



## **Hampshire's Chalk Stream Headwaters Forum Tuesday 2<sup>nd</sup> September 2008**

### **CONFERENCE PROCEEDINGS**

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## **Welcome**

### **Tim Nevard - Vitacress Conservation Trust**

Welcome to the second annual Vitacress Chalk Stream Headwaters Forum – it's good to be back and to see many familiar and new faces. My job is to facilitate today's plenary session and to ensure that we make it a productive and enjoyable day!

We are keen to ensure that we capture as many of your views as possible and so in addition to the plenary session later today, delegates have been provided with the opportunity to write down ideas or concerns that arise during the conference. Post-it notes can be found in delegate packs and should be placed on a discussion board in the main conference room.

Please state your name and organisation before any comments or questions to ensure that accurate proceedings are recorded. Proceedings can be requested by filling in a slip found in your delegate pack, and feedback on the conference is welcomed so please complete the feedback form and return it to us at the end.

May I now call on Lord Selborne to inaugurate the 2008 Forum.

## **Introduction and Chairman's Opening Address**

### **Lord Selborne – Vitacress Conservation Trust Patron**

Looking around the audience I can see many faces that also attended the forum last year. The forum aims to provide a local point for discussion of new ideas related to the management of Europe's most important chalk rivers here in Hampshire. At the previous meeting, we benefited from a wide range of expertise and experience in the audience including landowners, river managers, conservationists and individuals with commercial and agricultural interests.

Two clear messages arose from the forum last year. The first was that we need to have locally based sub catchment initiatives, and we will hear how some of these projects are progressing in the talks today. The second theme identified was that there is a need to integrate applied research into practical restoration work.

This forum aims to encourage everyone to share their thoughts and ideas, and contribute to the agenda. With the water framework directive looming, and continued debates of what is meant by 'good ecological status', we need to put robust suggestions forward to ensure that we have practical advice to offer to the debate.

## **Presentations**

- **“The Quintessential Chalk Stream”** by Jim Glasspool, Test and Itchen Association

An introduction to what makes a chalk stream, also identifying what issues are currently having an effect on England's chalk streams. The history and important features of chalk rivers were discussed, along with case studies on river fly life, white clawed crayfish, southern damselfly, trout, salmon and aquatic vegetation. Jim also discussed who was looking after the rivers, and highlighted that £3 million is spent on trout and salmon fisheries in Hampshire to employ 65 full time keepers and various contractors to maintain the river systems through island formation, bank maintenance, mink control etc. The main issues facing chalk streams were summarised as abstraction, water quality (phosphates and pesticides) and riparian land use.

- **“The Structure and Function of Chalk Streams”** by Pete Shaw, University of Southampton

A scientific look at the ecology of chalk streams and what categorises them, including physical, biological and hydro-geological aspects, along with characteristics and diversity; as well as looking at food webs and trophic interactions, explaining that chalk streams host extremely complex interactions. By understanding the food webs within the diverse ecosystems of chalk

streams, one can use this information to define and achieve ecological, conservational and service goals.

The question has been raised many times as to whether these goals are compatible. Compatibility requires us to think broadly about what we want to achieve and to use our scientific understanding to underpin our decisions.

- **“Chalk Stream Malaise”** by Lawrence Talks, Environment Agency

Presented the UK BAP objectives for chalk rivers and highlighted the purpose of the Environment Agency’s work to drive implementation of restoration schemes, raise awareness of the status of chalk rivers in the UK and to be a centre of expertise in chalk river communities.

There are 161 defined chalk rivers in the UK, but only 10 are SSSIs and 4 are SACs so the majority are undesignated ‘Cinderella Streams’. The State of England’s Chalk Rivers report identified the top 5 issues facing chalk rivers as: abstraction, agricultural run off, the impact of chemicals, reduced flow and lack of fly life. Examples such as the Misbourne and Meon were used to illustrate these issues.

Several suggestions were made of where further research investment is required:

1. The impact of abstraction
2. Catchment-based assessment of phosphate
3. Long term monitoring/assessment of chalk river habitat restoration
4. The impact of climate change; temperature, run-off etc.
5. A chalk rivers science conference
6. A University-hosted national chalk river reference collection

- **“Catchment Sensitive Farming”** by Nigel Thomas-Childs, Environment Agency

An introduction to the England Catchment Sensitive Farming Delivery Initiative, launched as a voluntary initiative in 2006, to provide free advice to farmers. This project has recently been extended for a further 3 years, and provides a multi-agency approach, funded by DEFRA.

Environment Agency and Natural England water quality, habitat status and risk mapping was produced in 2006, and this was used to identify areas on which to focus. Forty catchments were identified using criteria relating to phosphate and sediment levels, or whether the SSSI status was declining. Farms within these areas were visited and offered a range of advice including soil structure assessments, soil management plans and nutrient management planning.

Catchment Sensitive Farming is an advisory mechanism to support farmers, not to regulate them, and methods used by the scheme include farm visits, workshops and advice services. The main aim is to use farmer engagement to reduce diffuse pollution from agriculture to achieve multi-agency objectives for SSSIs.

- **“The Bourne Rivulet Initiative”** by Gail Taylor, University of Southampton/Vitacress Conservation Trust

A summary of the progress of the Bourne Rivulet Initiative management group was made, since identifying targets from the chalk stream forum in 2007. Work began in November 2007 to develop an action plan for multi purpose long term management of the Bourne Rivulet. The group also aims to undertake applied research and take expert advice as necessary in order to develop an approach on the Bourne Rivulet that can be used as an exemplar for other headwaters such as the Itchen.

Partnership organisations and key groups were identified including Hampshire & Isle of Wight

Wildlife Trust, angling groups, landowners, Natural England, the Vitacress Conservation Trust, Vitacress Salads, local communities, the University of Southampton, water companies and the Environment Agency. The group's objectives are to identify what is meant by 'good environmental status' and find current factors affecting this status in order to produce appropriate management plans; discharge, abstraction, sewage (mains and septic tank), surface water.

Progress of the group includes establishing an online reference of chalk stream literature and studying physical, biological and chemical data to define 'ideal status' for the stream.

- **“Building Biodiversity”** by Simon Cain/Dominic Longley, Cain Bio-engineering and Terry Lawton, Angling Consultant

An insight was given into river restoration schemes, using the Vitacress channel creation project and Michael Malyon's restoration on the Bourne as case studies.

Terry Lawton outlined the Vitacress project, involving re-creation of a 200m stretch of new chalk stream, due to the removal of underground pipes and culverts which carried the Vitacress farm's 'grey water' from the watercress farm and salad wash.

The project brief was to provide good brown trout habitat and biodiversity, along with wetland areas to absorb phosphates and dipping areas for school visits. The project needed to be sustainable and durable. Images of the site were shown from May 2007 (5 weeks after completion) when a range of invertebrates and a juvenile bullhead were seen, and July 2008 (1 year later) which showed a biodiverse marginal zone with 15 species of plant, wildflower meadows and a brown hare.

Dominic Longley then spoke about the restoration of a 700m stretch of the Bourne Rivulet for Michael Malyon and the materials used to create the various features. Biological and hydrological data was collected pre and post recreation in order to compare the biodiversity of the site and evaluate the success of the project.

## **Questions and Responses**

### **Lord Selborne – Vitacress Conservation Trust Patron**

This section is your opportunity to ask any of the 8 speakers a question so please state your name and who you would like to address your question to.

### **Comment from Peter Evans, local resident:**

I have several questions but I would like to focus on the final talk on the subject of river restoration. The restoration looks good, but this question of whether it is science or art paints a good picture and it seems to be coming across that it is the remediation that has improved the river. However, we mustn't lose sight of the fact that the original HABSCORES were done when there were significant effects coming out of the discharges from the watercress farm effluent which I'm pleased to say have now been reduced.

There have been considerable efforts made to remove chlorine and ammonia on site which has had a positive difference, as the science has shown. This shows that we must get the water quality right before conducting habitat re-creation in order for the projects to be successful. There is not a lot of point in spending a lot of money on remediation unless the water quality and siltation is improved and maintained.

I'm very happy to see the catchment sensitive farming project tackling the issue of the road and working with Highways as we must stop the run off. We need to stop the water coming down through the valleys and instead it needs to be put through the chalk. Hydrogeology studies are

required in order to understand how water close to surface is affected by abstraction and recharge etc.

**Response from Simon Cain, Cain Bio Engineering:**

You are absolutely right, but there are combinations of factors that contribute to the success of restoration projects. In the case of Michael Malyon's Bourne site, the channel was extremely over widened with sediment over the entire stretch and no ranunculus growth. One of the things I have found with river restoration in catchments with a high sediment input is that if you restore the river channel, the sediment is washed through in faster areas and unwanted material on the gravel is flushed out and washed through the channel further downstream.

**Question for Simon Cain from Peter Evans, local resident:**

Do you have a maintenance programme for silt removal as it will naturally build up, so how do you deal with this?

**Response from Simon Cain, Cain Bio Engineering:**

The river tends to become self cleansing. When an area becomes filled up with sediment to a point where it cannot contain it, high water events flush the silt further downstream.

**Question for Simon Cain from Peter Evans, local resident:**

But then presumably that causes a problem lower down in the catchment?

**Response from Simon Cain, Cain Bio Engineering:**

This is a natural function in many rivers with high sediment inputs – look at the Amazon where the silt forms deltas that span for miles.

**Question from June Chatfield, British Naturalists' Association:**

In nature, there are slip off slopes and undercut banks that create sharp divisions between water and land. Don't you feel that these natural divisions would be a little bit better than having shallow banks everywhere, especially for species such as kingfishers that rely on the steep banks for nesting.

**Response from Dominic Longley, Cain Bio Engineering:**

Pete Shaw showed the best example in his talk about how it is vital to recognise the nature of each individual headwater as they are extremely variable. Whole rivers don't conform to a textbook description of the way a chalk stream should be. This leaves us with a challenge to design each individual restoration project for local conditions and ecology. If kingfishers are nesting locally, we will take this into consideration and provide for them, and this goes for all species. Within the stretch of river I spoke about we have seen kingfishers but, rather than providing nesting areas, we have created excellent backwater habitat designed for sticklebacks, to build up the food webs that support species higher up the chain.

**Question for Environment Agency from Richard Gueterbock, HEP:**

Can I make mention to the one agency that doesn't seem to be fully engaged in these discussions and that is the Highways Agency. It is all very well to put a huge amount of effort to remediate streams and prevent agricultural diffuse pollution, but unless the Highways Agency are fully engaged in the process, we are just going to destroy what has been created. What can the Environment Agency do to force the HA to come to the table with a constructive approach.

**Response from Nigel Thomas-Childs, Environment Agency:**

This is one of the core issues where I want to try to work in partnership with the Highways Agency and to educate them about these issues within the catchment. I have made a request within the Environment Agency to try and support an officer to work on the non-agricultural diffuse pollution issue. DEFRA have also started work looking at non-agricultural diffuse pollution on a national level. This work should look locally to build relationships between the agencies. The scope of this could also be broadened to include septic tanks as well.

**Question for Nigel Thomas-Childs, Environment Agency from James Carr, Salmon and Trout Association:**

How is the catchment sensitive farming programme assessing the outcomes of the plans written and the actual deliverance on the ground? Also, who actually paid for the work to install the water pumps to stop the cattle drinking from the river?

**Response from Nigel Thomas-Childs, Environment Agency:**

The soil management plans are funded by the Environment Agency. The plan is written, and the farm is then revisited to assess the options and answer any questions the farmer may have. The soil management plans also offer the farmers protection for insurance reasons as it proves they have taken action to improve run off issues etc. As the CSF project has now been extended, we will be able to revisit the original farms and high risk fields to see how the measures are working in practice.

The soil management plans are produced alongside the farmer to ensure that the options are suitable and achievable. There is also a DEFRA funded capital grant scheme which can provide some funding for prioritised alternative drinking structures.

**Question for Environment Agency from Paul Knight, Salmon and Trout Association:**

Sedimentation has not been included by the UK technical advisory. What can we do, in the Environment Agency's point of view, to bring out a national standard for sedimentation or to raise the profile on a catchment scale?

**Response from Lawrence Talks, Environment Agency:**

The DEFRA response would be that the catchment sensitive farming scheme is the prime tool for protection from sedimentation to manage run off. In terms of raising the profile, the Environment Agency does monitor the siltation levels in rivers, but whether the Environment Agency is as active as it might be to push for programmes on every catchment is another question. We have highlighted the importance of sedimentation on chalk rivers and have seen an increase in the take up of catchment sensitive farming.

I think it is partly a question of nuts and bolts; you need the catchment sensitive farming at catchment scale, but also at a reach level you need the habitats to be appropriate to be able to absorb silt and provide habitat for spawning. Our hope is that it will be pushed up the agenda by the water framework directive.

**Response from Nigel Thomas-Childs, Environment Agency:**

Just to add that, through the catchment sensitive farming scheme, we have an enhanced monitoring programme which has been applied on a sub-catchment of the River Test. It means that in addition to the once a month monitoring, we have implemented weekly monitoring over the last year at set point to look at phosphates, nitrates etc. At the same time, river readings have been taken to look at fluctuations and weather conditions. I am keen to have the Bourne included in this enhanced monitoring and it was requested two years ago when the project started.

**Question from for Nigel Thomas-Childs, Environment Agency from Nick Sotherton, Game & Wildlife Conservancy Trust:**

Is there any evidence to suggest that cattle health improves when the drinking pumps are added as part of the catchment sensitive farming scheme?

**Response from Nigel Thomas-Childs, Environment Agency:**

The pumps are providing the same water as the cattle would have been drinking previously, so I would not be able to comment on any changes in health.

**Questions from Roger Harrison, Itchen Stoke Mill:**

This year, I have witnessed more flannel weed in the Upper Itchen than ever before and it seems

to be systematically increasing every year. There is an almost complete absence of *Gammarus* in the main river and almost a complete absence of *Ranunculus*. This is a very real problem, and the longer it is left the harder it gets to deal with. There very are significant problems with the Upper Itchen.

**Comment from Graham Roberts, Hampshire & Isle of Wight Wildlife Trust:**

I have known the site for 35 years and I think this year, especially considering there have been 2 years where has been good flow, there is a serious problem somewhere in the Upper Itchen. One would have expected that this year above all years that the situation would have flushed through, but it hasn't. There is something wrong and it needs to be taken very seriously. If we are not careful, we may be too late to act.

**Response from Lawrence Talks, Environment Agency:**

This may be perhaps linked to the rainfall we have had this year flushing nutrient rich material into the system, and the more sensitive areas have been affected. For example, I was at Tichborne a couple of weeks ago where there is lots of blanket weed and it was certainly worse than I have seen in recent years. I can only put this down to climatic conditions with a possible link to land use.

**Comment from Peter Evans:**

Nigel mentioned the weekly phosphate monitoring on the Bourne. Surely what we need and the Environment Agency data would show is that spikes in phosphate can have long term consequences. The monitoring regime should surely be constant and this would also help identify the causes for the problems on the Upper Itchen. This would also help identify any spikes in phosphates and where they may have come from.

**Response from Gareth Old, Centre for Ecology and Hydrology:**

We have just bought a section of river purely for research to trial continuous phosphate monitoring.

**Question from Tim Nevard, Vitacress Conservation Trust Trustee:**

Does anyone know if there is a continuous monitoring system for phosphate yet? It keeps being mentioned but we don't seem to have a scientific instrument that that monitors continuously.

**Comment from Pete Shaw, University of Southampton:**

Southampton University are currently looking into the osmotic transport of phosphate.

**Comment from Lord Selbourne, Vitacress Conservation Trust Patron:**

Hopefully this is something that we can discuss further and draw out conclusions this afternoon.

## **Plenary session**

**Lord Selborne – Vitacress Conservation Trust Patron**

We now have time to break out into a wider discussion for the next hour. I would like to invite anyone who has an issue to raise it, and for anyone that would like to input into the focus of work for the forum in the coming year to share their views with us all and get thoughts out into the open.

**Tim Nevard – Vitacress Conservation Trust Trustee**

This section of the conference offers everyone a chance to raise issues for the agenda of the 2009 forum. Summarising the post-it notes placed at the back by attendees, and the presentations we have heard throughout the morning I feel that there are three main themes that we need to address in more detail.

1. The biggest issue by far arising from the discussions today seems to be phosphates and

- phosphorous. Roger Harrison and Graham Roberts have expressed concern about the Upper Itchen and there does seem to be an issue here. Maybe the Upper Itchen is an area where the Bourne methodology could be implemented.
2. Lawrence Talks has mentioned the need for a science forum, and this is something that we will need to debate.
  3. We have also discussed the need for assessment of habitat creation schemes and I am a great believer in these schemes, as they engage communities and the public. However, we do need to assess their success and viability.

## **Issue 1: Phosphates and Phosphorous**

### **Tim Nevard, Vitacress Conservation Trust Trustee:**

I would like to kick off the debate with the first issue which is concerned with phosphates. I am going to direct my first question to Steve Rothwell: We have a bit of a smoking gun in the Upper Itchen and Jim Glasspool has isolated it down to two things; the watercress industry and septic tanks. Please could you start the debate and comment on the issues surrounding phosphates?

### **Steve Rothwell, Vitacress Salads**

Phosphates are an element of watercress farming effluent. You cannot grow watercress in a chalk stream without adding phosphate. Indeed, their clarity is due to the absence of phosphate. When I joined Vitacress in 1980, the method to add phosphate to the water was to add slag in huge amounts – up to 1 tonne an acre. By the mid 1980's supplies of this slag had dried up in the UK and so farms were then buying powder with phosphates stirred in and this is when things started to become difficult, with the industry moving towards more soluble forms of phosphates.

My PhD was concerned with the most efficient ways to grow watercress so I implemented a regime for Vitacress where we stimulated the affect of that basic slag - i.e. we added insoluble phosphate to the base of the bed, so that over a period of months and years the released phosphate slowly supported plant growth.

The rest of the industry did not follow this approach, and particularly smaller growers today tend to add cheaper phosphate in a concentrated form straight into the flowing water; which can result in 2% of the phosphate being used to grow the crop and the remaining 98% flowing directly into the river. I think there is evidence of this happening by very small growers having a large impact on the Upper Itchen.

I am Vice Chairman of the NFU Watercress Association, which represents good practice within the watercress industry. We are mindful of the fact that poor practice could lead to unnecessary regulation that could have been achieved by self regulation. This led us to act in two ways:

The first was to commission a £100,000 piece of research which ADAS are undertaking, that will report in early 2009, whereby watercress is being grown in nine beds, each of which are under different phosphate regimes, in order to find the minimum input of phosphate for maximum output crop to ensure the impact on the river is kept to a minimum.

The second thing is that we have fed all Vitacress information into the study for free. At one stage, I hoped that knowledge of how to apply phosphate responsibly may be used widely - but in 20 years that has not happened as no-one has stepped in to regulate the other growers. However, by early 2009 we will have a blueprint for an industry standard which the Environment Agency is part funding and will then help to support by regulating growers and ensure that they are growing responsibly and comply with the standards.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

Are you saying that the watercress farming industry will raise its game or can we only hope?

**Steve Rothwell, Vitacress Salads**

A greater proportion of farmers will improve without question.

**Nick Sotherton, The Game & Wildlife Conservation Trust:**

We run our demonstration farm in Leicestershire and one of our concerns is that water leaves farms in better condition than it comes in. As a result of that, we have conducted a lot of phosphate measuring and, in this particular case, the in-stream phosphate was definitely coming from septic tanks in the village that were leaking. Very little phosphate was found to be coming from the farmers, and this was quite a revelation.

**Question from Tom Stratford:**

Is there anyone here from the Environment Agency who can comment on what they are doing on the Upper Itchen? I have spoken to other organisations and individuals and they are all doing a lot to monitor the situation.

**Alison Graham-Smith, Natural England:**

I can make a comment from Natural England. As I understand, as the result of the review of consents, it was agreed to write some standards that an SAC river might need for watercress farms. The Environment Agency was looking at rolling these standards out to all watercress farms but I am unsure of the timescale for that.

**Shirley Medgett, Environment Agency:**

I am not in close contact with the review of consents work, but I know on the Habitats Directive we look very closely at phosphate levels in the River Itchen and that work is currently in progress. Additionally we are seeking to fund a PhD on the Itchen catchment looking at macrophyte growth, and in the last three years we have been collecting diatom samples three times a year from the whole of the Itchen catchment. This work will also carry on for the next three years, so there is work ongoing.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

We have heard today about the issue of sampling frequency, and the Environment Agency is being criticised for the lack of frequency of monitoring, please can you comment on this.

**Shirley Medgett, Environment Agency:**

In the past I have led investigations specifically looking at watercress farms, looking at discharges on the Bourne Rivulet in particular, and we have deployed 24 hour monitoring. There is data and we do know the background levels that we would expect to find and how those relate to phosphate monitoring. It is a question of resource with the monitoring and there is no way that we can possibly hope to cover the catchment with that level of monitoring.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

We are hearing that the Upper Itchen is in crisis - what is going to happen?

**Shirley Medgett, Environment Agency:**

We are hoping that the PhD work will continue. Although it is easy to point the finger at phosphorous, as there is some evidence that it is the problem in the Itchen, we have not made a conclusive link yet so the *Ranunculus* research will look at identifying the cause of the decline.

**Peter Evans, local resident:**

As I see it, in the watercress industry there are two pathways for phosphates to enter the river system. The first is through direct discharge and the second is through diffuse phosphate connectivity between the watercress and the gravel beds into the groundwater below. The continuous monitoring of direct discharge that Shirley has talked about is only for ammonia.

We had the figures in the review of consent of 40/60 parts per billion but this is an annual average and the watercress industry do not use phosphates during the winter. Therefore you can put higher levels of phosphate for shorter periods but have a low annual average overall. As watercress farms do not use phosphate all year around, the continuous monitoring may be a problem in certain areas.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

Can Steve verify whether there is leakage from cress beds into groundwater?

**Steve Rothwell, Vitacress Salads**

In our watercress beds you have 100 years of compacted chalk and gravel which is impermeable. The beds are designed to retain the water and certainly none of the Vitacress beds leak. Even if they did, phosphate very rapidly engages with chalk and a chalk/phosphate substrate would form so the phosphate wouldn't actually go anywhere.

**William Daniel, Famous Fishing:**

If Vitacress have a non-consumptive license to abstract water every day, where does all of that water actually go?

**Steve Rothwell, Vitacress Salads**

The only loss, depending on the weather, is evapotranspiration as there is no loss in the process and the water goes back into the river.

**William Daniel, Famous Fishing:**

Steve, we have photographs of the River Bourne flowing before the Vitacress farm and then disappearing into the ground afterwards. If the water is going back into the ground then surely Peter has a very good point about the groundwater collecting phosphate.

**Peter Evans, local resident:**

Coming back on that, as part of a planning application an independent environmental assessment stated that the rain that falls on the crop recharges the groundwater so it cannot be both ways. I'm not saying that it may not be true at St Mary Bourne, the beds may be compacted there but we are trying to identify sources of the phosphate and so we need to look at the pathways available for phosphate to reach the river.

According to the British Geological survey, the St Mary Bourne site has 15-20 feet of gravel beneath it before you get to the chalk. My understanding is that chalk will lock up phosphate in farmland up on chalk hills but what we should be worried about in my understanding is that when phosphate arrives in the gravel substrate of a valley, it will then travel underground through the gravel. I don't think that the gravel, especially as it is a concentrated layer, would still have the capacity to lock up any more phosphate and so this could be the reason for phosphate residue and the reason we are still seeing problems in St Mary Bourne.

We do get blanket weed upstream during high rainfall and this could be due to phosphate being washed out of the gravel. There is a pathway - there is research that shows groundwater or springs above the watercress farms coming out at 30/40 parts per billion and downstream of the watercress farm they are 60 parts per billion out of the ground.

That phosphate has obviously got there somehow and this is the reason I have been calling for a hydrogeological survey so that we can understand the pathways and which way the water is flowing. All I am saying is don't only look at the discharge point, we also have to accept that there may be pathways that are coming in from somewhere else.

**Pete Shaw, University of Southampton:**

I think we are entering very tricky territory with phosphorus, because phosphates come as

complex shapes with particulate forms. There are many different forms and so I cannot over-emphasize how difficult it is to identify the interaction between the nature of any phosphorous problem, the prevailing ecological conditions and the pathways involved.

**Lord Selborne – Vitacress Conservation Trust Patron:**

This seems to be an issue where there are some very real doubts as to whether monitoring is the answer. If money wasn't a constraint, what research project would you like to see NERC funding?

**Pete Shaw, University of Southampton:**

The main thing is to find out what the main big sources of phosphates are. At Lough Neagh in Northern Ireland there was an audit of phosphate inputs, which resulted in a major treatment works being responsible for eutrophication issues. We are not going to be able to completely solve the problem as we will never shut off the phosphate supply to chalk rivers.

However, if we can identify the main case and sources we can focus our resources there. The causes may be due to agriculture; it could be silt, as phosphate as a chemical is extremely sticky so attaches itself to particles and can be carried in silt. A lot of problems that we have discussed are concerned with headwater streams with standing water. These systems have higher nutrient and silt deposits that could be holding onto the phosphate. We need to understand the process in which the phosphate reaches the river and the attributes of the phosphorous compounds.

**Gail Taylor, University of Southampton/Vitacress Conservation Trust Trustee**

There is a revolution in sensor technology at the moment and I believe that we need to look at developing cheap sensors for continuous monitoring.

**Allan Frake, Environment Agency:**

The pathway of phosphate into a river is fairly simple and relatively easy to understand but the complexity of a river, immobilisation of phosphate and effects in ecology is poorly understood. I am worried that there is a lot of interest in monitoring, when we really need more understanding of how phosphate behaves in the river rather than blanket monitoring for monitoring sake. There is a lack of understanding of riverine phosphate movement, and this is what we need to work on.

## **Issue 2: Habitat Creation**

**Tim Nevard, Vitacress Conservation Trust Trustee:**

We had a long discussion today about habitat re-creation and this is something that Terry Lawton has been involved with for years. I am hearing today that some people think that the jury is still out on the effectiveness of habitat creation schemes and I would like to ask Terry to speak about his experiences and thoughts on this issue.

**Terry Lawton, Angling Consultant:**

I realise now how lacking in knowledge we were when we took on past habitat creation projects, and knowing what I know now I'm sure we would do it differently. However, the projects provided quality habitat for wild and stocked trout, and it has led us to get funding for more work on different rivers. This means that we can do bigger projects with more knowledge to inform our choices and schemes.

The value of the created habitat in its scientific form is difficult to assess - can you measure in exact science or is it more of a gut feel, suck it and see operation? Simon Cain's work on the Bourne should be an improvement on previous methods used and an example of utilising science to inform management.

**Allan Frake, Environment Agency:**

We are spending millions on habitat creation and conducting no monitoring. It is difficult to measure impacts on reach scale restoration projects, but we have just developed a monitoring

protocol which ranges from simple fixed point photography to the more intricate geomorphology monitoring. We do recognise that our monitoring is poor and we need to improve this in order to be able to prove why we have spent millions of pounds of public money on restoration.

**Graham Roberts, Hampshire & Isle of Wight Wildlife Trust:**

Hampshire & Isle of Wight Wildlife Trust would like to see, wherever possible, the implementation of sustainable solutions. I have seen lots of money spent on restoration projects, but some are also quick fixes and there is a question of their sustainability. There is a big restoration project on the Upper Avon and I felt that some of the restorations were a mess. If you looked at the river closely you could see that it wasn't functioning.

We need to ask ourselves 'what are we trying to achieve?' We have been on a massive learning curve and are moving forward but we need to learn quickly or we are in danger of wasting money and not getting a good result. If we can get the flows and water quality right, smaller, more sensitive tweaks may be a more sustainable solution. Having said this, restoration projects do raise awareness significantly, which is always beneficial. The key issue we need to address is how we monitor the benefits. This needs to look at the functionality of the whole system, and not just individual species.

**Paul Knight, Salmon & Trout Association:**

With the Water Framework Directive objective needing to be delivered, I just wondered if Lawrence can make a comment on whether he thinks a programme of monitoring will be put in place to assess whether the WFD objectives are being delivered.

**Lawrence Talks, Environment Agency:**

Under the Water Framework Directive we have clarity on what 'good ecological status' is and that will be monitored using a range of species as indicators - fish, invertebrates, diatoms. That monitoring framework is staying and will continue. However, less thought has been put into river channel restoration. I think that restoration is an excellent way of engaging people in the local community with chalk streams and getting the public enthusiastic about rivers.

Monitoring can be very expensive and there is a case for setting up exemplar site where we have long term before and after restoration monitoring programmes. The Chalk River Habitat Guidelines that I have been involved in will hopefully create discussion and raise awareness of the options for restoration and I would welcome feedback from you on this.

**Earl of Strafford, Piscatorial Society:**

I can assure everyone here that there has been a total transformation of stretches on the River Avon. In particular there was one wide stretch that 12 years ago was completely bare. By gradually narrowing the river, there are now wonderful beds of *Ranunculus* and the habitat is much improved. This is an excellent example of restoration that has happened, has worked and is being monitored.

**Jim Glasspool, Test & Itchen Association:**

I would just like to make the point that we are dealing with man managed systems which are mainly being paid for by fisheries. The fisheries are the people that are doing a lot of restoration and I wanted to point out that there is a resource there that is not costing the public money and is beneficial to the river system.

**Jean Hedley, Hampshire & Isle of Wight Wildlife Trust**

I just want to reinforce what Graham said and also take up Lawrence's point. Monitoring is expensive, and we are very aware that we need to monitor what we are doing and this is an ongoing issue. Whilst monitoring is built into our plans, I think that it is not as thorough as it should be.

**June Chatfield, British Naturalists' Association:**

I would like to mention that a lot of species identification knowledge is currently being lost. We need to get more people involved in nature and encourage natural history societies to get volunteers involved.

**Lord Selborne – Vitacress Conservation Trust Patron:**

The House of Lords Taxonomy Report was released in August 2008 and investigated whether systematic biology in the UK is in a fit state to generate the essential taxonomic information and whether the UK has the skills available to be able to understand and predict the impact of climate change on biodiversity. There is no point in doing habitat re-creation programmes if there are no amateurs to monitor and continue the conservation work. In order to support the habitats, we need scientific expertise.

**Paul Knight, Salmon & Trout Association:**

Warren Gilchrist, who is here today, conducts river fly monitoring and the river fly partnership has over 300 operative well trained amateurs in 20 Environment Agency areas. This network is extremely useful as we have just won two cases in Wales that began when the monitoring team noticed a problem with the invertebrate populations. The cause of this was tracked down, and appropriate action was taken.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

The Environment Agency is investing in habitat re-creation schemes, but is that good value for money?

**Warren Gilchrist, Test & Itchen Association:**

Whilst there is a lack of people that can identify river insects, there is also a lack of keys. Older keys can be very tricky, but the Field Studies Council has produced some excellent booklets. New releases include ephemeroptera and caddis fly adults.

**June Chatfield, British Naturalists' Association:**

There is also a freshwater snail course that the Field Studies Council is running soon.

### **Issue 3: Chalk Stream Science**

**Tim Nevard, Vitacress Conservation Trust Trustee:**

The need for a Chalk Stream Science Forum has been raised by a number of speakers and delegates. Gail, would you like to respond to this?

**Gail Taylor, University of Southampton/Vitacress Conservation Trust Trustee:**

With a lot of the concepts we have been discussing today, we don't have scientific information to back up the evidence. However, we don't just want science for the sake of science - we need to ensure that any research is valuable. Lots of information has been collected and currently it hasn't been brought together very well. We hope that this forum and the planned web portal will begin to improve this. Science is expensive.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

Chalk stream headwaters are one of the most important habitats within the EU and the UK. How could we prioritise scientific research?

**Fiona Bowles, Wessex Water:**

Wessex Water have invested several million pounds into research projects over the last few years and there is a review of consent going on over the next 5 years to collect more information on flows and phosphate levels. The real task is to bring it together and monitor it on a national level.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

Will this answer the question posed earlier that we don't know the effect on phosphates/phosphorous on river ecology? Will this research tell us what these effects might be?

**Fiona Bowles, Wessex Water:**

The research I have been conducting looks mainly at flow rates, but I have also been collecting chemical analysis data.

**Gareth Old, Centre for Ecology and Hydrology:**

One of the critical things as scientists is to identify important areas for monitoring and add value to the information by measuring nutrients. By combining expertise we can ensure that information is collected from specific sites where it is needed. It needs to be a joint, coordinated approach.

**Lawrence Talks, Environment Agency:**

My point is about the partnership between operational organisations like the Environment Agency and scientists.

We all collectively agree that there is not enough resource to tackle monitoring and evaluation but I think that we are not working well enough together. This forum is a good example of bringing different experiences together, but I think we need to do that on a national level. I would like to see a partnership with operational elements and the science community to achieve practical outcomes. As an example the LOWCAR (Lowland Catchment Research Project) project was £7 million, but has it made a difference to chalk rivers?

**Gail Taylor, University of Southampton/Vitacress Conservation Trust Trustee:**

My perception of the Research Council is that the funding is much more focussed on problem solving. Operational interests are now working much more closely with the Environment Agency and it is true that 5 years ago science was undertaken much more in isolation than it is now.

**Peter Evans, local resident:**

This has been a bit frustrating for me to see that raw research like that from CEH doesn't get through to regulatory bodies or organisations like the Environment Agency. There was a paper written in 2000 about groundwater protection in areas of abstraction that was a European document with the Environment Agency's name on it. However the Environment Agency Head of Water Resources had not heard of the report. That report sought an investigation of the hydrogeology on the Bourne Rivulet which had also been called for in 1993 by the NRA. A lot of these projects have been 'called for' but they never seem to reach the light of day. This all leads to another issue we have discussed regarding increased population size. We need to find a better way to use our water in a sustainable manner.

**Martin Burton, Hampshire Water Partnership:**

I just wanted to pick up on the point on the use of science, and that we can also engage with sociology departments to look at uptake pathways and how to get the message out to people to manage their demand of water. I think that there is a need to take the debates we are having in this forum to a wider audience in order to engage the public, manage demand with the aim of conserving our rivers.

**Gareth Old, Centre for Ecology and Hydrology:**

I would just like to make a comment about a programme that I was involved with which engaged with the public, trained young scientists and held open workshops. In projects there is more and more emphasis on knowledge transfer and funding schemes now ask to pass on the knowledge gained and engage with stakeholders through workshops etc. However, it can be difficult to approach projects from both sides.

**June Chatfield, British Naturalists' Association:**

The question of hydrogeology has been mentioned several times today and I wanted to make

people aware of the Royal Geographical Survey which has a lot of material and information that is available on the web.

## **Additional Issues**

### **Tim Nevard, Vitacress Conservation Trust Trustee**

Does anyone have any comments about additional issues that we haven't already explored in today's discussions?

### **Question from Allan Frake, Environment Agency:**

The effect of climate change has been mentioned today, but what do we all think may happen?

### **Paul Knight, Salmon and Trout Association:**

Allan raises a good point, and Nick Giles for the Game and Wildlife Conservation Trust has worked on this. There is a report 'Management of Chalk Streams' which looks at coppicing and the fact that we may need to revert to older practices, as shading will become important due to the effects of climate change.

### **Lawrence Talks, Environment Agency:**

The graph I showed with the flows on the River Avon gives an immediate picture of how in 1989 the flow pattern changed from even flows to strong peaks and troughs. This will have a profound impact on our chalk rivers and spawning times so climate change could potentially have a massive effect. It is possible that we are seeing the impacts now. Wide, deep channels aren't any good for adapting to climate change whereas shallow areas with pools etc will be able to adapt to the rise and fall in flow.

### **Question from Stewart McTeare, Piscatorial Society:**

Will the change in ownership of Vitacress Salads bring about changes to the Vitacress Conservation Trust?

### **Nick Stenning, Vitacress Salads:**

The short answer is no. Earlier this year, Malcolm Issac sold the company to another shareholder, and we have been told that there will be no changes made so we hope to continue as we are and go from strength to strength.

### **Question from Nick Sotherton, Game and Wildlife Conservation Trust:**

What will be the subject of the 2009 forum – is it worth getting suggestions now?

### **Question from Tony Yoward, Hampshire Mills group:**

I would like to ask why we are not using our rivers as a source of power. Somerset and Dorset have turbines within their rivers generating electricity that they then sell back to the national grid. Why aren't we doing this in Hampshire?

### **Alison Graham-Smith, Natural England:**

In Hampshire there are some hydro power schemes but it is important to make sure that the upstream and downstream effects are looked into.

### **Unidentified delegate**

I agree, it is crazy to put so much effort into wind power which is inconstant, when the flow of a river is constant and could therefore provide a constant source of power. I would also like to state that we need to support the use of volunteer groups as much as possible in projects and studies. These local volunteers are useful for work into the future and if they feel the Environment Agency is involving them it can only be good PR for them. Lastly, it would be extremely valuable if the scientific information could be made open access on something like Wikipedia where people can

comment on specific facts etc.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

My understanding is that the scientific information gathered together by the VCT will be made widely available when the process is sufficiently advanced and any glitches in access have been ironed-out.

**Graham Roberts, Hampshire & Isle of Wight Wildlife Trust:**

I would like to make the point about raising awareness of alien species. In the DEFRA report, over 1800 species were listed as a concern and 150 species as of serious concern. Many of these species are in Hampshire, and I feel that a useful outcome of this forum would be that we become aware of the issues surrounding alien species, particularly with links to climate change and work to address the problem. We need to act before they take over and become unmanageable.

**Tim Nevard, Vitacress Conservation Trust Trustee:**

There being no more points raised, I'd like to hand the floor back to Lord Selborne to close the Forum.

**Chairman's Closing Remarks**

**Lord Selborne, Vitacress Conservation Trust Patron**

The aim of this forum was to try and focus on local projects. I have been impressed to hear about the sustainable agricultural schemes and habitat restoration projects that are currently taking place. It has been highlighted that it is difficult to measure the success of these schemes, and I agree with points from discussion that a scheme that excites and involves people, however unproven it may be from a habitat monitoring perspective, is worth it. If the schemes can lead to the education of the public to recognise the indicator species on our rivers, they are more than serving a purpose.

We need to research the effects that phosphates are having on our rivers in order to understand the issues before increasing the level of phosphate monitoring. There are immediate issues that need to be addressed now and there are a range of funding schemes that may enable us to carry out this work. The Natural Environment Research Council has a £1 billion programme with funding from 16 organisations to look into living with environmental change. We need a well thought out medium to long term project which will include social sciences to address how environmental change will impact on our lifestyles. It is perfectly valid to look at the need to understand the science issues that impact chalk rivers, and also ask that funds are allocated at a more local level where problems appear.

This would also help to mobilise local enthusiastic support to address the issues faced. We also need to ensure that research and projects are transparent to ensure the dissemination of information between organisations and research projects. The Vitacress Conservation Trust plan to put all data it gathers into the public realm. Every research project funded by public funds has a duty to ensure that the information is accessible by all. The data must be shared in order to ensure that informed decisions are being made.

Today we have recognised that the work that has taken place in the past year is as valid as ever, but that what is needed is work at many different levels; reach, catchment, regionally, nationally. We also recognise that although we will not hold a national conference, we will have significant points to contribute at a national level.

I would like to finish by thanking Tim for leading the discussion, to all of our speakers, to Gail Taylor and all of her colleagues in Vitacress Conservation Trust for organising the event, to Carrie Hutchings for ensuring the day ran smoothly, and to all of you for coming along and contributing.