science summary

Environment Agency

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SCHO0706BLFE-E-P

Development & mapping of WFD ecological status classes to RAM river flow objectives

Science Summary SC050019/SS

This project is one of four looking at how the Environment Agency currently manages the ecological aspects of water abstraction licensing. The aim of this project was to investigate how we can measure the ecological effects of changes in river flow by looking at aquatic plant communities. We developed a database to link sites currently used for water quality assessments with those used for ecological assessments and used this to identify sites where flow is the only significant factor influencing ecology. We are using this work to revise our strategies for managing water abstraction and aid the implementation of the Water Framework Directive (WFD).

The Environment Agency is responsible for managing water resources in England and Wales. One of the ways this is done is through licensing water abstraction. To help us provide a consistent approach to managing local water resources and balancing the needs of water users and the environment, we developed Catchment Abstraction Management Strategies (CAMS). CAMS includes , the Resource Assessment and Management (RAM) framework, we use to assess a river's suitability for water abstraction based on a number of hydrological criteria, including river flow. We then set river flow objectives (RFOs) to minimise the impact of changes in flow on a river's ecology.

RFOs have worked well as a basis for assessing water availability status for the CAMS produced to date. The approach may also be useful in making ecological assessments for the WFD, but for this to be effective, we need to link sites where we have RFOs with the criteria that will apply under the WFD.

This project has:

1. Developed a database to link sites currently used for river General Quality Assessments (GQAs) with the abstraction assessment sites used for CAMS.
2. Produced a summary of how artificial influence at these sites can be measured, including hydrological, morphological and chemical factors. This includes effects of deviation from natural flow estimates, urbanisation and peak flow screening variables based on the hydrological classification of river water basin sub-catchments
3. Identified a sub-set of GQA sites where flow is the only significant influence on the ecology, to investigate correlation between ecological flow stress and deviation from natural flow. Unfortunately no clear patterns emerged.
4. Assessed ecological flow sensitivity by developing a system to categorise river typology based on the predicted aquatic plant (macrophyte) community. This typology has been mapped onto all GQA sites nationally and will form the basis of the new environmental weighting within RAM.

This summary relates to information from Science Project SC050019, for more information regarding the outputs of this project contact the project manager.

Internal Status: Regions
External Status: Public

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This project was funded by the Environment Agency's Science Group, which provides scientific knowledge, tools and techniques to enable us to protect and manage the environment as effectively as possible.

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