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CYCLEAU PROJECT

‘Working together for the future of our rivers, estuaries and coasts’

www.cycleau.com
Integrating research and decision-making for whole river basin management

• Introduction to Cycleau
  – Overview of the Project
  – Main actions in Cornwall
• Distributed modelling
• Habitat action
• Lessons for Water Framework directive delivery
The Cycleau venture: an overview...

Driving force is the Water Framework Directive

- Project life - 3.5 years (2003 - 2006)
- Programme funded by NWE Interreg IIIB
- Budget - 13.1m€, ERDF funding 7.8m€

- Common, transnational, holistic approach
- Innovative ways of managing whole water catchments
- Involving local communities
The Partnership

- 3 states: UK, France, Ireland.
- 11 Legal Partners
- Many other local partners
Cycleau Demonstration Sites

• 11 sites - 8 in South West of UK, 2 in France, 1 in Ireland.
• Project Site = the whole catchment, from source to estuary mouth

Red River
Fowey
Fal & Helford
Teign
Slapton Ley
Axe & Char
Exe
Dart
Moy
Belon
Le Payré
Cycleau Project Philosophy

• The Cycleau Project aims to produce a ‘route map’ methodology for communities wishing to use best practice environmental management.

• Information

• Participation

• Action
Information

- **Catchment Profiling** - to identify, collate and analyse what information is available on each catchment.

- **Risk Assessment** - to assess the impact and likelihood of events and activities that could prevent the achievement of Cycleau objectives within the catchment.

- **Targets** - to identify targets which are realistic, relevant, achievable and measurable - linked to the information collated in Catchment Profiling and Risk Assessment.
Participation

• What do people think about catchment or water management?
• How can they become more involved?
• Development of tools to raise public awareness
Action

- **Physical Processes** - to understand how river and estuary dynamics work (e.g. sedimentation).

- **Diffuse Pollution** - to develop methods to mitigate pressures from agricultural, maritime and industrial activities.

- **Acute Pollution** - to develop a methodology for planning the control and management of acute pollution incidents (e.g. oil spills).

- **Habitats** - to mitigate the impacts of development and increase environmental carrying capacity (ecosystem functioning).
Cycleau methodology
- Checklist

- Catchment Profiling – what have we got? what is it like?
- Risk Assessment – how and where is it under threat?
- Target Setting – how do we measure changes?
- Stakeholder Participation – is everyone involved?
- Physical Processes – what is happening and where?
- Acute Pollution – how do we manage the risks?
- Diffuse Pollution – can we reduce the risks?
- Habitat Action – can we improve ecosystem functions?
Cycleau in Cornwall

Catchments
- Fowey Estuary
- Fal Estuary
- Helford Estuary
- Red River
The Cycleau Cornwall team

- Loveday Jenkin – Project Manager
- Dave Watkins – Information Officer

Community Facilitators:
- Jacque Merrick – Red River (KCC)
- Sangeeta Taylor – Fal and Helford (CCC)
- Annabel Keast – Helford (FWAG)
- Jane Richards – Fowey (FHC)
Red River

The Red River has been associated with tin and copper mining for centuries. Its waters are heavily contaminated with metals and for much of its length it has been canalised.
Red River Actions 1
Diffuse pollution

Use of a pilot passive treatment plant to demonstrate removal of metals (Zn, Cu) in the River from diffuse sources using iron-rich mine water (with the Environment Agency).
Red River Actions 1
Habitat creation

The project has enabled spin-off habitat improvements, much to the delight of the public / stakeholders.
Red River Actions 2

Habitat creation
Regeneration of a coastal sand quarry as a mosaic of sand dune and wetland habitats. Enhancement of adjacent floodplain wetland.
River Fowey

The River Fowey originates high on Bodmin Moor and flows across the uplands of the moor descending through farmland and scattered villages to the important commercial port of Fowey at the mouth of the estuary.
Fowey Actions 1
Physical processes

Removal of sand and reducing the rate of sand input into the upper catchment (with the Environment Agency).

Before

After
Fowey Actions 2
Physical processes

Two year study of rate and quantity of sediment inputs into the estuary from the upper catchment, both suspended solids and base load (with Fowey Harbour Commissioners).
River Fal

The **River Fal** catchment starts at Goss Moor and passes through farmland, heathland and china clay mining areas before emptying into the Fal Estuary, a Special Area of Conservation (Natura 2000).
Fal Actions 1
Physical Processes

Analysis of distribution of TBT contaminated sediments. Identification and demonstration of novel clean-up technologies.
Fal Actions 2

Acute Pollution

Trial of novel movable moored boom system to allow removal of floating oil and avoid its deflection onto sacrificial beaches.
Audit of opportunities for habitat enhancement, restoration and re-creation to improve biodiversity and ecosystem functioning.
Fal Actions 4
Habitats

2 year trial of new mooring system aimed at reducing impact on marine benthic habitats.
Fal Actions 5
Habitats

Demonstration of an outdoor wintering area for cattle with linked wetland treatment system for nutrient and sediment reduction.
Helford River

The Helford Estuary is about 9km long and has numerous creeks running off it, many of which dry to mud at low tide.
Helford Actions 1
Diffuse Pollution / Participation

Employment of a catchment farm advice officer to work with farmers to find ways to reduce diffuse pollution, including the trial of a small value farm grant scheme.
Helford Actions 2
Diffuse Pollution

Sediment budget monitoring and assessment. Quantification of the sources, stores and fluxes of fine sediment in the whole basin (University of Exeter).
Helford Actions 3  
Diffuse Pollution

DNA testing of pathogens (*E.coli*) to identify sources: animal, human, avian. Linking to sediment study and determining impacts on shellfisheries (University of Exeter and Environment Agency).
Distributed modelling and GIS

• Begins with catchment delineation from the Digital Elevation Model

• DEM
  ⇓
  • runoff map
  ⇓
  • river network
  ⇓
  • watershed boundary
Catchments & sub-catchments

e.g.

- What land use is upstream of a particular monitoring point?
- What discharge consents are upstream of oyster beds?
Visualisation

Useful for involving stakeholders.

e.g. “I can see my farm from here!”
Data integration and GUI for hydrologic modelling

- Linking to other software
- Risk assessment

- HEC RAS
- HSPF
- SIMCAT
Habitat Action
Leading the Theme

Development of Cycleau methodology
Using experience in Natural Environment Service, CCC
And Theme Group Workshops and Meetings
HABITAT ACTION PRINCIPLES – the 8 key principles

1. Maintain existing levels of biodiversity
2. Ensure long-term stewardship
3. Public awareness, understanding and involvement
4. Broad vision for the catchment
5. Incorporate all key stakeholders and best scientific thinking
6. Create clear, site specific, measurable, long-term targets
7. Natural processes should be pre-eminent
8. Adaptive management should be employed
Processes – Habitat Action Wheel

1. Plan appropriate timescales

2. Assess appropriate areas and existing conditions

3. Assess objectives and draw up options

4. Consult different groups separately then combine

5. Set up a long-term delivery and management group

6. Monitor implementation and feedback to step 1.

Involve all stakeholders at all stages
Lessons for WFD delivery

- Good science and research is not enough
- Linking information to decision-makers is essential to strategic delivery of actions
- Participation of the community will influence decision-makers
- Interpretation of the science is essential
- Action requires good research, participatory planning and time to do it

Information => Participation => Action
www.cycleau.com

“Bridging the Strategic Gap: Case studies from Cycleau”

Falmouth, Cornwall, United Kingdom

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