River Restoration NEWS

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NEWSLETTER of the RIVER RESTORATION CENTRE

Working to restore & enhance our rivers

RRC Network Conference – Coventry 2001

Around 150 people came from across the UK to the Second RRC Network Conference held in April. The two-day annual Meeting represents RRC's commitment to providing a forum for its members and other river rehabilitation practitioners to share their experiences.

The first of four conference sessions covered opportunities that exist for river and floodplain restoration in tandem with achieving reduced flood risk to vulnerable areas. Catchment Flood Management Plans and the Water Framework Directive were both clearly identified as key drivers for the future illustrating the greater emphasis on more holistic and strategic approaches to flood management. The second session covered contrasting cases of project management and monitoring. Several papers on monitoring indicated that projects are generally very successful, but do not always achieve their full potential.

Either side of the more formal presentations and discussions delegates had opportunities to see examples of river restoration undertaken on the Cole catchment, east of Birmingham. At one site, Andrew Crawford from the Environment Agency took participants to a gravel excavation site where 700m of a previously ruler straight, diverted, river had been re-meandered. The contrast between the restored reach and the unchanged channel upstream was dramatic. This was made possible by the Environment Agency who relaxed its normal approach to allowing mineral extraction close to rivers to provide an opportunity for restoration. The gravel company, RMC, was rewarded with a mineral resource it would not have otherwise had, but bore the considerable cost of undertaking river restoration through recently compacted material. RRC whole-heartedly congratulates those involved in this pioneering restoration work, and hopes it will inspire others to take advantage of other such opportunities.

Delegates visit the River Cole, in east Birmingham

Next spring we will hold our third Conference. If you have ideas for topics to include, wish to participate, or have any comments to make on our previous two conferences, please contact the Centre.

River Restoration and Geomorphology Training Workshop

Delegates split into groups for the afternoon workshop sessions

Following on from the Network Conference, a one-day geomorphology workshop was held, attended by about 90 delegates. The workshop was a result of recommendations from delegates of last years conference in Manchester and aimed at introducing delegates to the need for sound geomorphological assessment in river restoration. The day was lead by geomorphologists from the Universities of Newcastle, Aberdeen, Southampton, Nottingham, and Stirling, as well as Babtie Group and SNH. In the morning, tuition sessions included 'The Basics of Geomorphology', and 'Geomorphology and Data Collection'. In the afternoon, delegates were split into 3 different workshop sessions using case studies to illustrate the importance of geomorphology when planning river restoration projects.

A proceedings of the workshop will be available shortly. If you didn't attend and would like a free electronic version please contact RRC.

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The Bog Meadows Project

Judith Bankhead from the Rivers Agency, Northern Ireland reports on a partnership project including works to restore the floodplain of the Blackstaff river

The Bog Meadows is a unique site within Belfast. Located less than 2 miles from the City Centre and bordering the M1 motorway, its 53 acres are all that remain of the several thousand acres that originally formed the floodplain of the Blackstaff River.

The Meadows contain a number of distinct habitats, including five that are listed as Biodiversity Priority Habitats within Northern Ireland. These are:

1. Floodplain grazing meadow
2. Fen
3. Reedbed
4. Eutrophic standing water
5. Ancient and/or species rich hedgerows

Originally grazed by cattle, the Meadows were historically important for breeding waders, and until 1987, corncrake were present.

Although long recognised as a valuable area for conservation, it was in 1998 that the Bog Meadows Partnership Project was developed. Led by the Ulster Wildlife Trust, the partnership includes various government bodies - Rivers Agency, Natural Heritage, Construction Service, Belfast Regeneration Office and Making Belfast Work - with Belfast City Council and local groups and charities such as Friends of Bog Meadows and St James Forum. Funding was obtained from the European Peace and Reconciliation Monies, and consultants were appointed to undertake a feasibility study and design.

The design was based on the three main objectives of the project - conservation, education and amenity/recreation.

With ongoing maintenance responsibility for a watercourse within the site, the Rivers Agency agreed to contribute to the project by carrying out particular works. Two specific areas were identified - the construction of a second channel for the Ballymurphy Stream, and nearby, the development of a large open water feature, to attract wildfowl and to provide educational opportunities.

Aerial photograph of the Bog Meadows project, Northern Ireland.

The new channel for the stream helped to fulfil the requirement for undisturbed grassland, by creating a large, inaccessible island of potential for breeding waders. The new cut itself was designed as a more natural channel, with meanders, shallow bays and varied bank slopes. The retention of flow in both old and new channels was important, with a 60:40 new to old ratio achieved. This reduction in flow in the old channel had the added benefit of reducing pressure on an area of erosion at the base of the motorway embankment.

The open water feature was a much larger undertaking, with problems of access through wet ground, spoil disposal, and a need to be off site before wader breeding season. The design included a raised vegetated island (used as a work platform for the machine), a varied shoreline to include areas of Typha fringe, and depths ranging from 0.3m to 1m+, to encourage both diving and dabbling duck. As the feature will be the site for pond dipping platforms, safety was of great importance.

Work commenced on 12th September 1999, and was completed on 24th December the same year. All spoil from both areas of work was retained on site to reduce costs, and was used to create raised viewing platforms, bunds to muffle traffic noise from the motorway, and raised planting areas.

Other aspects of the project have been continuing since then through the Peace and Reconciliation funding. Access paths, bird hides and original style gates and posts have been constructed. The open water feature in particular has been most successful, with a range of duck, a pair of nesting mute swans, and more recently a pair of greylag geese being observed. The partnership method of work has been very successful, with local people feeling involved in the project through local groups and the continued use of the site by the public throughout works. The site was designated a Local Nature Reserve by Belfast City Council, and a project officer was appointed in 1999 to oversee its development and the fulfilment of the objectives. For the Friends of Bog Meadows in particular, who identified the value of the site some 20 years ago, their hopes and aspirations have become a reality.

Open water feature at the Bog Meadows site

Joining the River Restoration Centre

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Land Management Initiatives

Justin Sargent, discusses what the Countryside Agency are doing to implement sustainable land management

What have sustainable land management and Einstein's Theory of Relativity* got in common? They are both easy to say, but a lot harder to define.

To meet this challenge, the Countryside Agency has set out to show what sustainable land management means in practice through a series of demonstration projects called Land Management Initiatives (LMIs). There are nine LMIs in total. Each project is looking at different aspects of sustainable land management but all have been developed with farmers, local community and other relevant partners. The Countryside Agency will use the lessons from the projects to influence how UK and European policies, such as agri-environment schemes, are shaped and implemented.

Readers of River Restoration News will be most interested in what we are doing in relation to water issues. So, for this article, I have focused on three different projects where water management is an important factor.

Extensive consultation with all interest groups has enabled the Humberhead Levels project to develop a set of integrated objectives for water management.

Humberhead Levels (Known locally as "Value in Wetness".)

The Humberhead Levels lie at the top end of the Humber Estuary and are characterised by the wide open, flat landscapes found there. Over much of the Levels water management is undertaken for flood defence and drainage, as well as public and industrial consumption. The Levels are dominated by arable farming, but are also of high wildlife, archaeological and historical importance.

"Value in Wetness" has defined a set of integrated objectives for water and land management in the area through extensive consultation with local stakeholders. Land use trials will be set up to help show how water management and economic, social, and environmental benefits can be gained in practice

Ultimately the project will verify and evaluate the benefits of "Positive Water Management" for land and water managers, and for society as a whole.

Severn-Vyrnwy Project

The Severn-Vyrnwy Project area covers the pastoral floodplain located around the confluence of the Rivers Severn and Vyrnwy in Shropshire. There is a long history of drainage and flood defence in the area. The key farming activity in the area is intensive dairying. In the past, the area supported large populations of waders and over-wintering wildfowl.

Working with local farmers, the project officer is developing ideas and approaches to securing a broader range of public benefits from the area. The project will use demonstration sites to show how good environmental stewardship is compatible with modern farming and water level management. It will also investigate alternative approaches to agri-environment schemes which will help local farming move towards more sustainable practices.

Northumberland

The Northumberland LMI will identify and test new land based activities in the uplands which will deliver environmental, economic and social benefits in an integrated fashion. The project will take a thorough look at all land based activities, services and goods that could be delivered by upland farmers, and will assess how they could be supported by either the public purse or through the market.

One of the areas under investigation is an assessment of the role land management plays in the management of basic resources, such as holding back water to reduce flood risk. The economic importance of that role will be assessed and options for enhancing the resource management role of upland land managers will be identified.

If you would like more information about the LMI programme, please contact Justin Sargent, Justin.Sargent@countryside.gov.uk (01242 533485)

*As for the Theory of Relativity - answers on a postcard please

The Northumberland LMI is looking at the range of public services upland farmers could provide, such as managing water resources.

The PURE Programme - Planning for Urban River Environments

Allan Snape from Northumbrian Water and Peter McIntyre from the Civic Centre, Newcastle tell RR News about plans for environmental improvements to the Ouseburn Valley

The Ouseburn is the largest and most significant river in Newcastle City. Rising near Callerton, it runs for approximately 14km before flowing into the Tyne Estuary, passing from open agricultural land through to a highly urbanised area. This river, now degraded in quality, but rich in context, is seen as the potential catalyst to the aspired new generation of life throughout the Ouseburn Valley.

Within Newcastle City Council the development of strategic plans through partnership working is seen as best practice with regards to project development. The PURE Programme aims to co-ordinate opportunities for the physical environmental improvement of the Ouseburn, whilst securing the involvement of the widest range of partners or stakeholders. Current lead partners in PURE include the Environment Agency, Northumbria Region, Newcastle University (Centre for Land Use and Water Resources Research) and Northumbrian Water Limited.

Aerial image of the Ouseburn as it flows into the Tyne Estuary.

Poor water quality adversely affects the river use, particularly fisheries, recreation and biodiversity. Some stretches of the river in the Ouseburn catchment currently fail to meet regulatory targets. However these targets are exceeded periodically demonstrating the potential for improvement.

Some of the water quality problems are due to the effects of discharges from combined sewerage overflows to the watercourse. Previous industrial activity, notably mining, lead works and landfills, have left a legacy of land contamination with a variety of chemicals. These sites continue to pollute the river and pose an ongoing threat of pollution to surface and groundwater.

Possible development proposals for derelict warehouse

Other water quality issues arise from agricultural pollution, in terms of surface runoff of phosphates and nitrates directly into the rivers and streams and sediment runoff from arable fields. There is also, from adjacent residential areas, a plethora of cross connections as a result of incorrect plumbing. The ongoing appropriate management of drainage from Newcastle Airport has successfully reduced its impact on the watercourse. Sustainable Urban Drainage Systems (SUDS) are to be applied to the proposed Newcastle Great Park development (2500 new homes and an 80 hectare business park) to maintain water quality.

Other proposed developments in the catchment include the creation of a sporting club by Newcastle United Football Club on agricultural land (comprising professional training pitches and training facilities plus an 18 hole golf course), a Rugby Union Centre of Excellence by Newcastle Rugby Football Club (a 10,000 seater stadium, all weather pitches, training pitches and car parking) and the regeneration of a former industrial area at the mouth of the Ouseburn into a new urban village. The Ouseburn Partnership commissioned ENTEC UK Ltd., a RRC member, to undertake the feasibility study on the latter. The preferred option would involve the construction of a weir and lock towards the mouth of the Ouseburn. The lock would permit the passage of boats and other watercraft whilst providing a water level control facility.

The Ouseburn attracts various ad-hoc recreational usage, however there is presently little management of the watercourse or riparian areas, which has had a significant impact upon the profile of informal recreation and the aesthetic quality of the City resource.

Urbanisation has led to some straightened channels and significant reduction in surface water percolation. This results in more water reaching the rivers and streams faster, faster flows in the canalised section (with resulting flooding and erosion problems) and a reduction in quality and quantity of biodiversity resource. Intensive agricultural methods have lead to overgrazing, trampling and cultivation of land right up to bank

edges. Through these processes bankside vegetation has been lost, the river's structure damaged and the natural processes and functions of the river have been destroyed. The decline in habitat quality of riverbanks, and the river itself affect fish and wildlife populations so that diversity and abundance is dramatically reduced.

The PURE programme would seek to achieve a co-ordinated and innovative approach to the management of the catchment through:

- Integrating the concept of sustainable development into land-use and planning.
- Demonstrating innovative techniques and methods of management, which are directly transferable to regional/national/international policies, such as the Water Framework Directive.
- Developing a project that will demonstrate co-operation between organisations responsible for land-use management, social and economic development and the communities within the project area.

The development of a River Basin Management Plan will bring together these currently diverse elements. The document will set out the objectives for the river basin describing how they will be achieved and timescales. The plan will further demonstrate the characteristics of the river along with the perceived human impact upon the area. The actions within the plan will clearly state the current legislative procedures in place to carry out these actions along with suggested measures to fill any gaps discovered.

There is now widespread acceptance that communities should and will be involved in changes affecting their local environment such as river restoration or rehabilitation or management. The project will address this issue building upon an extensive consultation/stakeholder involvement process. Utilising digital media the project will be made available to all, be interactive, demonstrating best practice with regards to the use of remote sensing techniques, Geographical Information Systems and the World Wide Web. It is further thought that, through the active involvement of the "communities" surrounding the Ouseburn Catchment, ownership of the project at a local level will develop. The setting up of several training/employment initiatives based upon the perceived physical infrastructure improvements required to redress environmental impacts upon the catchment will involve residents actively in the planning and delivery of the project.

Targets:

- To develop a whole catchment approach to managing flooding and water quality issues including groundwater;
- To carry out ecological improvements recommended within the Newcastle upon Tyne Biodiversity Action Plan (Rivers & Streams);
- To involve local communities and stakeholders in the planning and implementation of the project;
- To develop Land-use Planning Guidelines to highlight the economic and social value of the Ouseburn catchment;
- To demonstrate how the Ouseburn corridor could be managed to contribute towards sustainable development within the catchment.

Outputs:

- 1 Integrated River Basin Management Plan.
- 2 Sustainable Urban Drainage Systems - Demonstration Projects.
- 1 demonstrated Public/Stakeholder Involvement Model (2000 residents consulted or involved in design).
- 5 kilometres of improved or new riparian habitat in the project area.
- 5ha of land improved for open space.
- 25% reduction in the cost of dealing with pollution incidents and flooding by 2005.
- 1 set of sustainability indicators for urban rivers.
- 3 Training initiatives involving local residents.
- 1 Volunteer programme involving local residents.

For more information about the project please contact: Peter McIntyre, ouseteam@netcomuk.co.uk (0191 224 1118)

Preliminary proposal for sluice/lock arrangement to allow boat passage and to control flooding upstream.

Wessex Chalk Streams Project

Jackie Smith, Project Officer informs RRN readers about the management of the River Avon and its tributaries.

The Wessex Chalk Streams Project has been running since April 1999. It aims to help wildlife to be better integrated into the many activities and management which are undertaken on the River Avon and its tributaries - Wylye, Nadder, Bourne and Till within Wiltshire. Opportunities for river enhancement and promoting best management practice are being identified and supported, through working with landowners and managers along the river.

The Avon and its tributaries are a Site of Special Scientific Interest (SSSI) which has European recognition as a candidate Special Area of Conservation (SAC). They are important fishing rivers and the traditional fisheries management over the years has contributed to the special interests of the river.

The Project is run as a partnership - the Project Officer being funded by Wessex Water, employed by Wiltshire Wildlife Trust and based within the English Nature office. A Steering Group is chaired by the Environment Agency and comprises Wessex Water, Wiltshire Wildlife Trust, English Nature and the Wiltshire Fishery Association. Wessex Water funds the Project, as a contribution towards its Biodiversity Action Plan.

The Wessex Chalk Streams Project has enabled:

Hazel faggots are floated into place on the East Chisenbury project (upper River Avon).

Members of the East Chisenbury fishing syndicate hammer in chestnut stakes which support the faggot structures

- A single point of contact to be established. This has proved invaluable to landowners because there are now so many regulatory and voluntary bodies involved in the river.
- Information and conservation advice to be disseminated to landowners, managers and the local community through a twice-yearly newsletter, leaflets and site visits.
- The partner organisations to establish a better understanding of the management, which is carried out on this internationally important river system, and for landowners to better, understand the aims of the conservation bodies. An example is the production of SSSI Management Statements with the fishing clubs and landowners (on behalf of English Nature). This mutual understanding helps prevent conflicts over management.
- Better communication between the five partner organisations and more effective working systems to be established.
- Eight river enhancement projects to be carried out over two years - at a total cost of £50,000 (comprising roughly half from English Nature funding and half from landowners).

This year, it is hoped that five quite diverse projects will go ahead, totalling approximately £42,000 (with around half of which will be contributed from English Nature funding through Management Agreements).

These projects include:

- Improving a previously dredged site by replacing the gravel from the banks and creating 'squidgy' margins.
- Narrowing an over-widened silted river bed.
- Introducing dappled shade to a completely shaded channel.
- Restoring a severely eroded river meander on a community riverside walk, introducing fishing platforms and interpretation boards.
- Creating channel diversity to a straight channel in a recently bought area of land, which is intended to become a site for the local community.

The success of the Wessex Chalk Streams Project owes much to engaging the local landowners and managers, the partnership approach, the cooperation of all the interested parties on the river and the ability to offer practical support and financial incentives to fund parts of the enhancement projects, which contribute to 'wildlife gain'.

For more information on the Project please contact: Jackie Smith, jackie.smith@english-nature.org.uk (01380 726344 x 231)

The River Skjern Restoration Project

The holding of the 8th European Centre for River Restoration Management Board meeting in Denmark in March enabled Nigel Holmes, the UK's representative on the Board, to visit this amazing project. Here for RR News he tells us a little about the background, and progress to date.

The Skjern is Denmark's largest river (about half the mean annual discharge of the Thames), draining over 10% of the mainland before discharging through the broad shallow Ringkobing Fjord (Denmark's largest coastal lagoon) to the North Sea. Less than 40 years ago the lower river catchment supported a rich mosaic of watercourses, lakes, ponds, reedbeds, meadows, common grazing land and heathlands. In time of flood, an enormous lake was formed, interrupted only by boggy marshlands.

All this changed between 1962-68 when the river being straightened, deepened and embanked, and gradually the wetlands, meadows and heath were turned into a massive, 4,000ha, arable prairie. This was Denmark's largest drainage project, equating to around £22m today. However the gains for agriculture were not as large, or as easily sustained, as initially envisaged. As floodwater no longer flowed over land, and as fertilizer was liberally applied, the floodplain now began to act as a huge 'source' of nutrients, and no longer was a 'sink' for sediments. This had a disastrous impact on the fjord as it became silted up and polluted. Problems also arose in the drainage area itself. The land shrunk as it dried out, and so land levels dropped making drainage ineffective and water turned bright red due to ochre precipitation.

The newly meandered Skjern

A stark decision needed to be made less than 20 years after the scheme was completed. The options were either to undertake more drainage works to enable unsustainable agriculture to continue, and with worsening consequences for the fjord and nature, or do a U-turn. In 1987 the Danish parliament decided scientific and technical investigations, alongside feasibility studies, option appraisals, public debates should take place. By 1998 plans for restoration were ready for implementation and a supporting act of Parliament was passed. Project objectives included:

- recreating natural wetland habitats of international importance;
- developing the valley for 'nature' tourism and leisure as an alternative income to intensive agriculture;
- improving the aquatic environment of the downstream fjord as a result of the works upstream.

Visitors to the new bridge and meandering watercourse.

The Project Area and its Components

The project area covers the 20km of river and 2,200ha of the 4,000ha drained land. At todays prices, the project is costing almost £25m, about 20% more than the original scheme!! Land acquisition accounts for more than 35% of this, and engineering works almost 45% (includes diversion of roads, bridges as well as re-meandering the river). There is almost £1.5m being spent on monitoring the effects of the project on the quality of the fjord and the environments of the river and the floodplain.

Work is progressing to schedule with half already completed. Much of the straightened and embanked River Skjern no longer carry any flow, and have either been partially retained as linear ponds, or been in-filled with material that arose as new meandering channels had been constructed. The drainage pumps are silent, and not a grain of corn could be seen. Where less than three years ago there was not a puddle of water to be seen, vast winter lakes now appear as floodwater is again stored on the floodplain as the newly meandered river over-tops its banks. Only time and monitoring will tell if the Skjern project can be hailed as the greatest example of restoring the unsung functions that natural floodplains perform to the benefits of all.

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News and Events

Launch of Italian version of the RRC Manual of River Restoration Techniques

RRC have been invited to the launch on the 7th July in Venice. The Manual, based on techniques used on the rivers Cole and Skerne demonstration projects has been translated into Italian to use as examples of best practice for the newly formed Italian Centre for River Restoration, CIRF (Cirfcentro Italiano Per La Riqualificzione Fluviale). Visit the CIRF website at http://www.cirf.org (English version available)

Scottish Native Woods - Restoring and Managing Riparian Woodlands

This recently compiled illustrated booklet gives an excellent overview of riparian woodland management. Readers are taken on a 36-page tour of the importance of riparian woodlands from the species associated with the riparian zone through practical advice on how to manage and restore riparian woodlands. Copies can be obtained from Scottish Native Woods at a cost of £4 (including P&P), email: nhnw-snw@btinternet.com (01456 486426)

Learn About Watershed Management on the Net, Mark Diamond, Environment Agency, North-West Region

For a good introduction to the principles and practices of river restoration try Watershed Academy 2000 (www.epa.gov/owow/watershed/wacademy/acad2000). At this site, developed by the US EPA, you will find an on-line modular course based on a systems approach to watershed management. A certificate is available to anyone who completes 15 core modules (15 to 60 mins per module).

Internet Toolkit for River Restoration?

The internet is a fantastic source of ideas and information on river restoration. Of course the problem is sorting the wheat from the chaff; as illustrated by the "Watershed Tools Directory" on the American Environment Protection Agency Site. (www.epa.gov/OWOW/watershed/tools/). The directory is an 11 page listing of hyperlinks to watershed tools for use in areas such as goal setting, modelling and planning etc. While some of the hyperlinks are quite descriptive (eg "Watershed Ecological Risk Assessment Guidance") others are less so (eg "Barny", "Electric Log", "SMPTOX3E"). It could therefore take a long time to find which tools are even potentially useful.....and that is just on one web site!

One idea being considered to solve this problem is the development of something we are calling an internet toolkit for river restoration. The idea is that a portal site would be developed to guide people quickly to the tool(s) that best matches their needs. We recognise that this will be quite a big task and therefore we are carefully assessing its feasibility before proceeding and we are likely to seek partners to assist in its development. The toolkit may play a central role in the strategy for the European Centre for River Restoration. In the meantime, we could use this newsletter to start sharing useful websites. If you have found a site that you would like to share please e-mail a brief review to mark.diamond@environment-agency.gov.uk.

Water UK and the Wildlife Trusts Otters and Rivers Project

The Otters and Rivers Forum was held on the 25th June in London to mark the completion of this 3-year project to restore the otter population and improve wildlife habitats associated with rivers in the UK. The project has been implemented by a network of 23 conservation officers and more than 1200 volunteers based at Wildlife Trusts throughout the UK. This excellent work will be continued through a new joint project, 'Water for Wildlife' to be launched later in the year.

RRC is most grateful to all those who have contributed text or photos for this Newsletter

The following statutory organisations provide Core Funding for the River Restoration Centre and their Representatives form the Advisory Board who together with RRC's Directors make up the RRC Council.

Environment Agency · The Countryside Agency · English Nature · SEPA · Rivers Agency · Scottish Natural Heritage