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### **Nutrient enrichment of basin fens: options for remediation**

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#### ***Introduction***

Basin fens are small wetlands, often less than 2 hectares, surrounded by land using or producing the plant macronutrients nitrogen and phosphorus. Their interest often lies in being low nutrient environments, such as poor fen (Natura 2000 feature "transition mire"), and they are vulnerable to nutritional enrichment.

Many are Sites of Special Scientific Interest and candidate Special Areas of Conservation. The designation boundaries have been drawn closely around the special interest, as it has proved difficult in the past to judge which additional land might be included to protect the special feature. The outcome is that, unless a management agreement to tackle the pollution source is welcomed by the landowner, little can be done to address the problem and assure favourable condition.

The work was undertaken to scope the extent of the nutrient enrichment problem in basin fens, and set out what remediation options are preferred for each site.

#### ***What was done***

A large body of literature on the processes of enrichment through nitrogen and phosphorus inputs was assessed and summarised, and the role of hydrology in contributing to nutrient enrichment was also reviewed. The review led to two general approaches to mitigation - the 'Prevention' model and the 'Protection' model. Prevention is strategic and ties in with the reduction of diffuse agricultural pollution in priority catchments. Protection includes measures such as the development of vegetated buffer zones to take up nutrients before they enter the fen.

The basin fen resource was identified using FenBASE. The list included 61 sites, mostly in the North West or the West Midlands, and the remainder in the North East and East Anglia. Only one site was identified in Southern England. They were assessed in terms of their general character, potential nutrient enrichment issues and other issues affecting them. Options for remediation were also assessed, and sites were prioritised for action.

Three case studies were presented, and a range of alternative mitigation measures were costed for the farm businesses. A decision-making flow chart is provided.

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## ***Results and conclusions***

Most basin fens studied are vulnerable to enrichment from adjacent or nearby land use. Designation boundaries rarely include sufficient land to enable the powers of the Countryside and Rights of Way Act (2000) to be applied effectively to prevent the enrichment. In most cases, extending the boundary is not the only remediation option, and others might be attempted, like planting up a buffer zone to soak up nutrients. The efficiency of buffer zones in trapping nutrients is not yet well-tested.

## ***English Nature's viewpoint***

Basin fens are an important nature conservation resource within the UK and European series of sites. Diffuse agricultural pollution is one of the major issues affecting wildlife habitat in the countryside, and is being addressed through policy drivers by identifying 105 priority catchments.

## ***Selected references***

ENGLISH NATURE. 2003. Prioritising designated wildlife sites at risk from diffuse agricultural pollution. *English Nature Research Reports*, No. 551.

## ***Further information***

For the full report or other publications on this subject, please contact the Enquiry Service on 01733 455100/101/102 or email [enquiries@english-nature.org.uk](mailto:enquiries@english-nature.org.uk)

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