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# Adaptation of a crop composition and configuration analysis method to european agricultural landscapes

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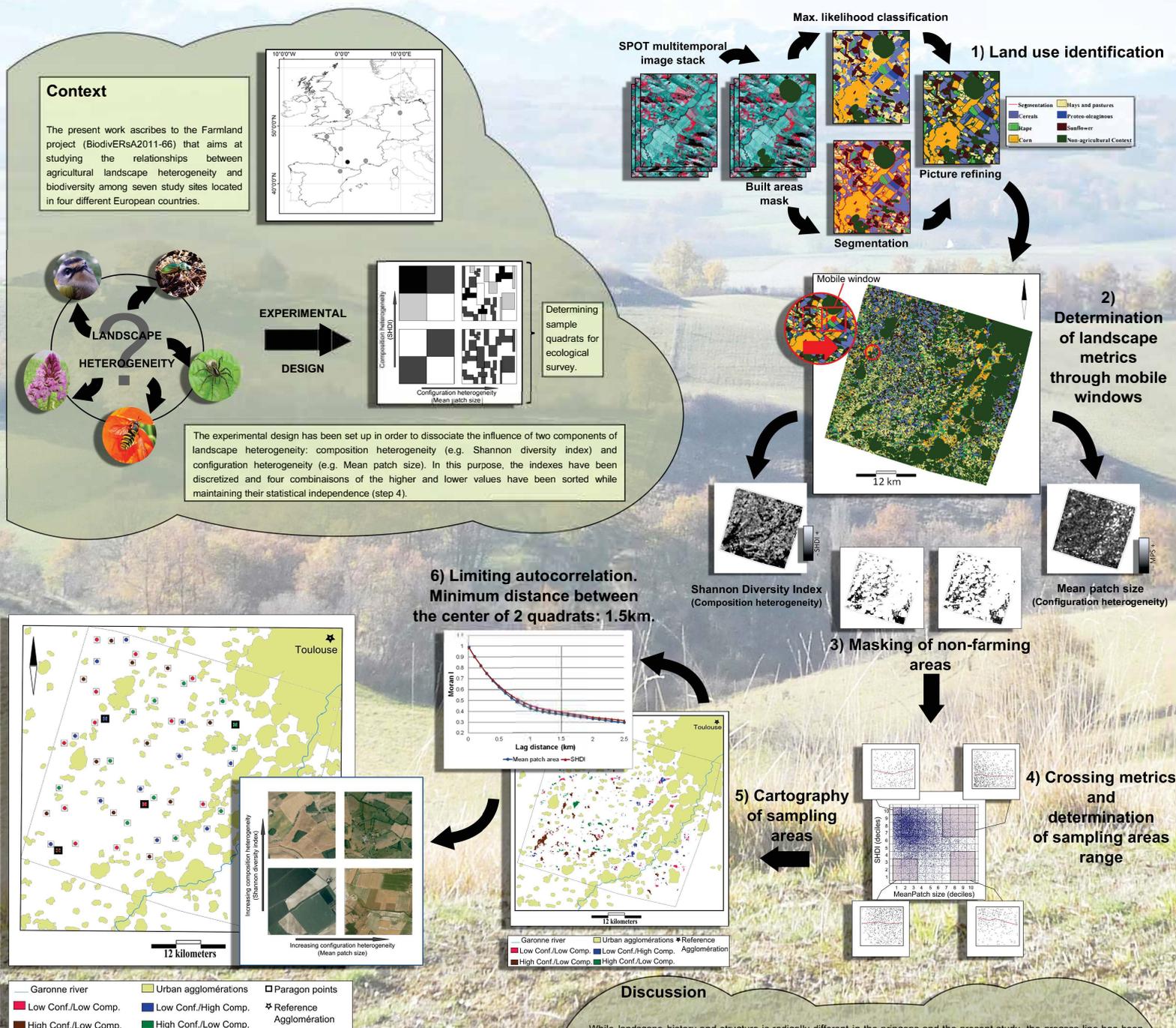
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## Introduction

Agricultural landscapes approximately occupy a large part of available land surface and as such constitute a keystone in biodiversity conservation programs. In return, biodiversity contributes to production through ecosystem services as pollination or pest control. However, recent studies also suggested that new policies and modifications in agricultural practices in order to promote biodiversity must be accepted by the different actors of the rural space and incorporated in existing practices. In this perspective, deciphering the role of agricultural landscape heterogeneity in maintaining biodiversity may be a promising research direction. The FARMLAND project precisely aims at giving an answer to this questions combining tools from geomatics, remote sensing and geostatistics associated to ecological research on biodiversity. Based on spatial indexes from landscape metrics, this work proposes a mapping method for sampling quadrats and constituting an experiment design in order to dissociate the influence of composition (the number and probability of occurrence of the different cover types) and configuration landscape heterogeneity (the spatial display of cover types) on biodiversity. After the sampling of quadrats in each of the 7 European sites, multi-taxa biodiversity records and ecosystem services identification will be undertaken.

We present here the different steps (1 to 7) of the adaptation of the initial methodology from a previous study (Pasher *et al.*, 2011) to the French site "Vallées et Coteaux de Gascogne" that constituted a test zone for the other European sites.



## Discussion

While landscape history and structure is radically different in the principles and the present study, the process line has been adapted with success. The main innovations consists in taking into account most of land use and land cover classes to represent agricultural landscape complexity and masking urban agglomerations and small villages. Indeed, the classification process can easily confound hays and pastures with grass around habitations. The use of a buffer zone that takes into account the size of the agglomeration greatly improves the process line and prevented errors in the final sampling step (i.e. a quadrat in an urban agglomeration).

Though the original procedure has been adapted entirely to our site, the whole project will require the coordination of the different laboratories involved in the project in order to fit with the peculiarity of each study site. The kick-off meeting of the project that will take place in spring 2012 will be the opportunity of such a focus.

**7) Result: Sampling of 48 quadrats (1km<sup>2</sup>) corresponding to 4 combinations of composition and configuration heterogeneity modalities in landscapes accounting for 60 to 90% of farming surface.**