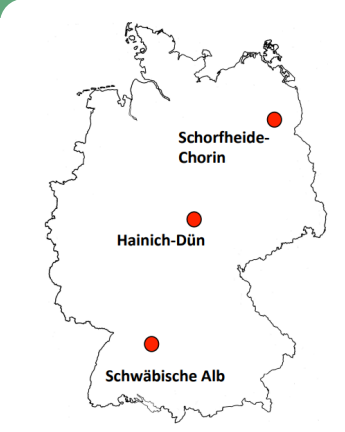


# From Big Beaks to Small Squeaks

## How Landscapes Affect Bird and Bat Traits



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### Background

Habitat and landscape filtering affect the occurrence of species with specific functional traits in a certain area. A study by Neyret et al. (2024) described organismal functional responses to local-scale drivers and provided strong evidence that synchronous, whole ecosystem responses to environmental factors exist. In this study, we explored how the surrounding landscape affects the Community Weighted Mean (CWM) of traits in two higher trophic level organisms, birds and bats.

**The aim of this study was to determine how landscape and land use intensity shape the "average" birds and bats that are present in an area.**

### Methods

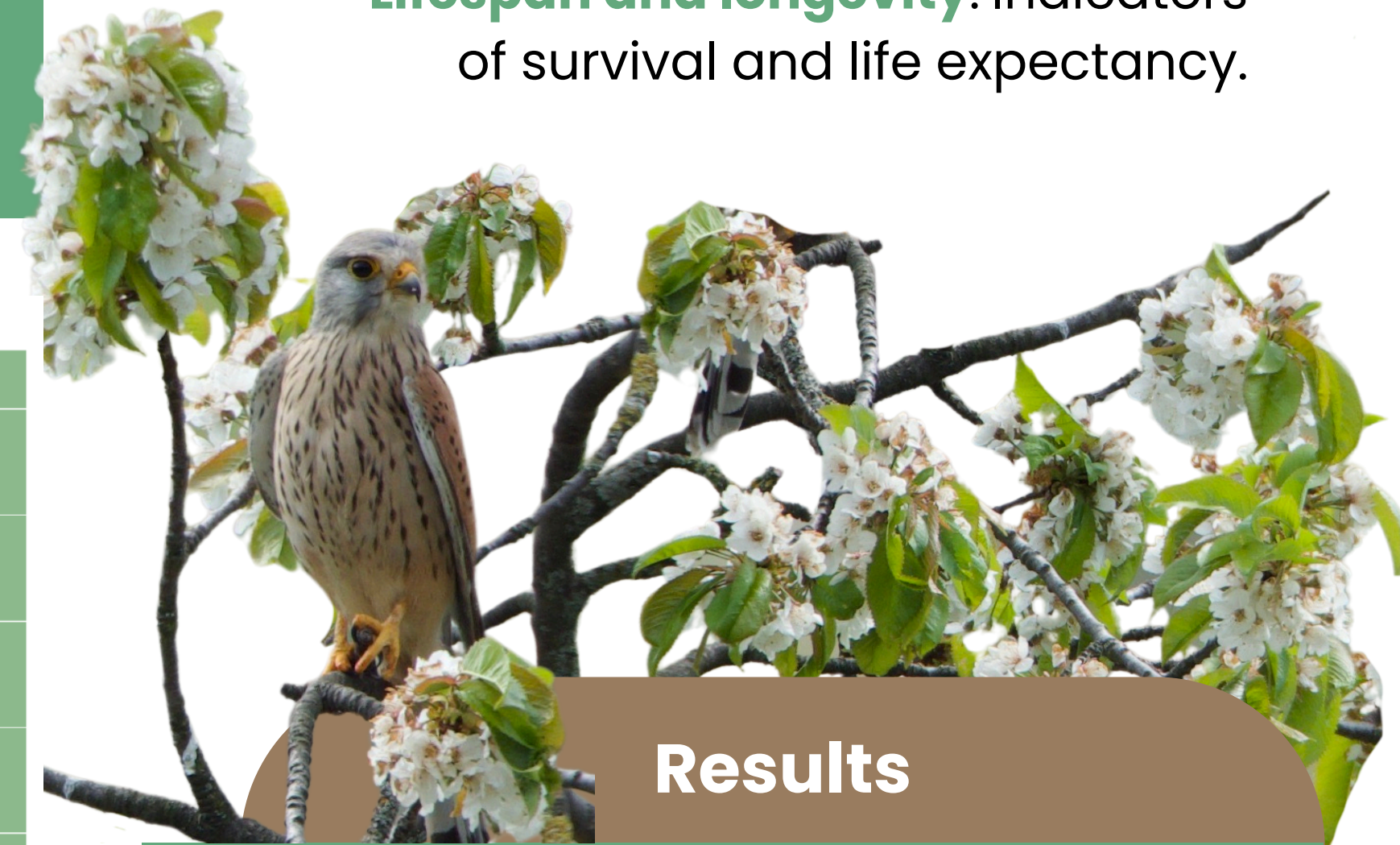
We analysed how **surrounding landscape composition influences the community weighted mean (CWM) of traits in birds and bats**. Data was sourced from the Biodiversity Exploratories project, using trait data from Neyret et al. (2024) and land-use data from Le Provost et al. (2021). CWM values were calculated and assessed against forest and grassland cover (2000 m radius) and land use intensity, using multiple regression models.

### Selected traits

**Body mass:** Influences energy needs and mobility.

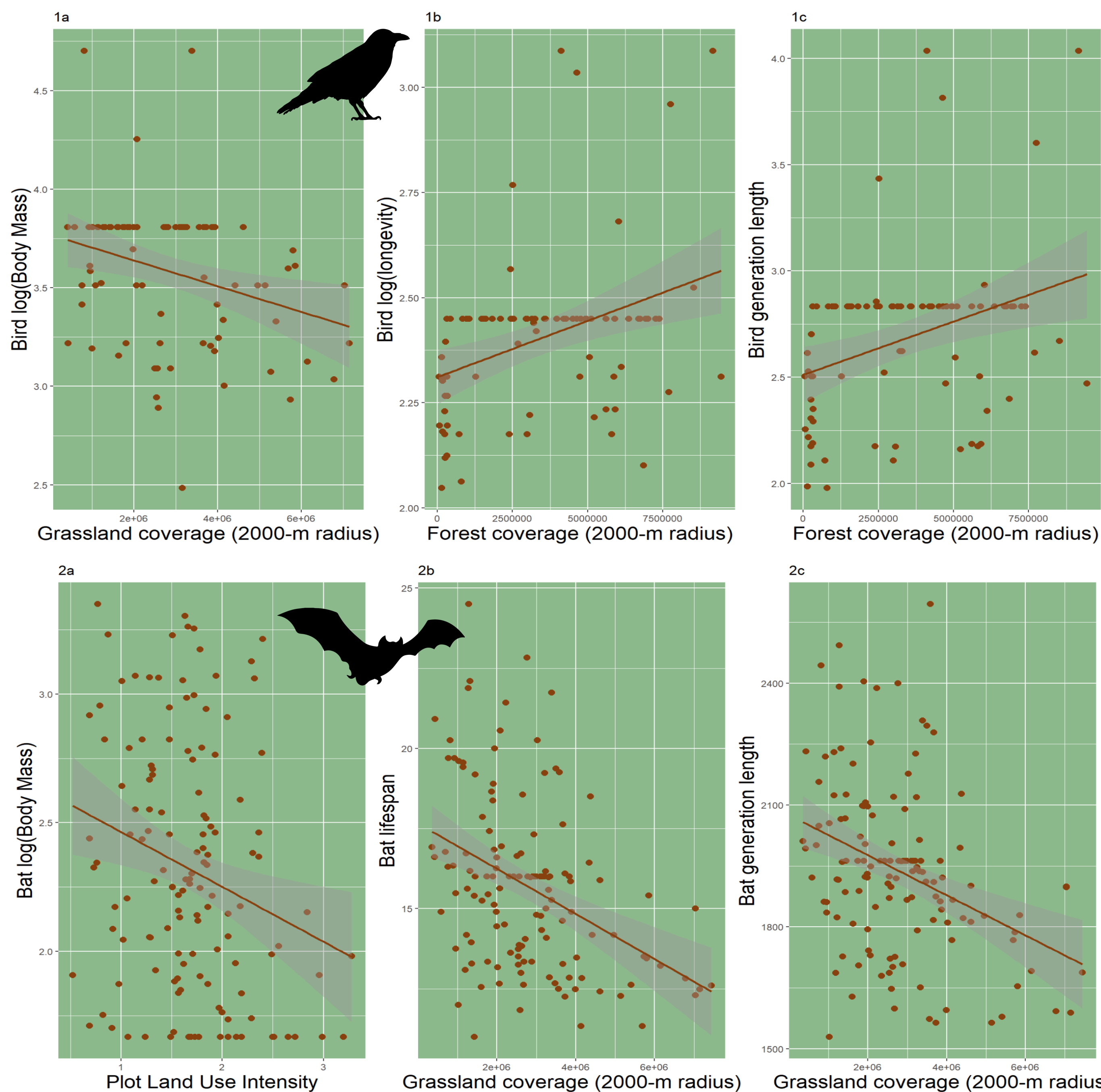
**Generation length:** Reflects how quickly populations can grow.

**Lifespan and longevity:** Indicators of survival and life expectancy.



### Results

- Forested areas attract bird species with traits associated with stability and longevity
- Bird species in grassland areas tend to have smaller body size
- Bat body size decrease with increased plot land use intensity.
- Bat life span and generation length decrease with increased grassland coverage in the surrounding landscape.



### Conclusion

Bats and birds with distinctive traits are **drawn to different regions affected by the surrounding landscapes**, with different environments promoting distinct lifestyle strategies.

#### References:

- Le Provost, G., Thiele, J., Westphal, C. et al. (2021) Contrasting responses of above- and belowground diversity to multiple components of land-use intensity. *Nature Communications* 12(1), p. 3918.
- Neyret, M. et al. (2024) 'A slow-fast trait continuum at the whole community level in relation to land-use intensification', *Nature Communications* 15(1), p. 1251.

