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River Restoration in the UK; Development and Opportunities

Martin Janes
Manager
River Restoration Centre
UK

Restauracion de Rios, Madrid 2006

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Summary

- Past - Flood 'Protection' and 'Defence'
  Channelisation, walls, culverts, pipes
- Present - Flood 'Risk Management'
  Storage, capacity, and how this affects the river
- Future - River 'Catchment Management'?
  Land (soil) management (1st order streams), Sustainable drainage systems, functioning floodplains, integrated planning policies.


Dig it deep!


Give it space


Put it back

Lessons

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Past management

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Defending against floods (urban & agriculture)

- Little appreciation for nature..
  - Ecology
  - Fisheries
  - Recreation
  - Landscape

Concern and unrest…

- The River Restoration Project (pre. RRC)
- Support and ideas 1990 to 1994
- 1994 -1998 two UK demonstration projects:
  - the River Skerne, Darlington
  - the River Cole, Swindon

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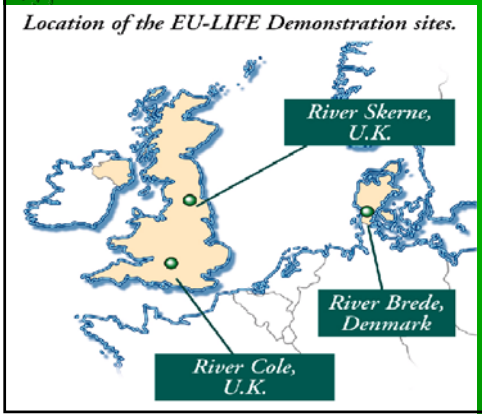
A change in attitudes

LIFE Project 1994 -1998

To Demonstrate various techniques over short reaches in single ownership – new beginnings?



Including:

- Re-meandering, riffles, backwaters & other in-channel enhancements.
- Wider catchment benefits (including flood defence)
- Community involvement and a partnership approach.

The Skerne today

Early success

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- National and International success as ‘demonstration’ sites,
- Promotion, publications and reporting
- Still used today, techniques still applicable

Many other projects needing the same support

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‘working to restore and enhance our rivers’

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- Not-for-profit, information & advisory organisation
- Independent, but backed by UK Government Environment Agencies
- UK-wide remit covering very different areas
- Promoting RR and best-practice management
- Scientific research linked to practical works
- Supports a network of UK Experts

The sole UK organisation for RR and management, disseminating innovation and best practice

A change in climate

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Impact on river management;

- 20% contingency in Southern England
- 20% increase in river discharges (IPCC)
- Stormier conditions, flash floods (Boscastle '05)

- Studies of increase in flood risk in Scotland
  - Perth 1:200 in '88 to 1:100 in '94.
- Previous and current traditional defences may no longer be adequate! 1:50 to 1:17
- Implications for insurance and property value = public concern and political action

Flooding is the UK's biggest driver!

Present situation

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General river management

- Recent movement towards flood risk management, not defence.
  - More sustainable options (natural systems) .
  - Takes into account issues such as public perception, ecology, landscape and flood alleviation.

River restoration and enhancement

- Numerous and diverse but small (reach-scale)

(RRC's Manual of RR Techniques; www.theRRC.co.uk)

- Wider appreciation of the river as a natural system, ….. And benefits of this.

Sustainable Flood Management

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- Jubilee River, London

A '2nd River Thames' for Windsor & Maidenhead.

11km of shallow, linked, linear gravel bed pools. [Reflecting the habitat lost from the main River Thames].

High land and property prices made the project viable. £110,000,000. =£10M per Km.

Only in London?

Urban Town Centre re-development

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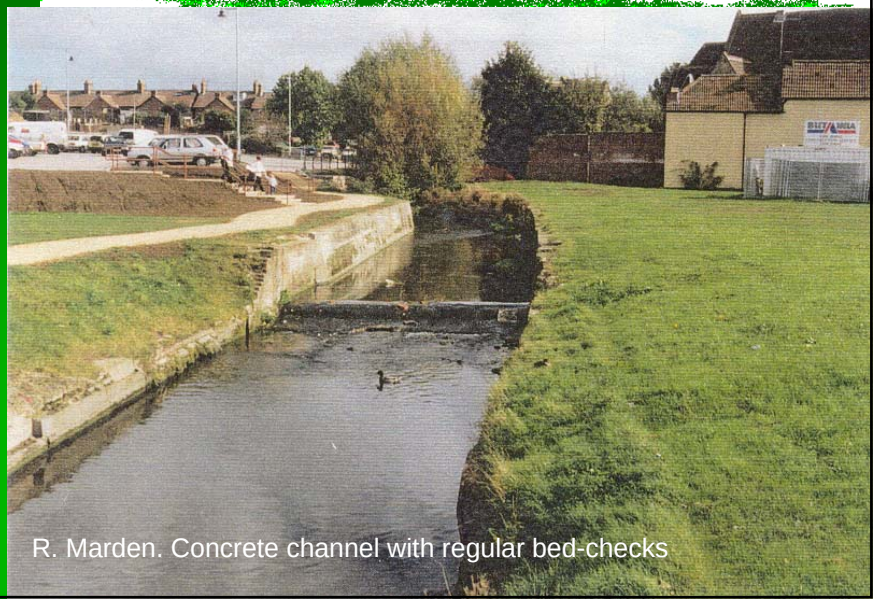

R. Marden. Concrete channel with regular bed-checks

River Marden

- Flood risk

but also….

- Landscape,
- Habitat,
- Amenity,
- Civic pride.

Simulate form & processes in a constrained location

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Amenity, landscape & function

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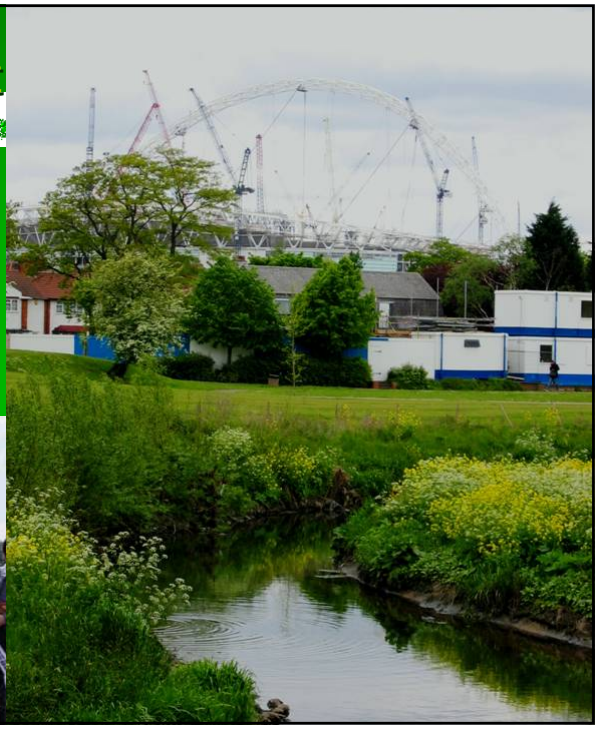
Social impact

Urban space,
Accessibility,
Quality of life,
Ownership,
Social justice.



Biodiversity projects

- New Forest Rivers

Some past realignment, but old channels still existing in the woodlands.

Restore the natural function of these small systems.

Benefits for biodiversity.

Mire restoration has been very successful, reducing runoff by infilling the drainage channels.

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Gravel and clay fill material raising the bed to previous levels [2006]

Highland Water. Structure ruined by poor management [2002]

Rural streams

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- R. Gaywood, Norflok

Aim:

Rrestore the stream,

Re-wet the 3 fen habitats.

Once a freely meandering, chalk fed stream. Straightened and dredged into submission.

Flashy response and very low summer flows.

More opportunity space, but less funding available!

Catchment scale projects

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- The principles are understood, policy is on its way – again time to demonstrate the benefits..
  - Use 'natural flood defences' where possible
    - Floodplain and upstream storage
  - Remove impoundments/barriers
  - Restore natural flow processes
  - Provide habitat to maximise biodiversity
  - Consider recreation, public use & aesthetics

But..

- Always constraints. Compromises between an effective solution and a sustainable approach

Catchment scale demo projects

River Avon and Avon Valley Initiative South West England

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Partners:

Environment Agency

English Nature

Life

Hampshire & Isle of Wight Wildlife Trusts

Wessex Chalk Streams Project

Wessex Water a YTL company

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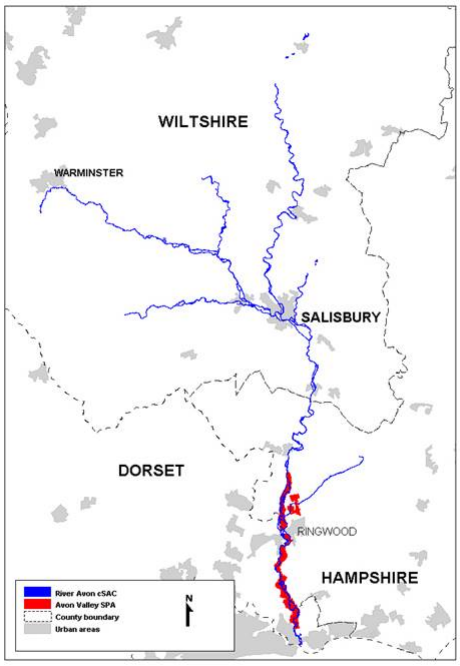
Wiltshire Wildlife Trust

River Avon

Restoration of an internationally important chalk river.

Demonstrating a strategic approach to catchment issues.

- Three European designations (SAC, SPA, SSSI)
- Intensively managed
- System is highly physically modified



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The problems

1. Historic dredging has enlarged sections of the watercourse, damaging the ecology, removing spawning gravels and in-stream vegetation, and reducing hydrological connectivity with the floodplain.

A more classic chalk stream view on the River Kennet

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2: Water level management in the Lower Avon [migration barriers, historic meadows, waterfowl, interruption to natural processes]

3: Impoundment behind control structures

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Target species

Bullhead	*Cottus gobio*
Atlantic Salmon	*Salmo salar*
Brook Lamprey	*Lampetra planeri*
Sea Lamprey	*Petromyzon marinus*
Desmoulin's Whorl Snail	
Gadwall & Berwick Swans	

Salmon

Brook Lamprey

Gadwall

Bullhead

Tackling the issues

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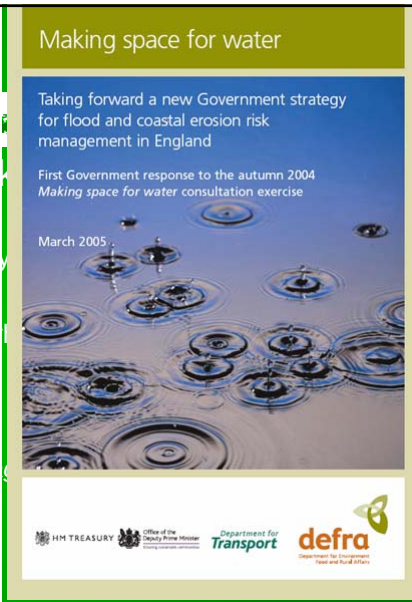
- STrategic REstoration And Management (£1M)
  - Restore the natural form and processes to provide the river habitat required by the target species
  - Selected demonstration sites (novel techniques, etc)
  - To promote long term restoration by local partners
- Enhancing public awareness of the importance of the river and catchment.
  - Local 'ownership' of the river
  - Future interest, understanding and commitment
- Living River Project (£1M)
  - Matching bid for wider biodiversity, access and interpretation throughout the catchment. Raising awareness of the river and its importance to people.



sultation
er Services act

North London RR Strategy

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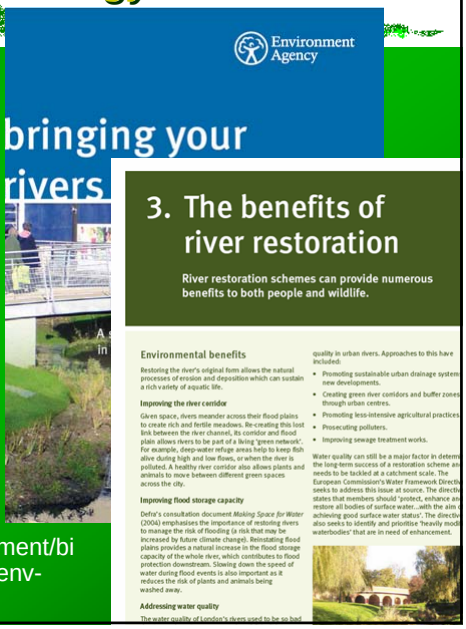
Launched this year by the Mayor of London's Office.

Targeting strategic planners and local authorities

Promoting the social, economic and environmental benefits of better rivers in the capital

Impetus for a City of London demonstration project.



http://www.london.gov.uk/mayor/environment/biodiversity/docs/restoring-rivers-nlondon-env-agency.pdf

'Whole River' Restoration Plans

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England and Wales

- 44 rivers (inc. SAC), total length 2509km
- Bring into 'favourable condition' to conserve the habitat integrity supported by the river type [chemical, physical and hydrological targets]

- Physical target setting (EN & EA)
  - Significant modification from natural conditions
  - River restoration planning
    - a challenging 'vision' of desirable restoration measures, removing constraints to achieve characteristic habitat form and function.
  - Two trial plans underway R. Wensum, R. Beult

Future - Issues and Challenges

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- Long term funding and support
  - No direct mechanism for funding (piggy back!)
- Urban expansion vs. the natural environment
  - Floodplain development & 'burden of proof'
- Integrated policies and integrated thinking
  - Many conflicting policies and no clear path
- Scientific appraisal of benefits and justification
  - Many techniques implemented 'in good faith' without substantive evidence. Post project appraisals are lacking.

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Conclusions

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- River managers working with, not against, the natural system (aiding recovery)
- Restoring the ability of a river to function naturally now has EU policy backing (WFD)
- Large scale demonstration projects can help develop scientific and professional expertise, and give confidence to policy makers and the public
- Planning at the catchment scale is essential to maximise the impact of any site or reach scale works

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Support networks

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- National Centres (RRC, CIRF), Universities, NGO's and Government Agencies
  - In depth understanding within national constraints
- European Centre for River Restoration
  - Encouragement and support
- Australian RR Centre ??
- Concept for a formal International RR Network

And all of the speakers here at this conference

Thank you