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A COMBINED MONITORING AND MODELLING APPROACH TO MAXIMISE THE IMPACTS OF AGRI-ENVIRONMENT PAYMENTS AT A NATIONAL SCALE

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ABSTRACT

Planning and delivery of integrated environmental, social and economic outcomes from agri-environmental payments to land owners and farmers have rarely been attempted at a national scale. Wales has launched one of the most ambitious projects ever within the EU to frame both delivery of payments and ongoing integrated assessment of outcomes within an ecosystem framework. The inter-dependency between outcomes is being explored through a major integrated rolling monitoring programme taking co-located measurements of soil, vegetation, land use, soils, water, birds and pollinators, GHG fluxes, landscape and historic features and farmer / landowner surveys using a stratified sampling approach across the country. Modelling is being used to upscale and integrate findings and to explore the extent of co-benefits and trade-offs between outcomes. Work is ongoing to identify the social and economic constraints which could limit scheme uptake and their spatial distribution. Initial modelling results in the first year of the monitoring and evaluation programme quantified potential benefits from a range of management options offered under the subsidy scheme. At a national scale these ranged from: 1 – 9% improvement in flood mitigation; 5 – 10% reduction in greenhouse gas emissions; increased accessible land for 'generic' broadleaf focal species by 3 to 12%, increased national carbon storage by ca. 0.4%, and reduced eroded soil and phosphorus delivery by up to 15% due to reduced connectivity of erodible land to rivers and lakes. Results at local / farm scales could be as high as 80% in some locations. A 75% improvement in habitat for selected 21 indicator plant species was also projected. Running the payment and assessment activities simultaneously, in combination with an integrated monitoring programme combined with a suite of biophysical and landscape quality models, allows for adaptive management as the scheme progresses.



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