

Weak effect of landscape structure on spider abundance and taxonomical diversity in crop fields of western Poland

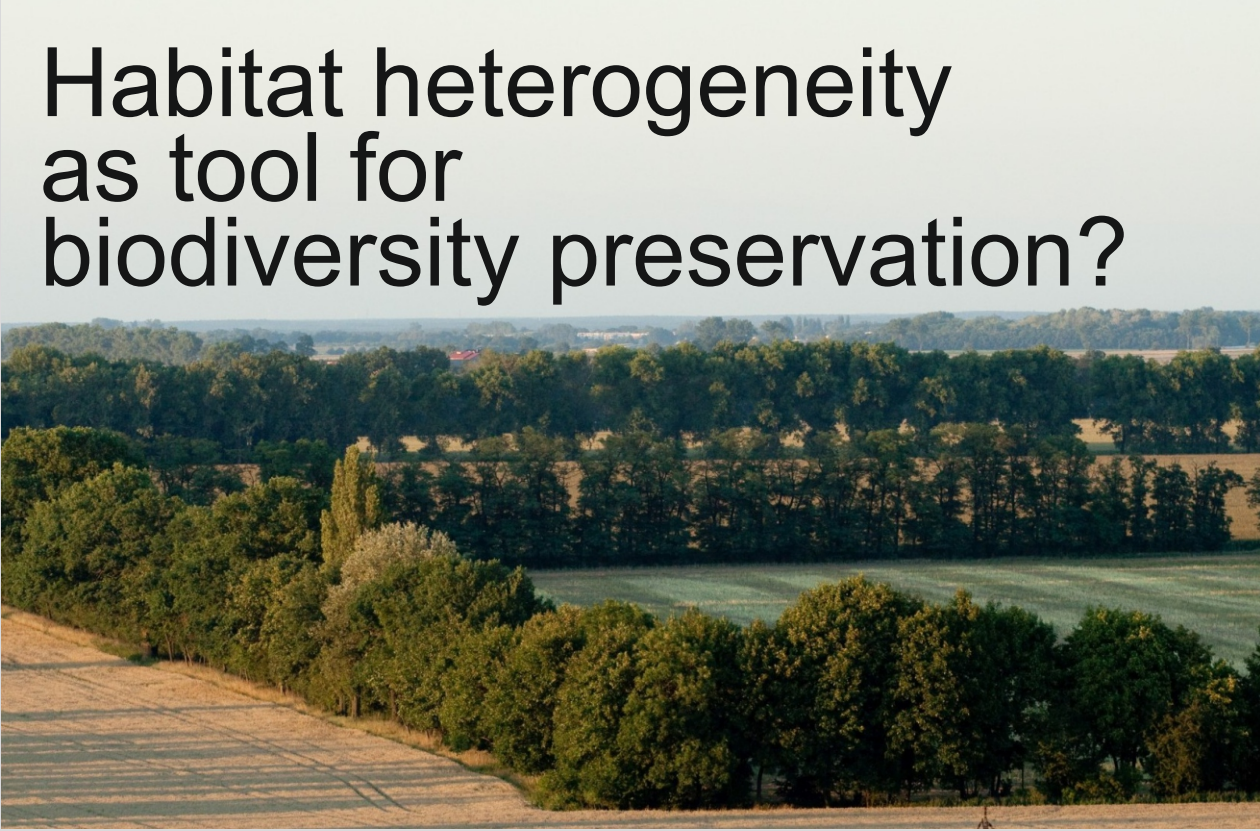
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Aim of the study



Biodiversity decline... almost everywhere, especially in farmlands



Habitat heterogeneity as tool for biodiversity preservation?

Our aim was to assess how spider communities respond to significant differences in the habitat quality of crop types and how this response is modified by landscape diversity.

Study area, methods

The years 2007-2009
Two landscapes: UNIFORM and DIVERSE
Three crops: alfalfa, wheat, sugar beet
Sampling by suction traps
Samples: two terms/year, 10 samples/fields, 1-2 field/crop/year
Specimens determined to species, genus or family
Statistical analyses: PERMANOVA, CHI-Square



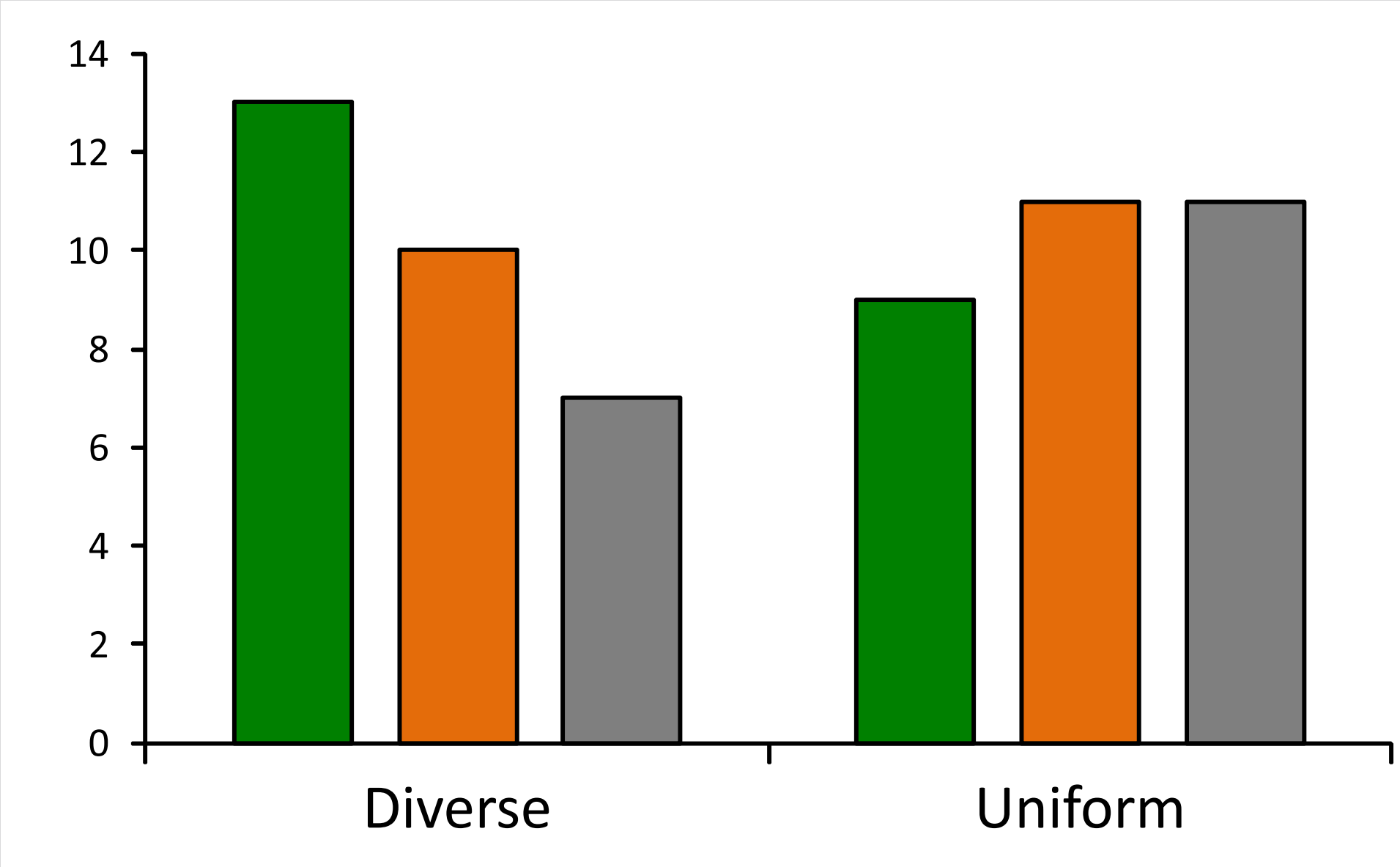
	Uniform	Landscape variable	Diverse
	26.0±23.4	Mean field area ± SD (ha)	4.7±10.9
	18.3	Median of field area (ha)	1.3
	0.6	Shelterbelts (km km ⁻²)	0.9
	1.0	Wooded patches (n km ⁻²)	1.6
	2.8	Area of wooded patches (%)	8.3



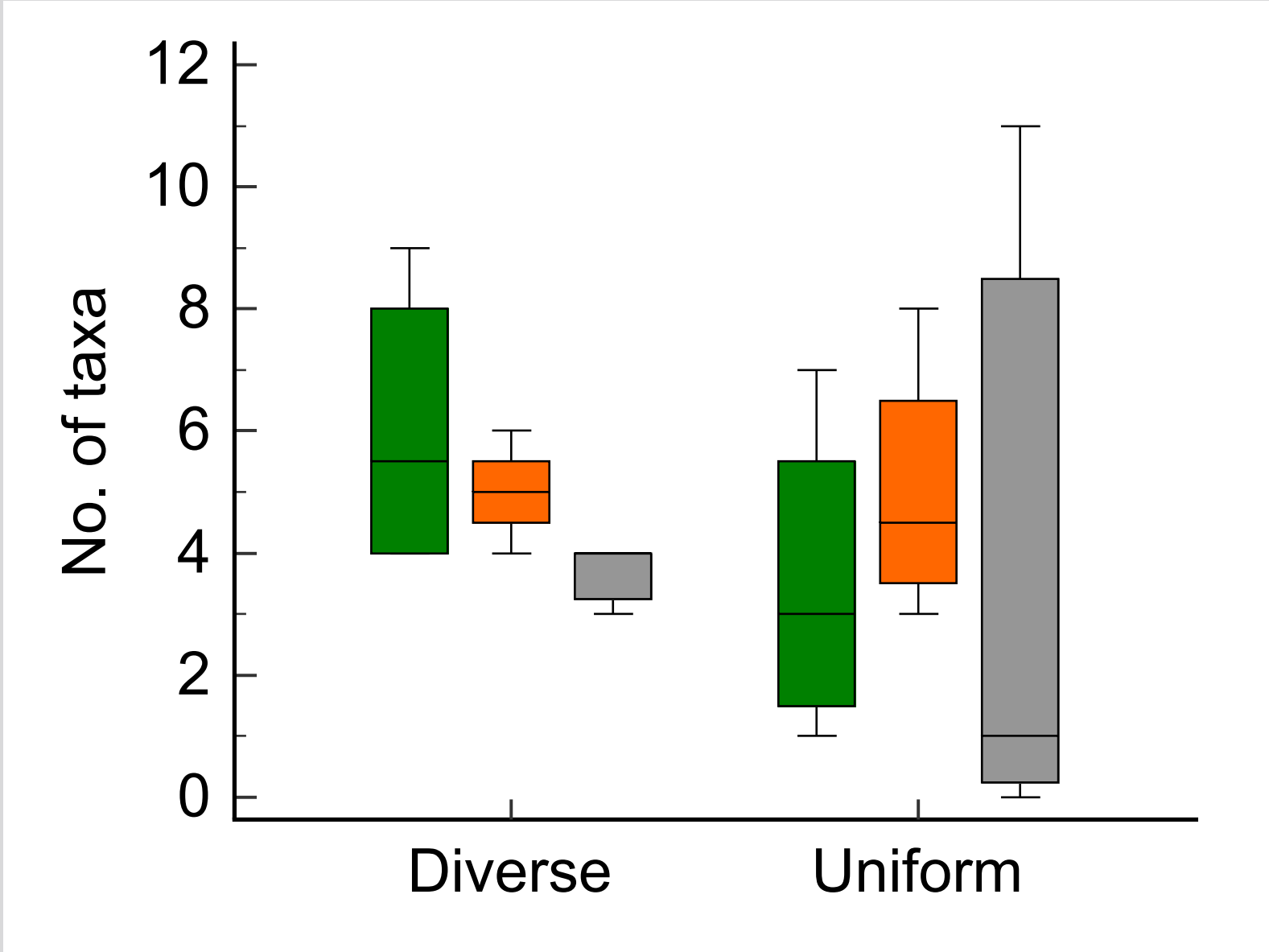
RESULTS

Effect of landscape (diverse vs. uniform) and crop type: alfalfa, wheat, sugar beet

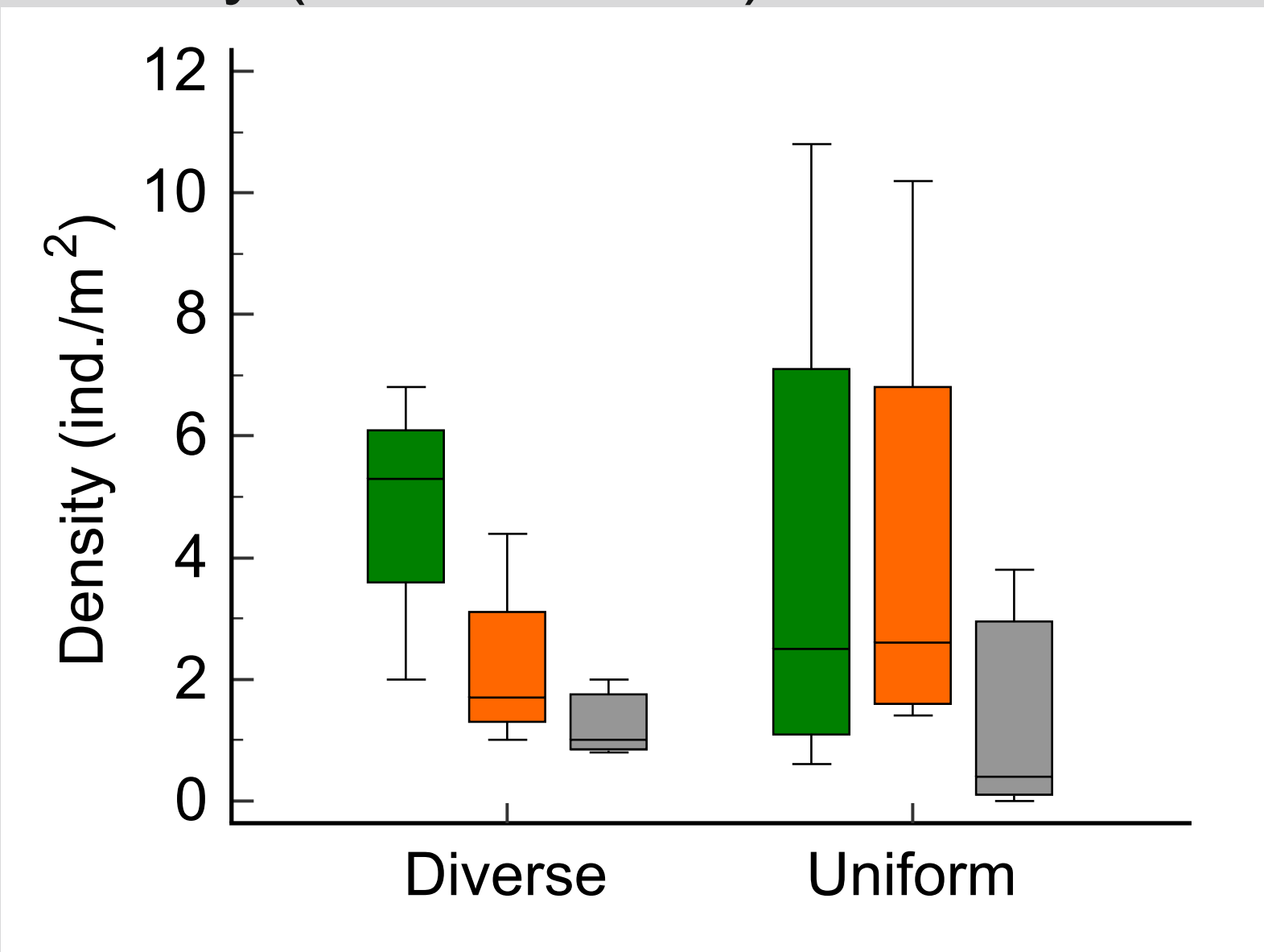
Total number of taxa



No. of taxa per year (median±IQR)



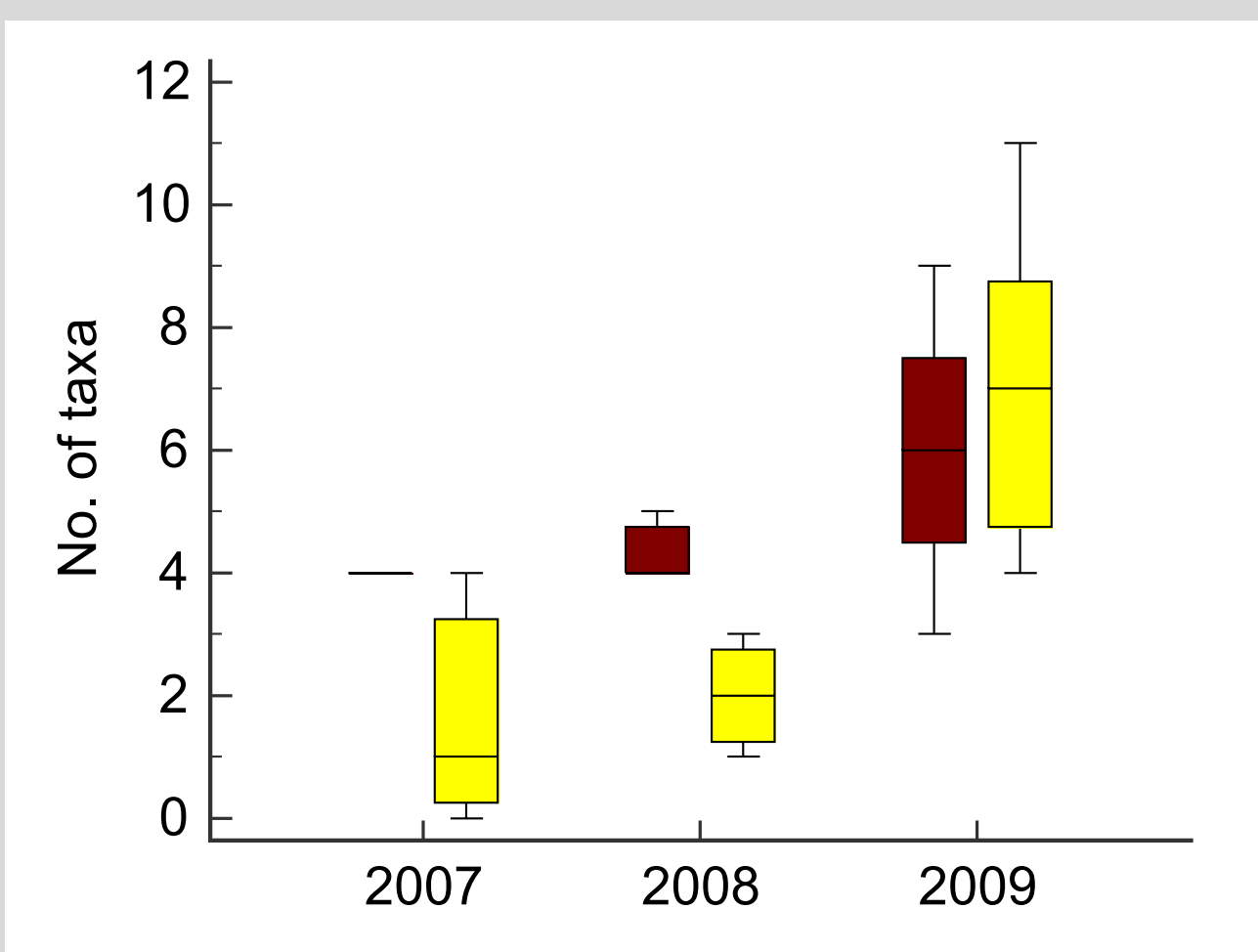
Density (median±IQR)



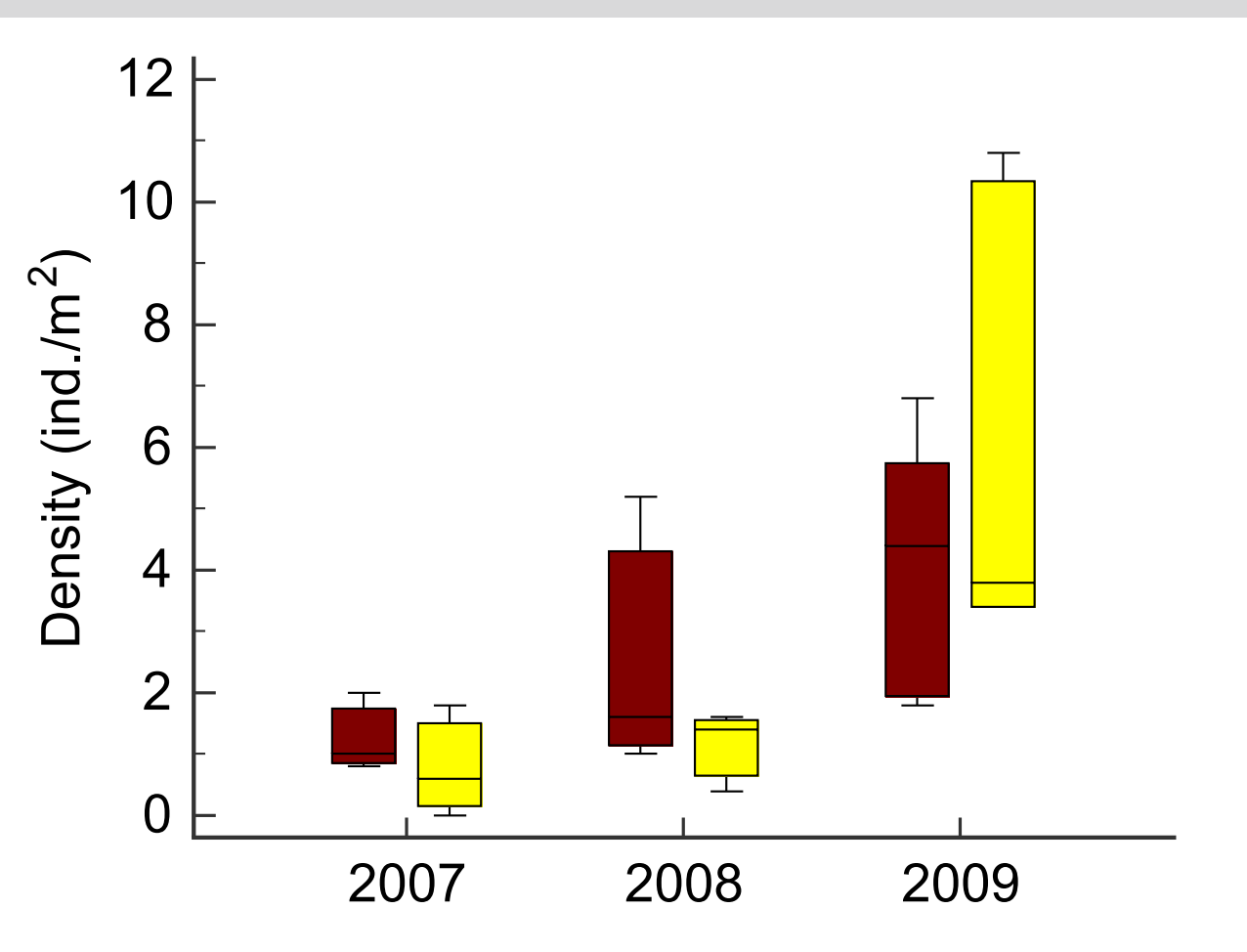
- No significant differences in spider taxonomical richness and abundance between the landscapes(PERMANOVA test)
- Higher variability of spider taxonomical richness and abundance in UNIFORM landscape

Effect of year on the differences between landscapes and crops in no. of taxa and population density (median, IRQ, Min-Max)

Number of taxa



Population density



Landscape:

diverse

uniform

(crops averaged)

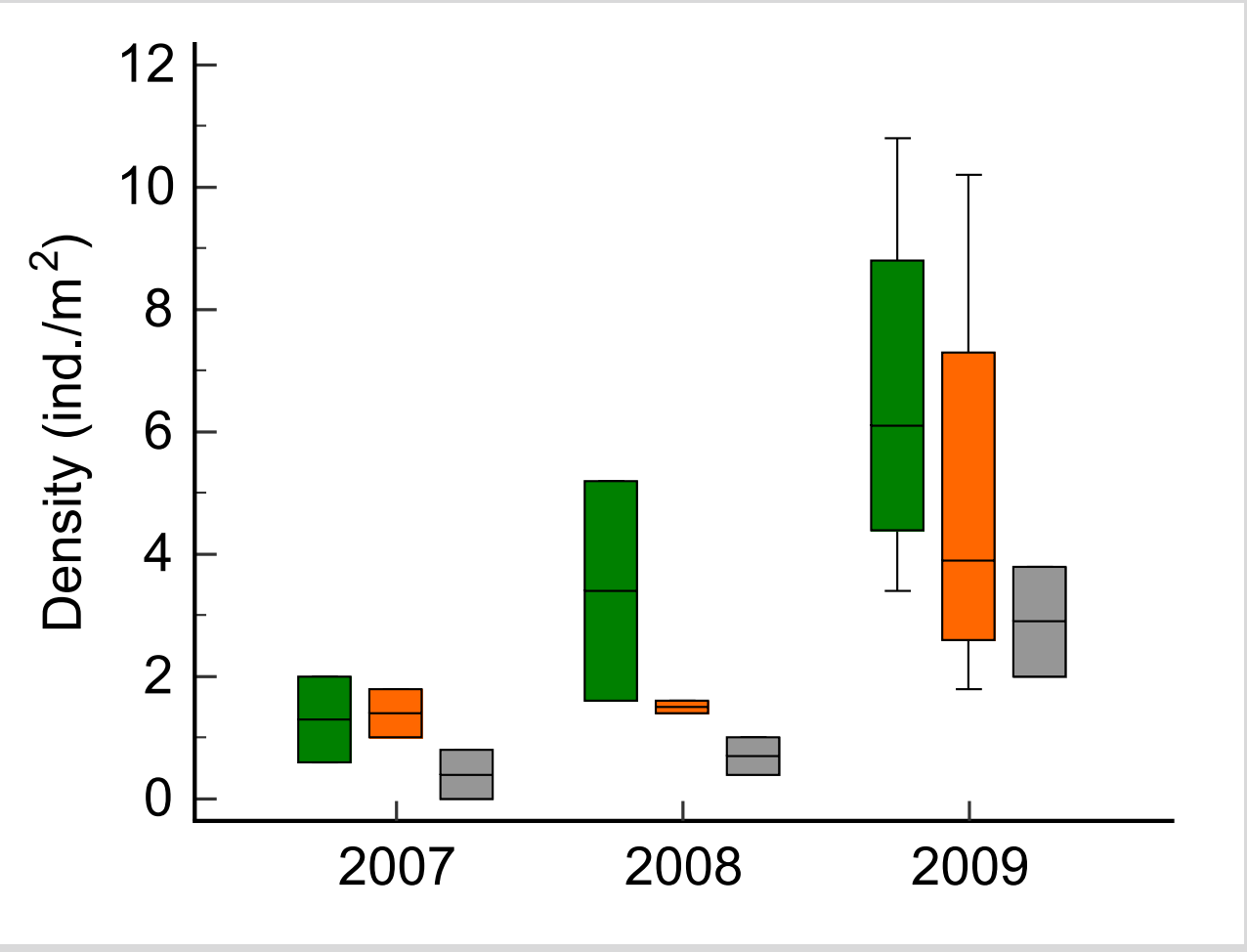
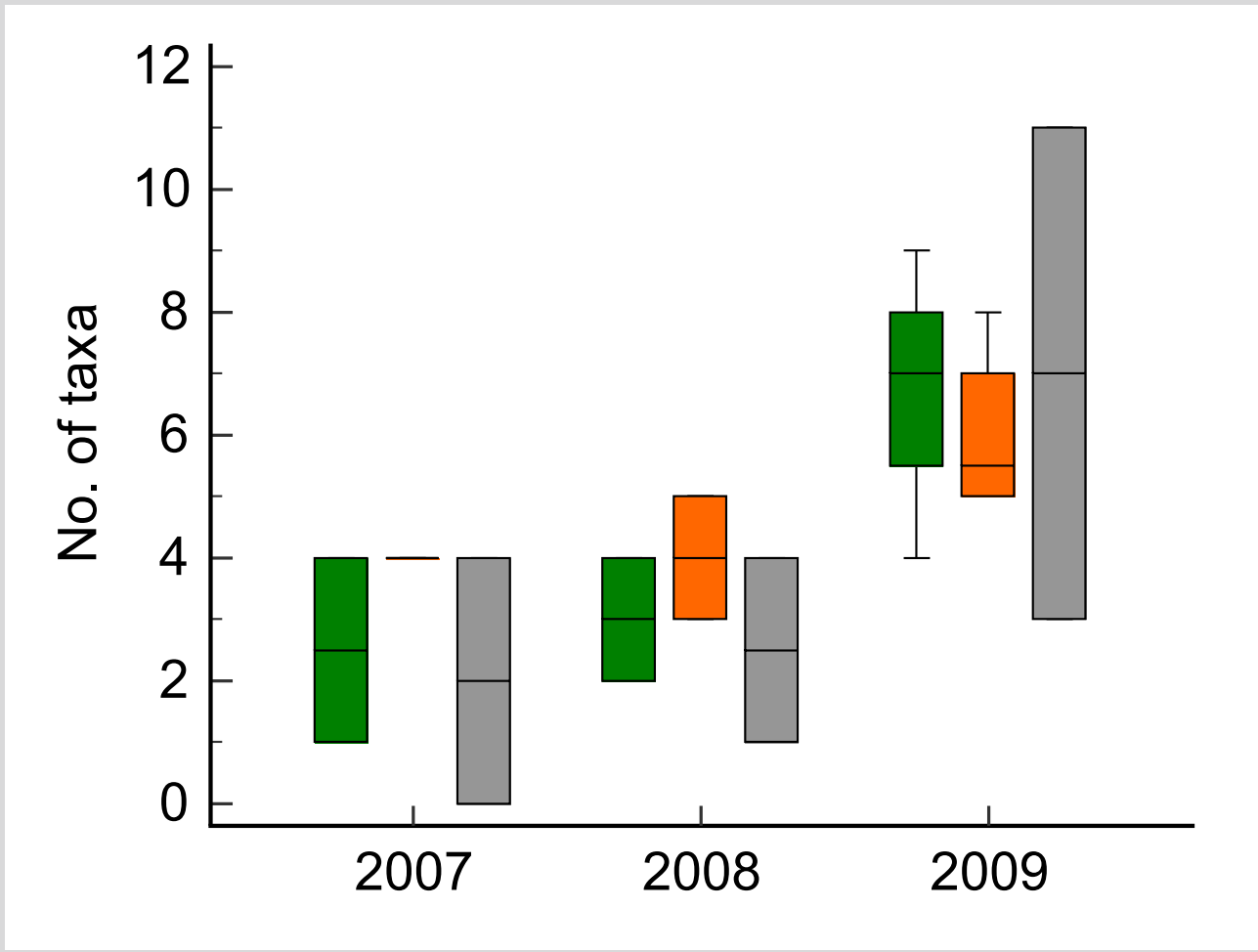
Crop:

alfalfa

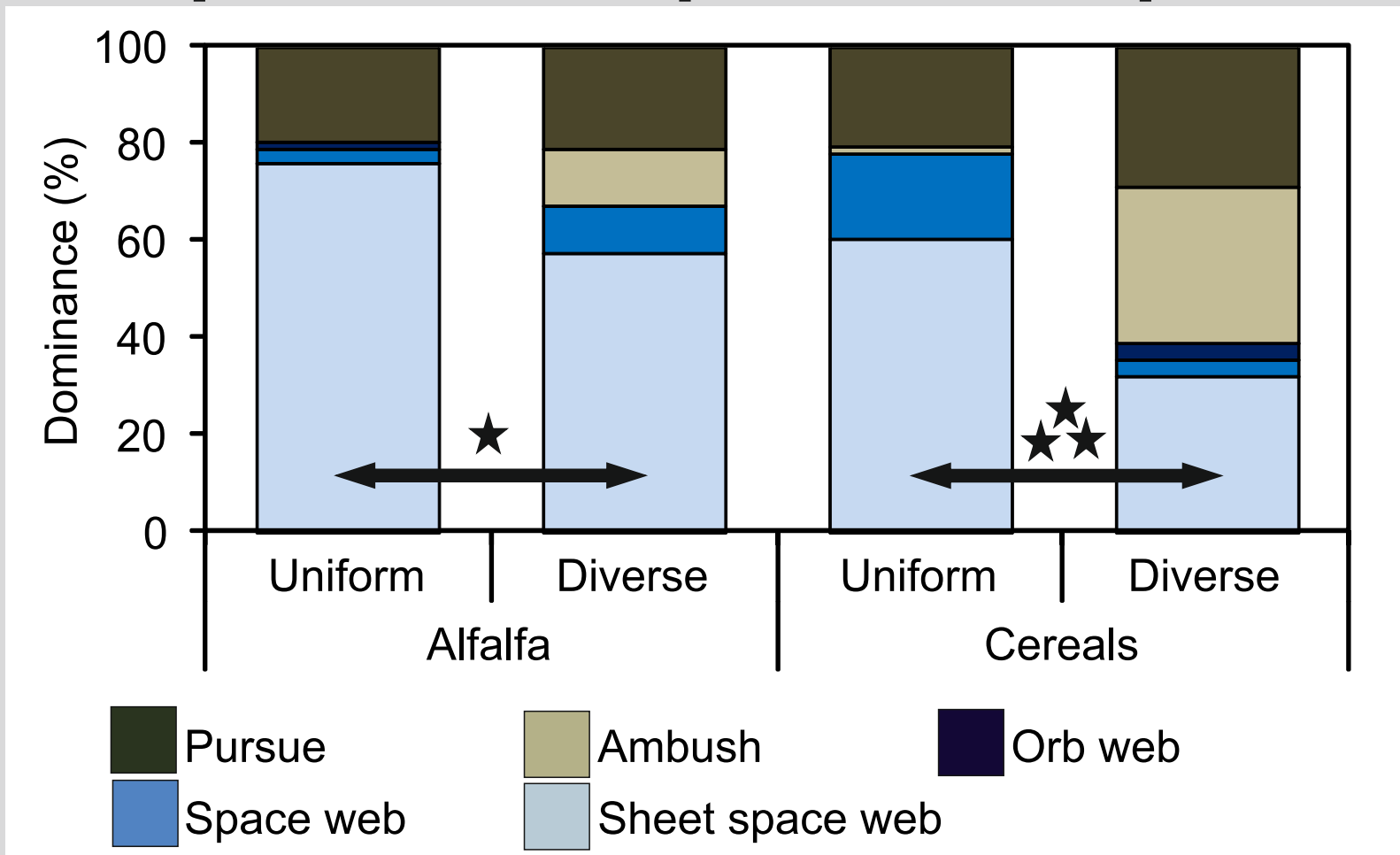
wheat

sugar beet

(landscapes averaged)



Effect of landscape and crop type on composition of hunting guilds (Chi-square test: * p<0.05, *** p<0.001)



Conclusions

1. More diverse hunting guild composition in crops in diverse landscape, but ...
2. No effect of landscape diversity on both taxonomical richness and abundance of spiders - assemblages homogenized.
3. Very low population density in all crops and in two compared landscapes.
4. Weak effect of habitat diversity at strong agricultural impact?