



Little Bustard: case study for modelling conservation costs

A new model, named OUTOPIE could help design more effective agri-environmental schemes. The model links the farm, field and landscape levels to allow a more accurate assessment of the costs of enrolling specific fields in conservation schemes. Using the model, the researchers were able to assess the cost-effectiveness of different policies for the conservation of the Little Bustard bird (*Tetrax tetrax*) in France.

Agricultural intensification and land use change in Europe have contributed to a loss in biodiversity and are thought to be responsible for the steep decline in Little Bustard numbers (there is now a 45 per cent chance that the Little Bustard will become extinct in the next 30 years). Agri-environmental policies, integrated under the umbrella of the Common Agricultural Policy¹ since the 1990s, have sought to halt and reverse the decline in European biodiversity and the most seriously threatened habitats are now protected under the Natura 2000² programme.

Conservation policies tend to be incentive driven because policy makers do not have sufficient information on the costs of participating in agri-environmental schemes for different types of farms. A newly developed model now allows policy makers to consider costs at the farm level by taking into account technical and administrative constraints, as well as farmers' tendencies to seek to maximise profits. This model was used to estimate the costs to farmers associated with different agri-environmental schemes designed to support efforts to conserve the Little Bustard.

Focusing on a stylised representation of the Plaine de Niort (Poitou-Charente) Natura 2000 site in France, the researchers explored different approaches to encourage farmers to adopt Little Bustard friendly conservation measures. These require a non-aggregated distribution of extensively managed grasslands across the area modelled.

Randomly distributing the extensively managed grasslands across the studied area would be the most effective conservation measure, but was also the most costly because it required equal participation from both low cost (mixed dairy farms on less fertile land) and high cost (farms on deep fertile soil growing cash crops) farms. If costs were reduced by including more low cost farms conservation, land became aggregated and less suited to the Little Bustard.

However, first simulations showed that a relatively simple two payment scheme which did not require detailed knowledge of individual farmers could be devised. For the stylised study area, this would mean a payment of €810 per hectare for up to 10 per cent of the farm area. The payment for any additional fields enrolled in the scheme would drop to €450 per hectare. Indeed these figures need to be confirmed by additional studies. The researchers believe this would encourage most farmers to enrol at least a small amount of land into the scheme and would lead to a spatial distribution of grasslands that was 'almost suitable' for Little Bustard conservation.

The model can be adapted to model agri-environmental schemes aimed at conserving other species that require distributed habitats.

1. Information on the Common Agricultural Policy is available from: http://europa.eu/pol/agr/index_en.htm

2. For information on Natura 2000 see: http://ec.europa.eu/environment/nature/natura2000/index_en.htm

Source: Bamière, L., Havlik, P., Jacquet, F. *et al.* (2011). Farming system modelling for agri-environmental policy design: the case of spatially non-aggregated allocation of conservation measures. *Ecological Economics*. 70: 891-899.

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Theme(s): Agriculture, Biodiversity

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To cite this article/service: "[Science for Environment Policy](#)"; European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.