New ‘Association of River Trusts’ launched

At a meeting and seminar held in Derby in October 2001, The Eden Rivers Trust, Tweed Foundation, Westcountry Rivers Trust and Wye Foundation announced the public launch of an “Association of River Trusts” for England and Wales. This development followed a considerable consultation period including communication with other river and fishery improvement trusts, the Scottish Fishery Trusts and the Environment Agency. The four “founder member” Trusts have all made significant contributions in their own areas to improve the aquatic environment and adjacent river corridor.

The main aim of the Association will be to network, co-ordinate, represent and develop the aims and interests of the member Trusts. Its main activities will be:

a) Exchange information/best practice (including workshops and publications)

b) Discuss common problems and make appropriate representations to Government, decision makers and opinion formers and other appropriate organisations

c) Provide advice and guidance to its members and help with new start ups and emerging like-minded groups

d) Explore funding opportunities

Other agencies and non-governmental organisations (NGO’s) with interests in the sector attended the launch seminar to contribute ideas and express their views to the Association.

For further information, please contact, Arlin Rickard (ART Director and spokesman) C/o Westcountry Rivers Trust, Fore Street, Lifton, Devon, PL16 OAA Tel: 01566-784488 Fax: 01566-784404 Email: wrt@wrt.org.uk

RRC Questionnaire Update

A big thanks to RR News readers who have completed the questionnaire that appeared in our November 2001 issue. Readers were asked to complete a series of questions about their use of the services that RRC currently provides and provide suggestions for any new services that RRC could potentially provide. Readers were also asked about RR News, our four monthly newsletter. This included questions on content and format. The results of the questionnaire are currently being collated. Questionnaires still to be submitted will be gratefully received (Questionnaire available on line at www.therrc.co.uk/newsletters). Any amendments to the newsletter from popular suggestions will be made over our next 2 issues.

RRC’s 3rd ANNUAL NETWORK CONFERENCE

Monday the 29th and Tuesday 30th April 2002
Swallow Hotel, Stockton on Tees

‘Engineering River Rehabilitation’

Keynote Speaker:
Dr Mervyn Bramley, EA Flood Defence Development Manager, and DEFRA/EA R&D Theme Leader for Engineering

One site visit will be to the award winning River Skerne Demonstration Project in Darlington. Contact the Centre now to receive a draft programme and booking form. (£175 for RRC members, £205 for non-members)

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The Shalbourne Restoration Project

In 2000 the Shalbourne Stream at Hungerford in Berkshire was returned to a course it may have last followed at the end of the Eighteenth century. A multidisciplinary project led by Thames Region of the Environment Agency and supported by British Waterways, English Nature, local fisheries and wildlife groups means it is now once again possible for the Shalbourne to flow directly into the River Dun.

Background

The Shalbourne Stream is a tributary of the River Dun. It rises from springs in the Upper Greensand and flows for 6kms across the Upper Chalk in a northerly direction through agricultural land towards Hungerford. Gauged flows for the Shalbourne between 1997 and 2000 show a mean winter flow of 24 ML/D and mean summer flow of 12 ML/D. The stream has a river quality objective of RE1.

The Dun is a chalk stream, flowing through the Freeman’s Marsh SSSI before joining the Kennet, itself a river SSSI, at Denford. It is abstracted by Berkshire Trout Farm immediately upstream of its confluence with the Kennet (plan of site)

The Kennet and Avon Canal was built in the late eighteenth century. Its route cut across the Shalbourne a short distance upstream of its confluence with the Dun. The connection between the two rivers was initially maintained via a 900mm brick culvert (A) built under the canal. This connection was later disrupted when the entire flow of the Shalbourne was diverted into the canal at a point (B) 150m west of the culvert. This was done to provide additional water for navigation. A fixed crest overspill weir (C) positioned opposite to the newly created confluence enabled surplus canal water to drain into the Dun via a ditch. This overspill was to become critically important.

The complex interconnections between natural watercourses and the Kennet and Avon Canal in the Hungerford area have been the subject of debate since the canal reopened in 1990. The canal is an important recreational and ecological resource in its own right, but its operation as a navigation led to water quality issues for the Dun. Overspill water, often high in suspended solids and algae, flowed into the chalk stream, leading to siltation of gravels and epiphytic growth on Ranunculus and other aquatic plants.

Disaster leads to an opportunity

The events of March 4th 1998 were to dramatically change the focus from a chronic to an acute problem. Unusual environmental conditions in the area gave rise to the production of a toxin in the canal. Toxic water passed over the overspill. Almost seven kilometres of the canal, the Dun and Berkshire Trout Farm were affected. Over 150 tonnes of fish died making this the largest fish kill incident the Agency has dealt with. A key recommendation of the technical investigation into the incident was the reduction of water transfer from the canal to the Dun, enabling any future similar incidents to be contained within the canal thus protecting the natural watercourses.

Restoring the historic culvert not only provided a solution to the urgent matter at hand – keeping toxicity from Dun, but potentially also to the longer term issues regarding water quality and flow impacts on the special conservation value of the sensitive chalk stream habitat. Importantly, it would also fulfil the objectives set out in the Water Level Management Plan for Freemans Marsh, including retaining swampy ground with areas of standing water throughout the year and maintaining periodic inundation of the area of MG8 grassland in the winter and spring.

There were a number of difficulties to overcome. Firstly, a diversion channel had to be dug on the south side of canal to connect the stream to the culvert. This diversion would follow a similar course to original channel. A complex series of consultations and negotiations were necessary involving four landowners and a wide range of user groups and interests. This had to be achieved in a short timescale as there was only a narrow window for construction over the winter months before the period when toxic conditions could develop again. The situation was more straightforward on the discharge side of the culvert. The landowner, David Susman, was an enthusiastic supporter of the project.
and, with English Nature’s consent, was prepared to let the stream simply run over the marsh to the Dun.

**Conflicting needs**

Ideally the entire flow of the Shalbourne would be diverted down the new channel. In the short term it was in all the interest of all parties to isolate canal from river. The challenge was to reconcile environment priorities with the legitimate requirements for navigation. British Waterways were naturally concerned about the potential loss of a key source of water for the canal at times of low flows. Although the Agency was legally able to divert the entire flow of the Shalbourne, its Water Resources department’s view was that it could not split the flow between the new channel and the canal without an abstraction licence. The licence application procedure would be a lengthy process requiring a formal Environmental Impact Assessment and would need approval by the Agency’s Board before going to DEFRA for determination (The Agency cannot grant itself a licence). The project team was working against the clock. Construction commenced in late Autumn 1999 and had to be completed by March 2000. The Agency and British Waterways worked closely to produce a pragmatic temporary solution to the issue of flow control. Two simple stoplog structures were installed. The first was across the Shalbourne some 30m upstream of the confluence with the canal. The second was at the head of the new channel. The Agency vested temporary control of the structures to British Waterways until an abstraction licence was granted.

The options for design of the new channel were constrained by the distance between the Shalbourne and the location of the culvert. Although the final design was less sinuous than we hoped, the gradient allowed the development of a pools and riffles over its 150m length. Bed width varied between 2.5 to 5m, with bank width 8 to 12m. (shal3). By contrast, on the north side the water was allowed to cut its own path from the culvert to the Dun, some 140m away. The resulting watercourse quickly picked up the path of a relic ditch, forming a braided channel of between 5 to 8m width. This was a unique opportunity to let nature take its course. With no banks to constrain it, water quickly infiltrated low spots in the SSSI, and a wide transition zone between terrestrial and aquatic communities was established. The channel was fenced to keep cattle out.

**What next?**

The project was completed to schedule and was opened on 20 March 2000. Feedback from partner organisations and the local community has been very positive. The Hungerford Fishery reported an immediate and dramatic improvement in flow and water clarity of the Dun leading to vigorous growth of Ranunculus. Favourable conditions are also reported by Berks, Bucks and Oxon Wildlife Trust (BBOWT) who manage a reserve on Freemans Marsh.

The interim operating protocol agreed with British Waterways has enabled the entire flow of the Shalbourne to run into the diversion channel from the day it opened. But the system has yet to be tested by a drought. British Waterways has agreed in principle to the concept of a sweetening flow being kept in the new channel for environmental purposes. However, it is accepted that in critical conditions it may be necessary for all available Shalbourne water to go to the canal to prevent damage to its infrastructure. Talks between the Agency and British Waterways to achieve a permanent solution are continuing and it is hoped the final operating procedure to underpin the abstraction licence application will soon be completed.

The views expressed above are that of the author. To find out more about the above project please contact John Sutton, Environment Agency (01276 454435), john.sutton@environment-agency.gov.uk
Scottish Environment Protection Agency’s Habitat Enhancement Awards 2001

Joanne Lambert, Project Manager, for SEPA’s Habitat Enhancement Initiative tells RR News who last years winners were for this annual Awards Scheme. The awards were presented at Battleby, near Perth in December 2001.

SEPA’s Habitat Enhancement Initiative Award Scheme aims to highlight the actions of those protecting, improving and enhancing aquatic habitats. The award scheme is open to all who are involved in projects in Scotland that demonstrate environmental enhancement measures with regard to biodiversity and sustainable use. Entries are welcomed from all: individuals, schools, local authorities, to industry, business and agriculture.

Perth Wood

The overall winner for 2001 was Forest Enterprise for a wood near Perth which can’t be named because of the sensitivity involving the Great Crested Newts that are found there. Since 1998, Forest Enterprise has created 28 new ponds and a large hibernation chamber in the wood. The project is a good example of how urban green space can be enhanced. It is an easily-accessible site which will be useful as a demonstration site for river habitat enhancement.

The project is a good example of partnership between the Farming and Wildlife Advisory Group (FWAG) and the local farming community, and will also serve as a useful demonstration site for river habitat enhancement.

Runners up:

Vane Farm Nature Reserve.

Vane Farm is an RSPB Nature Reserve covering 230 hectares, and is part of the Loch Leven system. Major achievements at the site include the conversion of 120 hectares of arable land to wet grassland involving the removal of drains and the creation of shallow pools. A flooding area has been created where water levels can be controlled. Also the ongoing restoration of a lowland raised bog is occurring. The site is an Environmental Education Centre of Excellence and is currently used to demonstrate and promote practical opportunities and best practice for creating and managing habitats.

Water of Leith Group Farm Project.

This project is an example of best practice in river habitat management. A network of habitats along the river have been protected and restored. Works have included the fencing-off of the waterside margin, planting of native trees and shrubs, protection of river-bank woodland, pond creation and restoration, and environmentally-sensitive bank protection.

The wetland management work has benefited two of the city’s key species – the Reed Bunting and the Water Vole. This project is a good example of how urban green space can be enhanced. It is an easily-accessible site which will be useful as a demonstration site for wetland management techniques.

Hogganfield Park Local Nature Reserve Wetland

A new wetland has been created in Hogganfield Park, in the north-east of Glasgow. A large area of this park is a Local Nature Reserve, and the new wetland consists of a series of shallow pools on the eastern side of the park. A small reed bed has been created at the north-east corner of the loch.

The wetland management work has benefited two of the city’s key species – the Reed Bunting and the Water Vole. This project is a good example of how urban green space can be enhanced. It is an easily-accessible site which will be useful as a demonstration site for wetland management techniques.

To find out more about SEPA’s Habitat Enhancement Award and how to enter your project in this years Awards scheme go to http://www.sepa.org.uk/guidance/hei/index.htm or contact Joanne Lambert (joanne.lambert@sepa.org.uk)

Applications for the Award Scheme should reach HEI staff before 30 June each year.
Arleen Jamieson, Conservation Student with the Rivers Agency describes the rehabilitation of the River Derriaghy, a degrade urban watercourse flowing through Belfast

In Northern Ireland, as in many other parts of the UK, many urban watercourses have become a refuge for domestic waste, or are simply enclosed within concrete culverts.

The Derriaghy River, in West Belfast, is a typical example of such a degraded watercourse, providing little value for either the local community or wildlife. A tributary of the River Lagan, the river runs for some 5.5km, mainly through industrial and housing areas.

The river is a mixture of culvert and open channel, and suffers greatly from dumping. One open section lies within a green open space within the Twinbrook, a Northern Ireland Housing Executive estate. This stretch of river is a highly visible but unattractive feature (photograph 1), with a straight planform and vertical banks.

The local residents’ association had identified the river as being a key component in the local landscape. They contacted Rivers Agency directly, to see whether measures could be undertaken to improve both the visual quality and the wildlife value of the river. The role of the residents was important – local primary school children were asked to draw the river as they would like to see it, and residents were asked for their ideas. Through discussion with the Agency, a sketch map of proposed measures was produced.

Further advice was obtained from Nigel Holmes (RRC), who visited the site in June 2000, and developed the initial proposals into a list of possible enhancement options which could be included on a “pick and mix” basis.

The urban location of the river, value for money and resources were important considerations. In particular, health and safety was a vital consideration and lead to the redesigning of some of the proposed works. For example, planned steep outer banks on meanders were given a more gentle 45 degree slope.

The rehabilitation measures implemented were:
* Realignment of the river to create meanders
* Re-grading of steep banks and the creation of berms
* Creation of a gravel based pool
* Creation of a small cascade to hide a pipe
* Creation of a small backwater
* Creation of riffle areas

Following agreement with the Housing Executive, work was carried out in September 2001 by the Agency’s own staff. Regular on site discussions between conservation and engineering staff, and the plant operator meant that the design was fluid, but should prove more sustainable in the long term.

Although the project’s urban location was problematic, its development through local interest was a significant advantage. Throughout the project, the residents’ group, by the extent of their involvement, demonstrated their commitment to improving the river. Already, the number of dumped shopping trolleys found in the river has decreased, and tree planting by local school children will continue local involvement.

The Derriaghy River would not be seen as a river of high conservation value, even post rehabilitation works. The project was opportunistic, and its is better measured through amenity value, public perception, the development of partnerships and as an example of how other urban watercourses may realise a greater potential.
1. Introduction

During the droughts of the late 1980s and early 1990s in southern England the resulting low flows together with heavy grazing pressure and abstraction resulted in a reported loss of fish habitat in many streams. Following concern by anglers and conservation groups in Wessex, consultants recommended a programme of channel restructuring (restoration) to restore fishable habitats and spawning areas. Between 1995 and 1999 therefore, habitat modification was undertaken on the River Piddle and Devil’s Brook, the Rivers Wylye and Till and the Sherston and Malmesbury reaches of the Bristol Avon (Figure 1). The techniques varied in both extent and composition but for the analysis were mainly classified as “substrate redistribution” (bed re-profiling, weirs, flow diversion, narrowing) or “substrate augmentation” (introduction of gravel beds). Some reaches were fenced to exclude stock and reduce grazing pressure but these fences were later extended by farmers and anglers.

Biological surveys were carried out at 22 sites during the summer of 2000. No baseline data were available and the flows were considerably better than in the drought years. For the comparative studies of restored and unrestored reaches therefore, control sites were selected from reaches known to be unrestored in the original work. 98 invertebrate samples were taken from 50m long restored and unrestored reaches. Margins and midstream habitats were sampled separately. 44 sweep net samples were taken from marginal vegetation to record selected adult insects. Plant species were recorded over 50m reaches of both banks and in the river channels. The aim was to assess if there was an overall, repeatable and predictable pattern of effects after alterations to the channel that could be used to plan further channel alterations.

2. Fishery Improvement

Data supplied by the consultants who carried out the alterations, from surveys between 1996 and 1998 showed significantly increased populations of salmonids and some coarse fish in restored reaches (Figure 2). However, tagging experiments suggested that the most likely explanation for the increases was short-term immigration from other reaches, a benefit for the recipient reaches, but with unknown consequences for the donor reaches. The effects of restoration on the species-richness, composition and diversity of the fish fauna in these rivers was unknown. No data on the “non-angling” species were obtained and effects on Annex II species such as the bullhead were not assessed. The actual carrying capacity of many reaches is also unknown and true stock densities are probably obscured by the stocking and angling. The river fisheries are to a great extent artificial.

3. Instream and riparian flora

Total species richness of plants was lower overall in restored than in unrestored reaches. This was a result of significantly lower numbers of bankside and terrestrial species in fenced reaches of the Piddle and

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Figure 1. Re-structured reach of the Avon upstream of Great Somerford, Wiltshire. Note the inserted riffle, large stones at the margin and the pool area near the camera. This is physically much more diverse than the unrestored.

Figure 2. Results of paired t-tests on fish densities in restored and unrestored reaches of the River Avon, Wiltshire.

All fish

<table>
<thead>
<tr>
<th>Number 1000m²</th>
<th>Control</th>
<th>Restored</th>
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<td>p = 0.023 *</td>
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Devils Brook. Trampled banks showed greater species richness than fenced reaches mainly because of the abundance of the more robust species in the fenced reaches and the absence of the mosaic of habitats found on trampled margins (Figure 3). Aquatic species showed similar diversity in restored and unrestored reaches but the Sherston and Malmesbury Avons’ showed a generally lower abundance of Ranunculus spp. There was a non-significant difference in Ranunculus cover between unrestored and restored reaches though this was probably a result of better flows than in the dry years. In all streams the greatest influence on instream weed was shade.

4. Invertebrates

There were no significant differences in mean invertebrate diversity between restored and unrestored reaches. Diversity of invertebrates in marginal river habitats was significantly greater than in midstream habitats and the species compositions differed. Local invertebrate species composition was more likely to change if restoration increased scour and current velocities, as species characteristic of higher flows displaced those preferring slower waters and added to the total in the reach. Species accumulation curves showed a lower total number of species in unrestored midstream reaches than in the others but this was mainly a result of effects of deepening at two sites on the Piddle. The slowed currents allowed marginal plants and associated invertebrates to colonise the restored mid-stream zones (Figure 4). No species new to the rivers were recorded. Significant correlations were found between aspects of physical diversity, biological scores (BMWP) and abundance was also tentatively correlated with invertebrate diversity probably as a result of sedimentation downstream of the beds. The crayfish populations in the River Piddle may have benefited from restoration work, particularly where fencing has allowed marginal and trailing vegetation to increase but data were not statistically viable. No crayfish were recorded in the Sherston or Malmesbury Avons’ in the most recent surveys despite re-introductions.

No effect could be detected on selected aerial insects though the data were sparse and not suitable for statistical treatment. Also, no conclusions could be reached about effects of restoration on mammals as all the data were not suitable for proper statistical analysis. The Wiltshire data were, however, worthy of further analysis and this methodology should be adopted and adapted throughout the region.

5. For the Future

Future management studies should include effects of Ranunculus on salmonid spawning, quantification of effects on fish communities and Annex II species and the need for some standards and targets for river restoration work. A simple target index is suggested for discussion in the report. It was considered that management for “diversity” probably requires continuous moderate disturbance from bankside trampling, angling and stocking and weed-cutting. Conservation for “naturalness” would require a more “hands-off” strategy. There may be conflicting effects of protecting both Ranunculus and salmon and some revision to the EC Habitats Directive may be necessary to allow for this. There is an increasing need for better scientific investigations of restoration schemes though it is too late in many UK rivers. There is also a good case for “do nothing” management in many reaches to allow natural restoration, including the encouragement of riparian trees.

Terry Langford and Robin Somes (Pisces Conservation Ltd)
Fiona Bowles (Wessex Water)

(The full report can be found on www.irchouse.demon.co.uk click on Download Reports)
News and Events

New, improved RRC website

The RRC website has recently undergone a major revamp. For the latest news and events, back copies of RR News, information on demonstration projects and lots more visit (www.theRRC.co.uk). To advertise an event on the web please contact Karen Phillip at the Centre.

Island Press, California. UK Price: £29.50.

This is an excellent book by Ann Riley, Executive Director of the Waterways Research Institute in California, who has considerable experience of stream restoration, particularly in urban environments. Although based substantially on experiences from west coast USA, most of the principles can be applied elsewhere: Ann outlines guidance on land use planning, site design and implementation of projects. The book is unique in covering social and economic impacts as well as technical and environmental considerations. Well worth a read! (Dr Andrew Brookes, Gifford and Partners, Southampton)

The British Hydrological Society

The formal aims of the BHS are to promote interest and scholarship in both the scientific and the applied aspects of hydrology and to foster the involvement of its members in international activities directed to the promotion of hydrology. However, since it began in 1983, BHS has tried to keep formality to a minimum and is seen by everyone involved as a society run by its members for its members. We promote an active programme of national and regional meetings, provide a quarterly newsletter, Circulation, and support a developing website (www.hydrology.org.uk).

We currently have a membership of 850, covering a range of interests including water resources, geography, hydro-ecology, meteorology and engineering. Members come from a range of organisations, including universities, research institutes, environmental regulators, water companies and consultants. New members are always welcome and you are invited to contact the Honorary Secretary or visit our website for further details. Tim Jolley, Honorary Secretary, SEPA, (01355 574 213), Tim.jolley@sepa.org.uk

COMPETITIONS

Wild Trout Trust Conservation Award 2002 – Call for entries

Now in its fifth year, the Conservation Award aims to recognise the achievements of angling clubs and riparian owners in protecting and improving wild trout habitat. There are awards in both amateur and professional categories, with prize money totalling around £5000 for further conservation work. Please see www.wildtrout.org for more information, or write for an entry form to: Wild Trout Conservation Award, 92-104 Carnwath Road, London SW6 3HW. Applications should be received by 15th April.

Riverfestival, Brisbane 2002

This annual event is Australia’s largest river and water celebration, and includes the award of the riverprize. Two awards are made each year, one a national award for Australia’s best practice in river management project, and the other an international award. In 1999 the international award was won by the Mersey Basin Campaign. For more information see the River festival website. www.riverfestival.com.au

CONFERENCES

‘Making Better Becks’ – Free one-day Conference

A free conference at the Royal Armouries, Leeds on Friday 22nd March 9.30 – 4.30pm. An opportunity for ‘hands-on’ enthusiasts to obtain information enabling them to make becks centre stage in nature conservation and regenerated open spaces for their local communities. Speakers converse with local group activities – opportunity for discussion – handbook containing information given free to those who attend. Some help with travel costs in defined cases. Contact: EYE on the Aire, (0113 2346223), email info@eyeontheaire.org.uk. A project supported by the Government’s ‘Are You Doing Your Bit?’ campaign.

Public Participation under the EC Water Framework Directive

The recently introduced Water Framework Directive contains provision for a far greater role for public participation in the management of water resources at catchment scale. Cranfield University, School of Water Sciences is hosting a one-day conference on April 4th 2002 to debate a number of issues arising from this initiative. The program includes speakers from the European Commission, the Environment Agency, the World Wildlife Fund, and the Cabinet Office. The event is organised in conjunction with CIWEM and the IWA. For further info visit www.cranfield.ac.uk/sims/water/stakeholders.htm RRC members are offered a discount of £15 on registration. Contact: Short Course Office, Cranfield University, (01234 754176) E-mail: shortcourse@cranfield.ac.uk

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.