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An up-to-date cost benefit analysis of English agri-environment schemes: their impact at the landscape scale and the cost of adequate monitoring

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Introduction

Four years ago in Darwin a summary of English agri-environment schemes and their effectiveness was presented to IALE (Carey et al 2004). Since then there has been a well mannered debate on the efficacy of schemes across Europe that in the end depended on whether you think the 'glass is half empty or half full'.

The new Environmental Stewardship scheme in England has the slogan "Look after your land and be rewarded". The scheme is split into two main parts in the 'Entry Level Scheme' (ELS) and the 'Higher Level Scheme' (HLS). The ELS is designed to attract 85% of all farmland. By December 2006, there were approximately 25000 agreements covering 3.5Mha (34%). The farmers are asked to reach a points target (30) for each hectare of land where the points are gained for carrying out different and basic management prescriptions for things such as the creation of wildflower strips in arable land, hedgerow management, and over-wintering stubbles for birds. The Higher Level Scheme is more like the old schemes where high quality land is targeted and the aim is to protect it and enhance if possible.

At Monks Wood we have been gathering data by experimentation on the efficacy of different management prescriptions that will be given to the farmers. By applying these results to the uptake figures for the new schemes we aim to predict the impact of the new schemes across the countryside. As this abstract is written the data on uptake for different prescriptions are not yet available.

Monitoring any project or programme against its objectives makes perfect sense. However, in the world of conservation and government policies it is seldom done adequately. Why is that? The simple answer is that it has not been budgeted for adequately. Recently the EU fifth framework project EASY devised and tested a monitoring programme for agri-environment schemes. We present how much the EASY methodology would cost to adequately assess change.

The Cost of Monitoring – a fictional example

The region of Allsplat (total area 20,000 km²) follows EU directives by designing a scheme to protect the treasured landscape and wildlife. Most of the wildlife exists in small areas of semi-natural habitat in amongst the intensive agriculture. Like England we assume there are two levels, one for ordinary land and one for rare species and habitats. The European Union requires Allsplat to monitor the success of the scheme but does not say how, or give any money to help do it (Carey 2001). The scheme paid out an average €80 per hectare of managed land. The simplest and cheapest objective to monitor was uptake of the scheme and to know how the farms were geographically located so a GIS was designed. It was found that 50% of all farms were in the scheme and that overall 10% of all land was under scheme prescriptions, at an annual cost of €16M. The uptake analysis and GIS cost €150K per year.

To monitor the effectiveness of the scheme requires: a baseline survey; and a monitoring scheme of farms in the scheme and outside of it that will detect change in landscape and wildlife that can be attributed to each of the prescriptions. A random sample of all agreements will not detect rare species (as shown by Kleijn et al 2006) because they are rare. We will show that for a rare weed that occurs on 5 farms the probability of detecting it is $\approx 8 \times 10^{-5}$. This is obviously not an adequate probability to say anything about the efficacy of a scheme. Targeted monitoring of various habitats in UK has shown that 200 plots can detect a suite of rare plant species (Walker et al 2006).

If the aim is to show that habitats are getting closer to the pristine condition of Priority Habitats power analysis is required to work out what sample size is required to achieve the desired level of change detection. Critchley et al 2002 showed a sample of 1000 sites was required. To this number of sites a control of 1000 should be added in fields not in the scheme following the protocol suggested by Kleijn et al (2006)

To detect rare species and detect whether habitats are moving towards a pristine state would require a sample of 2200. If each plot is visited twice in five years (the bare minimum to detect change) and the cost of each visit is €300 then the cost of just collecting the data will be €1.3M. Add to this the cost of project management, analysis and report writing, €0.5M and 5 years of uptake analysis and GIS, €0.75M then the total monitoring cost for the wildlife objectives would be \approx €2.55M. Socio-economic and landscape monitoring would also be required e.g. as carried out by Carey et al 2003 cost €4K per farm. A sample of 500 would therefore cost €2M. Total payments for the scheme over 5 years in Allsplat would be $5 \times \text{€}16\text{M} = \text{€}80\text{M}$. The monitoring budget is therefore 5.6% of the total payments to farmers, reasonable but expressed as a cost would annoy farmers and is probably outside the reach of most regional governments who have hospitals, schools etc. to pay for.

There are 100 or so real regions in Europe the size of the fictional one and so the cost of an adequate monitoring programme would be €455M over 5 years. Is there anybody out there who has ever heard of an ecological monitoring programme getting anything close to that from governments?

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