

River Restoration

Issue 37 November 2010



NEWS

Newsletter of the RIVER RESTORATION CENTRE

Wild Trout Trust Awards 2010

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Natural Processes*

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Now in its 12th year, the **Wild Trout Trust's Conservation Awards** are a way of celebrating and acknowledging the efforts, ingenuity, imagination and achievements of those involved in trout habitat management. With two categories of awards for Professional and Amateur entries, this year's ceremony took place in the rather grand venue of the Officer's Mess of the Household Cavalry in Hyde Park.

Wild Trout Trust Awards

New trends and 'old enemies'

In past years, the judges frequently raised some concerns over on the lack of pre- and post-project monitoring as some form of project appraisal. This is considered to be absolutely essential in evaluating whether money and resources represent good value, and of course other practitioners can learn from demonstrable success ...and indeed, failure!

To their credit, all the finalists this year have ongoing monitoring in place, which is not easy within the constraints of inevitably tight budgets and the logistical difficulties of monitoring at the river reach level. Common issues were also very evident amongst this years finalists – attacking the 'old enemies' of diffuse pollution, excessive sediment, bank damage from farm stock, over-wide dredged channels, poor physical channel structure and lack of quality ecological habitats for the various life stages of fish and other river animal and plant communities.

There were some excellent examples of almost 'traditional' on-the-ground habitat improvements and fish passes, where fisheries, wild trout and other wetland conservation interests were the primary focus. But the judges were particularly enthused this year to see projects where a considerable amount of soul searching had gone on to ensure that the remedial treatments being proposed and applied were being carefully thought through and evaluated. Decisions had been made based on quality survey data, sound scientific principles and a healthy dose of pragmatism.

The competition always attracts habitat management projects at various levels, carried out by a plethora of individuals and organisations. This was particularly evident amongst this year's finalists, where projects ranged from those costing hundreds of thousands of pounds to one which virtually cost nothing apart from some oil and petrol for the chain saw! There were those projects involving extensive & complex engineering work, to those driven by pure enthusiasm, usually from a few dedicated individuals using what materials and pieces of equipment they could get hold of locally.

Professional Category Runner-up

Cain Bio-Engineering Ltd entered a chalk stream project on the **River Kennet at Avington**, near Newbury, on behalf of the project team which included the **Avington Estate, Hungerford Town & Manor, the Environment Agency and Natural England**. This project was awarded the **Runner-up award in the Professional Category**. Sediment management, impoundments and an over-wide channel were the main challenges at this particular site. The solutions involved extensive channel narrowing with site won gravels, bank stabilisation and sensitive re-profiling, de-silting and sediment management, large woody debris and the creation of wetland areas in the river margin as well as floodplain scrapes, ponds and wetlands. This project was featured in **issue 36 of RRNews**.

Professional Category Winner

The winner of the Professional Category was the **Eden Rivers Trust**, who submitted a multidisciplinary, strategically led initiative "**The Sub-Catchment Project**" – involving ecology, GIS, aerial surveying, electro-fishing surveys and environmental modelling all to develop costed and prioritised conservation plans for 5 sub-catchments. Elements of delivery included the usual suspects of addressing point source & diffuse pollution, bank-side damage by animal stock, barriers to migration and poor habitat and fish recruitment. The judges were particularly impressed by the innovative thinking which supports this project's approach to addressing serious bottlenecks in the various life history stages of wild trout,

and the detailed scientific approach to determining which factors and drivers are the most important ones to be addressed, i.e. where do you direct your effort and get most 'bangs for your bucks'?



Electrofishing survey on a beck near Grisedale, in the Eden catchmen

2010

Allan Frake, chair of the judging panel, gives us the run-down.

Restored section of the Creevan Burn



Different approaches to narrowing on the River Kennet



Amateur Category Runner-up

The Runner-Up in the Amateur awards Category was the **Blacksessiagh Regeneration Group**, who have been very effectively working in close partnership with the **Loughs Agency** on the **Creevan Burn**, a tributary of the **River Drumragh in County Tyrone, Northern Ireland**. This project demonstrated a robust package of habitat improvement initiatives, particularly fencing out livestock to reduce fine sediment input, restoring spawning and nursery habitat, and installing low level deflectors and groynes to replicate natural river morphology. One of the major influences to the successful outcome of this project was that its co-ordination by the **Community Development Group** comprised members from a farming background, thereby encouraging the farmers themselves to improve and maintain their river fishery asset and highlight the positive links between sustaining both good farming and good river habitat management practice.

Amateur Category Winner

The winner in the Amateur Category was the partnership project of the **Blickling Fishing Club** and the **National Trust**, who clearly relished a difficult challenge by attempting to re-instate woody debris in a North Norfolk river – in this particular case, the **River Bure upstream of Blickling Mill**. Historically, river authorities and the club had always removed fallen trees from the river channel. Both channel morphology and fish populations have demonstrably improved, and some interesting and very comprehensive invertebrate, fish and geomorphological studies are being carried out in relation to evaluating the effects of the increasingly popular habitat improvement technique of installing large woody debris in the river channel.

Installing woody debris on the River Bure – before.....and after



Flood risk management and working with natural processes – new paradigm or old hat?

Working with natural processes (WwNP) means taking action to manage flood risk by protecting, restoring and emulating the natural regulating function of catchments, rivers, and floodplains

The background

It is widely accepted that flood risk cannot simply be managed by building ever bigger 'hard' flood defences. More sustainable 'softer' approaches are needed, reflected in **Making Space for Water**, which says that **flood risk management (FRM)** should be firmly rooted in the concept of sustainable development. This should involve embracing natural processes more, such as the appropriate use of multi-functional wetlands and realignment to widen river corridors.

But does this represent a **paradigm shift – or is it old hat?** Back in 1993, the strategy for flood and coastal defence stressed consideration of environmental impacts, and that we should initially presume that natural river processes should not be disrupted except where life or important man-made or natural assets are at risk.



The Pitt Review

The Pitt Review recognised that working more with natural processes does not mean no more traditional, hard defences, but that more sustainable approaches should work alongside them and extend their lifespans. **WwNP** should also realise a wide range of other benefits, from creating new habitats and enhancing biodiversity to providing green space for recreation and amenity. The Coalition Government is committed to taking forward the review's findings.

WwNP in FRM is all about slowing the flow of water where it won't cause damage (e.g. reconnecting a floodplain) and speeding flow up where it will (e.g. removing constrictions such as bridges). The Pitt Review identified three general types of rural catchment management solutions designed to do this: managing soil infiltration; the provision of water storage; and retarding flows.

Such techniques protect, restore or emulate natural processes which regulate flooding and erosion, as well as often providing other benefits. For example, a managed washland may be far from natural, but it restores the regulating storage function of the floodplain. Indeed, totally artificial urban areas can emulate natural processes for **FRM** benefit (e.g. green roofs, permeable paving and surface water attenuation ponds).

Guidance

Ultimately, natural processes operate across a continuum of measures from mitigated engineering to full naturalisation with **FRM** benefits, 'making space for water' to different extents.

The **Flood and Water Management Act 2010** formalises the WwNP approach as an example of what might be done in the course of coastal and FRM, reflecting obligations from the EU Floods Directive to take account of natural floodplain retention, address non-structural initiatives and promote sustainable land use.

The Environment Agency is committed to using a broad portfolio of approaches to manage the risks of flooding to local communities. Our strategic catchment approach will ensure the right solution in the right place, whether that is by avoiding inappropriate development in the floodplain, targeting flood warnings, building hard defences or by using the environment to help us manage the risk of flooding to people.

Duncan Huggett is a **Senior Team Leader** in the **Environment Agency**, working on implementation of the **Water Framework Directive** in flood risk management

River restoration and hydroelectric development in Central America

The first international workshop in Costa Rica

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Costa Rica

is host to 5% of the world's biodiversity, and approximately 25% of the country's land consists of public and private reserves devoted to landscape conservation. Dam structures are used globally in, for example, flood control, or to ensure water supply year-round. However, in Costa Rica they have only one function – to produce hydroelectric power. This is currently the country's largest source of energy (60%). About 98% of Costa Rican residents have access to electrical services and the Costa Rican Electric Institute (ICE) is the state entity in charge of the construction, operation and maintenance of hydroelectric dams.



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In the last decade,

ICE has begun to introduce river ecology environmental impact assessments. Steps are also being taken to improve understanding of the social impacts of dam construction, and local stakeholders are being encouraged to become actively involved in the planning process and decision making, and in prioritising environmental mitigation measures. ICE faces the challenge of achieving a balance between meeting the increasing needs of the population and ensuring that the basic natural resources on which most development depends are not jeopardised. Finding alternative and sustainable solutions to the future development of hydropower is a must, and this was the focus of the **1st International Workshop on River Restoration in Costa Rica**, in April 2010.

Section visited during field trip – Reventazón river

The workshop, organised by ICE and the Polytechnic of Torino in Italy, allowed professionals from both countries to exchange knowledge and expertise in topics relating to dams and river restoration. The schedule included discussion on fish migration monitoring techniques, evaluation of fish behavior at hydroelectric projects, environmental flows, retrofitting hydroelectric dams with fish passes, and the evaluation of restoration measure efficiency.



Future cooperative work with Italy and Sweden was agreed, while there was a site visit to the Reventazón Dam. The rapprochement between countries will improve understanding of how to construct environmentally sound dams, as well as integrated planning for riverbeds, environmental flows and eco-design.

Lessons learned

- The workshop heralded the beginning of thinking about the inclusion of river restoration techniques as part of hydroelectric dam projects, and provided a forum to discuss technical issues that remain in developing countries.
- More research, projects and opportunities to discuss rivers are required if Costa Rica is to follow the current energy profile and be carbon neutral by 2021.
- Contacting and deliberating with international experts will enrich river conservation in Costa Rica.

Short-Term Indicators OF REHABILITATION SUCCESS

The RRC provided support in association with the Radboud University in Nijmegen and Arcadis for an international research project examining river restoration monitoring and its success. Questionnaires aimed to discover which themes of restoration (divided into ecological, learning and stakeholder or socio-economic) were most important when evaluating success. The questionnaire also gauged how well theoretical recommendations for the methodological steps of project evaluation are applied in practice. These steps are an assessment of the initial state of degradation, development of a reference state, the formulation of project objectives and the presence of a monitoring and assessment system.

A literature review of 41 separate restoration projects was also carried out to discover how various scale factors (river size, land use, rehabilitation intervention and time) influence indicator results in the five years following the implementation of restoration measures.

Jon Matthews presents his key findings. john.matthews@hotmail.com

Importance of themes to project success

Ecological themes were the most important when defining project success in monitoring, followed by learning success. Elements that formed the stakeholder (socio-economic) theme were rated as being of lower importance as less than 10% of respondents included an indicator of socio-economic success in their monitoring.

This was in contrast to literature findings where the importance of socio-economic elements is supported by various authors as they are seen to play a critical part in trade-offs between ecological goals, ecosystem services, competing land uses, and costs. Therefore, it is recommended that project managers do consider the relevancy of socio-economic factors and formulate objectives and indicators to measure success. Disseminating project results was included as an objective in 77% of projects.

Comparison of theoretical concepts and practical application

- Methodological steps of river rehabilitation assessment recommended in the literature were demonstrated to be present in projects carried out in practice including monitoring; in contrast to statements made in the literature.
- Critically however, 27% of respondents did not compare monitoring results with project objectives or an initial degradation state and a lack of standardisation in reporting, and monitoring, continues to hamper the ability to compare and analyse the outcomes of similar projects.
- Practitioners demonstrated openness to new, innovative ways of standardising assessment in future.

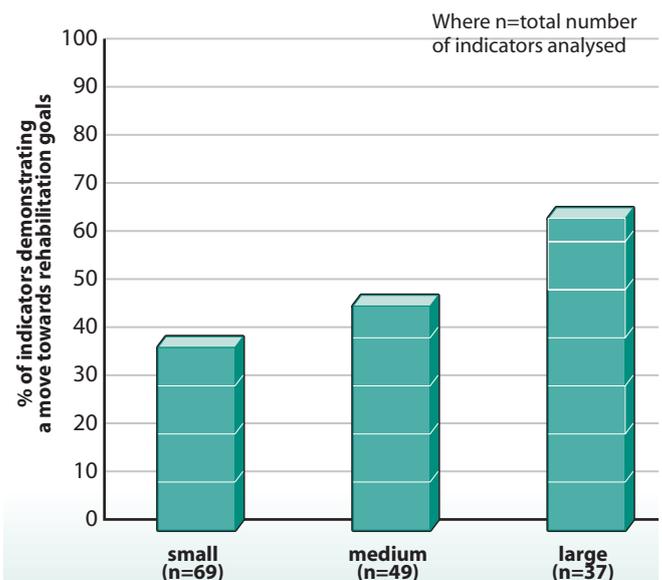


Figure 1.

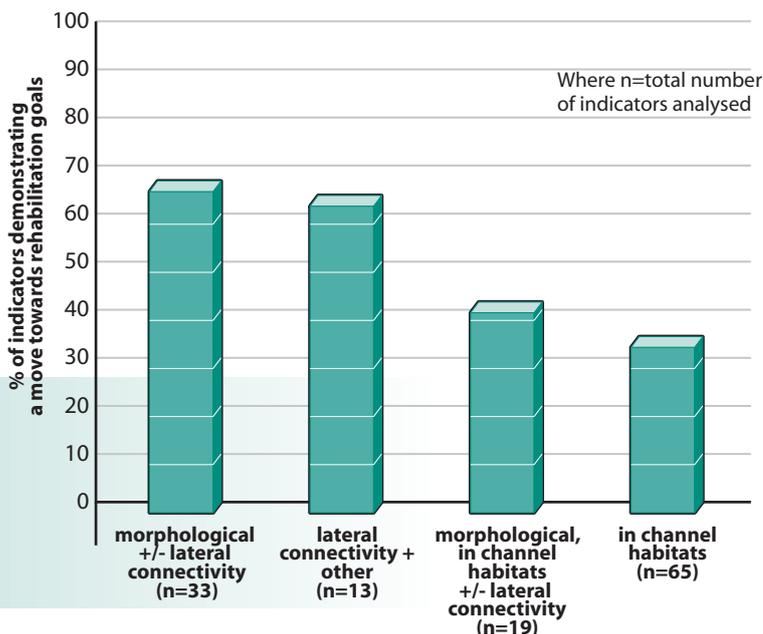
*Ecological indicator response in relation to **river size** within the first five monitoring years following the completion of rehabilitation interventions.*

Figure 2.

*Ecological indicator response in relation to **intervention type** within the first five monitoring years following the completion of rehabilitation interventions.*

Literature review

| Scale factor | Response to rehabilitation measures |
|-------------------|--|
| River Size | More positive response with increasing river size (figure 1); emphasising the importance of species colonisation potential & presence of local source populations in choosing rehabilitation locations. |
| Land Use | Rivers with surrounding land-use that is associated with higher degradation may exhibit a greater potential for positive signs of recovery. The poorer response of rehabilitated stretches subject to lesser degrees of land-use stress may be symptomatic of ecological buffering effects. Land use stress should be considered as a rehabilitation objective in future as not stated by any respondents. |
| Intervention Type | Those aimed at improving in-channel habitats induced fewer positive indicator responses on their own than in combination with other intervention types (figure 2); supporting the notion that larger scale morphological interventions and involvement of the floodplain in rehabilitation may increase the potential for overall system recovery in the short term. |
| Time | Monitoring should continue beyond 5 years to gain a consistent view of progress towards outlined project goals. |



RRC Message Board

ANNUAL CONFERENCE 2011 - A Date for your Diary:

Next years RRC conference will be held on the 14th April at the University of Nottingham, with an optional site visit on the 15th. There will be an opportunity for early-bird bookings before the end of 2010.

MEMBERS SECTION

Site Visits:

Thank you to everyone who has supported the site visits this year and in particular those who have led visits. The feedback that we have received has been very positive. A full review of the visits will appear in the next issue.

Janine Castro (U.S. Fish & Wildlife Service) Presentation:

"Innovative Stream Restoration Techniques: weir removal, channel re-meandering and large wood placement in the Pacific Northwest region of the U.S.", which was presented on the 31st August will shortly be available on the RRC website.

Annual fees:

Please note that RRC membership fees will rise in line with the UK Coalition Government's 2011 VAT increase to 20%. Ian Brown will be in touch before Christmas 2010 with the revised fees.

THAMES WINS THEISS INTERNATIONAL RIVER PRIZE

The River Thames was recently awarded the world's largest environmental prize, in Perth, Australia, in recognition of its transformation over recent years. The \$350,000 AUD prize will be invested both in a twinning project to help restore a river in the developing world, and in continuing to restore the ecological value of the Thames system.

http://www.therrc.co.uk/rrc_news.php

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Events

River Corridors in the Urban Environment – Developing a Vision for the Future:

18th November

The Showroom Cinema, Sheffield.

Register at:

<http://www.ursula.ac.uk/>

CIWEM Rivers and Coastal Group: Recent Guidance on Flood and Coastal Erosion Risk Management:

23rd November – Birmingham.

Find the event under the link:

<http://www.ciwem.org/events/events-calendar/>

Regulation for a Sustainable Water Industry:

9th December – SOAS, London.

Register at:

<http://www.coastms.co.uk/conferences/441>

CIWEM National & Rivers and Coastal Group Annual Conference:

27th January – London.

Find the event under the link:

<http://www.ciwem.org/events/events-calendar/>

3rd International Multidisciplinary Conference on Hydrology and Ecology, Ecosystems, Groundwater & Surface Water – Pressures and Options:

2nd to 5th May – Vienna, Austria.

Latest info at:

<http://web.natur.cuni.cz/hydroeco2011/>

Policy Update

SEPA Good Practice Guide – Sediment Management

A healthy environment is about more than just how clean the water is; it also includes the effects of our activities on the quantity of water and the natural form of beds and banks. A guidance document has been created to help determine whether sediment management is required, and if so, how to proceed with minimal impact on the water environment.

This is available at:

<http://www.sepa.org.uk/water/publications.aspx>

Water White Paper

Defra is in the early stages of developing plans to review the regulation of the water industry, to ensure that future challenges for water management can be met. It will reflect on the conclusions of several reviews, including one from Ofwat, and initial views are sought before further consultation.

Contribute to the survey before the 30th of November:

<http://www.surveymonkey.com/s/Water-WP>

“Managing Rivers at the Local and Catchment Scale under WFD”

THE RRC’S 12th ANNUAL NETWORK CONFERENCE

University of Nottingham, 14th April 2011 (*Optional site visit on the 15th*)

There will be an opportunity for ‘early-bird’ bookings before the end of 2010.

Member state competent authorities need to deliver the requirements of the Water Framework Directive (WFD) as well as ongoing priority commitments.

Given universal spending cuts, it is expected that this will be implemented through a combination of best practice river management approaches and river restoration measures. These will require careful management and effective use of resources, and new initiatives for achieving them will be of interest. River restoration goes beyond just the WFD, and abstracts that demonstrate other aspects of process-based ecological restoration are welcome.

The RRC’s Annual Network Conference is the forum to exchange knowledge and learn about new developments. This year there will be a full one day conference with a series of sessions, including an evening session and an optional field visit on the following day.

http://www.therrc.co.uk/rrc_news.php

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 Management Board.



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