Spatial distribution patterns of weeds depend on landscape complexity

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Biologie Gestion Adventices

Projet ANR « AdvHerb »

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Audrey Alignier & Sandrine Petit
INRA Dijon – UMR 1210 « Weed Biology and Management »

INRA

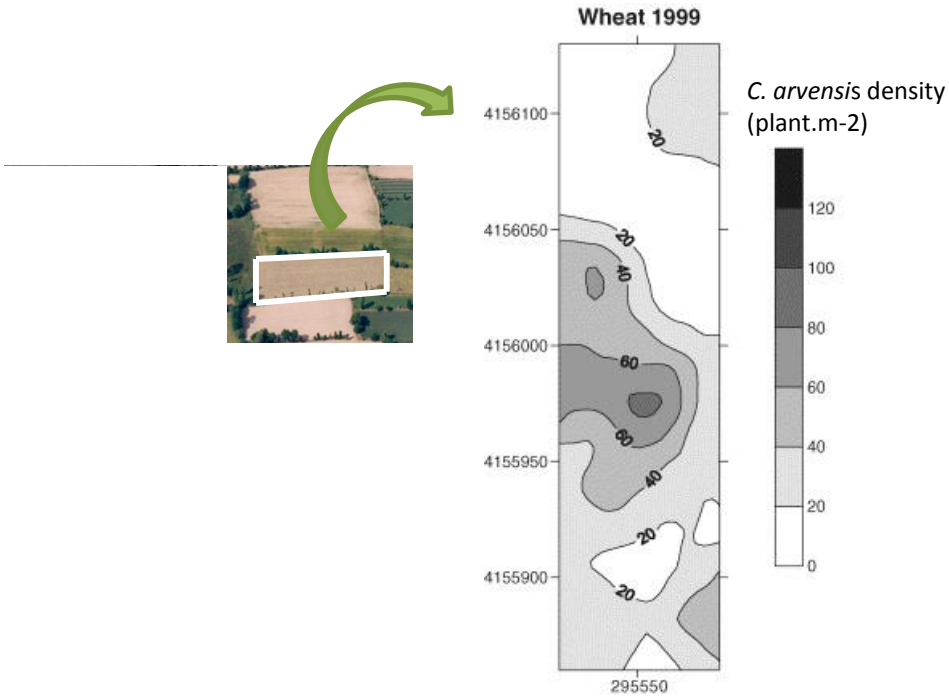
Weed spatial distribution studied …

… for individual weed species

e.g. *Concolvulus arvensis* L.
(Jurado-Exposito et al. 2004)

For weed communities ?

… at the within-field scale



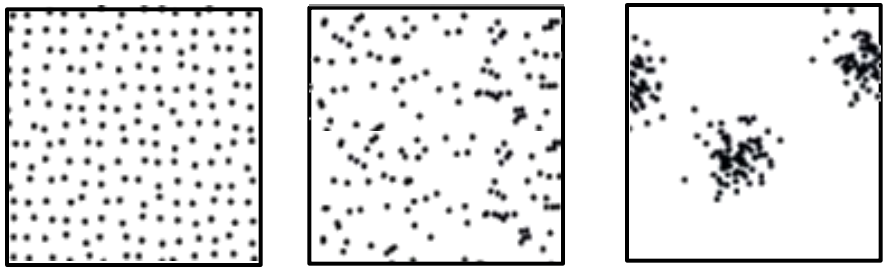
site-specific management

At the landscape scale ?

1 **Spatial patterns of weeds**

Communities (Mantel's correlograms)

Species (Moran's correlograms)



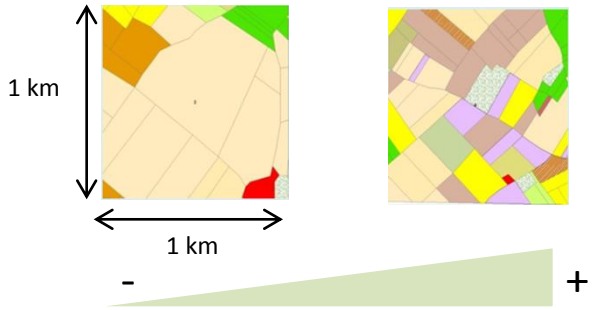
2

3

4

Landscape complexity

10 landscapes in a same region
sampled with a regular 50 m grid



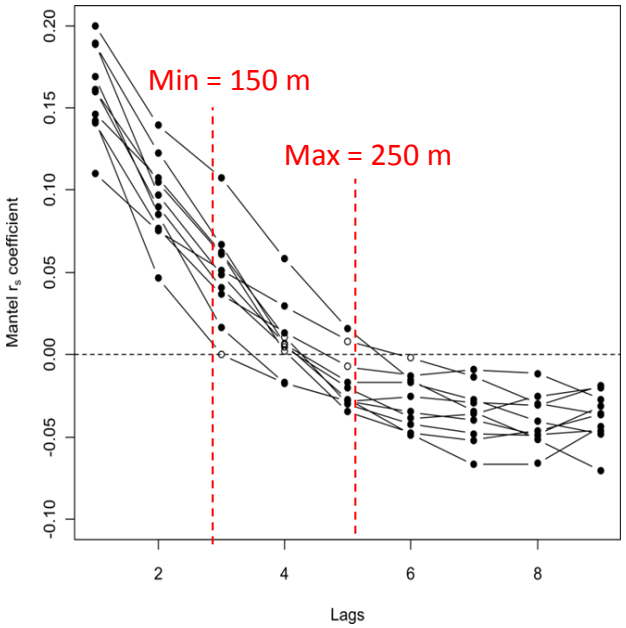
Edge density
Shannon habitat diversity

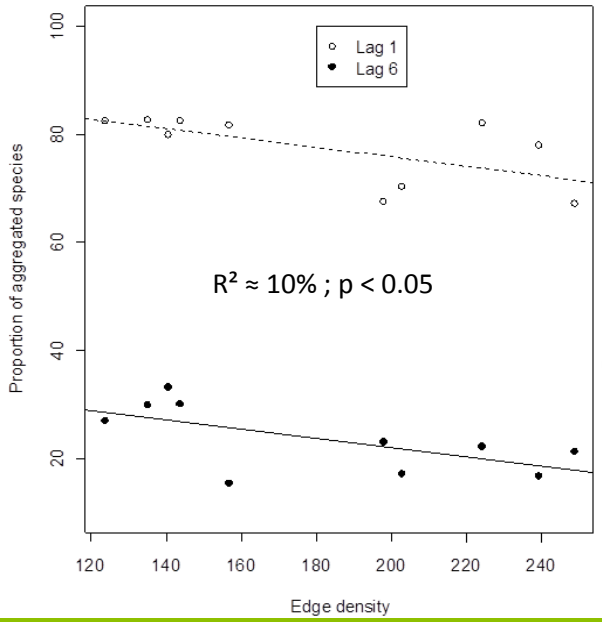
Species life attributes

Seed dispersal type

Degree of habitat specialization

Frequency of occurrence





1 Spatial patterns of weeds

Weed communities were aggregated up to 250 m.
Idem for weed species.

3 Relation « spatial pattern – life attributes »

Frequent species were always aggregated whereas rare species have either aggregated or random patterns.

4 Relation « landscape complexity – life attributes »

No filtering of species through their life attributes.

2 Relation « spatial pattern – landscape complexity »

Spatial aggregation decreased with landscape complexity.

Take home message

- **Weeds communitie**s were spatially **aggregated** at a large scale.

- Weeds exhibited **different spatial strategies** according to their frequency of occurrence (but not to their seed dispersal type).

Dispersal limitation probably did not occur (or was reduced) in weeds.

- Increasing landscape complexity reduced spatial autocorrelation in species distribution.

Alignier, A., Bretagnolle, V., Chauvel, C. & Petit, S. (2011) Spatial strategies of weeds along a gradient of landscape complexity. Ecography (in prep.)

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