



Assessing Alternative Land Use Options in Rural Floodplains: An Ecosystem Services Approach

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Integrated floodplain management



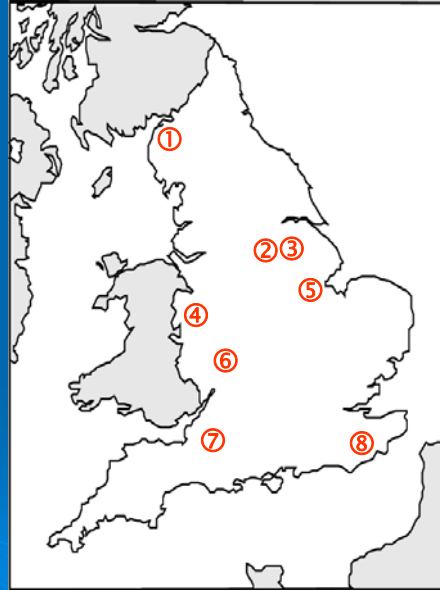
Aim:

To understand the causes, processes and consequences of change in land and water management on lowland floodplains in order to inform future decisions on sustainable management



Study sites

- 8 case study sites in England
- Previously subject to land drainage improvement schemes



Scenario modelling

5 single-objective scenarios developed for each site:

- Scenario 1: Maximizing farm income
- Scenario 2: Maximizing agricultural production
- Scenario 3: Enhancing biodiversity within an agricultural system
- Scenario 4: Enhancing biodiversity outside of an agricultural system
- Scenario 5: Maximizing flood storage



Integration - ecosystem uses, values & indicators

Function	Use	Values	Indicators
Production	Agricultural production	Economic gains from crop & livestock production	Net margin
Regulation	Flood water storage Water quality Greenhouse gas balance	Avoided damage due to flooding, tradeable services	Flood storage capacity Nitrate leaching Global warming potential
Habitat	Maintenance and enhancement of bio-diversity	Contribution to BAP targets	Habitat conservation value Species conservation value
Carrier	Transport Settlements	Location for housing, roads, industry: property and service values	Extra travel costs Flood costs to property
Information	Landscape Recreation	Enjoyment of the countryside and related benefits: willingness to pay	Landscape value Recreation value

Results: Scenario projections for Beckingham

	2006	Max production	Max biodiversity & agriculture	Max biodiversity	Max flood storage	Max income
Mean water table depth (m)	0.5	0.6	0.4	0.1	1.0	0.3
Surface water (days year⁻¹)	35	3	73	99	0	113
Annual flood probability	0.1	0.1	0.5	0.5	0.1	0.6
Land use	Cereals, grazing marsh	Cereals, root crops	Grazing marsh, floodplain meadow	Reedbed, wet woodland, grazing marsh	Cereals	Grazing marsh

Results: Outcomes of indicators

