



Classifying the ecological potential of canals for the Water Framework Directive

Title: Development of a system for classifying the ecological potential of UK and Irish canals

Project Code: WFD61

Who this research is intended for: Government Agencies and Public Bodies

Objectives of the project

The project aimed to:

- (a) Devise a canal classification tool that will be used to classify canal waterbodies by comparing their ecological condition to their expected ecological potential.
- (b) Provide sufficient information to determine the ecological potential of a canal water body based on the relevant biological, hydromorphological and physico-chemical quality elements as defined by the WFD.

Background

Under the European Union's Water Framework Directive (WFD) member states must develop methods to classify the ecological status of their surface water bodies. Such classifications will be used to support operational and surveillance monitoring and to select appropriate programmes of measures for incorporation into River Basin Management Plans.

In the case of artificial or heavily modified water bodies the WFD develops the concept of 'ecological potential' as a parallel to ecological status in natural water bodies. Navigation is recognised within the WFD as one reason why artificial water bodies may be created, or why the hydromorphological characteristics of natural water bodies may be modified.

This report presents the first phase in the development of a system for classifying the ecological potential of canals (i.e. artificial cuts) in Britain and Ireland.

Key Findings

- Under the WFD, the ecological quality of an artificial waterbody is assessed by comparing its current quality with a 'reference' condition of Maximum Ecological Potential (MEP); for canals, MEP is determined by the best available biology, given the level of boat traffic.
- Surveys of macroinvertebrates and macrophytes have been used to develop a classification tool for canals. The available data for macroinvertebrates is mainly recent (post 1990) but macrophyte data is mainly from 1990 or earlier and so may not represent the current state of the canal network. A protocol for new surveys that would provide sufficient data for water body classification is suggested.
- Establishing 'reference' condition is a key step in classification. The project used two approaches to identifying reference sites for invertebrates and one approach for macrophytes. There was a high degree of convergence in the location of reference sites.
- To set environmental standards that will determine classification boundaries, the project looked at the relationships between biological data and physicochemical data. However, it was not possible to reliably determine some classification boundaries due to a small dataset and so the results must be interpreted with caution.
- Some highly invasive species have colonised and spread via the canal system. Alien species are thus integrated into classification via a short list of high risk species that, if present in a waterbody, preclude the achievement of MEP.
- Classification of ecological potential also includes an assessment of hydromorphology by considering what measures have taken place to mitigate boat traffic impacts. A draft protocol is suggested which compares the observed score at a site with that which might be expected if all reasonable mitigations were in place.
- A method is presented which combines information from different quality elements (biology, physicochemistry, alien species and hydromorphology) to provide an overall classification of ecological potential of canal water bodies, consistent with the 'one-out all-out rule'.

Key Recommendations

- There is a pressing need to resolve:
- Uncertainty associated with sampling (which currently makes it impossible to offer confidence of class)
 - Lack of data for Scotland and Ireland. Data was collected during 2006; reference sites and assessment needs to be re-evaluated using this new data

Next Steps

Phase 3 of this project, which will be commissioned by SNIFFER in Autumn 2008, aims to:

- Produce a revised and finalised version of the tool based on data collected during 2006
- Refine and test the method for assessing hydromorphology of canals

Further Information

Copies of the research outputs are available for free download from www.sniffer.org.uk (search on 'Project Search' WFD61)

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10 October 2008

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