

Insect community changes in Swiss agricultural landscape: a 25-year resampling

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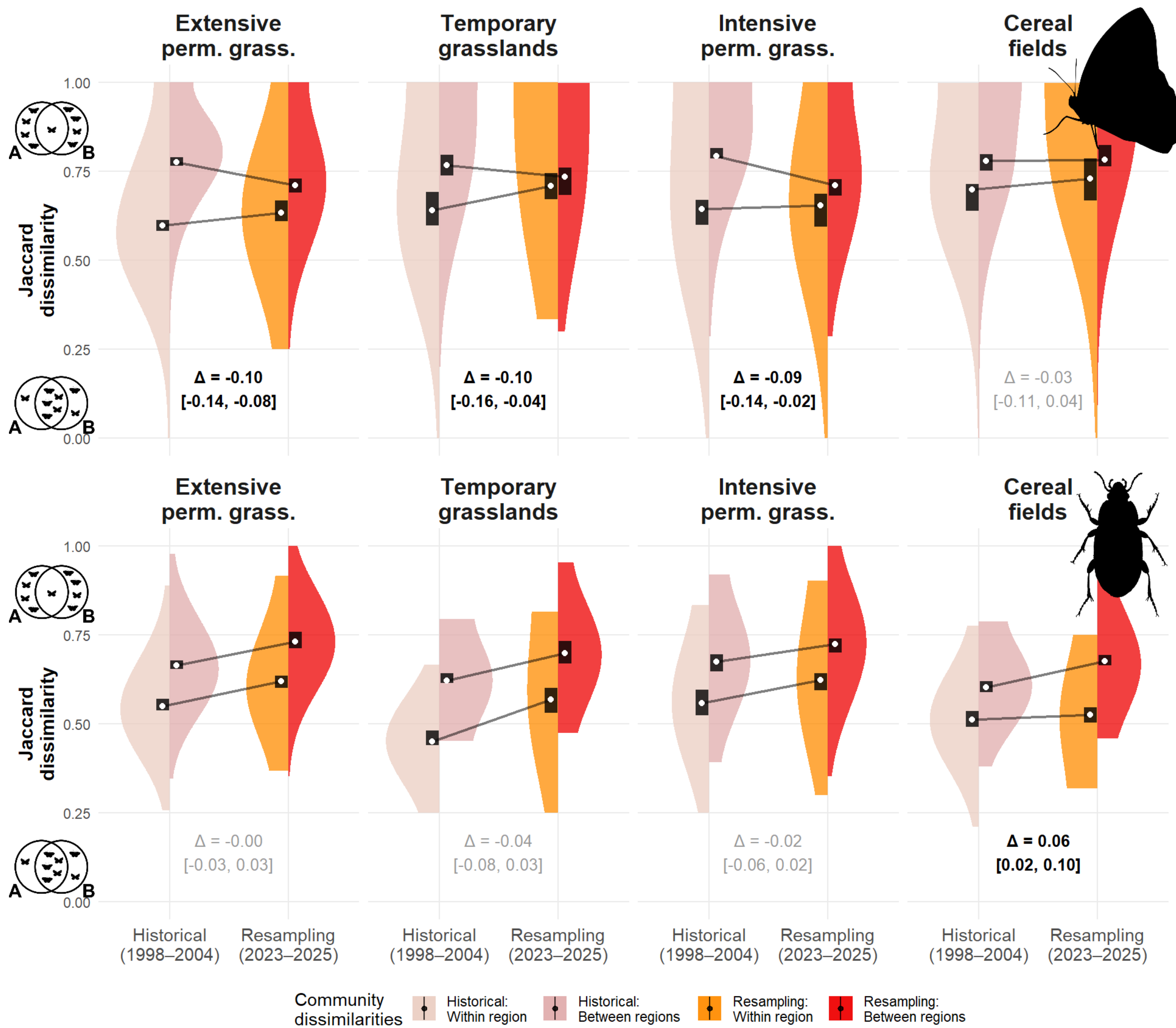
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Agricultural landscapes have been reshaped by **land-use intensification** and **habitat simplification** over recent decades, with potentially far-reaching consequences for **insects**.

Here, we ask whether **environmental changes** have led to **biotic homogenization**, **reducing the spatial organization** (i.e. beta diversity) of insect communities across major farmland habitats.

KEY FINDINGS

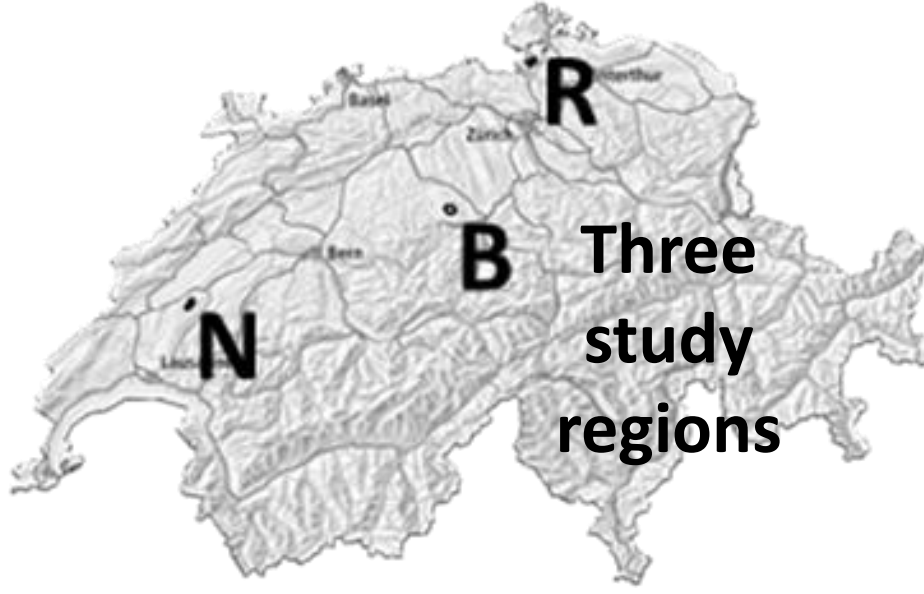
Butterflies: 6'169 transects • 31'628 individuals • 56 species
Carabids: 5'953 samplings • 365'610 individuals • 149 species



Butterfly communities became **less spatially structured** across Swiss grasslands over the last 25 years, indicating **increasing community homogenization**. In contrast, carabid communities remained largely stable, except in cereal fields where spatial differentiation increased.

METHODS

The Swiss **INSECT** project resampled historical insect surveys conducted in **1998–2004** during **2023–2025** using identical sampling protocols.



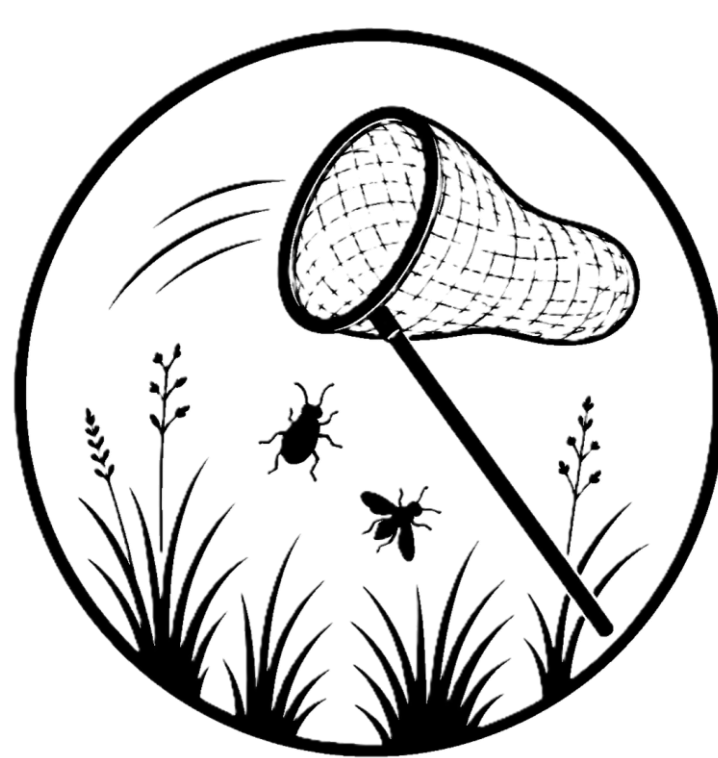
Plots ($n_{tot} = 337$) were (re-)sampled using:



Pitfall traps

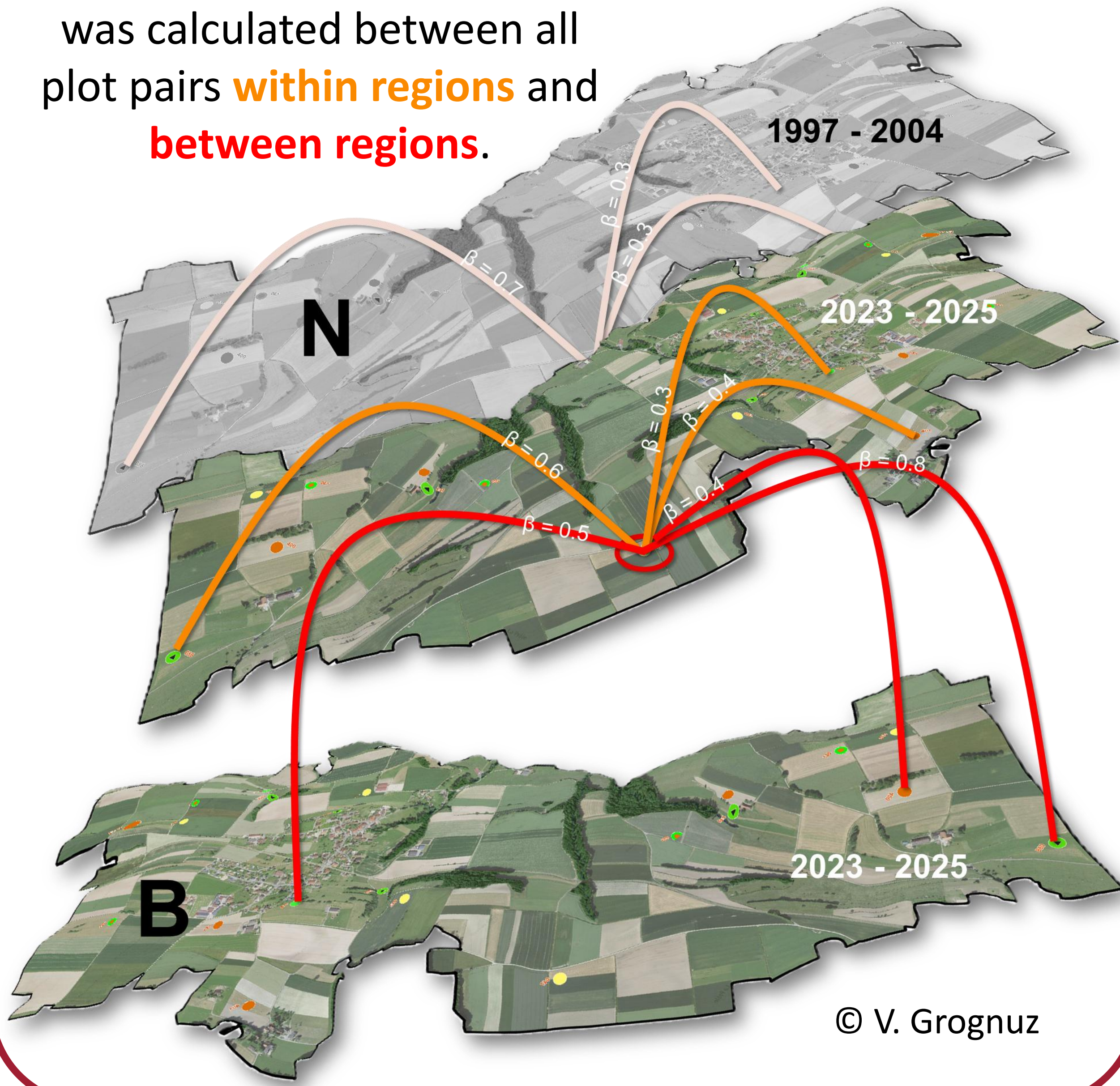


Butterfly transects



Sweep netting

Pairwise Jaccard dissimilarity was calculated between all plot pairs **within regions** and **between regions**.



TAKE HOME MESSAGE

Changes in agricultural landscapes are reshaping insect communities, but different taxa follow contrasting trajectories: butterflies show increasing biotic homogenization, whereas carabids remain largely spatially structured.

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