

English Nature Research Report 620

Development of eco-hydrological guidelines for wet heaths - Phase 1

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Introduction

Many European Sites and Sites of Special Scientific Interest support habitat types which have some dependency on water resources, although our understanding of the specific eco-hydrological requirements of these habitats is often limited. A collaboration between English Nature, the Countryside Council for Wales and the Environment Agency is progressing a programme of work to further our understanding of the eco-hydrology of a range of such habitats. Work initially focussed on mire and wet grassland habitats and developed an approach to conceptualising water requirements termed the 'Wetland Framework'. Having recognised the value of this approach for other wet habitats, this report presents the results of a review of the eco-hydrological requirements of wet heathland habitats, and where possible gives 'interim' advice for establishing eco-hydrological guidelines to assist casework.

What was done

English Nature commissioned a review and evaluation of information on the eco-hydrology of wet heaths in Britain in order to assess how far it is currently possible to identify their water supply mechanisms and preferred regimes for water and nutrients. There were three main elements of the work:

1. A review of published and unpublished eco-hydrological information on wet heaths.
2. A critical evaluation of the reviewed information
3. Development of a preliminary conceptual framework for 'how wet heaths work'.

The report also considers the influences of climate, water supply mechanism, nutrient regime, microtopography and management.

Results and conclusions

The report presents a sketch that attempts to conceptualise "how wet heaths work". Heath type is partly determined by climate, and the soil water-regime is influenced by temperature and rainfall. Heath types are clearly arranged along an axis from Continental to Oceanic climates, as well a second axis relating to the degree of soil waterlogging.

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Wet heath sites were divided into three broad eco-hydrological categories: a) those with impeded drainage; b) small depressions on undulating land; and c) those with clear soligenous effects. Suggestions are given for appropriate approaches for characterising the water regime of each category. The classification was supplemented by an assessment of variation in response to nutrient regime and microtopography.

Interim ecological targets were derived from the critical assessment and presented in two preliminary summaries: a) a diagram showing how wet heaths are distributed in relation to soil type, soil moisture and management; and b) a tabulation of wet heaths by the landscape situation within which they occur, and their ecological type (pH and soil fertility).

English Nature's viewpoint

The review represents the first step in establishing robust eco-hydrological guidelines for wet heath habitats. As there is currently insufficient quantitative data to construct a full typology of wet heaths by Water Supply Mechanism (Wheeler & Shaw, 2001) or SEV (Gowing et al., 2002), further work is needed. This would preferably use a network of sites with hydrological instrumentation, to give confidence in the conceptual models suggested here. In the short-term, the information presented will guide thinking about the eco-hydrological requirements of wet heathlands, for the purposes of casework and the development of future research.

Selected references

BROMLEY, J. and others. 2004. *Sensitivity of water levels and mire plants*. Final report of CEH project C01528. NERC Centre for Ecology and Hydrology

GOWING, D.J.G. and others. 2002. *The water regime requirements and the response to hydrological change of grassland plant communities*. Final report for DEFRA-commissioned project BD1310. Silsoe: Cranfield University.

WHEELER, B.D. & SHAW, S.C. 2001. *A wetland framework for impact assessment at statutory sites in Eastern England*. Environment Agency R&D Note. W6-068/TR1 and TR2.

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

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