Monitoring landscape structure and elements using LUCAS field databases versus remote sensing

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Habitat fragmentation is widely recognized as one of the major causes for the loss of biodiversity. Landscape permeability of cultural landscapes determines largely the spatial cohesion of core areas for specific species groups. Landscape permeability is especially related to the land use (intensity) and the landscape elements present within a landscape. The biological value of agricultural landscapes is also determined by its landscape elements. Linear features, such as hedges and lines of trees are important habitats for species in the countryside which are not reflected in Natura 2000 habitats. However, actual information on landscape structure and its elements is not easy accessible for many regions in Europe. Therefore, our aim is to find suitable methods to estimate the amount of woody linear elements across European agricultural landscapes. In this paper we assess and discuss different methodologies through which information about landscape structure and its elements can be obtained: i) by systematic (locational) field surveys such as the LUCAS survey (Eurostat), ii) by area sampling methods that make use of field surveys (e.g. BIOHAB/EBONE method) or iii) very high resolution satellite data (e.g. IKONOS or Quickbird) or iv) by the use of landscape structure as derived from e.g. Landsat satellite imagery as a proxy indicator for the amount of landscape elements. The study indicates that although the last method is an indirect method it suits very well the purpose for a European assessment, especially if it is implemented in combination with area samples of in-situ data across Europe for calibration.