

## Research questions

- This research aims to evaluate the main factors responsible for the success or failure of existing engineered wetlands on brownfield sites in the UK. It will determine whether these factors can be used to predict the ecological and socio-economic success of created wetlands by assessing the nature and extent of their contribution.
- Can a site succeed both ecologically and socially? Does ecological success influence socio-economic success and vice versa?

## Objectives

- collating a database of information on existing and developing wetland creation schemes on brownfield land;
- evaluating the condition of a subset of these schemes using a new rapid assessment methodology;
- analysing in-depth the properties, features and functioning of a selection of good and bad sites, including the role of ecological, hydrological and social factors;
- developing a new model to be used as a decision support system for improving the design and management of future wetland creation projects.

## Background

The decline in the UK's wetlands is now well understood and a wide range of initiatives is currently being developed to (re)create wetland systems in both rural and urban environments.

An investigation is underway as part of the SUBR:IM programme to establish the relative success of wetland re-creation on post-industrial or other brownfield sites. Such schemes can offer considerable potential for development as wetland habitats, enhancing the ecological, hydrological and social value of these formerly degraded sites.



*Darcy Lever (Bolton) highlighting the importance of considering the ecological and social success of a site*

## Further analysis

Environment Agency predictive system for multimetrics (PSYM) methodology used to analyse ecological success of sites. These techniques directly parallel the approach taken in the Water Framework Directive for (i) comparisons with baseline conditions and (ii) assessment based on multiple parameters.

Social success based on visitors satisfaction and frequency of visits (n~952).

The influence of additional social, environmental and hydrological data statistically determined.

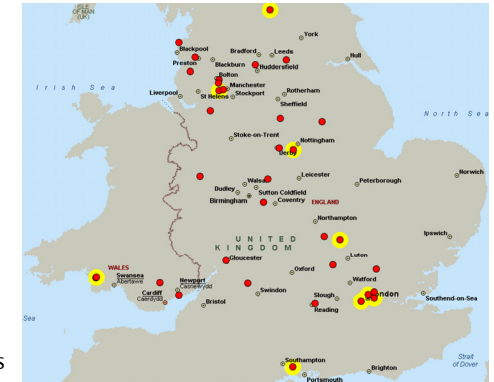


*Combined ecological and social success at 10 sites (initial results)*

## Initial data collection

Database of ~100 wetland creation schemes compiled, 34 chosen for initial data collection using a rapid assessment methodology (RAM). Statistical procedures were used to identify groups of cases, based on this data, to identify field sites for more detailed study.

- Ecological: aquatic plant and invertebrate data
- Hydrological: water chemistry and nutrient status
- Social: visitors and non-visitors surveys on site and online at [www.yourwetlands.co.uk](http://www.yourwetlands.co.uk)

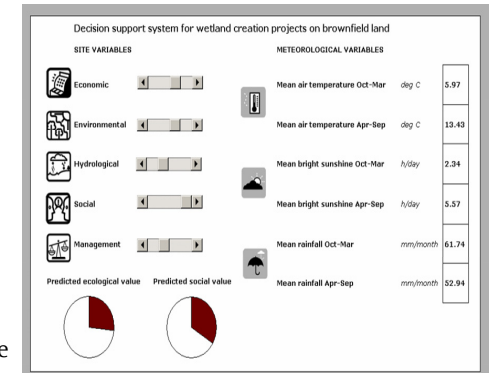


*Map of initial study sites (red) and sites for further analysis (highlighted)*

## Proposed outcome of research

A conceptual model will be created with the benefit of extensive and real data driving regression calculations. Values of variables can be input or adjusted by the user to create a series of 'what if' scenarios to explore the impacts that any management regimes or climate change scenarios might have on the ecological and social quality of the site.

The users can then estimate the cost and resource implications of any changes they are considering making and weigh up whether the changes are desirable from a cost-benefit perspective.



*Impression of decision support tool to aid future wetland creation projects on brownfield land*