interesting to monitor as fish are regularly seen here and it will be useful to know what pollution levels fish will put up with. The team is building up with two new volunteers namely Anne Wetson and Amanda Sinclair-Wheeler.

Anne has a degree in Biological Sciences and taught at Sussex University for many years before retiring and completing a PhD in Plant Physiology with a particular interest in salt marsh areas. Amanda is completing a degree in Natural Sciences in her spare time which is very different from her day job.

We are very lucky to have this expertise join us and they will help to expand the number of sites tested in a progressive way during 2014. The plan is to include points at Wiston Post Office, Buncton Chapel and Spithandle Lane at Wiston, in the near future.

We still need more volunteers who will be prepared to gather water samples.

Please contact Peter Chase or John Whiting if you are able to help.



Anne joined Sam on one of the biological surveys on the Ouse and we are in the process of purchasing the equipment so that surveys can start taking place in the Adur Catchment.



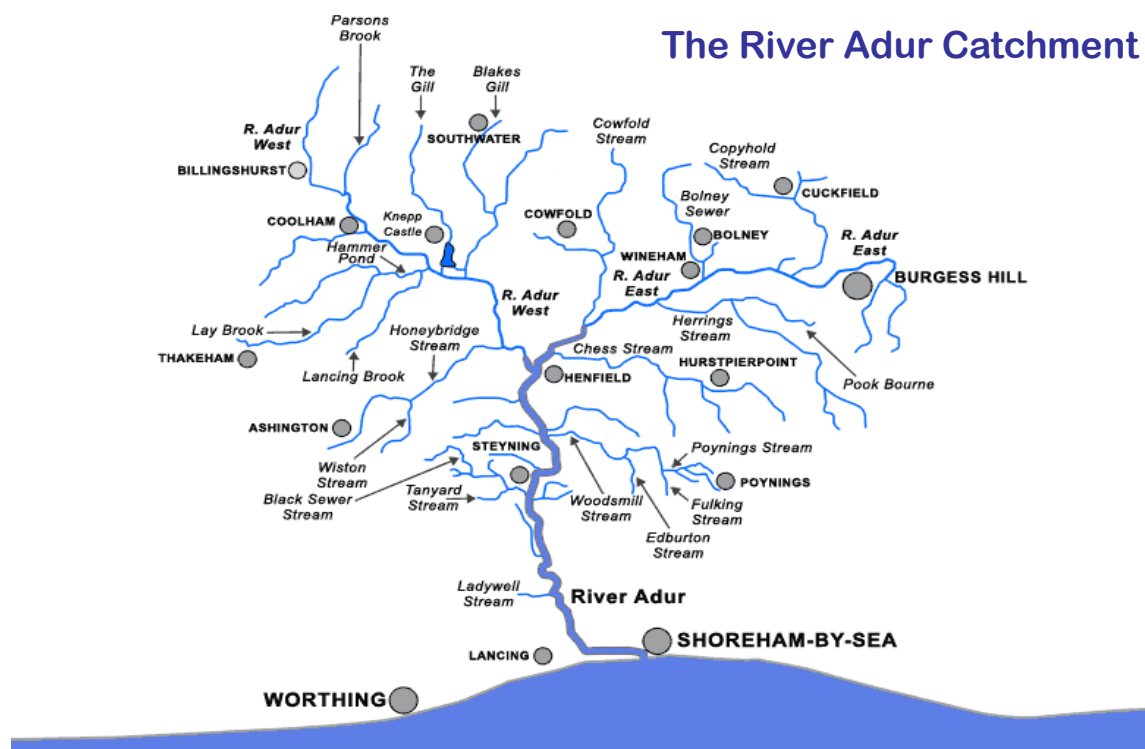
Adur Sea Trout Watch

John spotted the first sea trout, a cock fish of 6 or 7lbs, at a small weir on 4th. November. After that, in spite of checking each time the head streams rose, nothing was seen until Christmas Eve when I saw 6 or 7 fish up to about 8lbs at the same site. They were not showing on Christmas Day, however a few were seen up to the end of the month both jumping rather dimly on a few redds. Because of the high rainfall, the stream water levels have meant most redd sites are not at the time of writing possible to see. Hopefully, when levels fall, we shall find a lot of redds although some may be damaged by the big spates. On both of the main arms of the river the worst obstructions have been covered by big spates so observation has not produced any sightings. Four other streams have been checked with very similar results but only four Brown Trout seen in one location.

Local stream maintenance has been done regularly on the Black Sewer to keep the stream in good condition but the gravel introduced several years ago is being compacted and large amounts washed down stream. There is quite a lot of bank subsidence which may or may not need attending to depending on the advice of the experts.

Birds

We always leave the worst of our windfall apples on the grass, mainly for migrant birds such as fieldfare and redwing, but this winter we have not had any visiting. However, I have heard a few fieldfares near Wineham bridge but did not see them. Ten mistle thrushes were seen in the Black Sewer area just after Christmas and five song thrushes in one tree near Coultershaw which is by the River Rother.



The St Jude Storm and the Uck ~ DIY Hydrology

We watch the rivers and streams rise and fall with the weather knowing that flow and the history of flow over the seasons is important to people, farming, wildlife and landscape. Recently we have been able to follow water levels or stages hour by hour online at 6 places on the Adur and 12 on the Ouse. The locations are shown in Figure 1 (<http://www.environment-agency.gov.uk/homeandleisure/floods/riverlevels/136476.aspx>)

Figure 1 Location of online gauging weirs in the Ouse Adur basins

River Levels: Adur and Ouse



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around 1350 and then more slowly back to 800. That is just under a twenty fold rise. The total volume of the St Jude runoff in the Uck at Isfield, estimated by adding the hourly mean flows, was just over 1.6 million cubic meters. It is a sobering thought that the surge would have had a retail value of over £2.5 million if South East Water had been able to capture, purify and distribute it!

Elizabeth Shaw gives a good account of the preparation and analysis of hydrographs in her book Hydrology in practice, third edition, Stanley Thornes, 1994 p319 onwards.

The NERC Centre for Ecology and Hydrology National River Flow Archive (NRFA) estimates that the catchment area upstream of Isfield Weir is about 87.8 square km (<http://www.ceh.ac.uk/data/nrfa/data/station.html?41006> - 41006 is the NRFA station ID) OART member Robin Pepper recorded 39.9 mm of rain in the 24 hour period that included the storm. Met Office radar rainfall maps showed that rainfall was reasonably evenly distributed along the fronts that traversed the catchment during the storm.

It follows that St Jude delivered about 3.5 million cubic meters of rainwater to the area drained by the Uck above Isfield. It follows that more than 45% of the storm water went straight into the river system. This is surprising since according to the EA water situation reports the soil moisture deficit (SMD) was close to 100 mm before the storm, enough to absorb the storm water if the rain had not been too intense for infiltration. Figure 4 shows rainfall as measured at an EA recorder in Ringmer before, during and after the storm. Rainfall peaks occurred between 1900, 2200 and 0100 on the night of 27/28 October. Well before the flow at Isfield peaked.

River stages on line interpreted with the help of tables for converting stage to flow provide a simple tool for the layperson to look at the behaviour of water in sub catchments. When rainfall is relatively uniform over a sub catchment as is the case when weather fronts move over the area relationships between runoff and soil moisture deficit and land ground cover can be explored. NRFA mapping tool for annual average rainfall, geology, groundcover elevation and watercourses provides a useful aid to interpretation. Figure 5 shows the tributaries of the Uck and elevation of the land that they drain. I am grateful to and thank the Environment Agency's Hydrologist for the Solent and South Downs for the conversion tables, data and very helpful advice given with great patience. He has given permission to pass on the tables to anyone who might like to explore the territory that they open up.

Easy access to some of the basic data that the Agency uses for water resource management, flood forecasting and conservation purposes is welcome. However, many lay people find it difficult to visualise the state water in our river basins from river stages alone. The Agency's Hydrologist for the Solent and South Downs recognised the problem and has kindly provided tables for converting river stage to flow at four of the online weirs – Ardingly, Gold Bridge, Sakeham and Isfield.

I used the table for Isfield to look at the effect of the first big storm of the winter, St Jude on flow in the Uck. St Jude brought 40mm of rain to many parts of Sussex over 24 hours at the end of October 2013, on water flow in the lower Uck.

The history of discharge from a catchment after rain is known as its hydrograph. I prepared the St Jude hydrograph by taking a screenshot river stages at Isfield from the EA website (<http://www.environment-agency.gov.uk/homeandleisure/floods/riverlevels/136476.aspx?stationId=1108> - 1108 is the EA station ID for Isfield) between 12.00 on 27th October and 0900 on 29th, (Figure 2) printing it on graph paper, reading the depth of water each hour and plotting flow against time using the "look up" table to convert the hydrograph at figure 3 shows that over 11 or so hours flow rose from about 800 cubic meters/hour to just under 15500 before falling over the next 10 hours to

I captured a few of these maps at the time but assume that our printing budget would not run to reproducing one. The amount of water required to moisten the soil to the point that water drains, for example to field drains under gravity.

Figure 2 the Hydrograph for Isfield Weir 27 – 29 October 2013

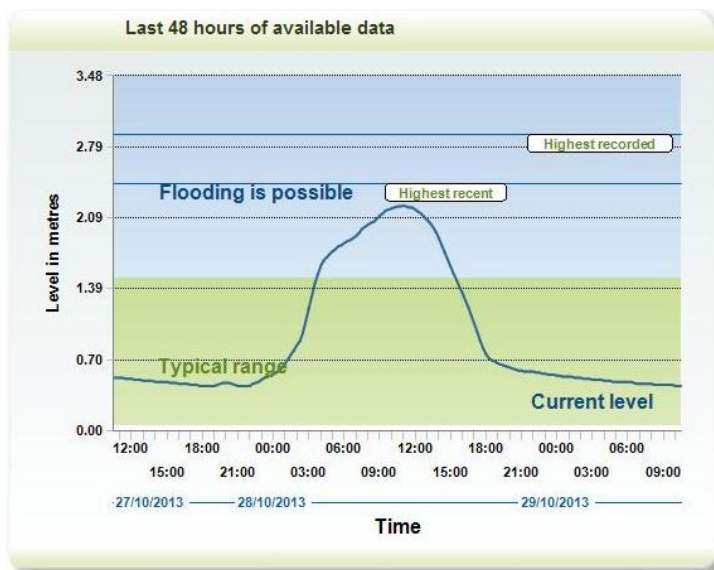


Figure 3 water flow at Isfield gauging weir converted from level data shown in figure 2

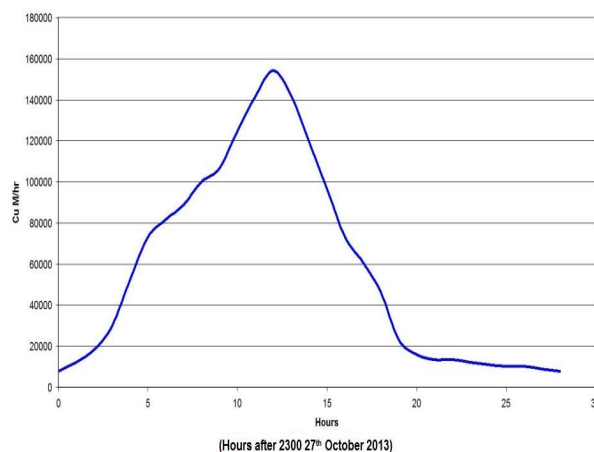


Figure 4 rainfall at Ringmer (mm/hour)

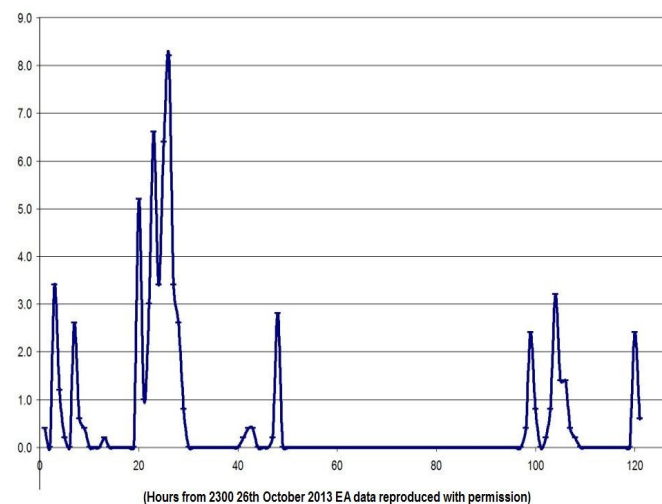
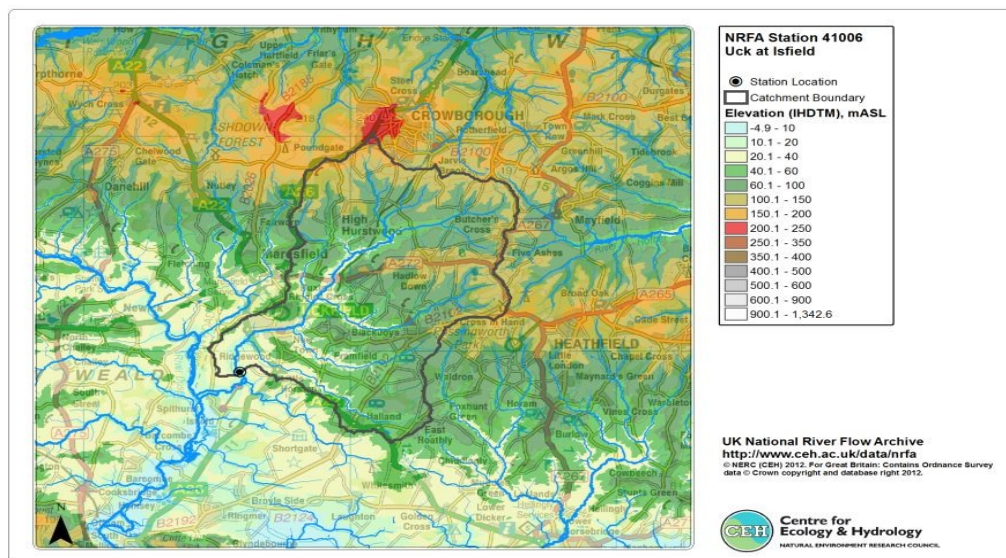


Figure 5 tributaries of the Uck above the Isfield gauging station - NERC data reproduced with permission





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