Monitoring Farm-Scale Habitat Diversity: A practical methodology for scientists and stakeholders

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Abstract

Farm habitat diversity is an important component of biodiversity. Its promotion may act as a universal measure for restoring and conserving agricultural biodiversity (Benton et al., 2003). However, despite huge monetary investments at the farm scale, e.g. through Agri-environment schemes (AES), little is known about farm level habitat diversity. Baseline information is required.

This paper introduces a methodology suitable for measuring and monitoring habitat diversity at the farm scale. It also highlights the challenges. The research formed part of the EU FP7 project BioBio (www.biobio-indicator.org; Herzog et al., 2012). Firstly, the extent of the farm and what constitutes farm habitat must be clearly defined. Careful decisions are essential as a farm is a legal/economic rather than ecological unit, consists of various farmed (e.g. arable fields) and unfarmed habitat (e.g. hedgerows) and is often non-contiguous. Here, clear guidelines were identified for both the definition of a farm and farm habitat. Secondly, an easy, practical and

repeatable mapping method applicable to the farm scale must be applied. Here a standardised and tested mapping procedure for European landscapes (EBONE, www.ebone.wur.nl) was adapted to the farm scale (Dennis et al., 2012). Finally, indicators need to be selected and calculated to survey and monitor habitat diversity. Such indicators must be appropriate at the farm scale, scientifically sound, geographically appropriate, and both relevant and useful for stakeholders and scientists. Here, an interactive two-step indicator-filtering approach was applied. The first step consisted of an exhaustive literature review and evaluation of potential indicators by scientist working groups (Dennis et al., 2010). Indicators that passed the scientist filtering process were submitted to a Stakeholder Advisory Board who selected a set of candidate indicators (Pointereau and Langevin, 2012). In a second step the indicators were tested in 12 European case studies. These indicators were then further evaluated and those unsuitable discarded (Jeanneret et al., 2012). Following a further audit by the Stakeholder Advisory Board a core set of habitat indicators was developed (Table 1). Here the indicator core set enabled baseline data on habitat diversity to be gathered at the farm scale. They also identified differences in habitat diversity between farms, farm types and case study regions.

Table 1: Farm-scale habitat indicators which have passed scientific and practical testing as well as the stakeholder audit.

Habitat Diversity Indicators	
HabRich	Habitat richness
HabDiv	Habitat diversity
PatchS	Average size of habitat patches
LinHab	Length of linear elements
CropRich	Crop richness
ShrubHab	Percentage of farmland with shrubs
TreeHab	Percentage of farmland with trees
SemiNat	Percentage of semi-natural habitats

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