



# River Restoration NEWS

Issue 17  
March 2004

NEWSLETTER of the RIVER RESTORATION CENTRE

## The Need for a Catchment Scale Approach to River Restoration

RRC Network Conference 2004, 20th and 21st April – Trevelyan College, University of Durham



Riverside path on River Skerne, Darlington  
(Option for site visit on the Wednesday afternoon)

As always the response to a call for papers and posters has been excellent. Within the conference theme of 'Catchment Scale Initiatives' we will be covering a range of issues including: *Catchment Projects and the RRC, Reconnecting Rivers to Floodplains, and Policy, Planning and People.* Furthermore, there will be a series of papers dedicated to *New Techniques and Approaches*, and an interesting selection of on-the-ground *Case Studies.*

We are also fortunate this year to have two eminent keynote speakers: Bart Fokkens, (Director of Wetland Development and Restoration, RIZA, Netherlands and a board member of the European Centre of River Restoration (ECRR)), and Chris Spray (Director of Environment for Northumbrian Water).

A site visit will be organised to the River Skerne River Restoration Project for those of you have never been or wish to revisit it. However, feedback from previous conferences, shows that some of you may prefer to spend this time discussing topical restoration issues. Therefore we are proposing to run a series of workshops as an alternative to the site visit and these will cover 'Sustainable Flood Management', 'Funding and Implementing Joint European River Restoration Initiatives' and 'The Use of Fluvial Audits to help inform Catchment Scale Restoration'.

The main ethos of the conference is to provide a friendly forum that can help to inform you about what is happening in the world of the river restorer, inspire you to become even more enthusiastic about enhancing riverine environments and encourage participation in dynamic debate about all aspects of river restoration.

We hope this conference will offer something of interest to everyone across a wide range of disciplines.

Booking is now in progress. Cost for a residential delegate to members of the

RRC is set at £210.00 including the conference dinner. Places are limited so if you wish to attend please contact the Centre as soon as possible. Final date for registration is Friday 26<sup>th</sup> March 2004.

*We look forward to seeing you there.*



### INSIDE THIS ISSUE

- SEPA's HIE, Annual Awards 2003 Page 2
- Assessing restoration schemes by the effect on Macroinvertebrates, Page 3
- Alexander River Restoration, Israel & Riverprize 2004 Pages 4/5
- The River Avon and Avon Valley Initiative Page 6
- Ecoflood Workshop Delft, Netherlands Page 7
- News and Events Page 8

# SEPA's Habitat Enhancement Initiative (HEI) 2003 Annual Awards

This annual award scheme is aimed at raising awareness of the work of SEPA's HEI and encouraging and rewarding individuals, groups and organisations enthusiastic about conserving and enhancing aquatic and brown-field habitats in Scotland. Winners of the scheme automatically become demonstration sites, being practical examples of good management practice. This year, in addition to the overall winner of the awards, additional prizes were given for each of the following categories:

- *Large schemes* (over £100,000);
- *Small schemes* (under £100,000);
- *Catchment scale* improvement projects;
- *Urban greenspace* enhancements;
- *Brown-field sites* initiatives that create new wildlife habitat and address environmental risks.

In all there were 16 entries. The overall winner and 3 of the category awards included river restoration initiatives.

## Overall Winner (White Burn)

The White Burn Initiative, in Whitburn (also the *Urban Greenspace* category winner) transformed an urban drain to a clean and safe watercourse thus increasing wildlife habitat and enhancing amenity value for the local community. A range of initiatives included from growing willow walls as a bank erosion control measure, improving bridge crossings as local focal points, addressing fly tipping within the burn, planting native woodland species where mown grass previously existed, rejuvenating landscape and wildlife value through coppicing existing willow and dogwood scrub, and installing mine water treatment systems.

The discovery of water voles in the burn was welcome news which led to a survey by Scottish Wildlife Trust. This will be repeated in 4 years' time to assess whether the habitat management works have benefited the distribution of the species.

A large area next to the White Burn planted with native tree species to enhance habitat



Otter holts being constructed by volunteers (Photograph courtesy of Shirley Macgowan)

## Category winners with a river restoration emphasis

The River Eden Conservation and Management Project which flows through the heart of Fife won the *Small scheme* category which improved the water quality of the main river and its tributaries by encouraging sensitive agricultural practice and pollution control through managing riverside habitats, raising awareness of water quality problems and reducing nutrient levels entering the Eden estuary. Bank erosion was reduced by increasing bankside vegetation and creating wildlife corridors. Fife and Kinross Farming and Wildlife Advisory Group (FWAG) provided funding towards new fencing for livestock control, water troughs for stock management and tree planting which have enabled landowners to reduce grazing pressure on banksides and create buffer zones along cultivated field margins.

The Ythan Project, Aberdeenshire won the *Catchment scale* category award, which embraced a collaborative approach between eight organisations and local people committed to restoring, protecting and enhancing the river. The key to its success was a series of river restoration projects aimed at improving spawning habitat and passage for sea trout, replacing of over-shading coniferous woodland with broad-leaved tree species and the creation of wetland areas (see issue 14 of the RRC's newsletter for more details).

Future actions for the Ythan Project will include the creation of a natural berm in an urban burn, fencing a badly eroded section of watercourse and further tree planting. There are also plans to undertake some river re-meandering work this summer near Fyvie, in order to create more habitat diversity in a straightened and over-deepened section of the river.

To enter the 2004 awards scheme (closing date 30th June 2004) or for more details about other category winners contact Joanne Lambert HEI.  
Tel No: 01224 248338;  
E-mail [joanne.lambert@sepa.org.uk](mailto:joanne.lambert@sepa.org.uk).

Each entry in this year's awards was assessed by a technical group and judging panel which included representatives from RRC; RSPB Scotland; Scottish Natural Heritage; Friends of the Earth Scotland; WWF Scotland and Scottish Wildlife Trust.

# Assessing and evaluating river restoration schemes by their influence on the community structure of macroinvertebrates

*Laura de Smith (RRC's part-time technical assistant) outlines some of her findings from her undergraduate dissertation completed at the University of Birmingham*

## Background

The aim of the study was to assess and evaluate the effectiveness of a range of restoration schemes by exploring whether there was a significant difference in macroinvertebrate community structure between control and restored sites across a series of rivers. Macroinvertebrate analysis was chosen as a tool for detecting change in aquatic ecosystems since they are generally acknowledged as being sensitive to variation in physical and chemical conditions and thus respond to human intervention.

Six rivers were examined all located north of the Thames including, the Rivers Mimram (Archers Green), Chess (Chesham), Roding (Redbridge), Rib (Bishops Stortford), Crane (Hanworth) and Colne (Watford). Macroinvertebrates were collected from a total of 12 sites over a six-week period. Samples were collected using a standard one-minute kick sample. Both taxa richness and abundance were calculated for each sample and analysed using standard statistical techniques.



*River Colne – Large backwater providing an alternative habitat for species favouring slack flow conditions*

## Key Findings

The most effective restoration schemes were found to be those in which a range of restoration techniques were implemented, providing a diversity of physical habitat characteristics. Restoration of the Rivers Chess, Colne and Crane aimed to increase flow diversity through the installation of backwaters, riffles and flow deflectors, with variable channel depths and widths adding to the range of suitable macroinvertebrate habitat. In contrast, the restoration schemes undertaken on the Rivers Roding and Rib, which only addressed one or two physical habitat characteristics, had little impact on the macroinvertebrate community structure.



*River Roding – one physical habitat characteristic was addressed by notching the weir, thus improving fish passage*

Implementing restoration techniques where vegetation diversity is limited such as in the River Roding, proved to be less successful when compared with the schemes undertaken in the Rivers Colne, Chess and Rib, where the introduction of riparian vegetation, marginal and emergent plants and aquatic macrophytes were combined with a range of river restoration techniques.

The scale of the restoration schemes was found to influence the degree of impact on macroinvertebrate community structure. Larger scale river restoration schemes undertaken on the Rivers Colne, Chess and Crane had a greater influence on the community structure of macroinvertebrates compared with those schemes limited in area.

## Conclusions

Overall, this short study highlighted that larger river restoration schemes exert the greatest influence on macroinvertebrate habitat, although small scale river restoration schemes remain invaluable in improving specific habitats. However, it was difficult to identify precisely the benefits of individual river restoration techniques.

A range of factors such as scale, diversity of river restoration techniques and a variety of vegetation should, wherever possible, be taken into consideration to ensure more successful and effective restoration schemes in the future.

Many of the river restoration schemes were limited by human impacts acting at the catchment scale. The restored sites of the Rivers Roding, Mimram and Rib were located close to urban influences, suggesting that the success of the restoration schemes may have been limited by poor water quality attributed to urban runoff. This study therefore highlights the need to consider localised restoration schemes in the context of catchment scale issues.

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# The International Riversymposium

## The Alexander River Restoration Project

*This article reports how the desire to solve pollution and associated ecological problems transcends bordering country conflicts and has resulted in the successful restoration of the Alexander River*

The Alexander River flows from the Palestinian city of Nablus in the Samarian Hills to the estuary of the Mediterranean Sea north of Tel-Aviv in Israel. The size of the river basin is about 136,000 acres (550 km<sup>2</sup>). Small quantities of fresh water flow along half its stretch. The fresh water is severely polluted by sewage and effluent. The river is, in effect, a small stream with big problems. Yet this 'small' river has been the subject of 'big' efforts over the past nine years. In recognition of these efforts, the project was awarded one of the world's most prestigious international prizes for excellence in river management.

### Background

The Alexander River Administration was founded in 1995. It consists of about 20 public and state entities at the local, regional and national levels. The Israeli Ministry of the Environment, the Jewish National Fund and Emek-Hefer Regional Council, have had a leading roll in the Administration since the project was launched. The Administration deals with planning, management and maintenance of the Alexander River in relation to the river basin. The approach is comprehensive and multidisciplinary. The public is involved in all levels of activity.



*'Saving Alex' - Protecting the huge (120cm long) Nile Soft-Shell Turtles that survived the pollution*

The Alexander River Restoration Administration enjoys a unique collaboration with its Palestinian neighbours from the district and town of Tul Karem. They share a desire to solve the severe ecological problems posed by the polluted river. Thanks to two agreements, of a unique nature, signed by brave, local Palestinian and Israeli leaders and pertaining to the restoration of the river this cooperation, on the local level between neighbours survives through difficult times as well. Ecology, which knows no political borders, has become a unique bridge between people.

### The Schemes

In 1995, a comprehensive master plan for the whole river basin was prepared by an interdisciplinary planning team. Outline schemes for the various parts of the river were prepared in 1997-1998. The implementation phase began in 1998 when several projects aimed at restoring the river were initiated and constructed. They address aspects concerning the removal of pollutants, water supply, restoration of a few sections of the river, the development of 7 river parks, pedestrian and bicycle paths along the river, ecological rehabilitation, public involvement, education, drainage and flood defence. A unique 'Emergency Project' for the treatment of sewage on the Nablus Stream (the main tributary of the Alexander River),



*A narrow and dead sewage channel with steep banks and no vegetation*



*A wide public park along a 'living' river, with relatively clean water and a variety of flora and fauna*

# m and Riverprize 2004, Australia

was constructed as an interim solution until the permanent purification plant is built, in cooperation between the Israeli and Palestinian neighbours. It was financially aided by the German government and more than 12 million USD have been already invested in the Alexander River Restoration Project. Yet, there is still much work to be done in the years ahead.

**For further information contact:**  
**Amos Brandeis (Architect, Town and Regional Planner, Project Manager and Chief Planner of the Alexander River Restoration Project)**

**[amos-br@inter.net.il](mailto:amos-br@inter.net.il)**  
**[www.alexander-river.dynu.com](http://www.alexander-river.dynu.com)**

***The Alexander River Restoration Project was the winner of the 2003 International Thiess Riverprize. The following outlines the rationale behind this prize and how to enter your project.***

#### **The International Riverfoundation**

The International Riverfoundation (IRF) was established in 2003 to advocate the protection and restoration of the world's rivers and waterways for future generations. The organisation (now the funding source for the Thiess Riverprize) is administered by a board of directors from Australia, Britain, Canada and the USA.

#### **The International Thiess Riverprize**

The International Thiess Riverprize of AUD\$100,000 for excellence in river management was established in 1999 and is awarded each year to the project which best provides an incentive to further the worldwide effort of restoring unhealthy rivers.



*Riverfeast Celebrations on the Victoria Bridge (where over 3,000 dinners enjoy the Brisbane River) as part of the Riverfestival.*



*International Riverprize Winners 2003, from the Alexander River (Israel, in cooperation with the Palestinians)*

#### **The International Riversymposium in Brisbane, Australia**

The Symposium is held within Brisbane's annual Riverfestival which is a ten-day series of events attended by over 600,000 people and underpinned by water-focused environmental education messages.

The 7th symposium 'Threats to Sustainable River Systems-beating the odds' will take place in Brisbane, Australia, from 31 August to 3 September 2004.

*For further details of the symposium and conditions of entry for the Riverprize visit:*  
[www.riverfestival.com.au](http://www.riverfestival.com.au) or email  
[stephen.nelson@riverfestival.com.au](mailto:stephen.nelson@riverfestival.com.au)  
*Information about the IRF can be found at:*  
[www.internationalriverfoundation.com.au](http://www.internationalriverfoundation.com.au)

## ***Presentation of the Alexander River Restoration Project Amos Brandeis***

**7th April 2004 from 4.00-5.30 pm**

Organised by: the River Restoration Centre. At: Silsoe Campus, Silsoe, Bedfordshire

This presentation will be open to all MEMBERS of the River Restoration Centre and promises to be a fascinating talk.

If you would like to attend please contact the Centre to reserve a place

Entry is free

There will be a small charge at the door for tea/coffee.

# The River Avon and Avon Valley Initiative (RAAVI)

*Neil Bannister, RRC's LIFE bid Project Officer in Devizes, outlines the main objectives of this catchment scale initiative*

The River Avon and Avon Valley Initiative (RAAVI) is an ambitious new partnership project encompassing the entire River Avon system and its associated tributaries, from its source in Wiltshire to its mouth at Christchurch in Hampshire. In October 2003 the team submitted a bid to the EU LIFE Nature Programme. The main goal of this project is to create a mosaic of 'favourable conditions' able to support certain vulnerable in-channel species (Bullhead, Brook and Sea Lamprey and Atlantic Salmon), Demoulin's whorl snail on the floodplain and chalk stream habitat characterised by in-channel vegetation such as *ranunculus*.



*High flood berms, reducing connectivity to the floodplain, on the Wylve at Crockerton.*

To achieve this, strategic parts of the watercourse will be restored to enhance the physical habitat in this 'candidate Special Area of Conservation' (cSAC) area. In the lower Avon Valley, an area with Special Protection Area (SPA) designation, increasing wetness by retaining water along some of the ditch network should contribute to the 'favourable conditions' required for the breeding of Gadwall and Bewick Swans. The works are due to be carried out over a 4 year period, with their initial success monitored by looking specifically at the impact on the physical diversity of the watercourses.

It has also been recognised that there are both 'invasive' and 'nuisance' species that are present along parts of this valley. Excessive numbers of Mute Swans, for example, are known to devastate *ranunculus* beds and there is the common UK issue of removing plants such as Giant Hogweed, Himalayan Balsam, and Japanese Knotweed. The RAAVI project is proposing to develop a strategic program to assess how best to deal with these species and will include undertaking works to eradicate these key invasive plants on a catchment scale basis.



*Impoundment behind 7 hatches at Chilhampton on the River Wylve.*

At the heart of this project lies a good working relationship between all the partners involved and this includes the local communities, many of whom have strong links with and interests in the watercourses.

The River Restoration Centre has been involved with the LIFE project from the outset and has provided information and advice based on its UK-wide role as a centre for promoting river restoration concepts and best-practice river management. The Centre continues to have an input into the project's management, restoration design and monitoring strategy. This latter involvement will include testing a broad assessment approach designed to provide LIFE with the predicted likelihood of the success or failure of the restoration works.

A response from the EU LIFE Programme is expected in June; meanwhile a complementary bid to HLF is being initiated to maximise this exciting and informative catchment scale project.

*Partnership members include: English Nature, the Environment Agency, Wiltshire Wildlife Trust, Hampshire and Isle of Wight Wildlife Trust, Wessex Water Services Plc. The LIFE bid is entitled the Strategic Restoration and Management (STREAM) of the River Avon cSAC and Avon Valley SPA.*

*For further information contact:  
Neil.Bannister@English-Nature.org.uk or through the RRC.*

# Ecoflood Workshop



The Rhine showing the NFD working in Jan 2004

## ***A workshop in Delft, Netherlands, on 23rd January looked at practical constraints and opportunities surrounding the creation of Natural Flood Defences. Martin Janes reports....***

This workshop followed a conference held in September 2003 and together define a set of guidelines for the creation of Natural Flood Defences (NFD). The workshop was aimed at stakeholders and practitioners, and used two keynote speakers per case study to look at the pitfalls, challenges, opportunities and solutions encountered, based on their experience and perspective.

Following an overview of funding and recent projects in flood management by the speaker from the European Commission's DG Water, the rest of the day focussed on case studies covering five countries, with two or more speakers, providing material for further discussion throughout the day.

From Denmark, Mogens Nielsen and Niels Rasmussen gave an account of the River Skjern project (the largest in history of Danish river restoration works). This came from the rivers consultant and local councillor viewpoint.

The River Odra, as it flows through Poland, provided the opportunity for a wealth of views from six representatives from a single project area, illustrating the sometimes very different objectives of local and national government, landowners and conservation organisations.

The northern Italian Tagliamento River, provided a stark contrast to the previous

two studies. One of only a handful of pristine remaining alpine gravel bed rivers, the issues here are ones of conserving this magnificent river and its processes, whilst addressing the needs of downstream flood prevention.

The UK's contribution was delivered by Martin Janes (RRC) and Warren Bradley (Halcrow). This picked up the missing 'smaller scale' but frequently occurring flood management projects, common to much of Europe, where urbanisation has resulted in a need for protection, but is also the major barrier to achieving this. The rivers Harbourne and Skell/Laver were used to illustrate that, on a smaller scale than those above, flood management in confined situations can still seek to incorporate a degree of NFD into its design.

The final study was presented by the Dutch, featuring the River Rhine and its vast network of flood management strategies, from its headwaters to the North Sea. This demonstrated the need for, and also the difficulties associated with, a true catchment scale approach to flooding. Uncertainty still surrounds the respective benefits of directing funding at headwater tributaries as 'sponges' or downstream (1 in 1250 year event) dykes and flood storage areas, as both are heavily dependant upon the nature of the rainfall event.

The parting 'thought for the day', was that however different your initial views and aspirations, an 1100km drive from Poland to the Netherlands is a powerful tool for consensus building!

Details of the workshop and conference are available from <http://levis.sggw.waw.pl/ecoflood/>



The Rhine, showing an adjacent 'nature' area where flooding is encouraged.

# News and Events

## RRC Talks

### *Alexander River Restoration Project, Israel* Amos Brandeis

7th April 2004 – Silsoe

For further details see page 5 of this issue.

*As a new initiative the Centre would like to coordinate a series of talks throughout the UK for its members.*

If you know of a project or river restoration issue that would be of interest to our members then please tell us.

## Conferences

### *Freshwater Biological Association FBA Annual Meeting 2004*

19th - 20th July 2004 - Plymouth, UK

Registration & poster submission deadline: 31<sup>st</sup> May 2004  
Contact Sarah Johnson at [info@fba.org.uk](mailto:info@fba.org.uk)  
or visit <http://www.fba.org.uk>

### *International Symposium on the Conservation & Management of Sea Trout*

6th - 8th July 2004 – Cardiff, UK

Contact Samantha Emmott at  
[SEA-TROUT-Symposium@Cardiff.ac.uk](mailto:SEA-TROUT-Symposium@Cardiff.ac.uk)

### *Wild Trout VII Symposium – Working together to ensure the future of wild trout*

20th – 22nd September 2004  
Yellowstone National Park, USA

Visit <http://www.wildtrout8.com>

### *3rd ECRR International Conference on River Restoration in Europe*

17th – 21st May 2004 – Zagreb, Croatia

Visit <http://www.ecrr.org>

## A New Award for Waterways

For 2004 Local Government News has launched a new Street Design Award category for waterways aimed at projects which are developing and maintaining Britain's forgotten waterway network.

### Interested?

Then email Tom Idle at: [tom@lgn.co.uk](mailto:tom@lgn.co.uk)  
or visit: <http://www.lgn.co.uk>

**Closing date is the 30<sup>th</sup> April 2004**

## Courses

### *5th International Course on Wetland Restoration* Wetland Advisory and Training Centre

30th August – 30th September 2004 – Lelystad, the Netherlands

Contact Rijkswaterstaat RIZA at [watc@riza.rws.minvenw.nl](mailto:watc@riza.rws.minvenw.nl)

## Publications

### *Guidebook to Applied Fluvial Geomorphology - Copies now available*

Down load at:

[http://www2.defra.gov.uk/research/project\\_data/default.asp](http://www2.defra.gov.uk/research/project_data/default.asp),  
enter FD1914 as search criteria.

Hard copies can be purchased from the EA's R&D

Dissemination Centre:

C/o WRc, Frankland Road, Blagrove, Swindon, Wiltshire SN5 8YF (Tel: (+44) 1793-865012; Fax: (+44) 1793-514562;

email: [publications@wrcplc.co.uk](mailto:publications@wrcplc.co.uk)

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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.

