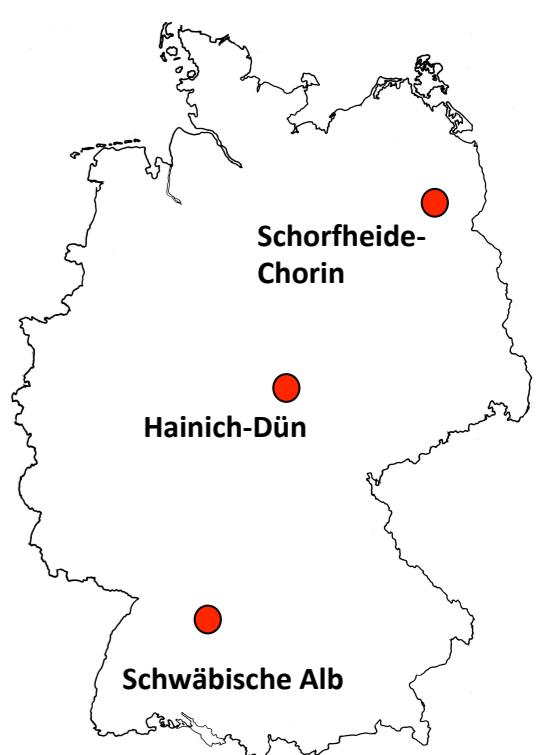




# Landscape management for grassland multifunctionality

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## Context: Strategies for landscape multifunctionality

Trade-offs between conservation and production lead to **increasing land-use conflicts** at the local scale.

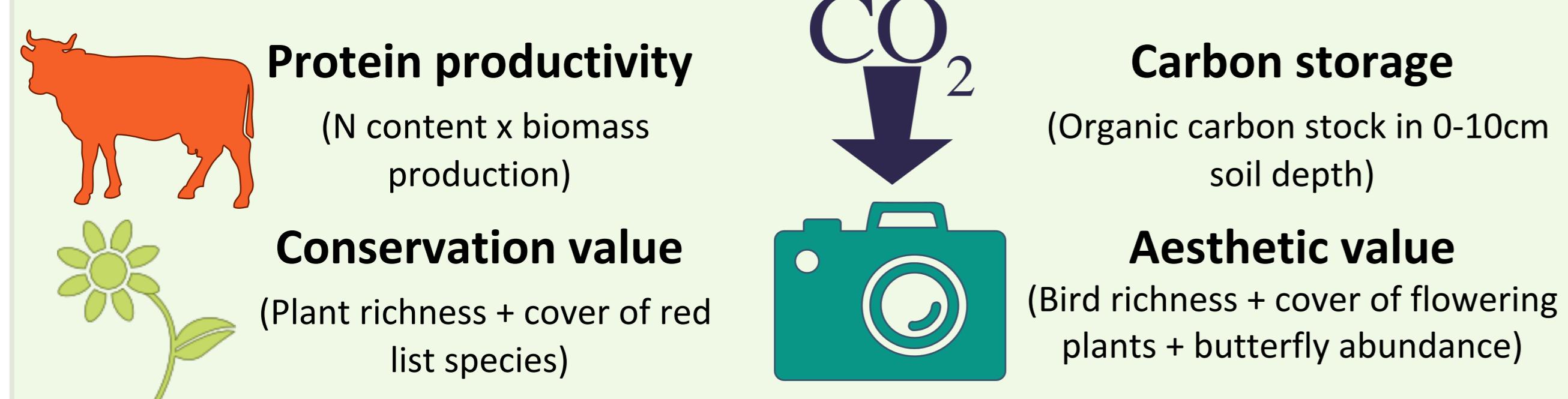
**Multifunctionality** assessments at the landscape scale have mostly centred on the land sharing v. land-sparing debate, which focuses only on two services: conservation and production.

**What is the optimal landscape composition** (i.e., minimizing trade-offs among services) in terms of low-medium and high land use intensity (LUI) plots **when additional services are considered?**

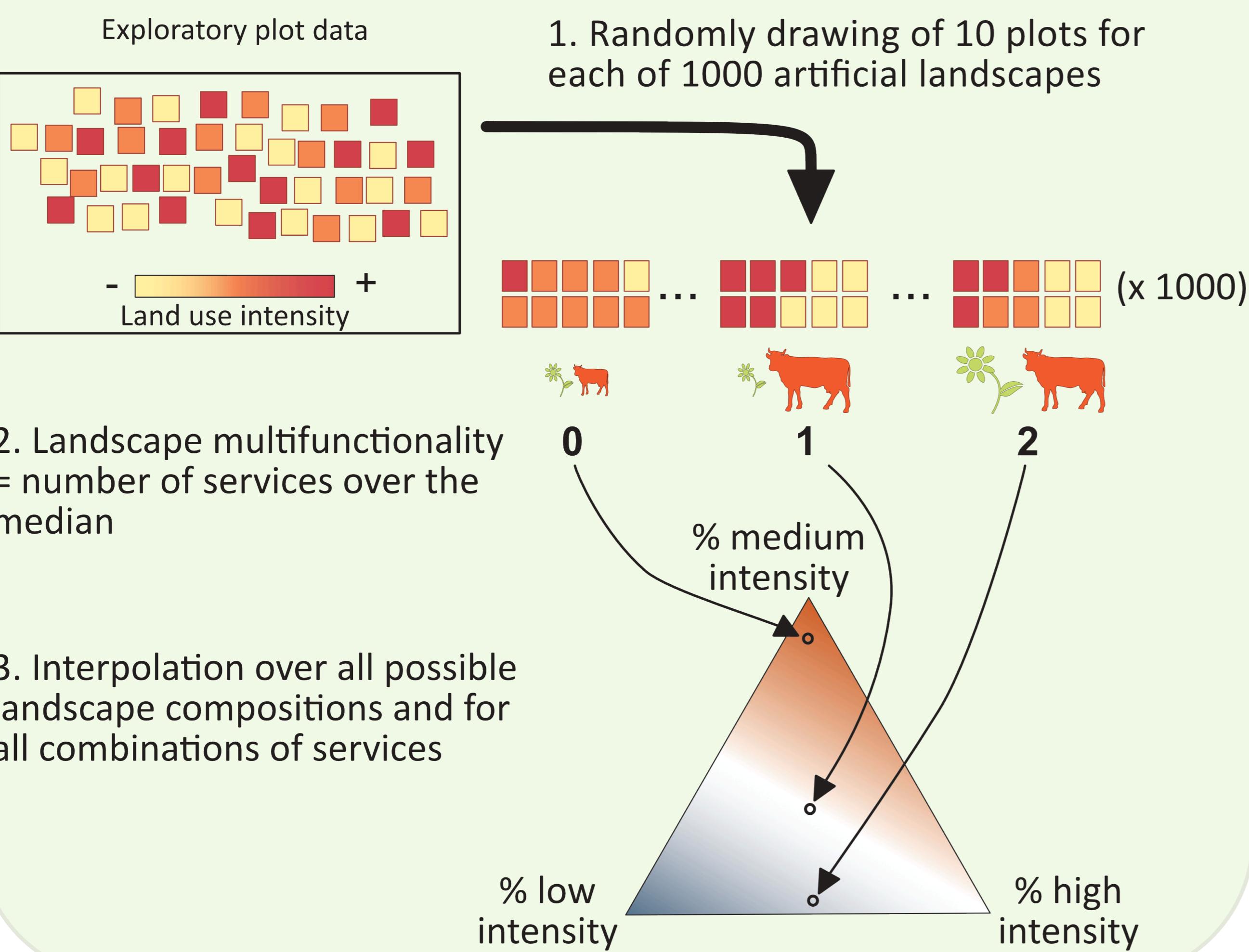
## Methods

Biodiversity Exploratories: 150 grassland plots in three regions of Germany, monitored since 2007.

Focus on four ecosystem services identified as the most valued by multiple stakeholders:



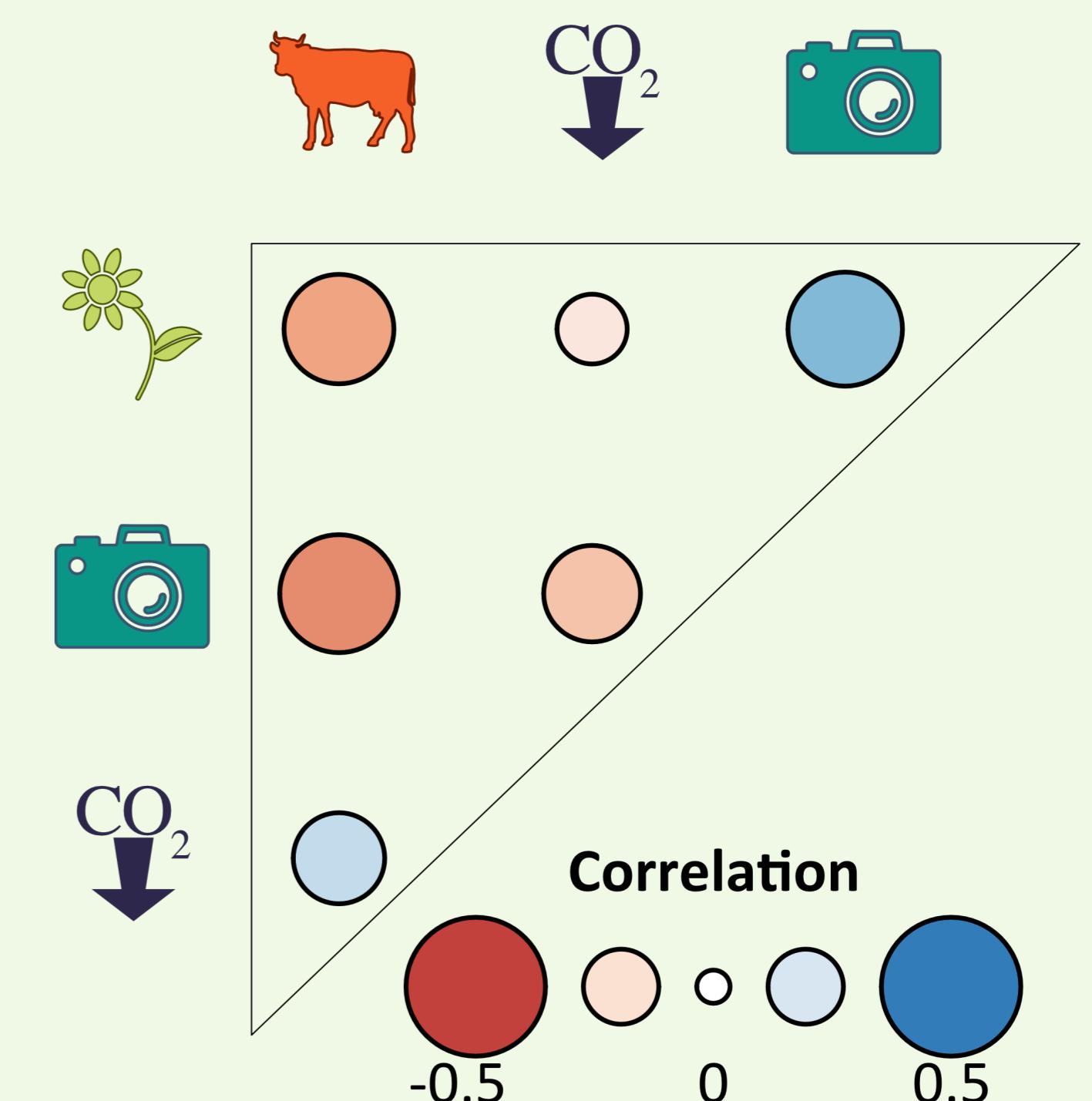
### Simulations:



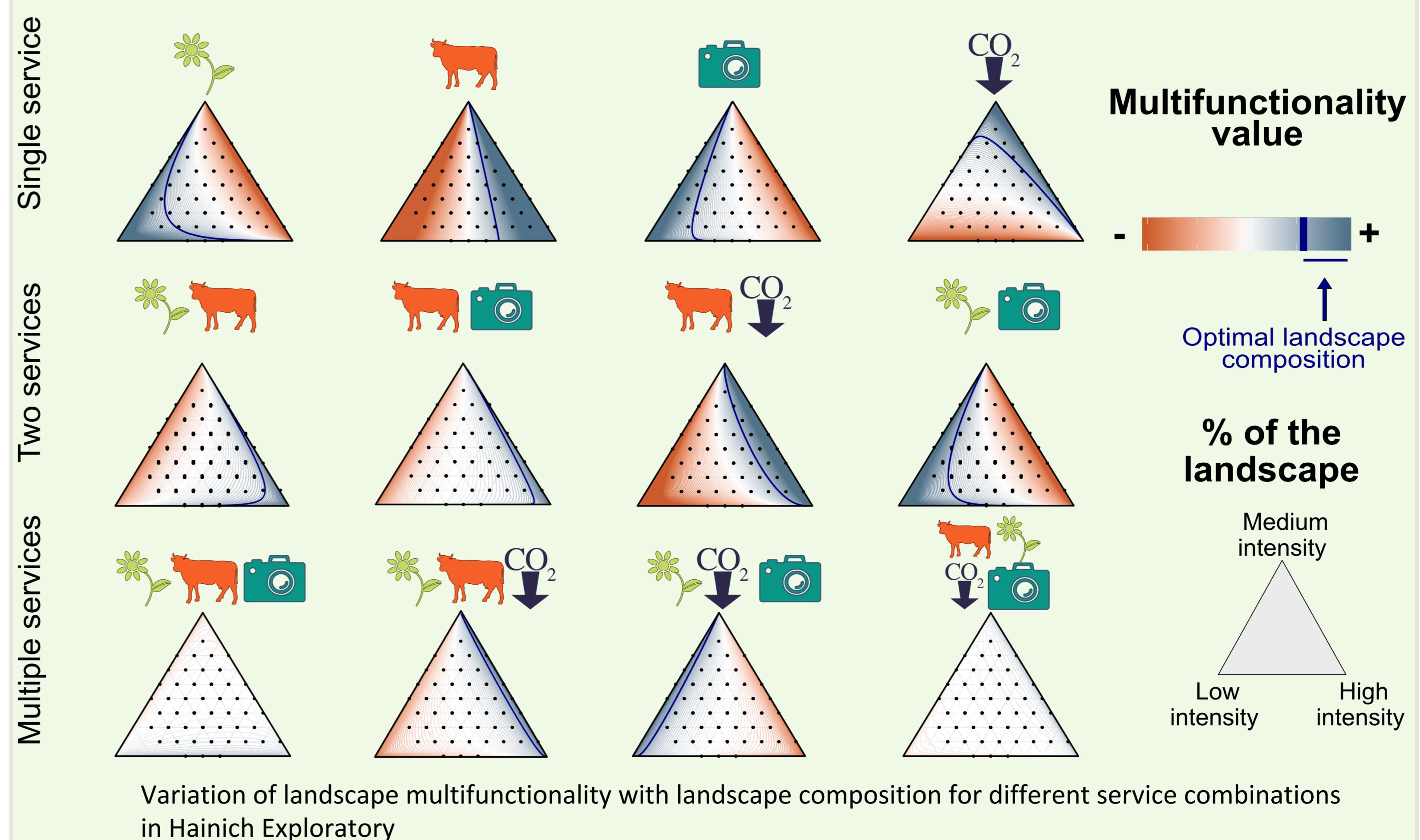
## Results

1. Conservation displays a **strong trade-off** with production and a **synergy** with aesthetic value. This is consistent across regions and with what is observed at plot scale.

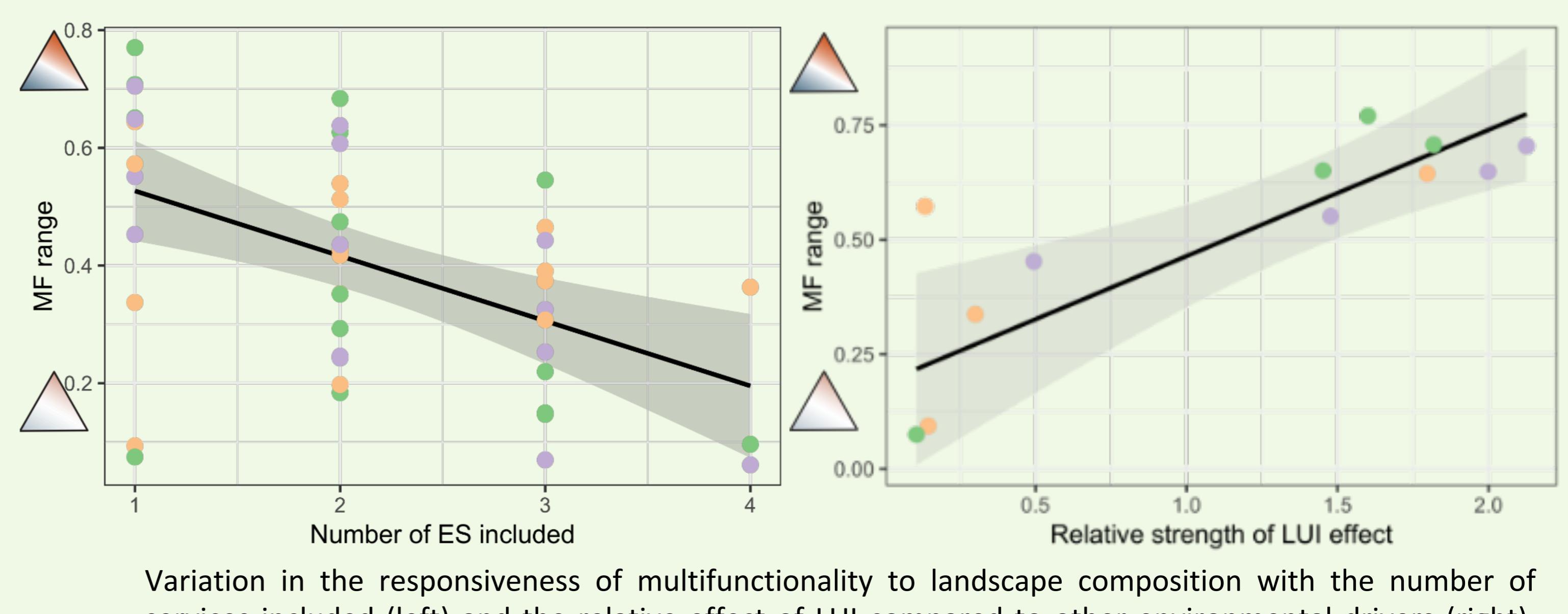
Correlation coefficients among landscape-scale services in Hainich Exploratory



2. Optimal landscape composition can be found for **one or two services**, but optimisation is increasingly complex as more services are considered.



3. The possibility to define optimal landscape compositions depends on how the different services respond to LUI relative to other **environmental drivers**, and decreases with the **number of services** considered



## Conclusion

- Simple **land sharing-sparing** strategies might **fail to identify optimal landscape strategies** for multiple services.
- Further research should consider how **multiple drivers** determine optimal land-use strategies.