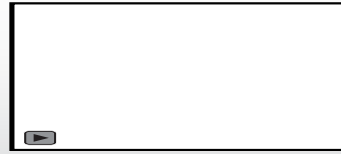




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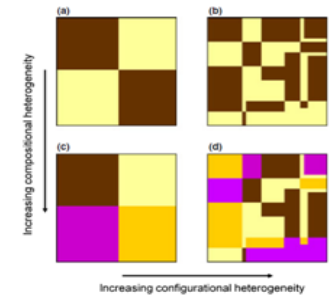
How does landscape structure affect ecosystem service supply?

OPERAs Scotland seminar, 2 December 2014, Edinburgh

Willem Verhagen, Alessandro Gimona,
Astrid van Teeffelen & Peter Verburg

The importance of landscape structure

- Landscapes are often used to supply a single ecosystem product, such as food → at the cost of other services, and, often at the cost of the service supply in the future (degradation). → Call for multifunctional landscapes.
- The importance of landscape structure for supplying multiple services is poorly understood.
- Landscape structure can be divided into two parts:
Composition: the diversity in land cover types
Configuration: the spatial pattern of land cover types



Source: Fahrig et al. (2011)



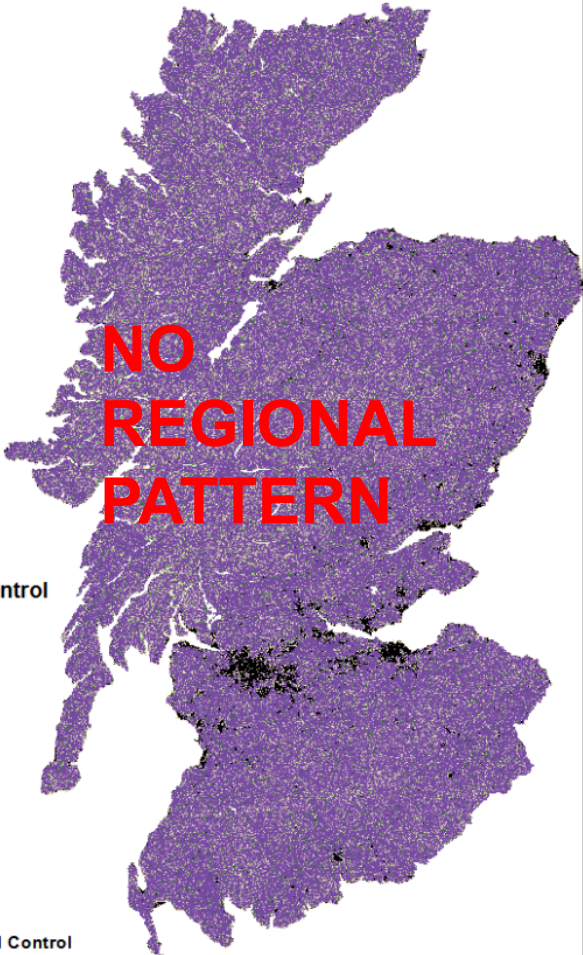
Objective and approach

- Assess the importance of landscape structure for ES supply. Distinguish between effects of landscape composition and landscape configuration on ES
- Mapping 5 ES for Scotland comparing a composition and configuration model.
- Configuration effect based on literature review and existing ES indicators
- Example flood control: configuration model accounts for number of upstream cells



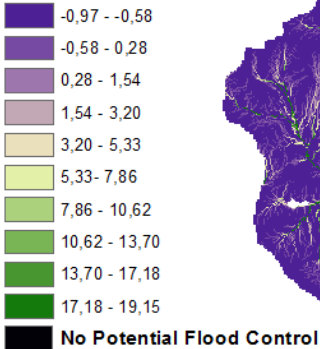
Preliminary results Flood Control

Configuration Effect Flood Control



CLEAR PATTERN WITHIN SUBWATERSHED

Change in Flood Control



Next steps

- Mapping procedure applied to 5 ES (flood control, pollination, recreation, erosion control and nutrient retention)
- Study (dis)similar responses of ES to landscape structure
- Linking changes in ES supply at the landscape to explanatory variables
- Translating outcomes for landscape management: In what landscapes does heterogeneity make a difference, for what services, and how much, and how can landscape management promote multifunctionality?



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