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A review of approaches to developing Lowland Habitat Networks in Scotland

(ROAME No. F02AA102/2)

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Background

Habitat fragmentation, coupled with habitat loss and degradation has had a detrimental impact on the biodiversity of lowland agricultural landscapes in Scotland, especially over the last 50–60 years. Site-protection measures alone are insufficient to conserve biodiversity and a wider landscape scale approach is needed which fosters connectivity between habitats through the development of ecological networks.

Current ecological theory and approaches to landscape evaluation for biodiversity are reviewed and tools offered for developing habitat networks in Scottish lowland agricultural landscapes, focusing at the sub-catchment scale (~200km²).

Main findings

- Two contrasting ecologically-based approaches to landscape evaluation can be identified: the first focuses on landscape structure (eg metrics); the second on landscape processes (eg species dispersal and habitat usage).
- Focal species modelling integrates both structural and species-based approaches and is recommended as a practical, ecologically robust method for constructing and evaluating habitat networks. Sources of data on lowland habitats and species are identified and examples given of ecological profiles for focal species.
- Landscape Character Assessment (LCA) is recommended as a tool for assessing the aesthetic and visual impacts of network development but needs to be combined with a Historic Land use Assessment.
- Computer-based visualisation packages are available to help with communicating LCAs.
- Work is required to integrate the LCA boundaries with Natural Heritage Future boundaries (the latter provide the ecological framework for networks).
- A GIS-based approach to assessing recreational impacts on habitat networks is proposed involving analysis of buffer distances around access and recreational facilities.
- Network construction and analysis tools which combine ecological, cultural and aesthetic attributes can be developed but need to be tested within case-study areas.
- A number of factors may constrain the practical implementation of habitat networks such as climate change, cultural resistance and the economic uncertainties facing the agricultural sector.

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