Production intensity and biodiversity?

Bird abundances along an intensity gradient of dairy livestock farming system

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Introduction – Biodiversity and agriculture

Need for land use strategies meeting
production and conservation objectives in agro-landscapes

Segregation

Unfarmed **Intensive farming**

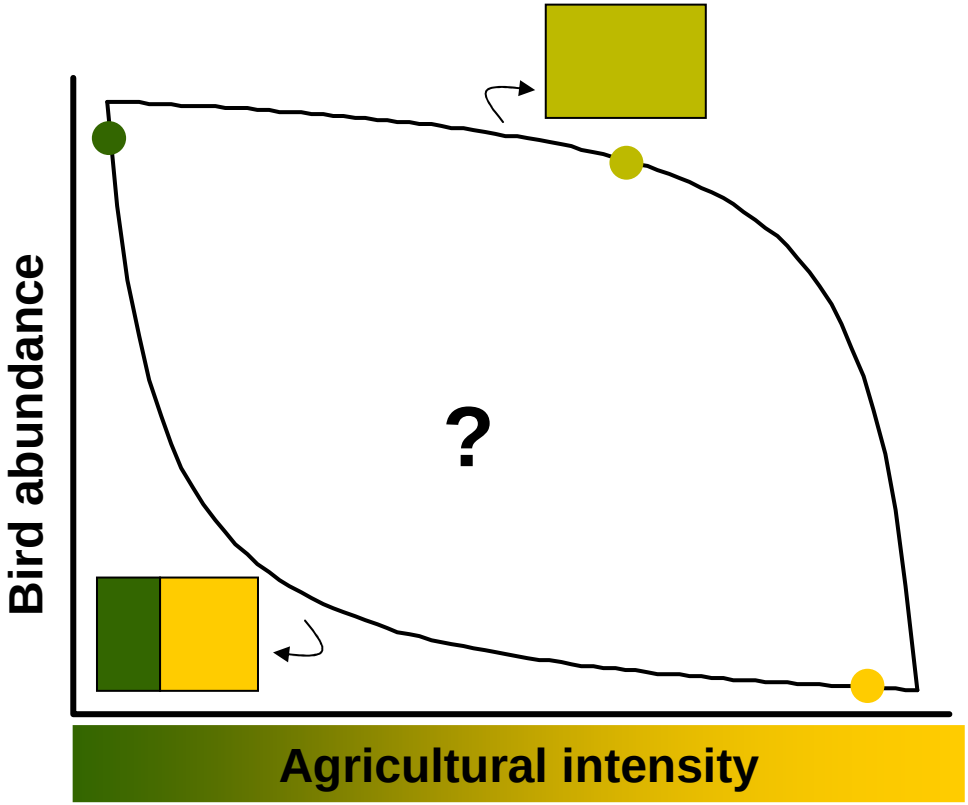
Coexistence

Farmed extensively

Green (2005) *Farming and the fate of wild nature*. Science.

Introduction – Question

Bird response to intensity



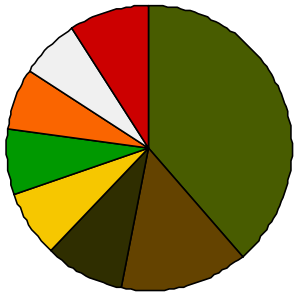
What is the relationship between production intensity and bird abundance?

Methods – Linking agriculture to birds

- **Agriculture**

Intensity indicator: Input Cost / Utilized Agricultural Area (IC / UAA, €/ha/year)

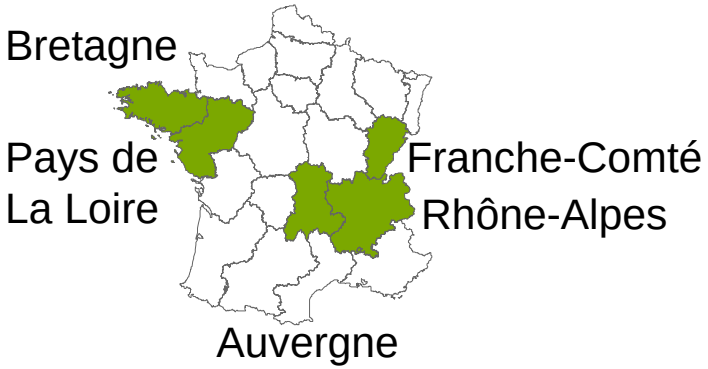
- **Feed**
- **Fertilizers**
- **Fuel**
- **Seed**
- **Veterinary prod**
- **Water, gas, elect.**
- **Pesticides**
- **Other**



?

Focus: Dairy livestock farming system.

5 main French regions



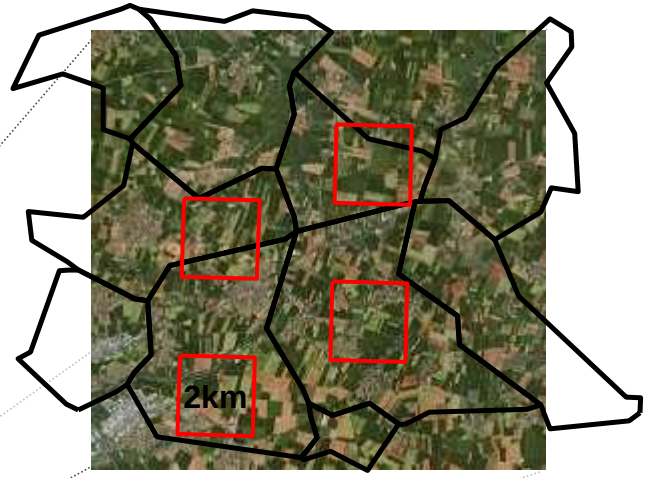
- **Birds**

Variable: abundance of 12 species of common farmland birds

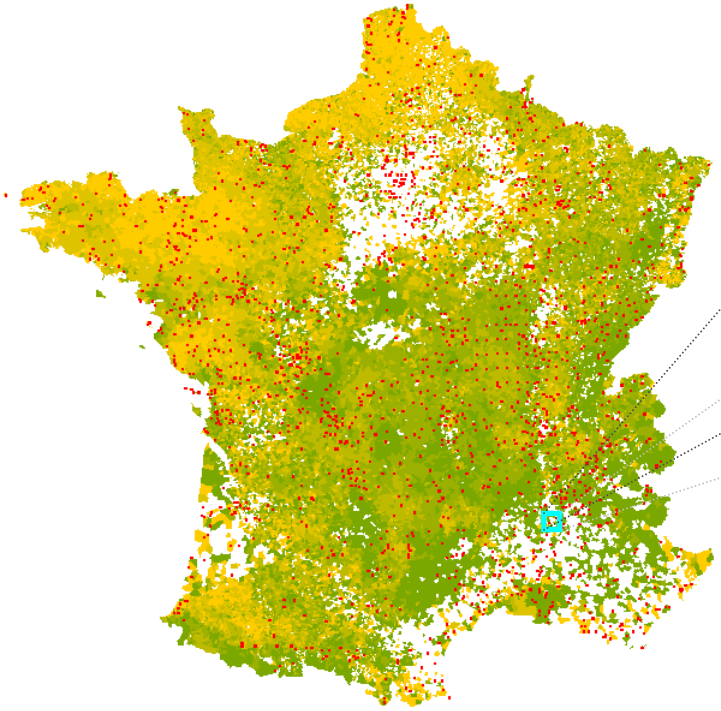
The specialization index (SSI) is used to compare species

Methods – Link at different scales

At the commune level



At national scale

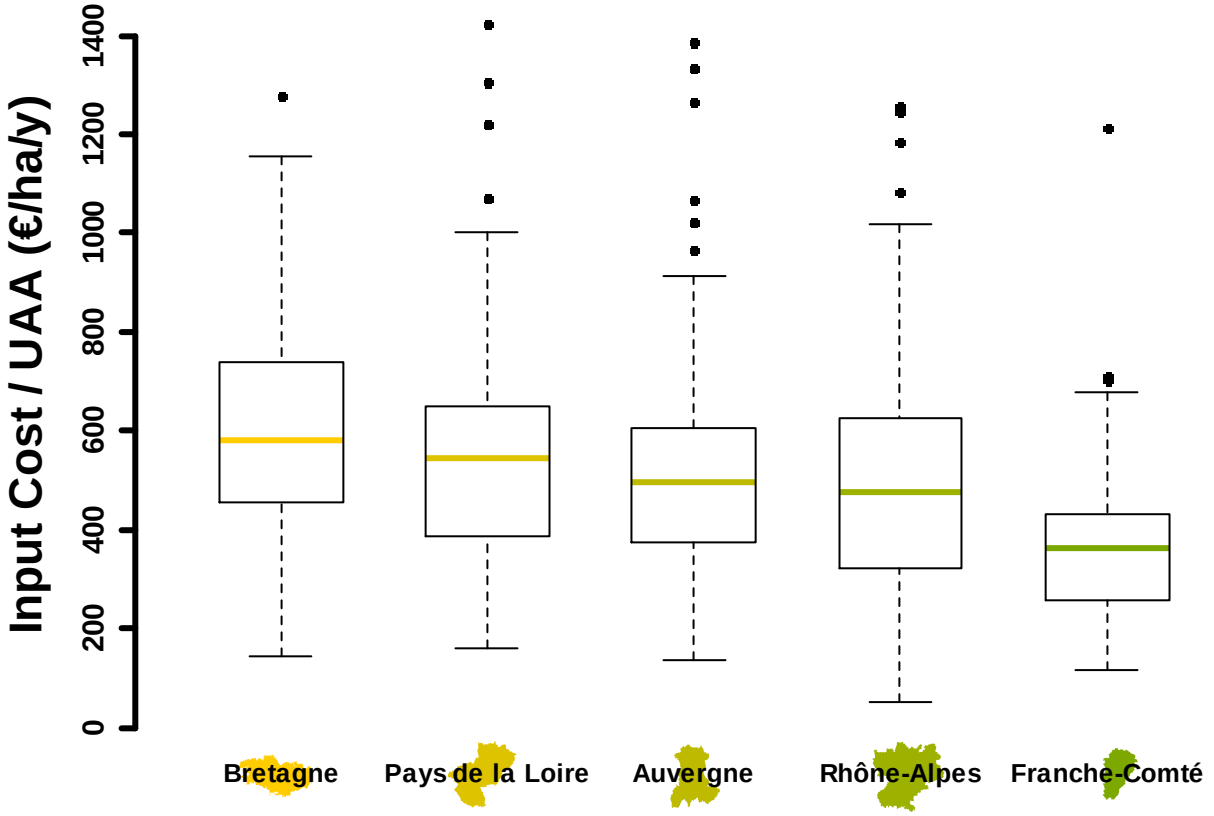


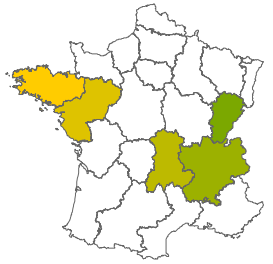
Bird data (STOC, MNHN)
Agric. Data (INRA, ODR)

Bird abundance

Prod. intensity + other explanatory variables

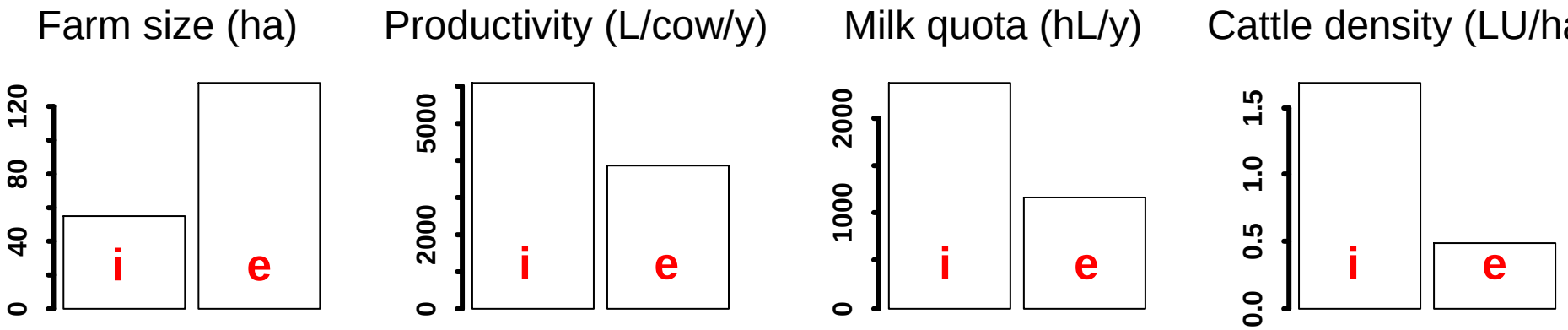
Results – The intensity gradient in dairy LFS

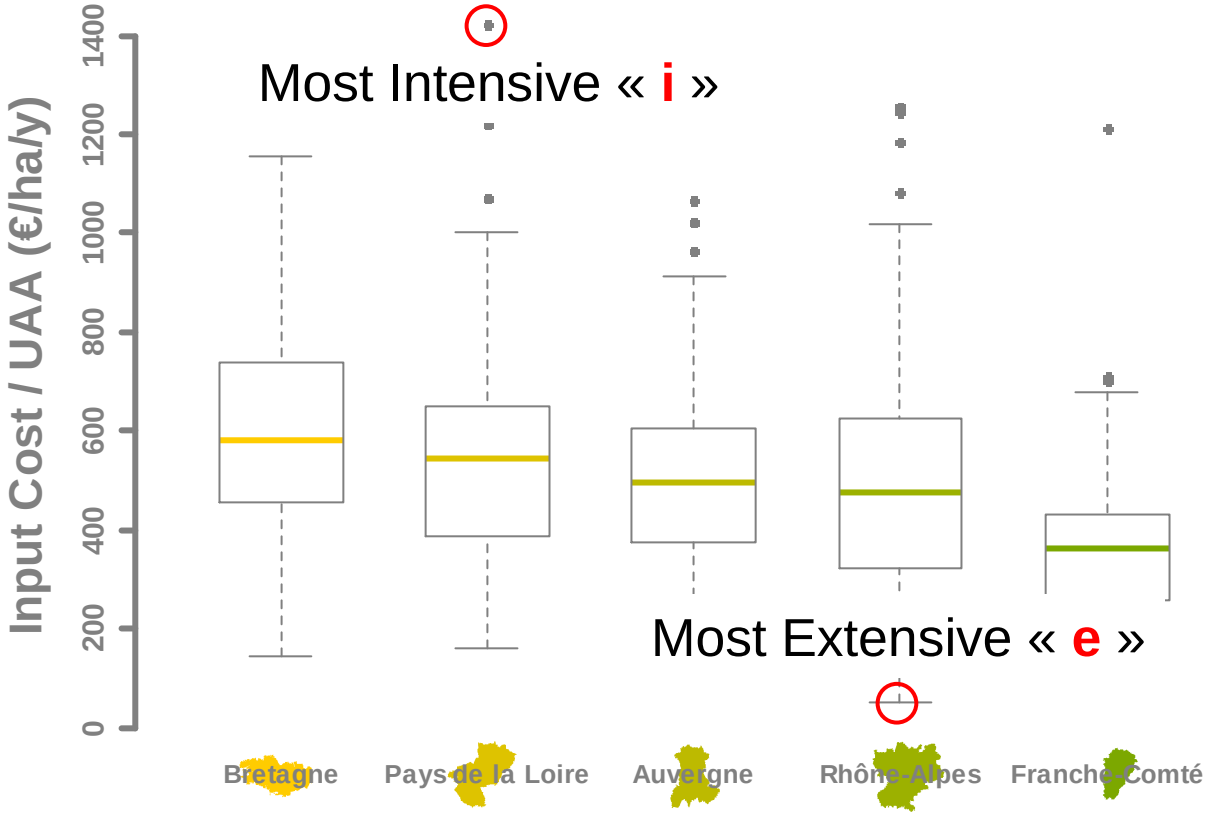


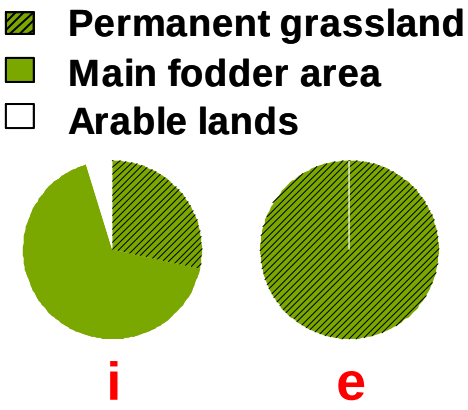


(All means ≠ significantly)

Results – The intensity gradient in dairy LFS

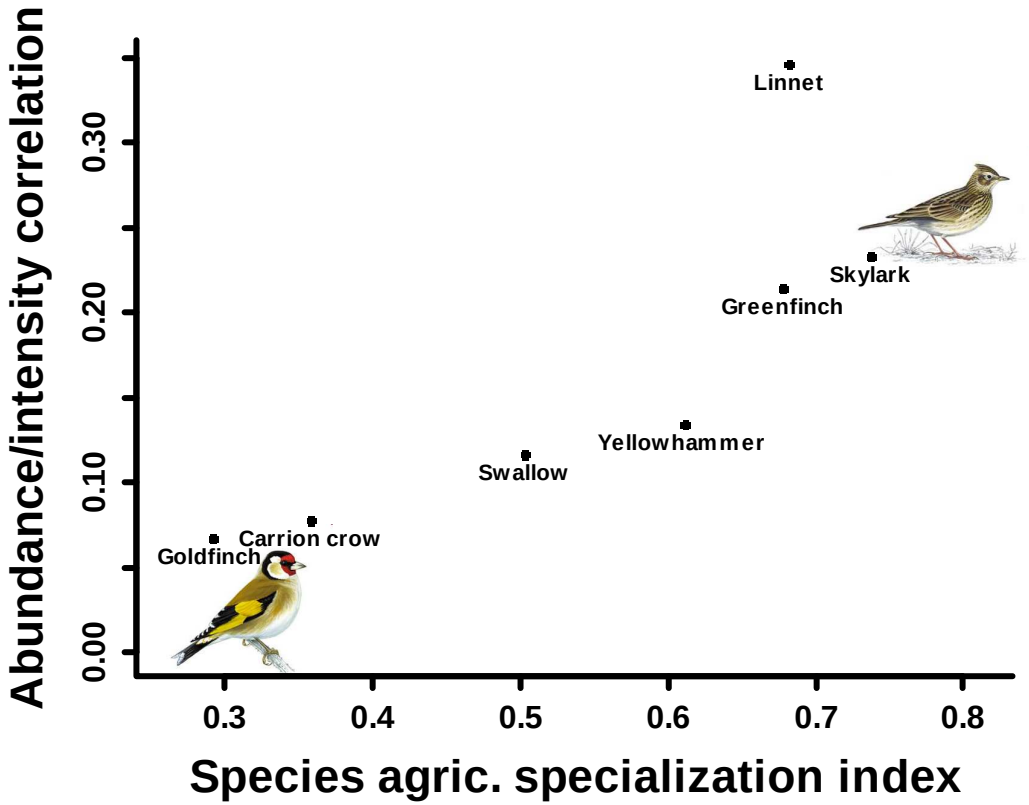






Results – Effect of intensity among species

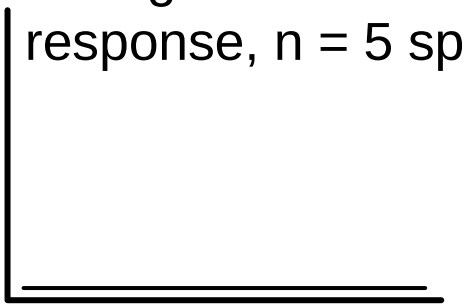
Species highly specialized in agricultural habitat seem more tolerant to intensity



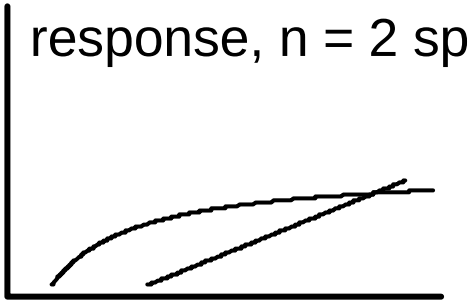
Results – Response to intensity

Some species show non-linear responses to the intensity of French dairy farm systems

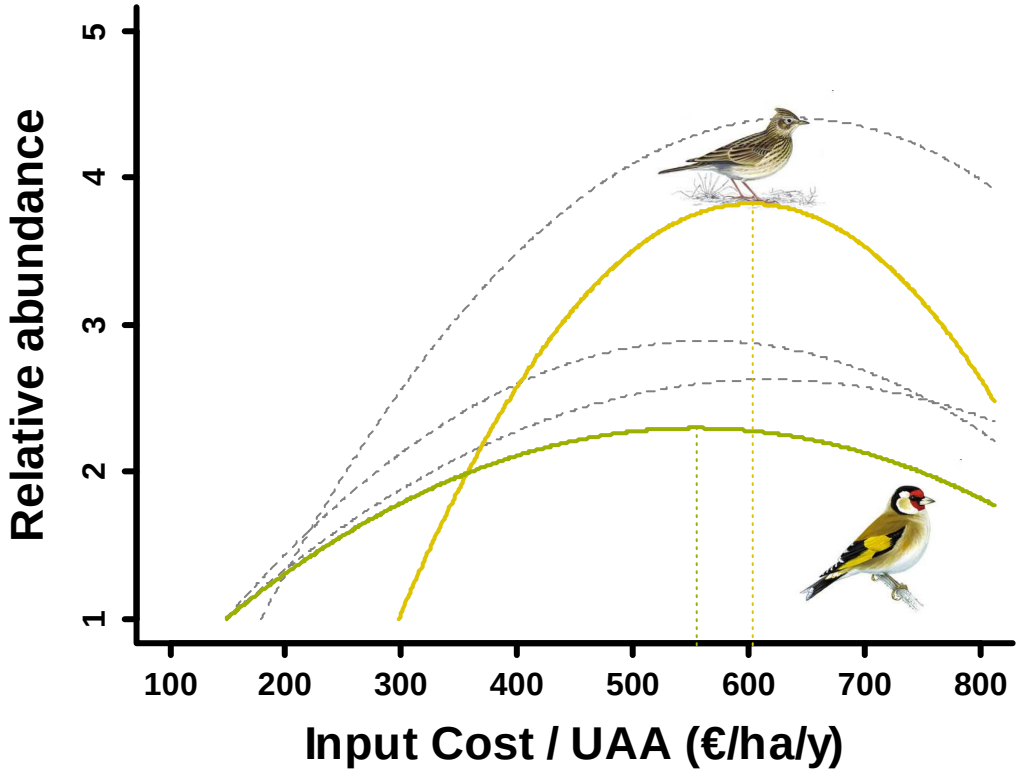
No significant response, n = 5 sp.



Positive response, n = 2 sp.



Optimum response, n = 5 sp.

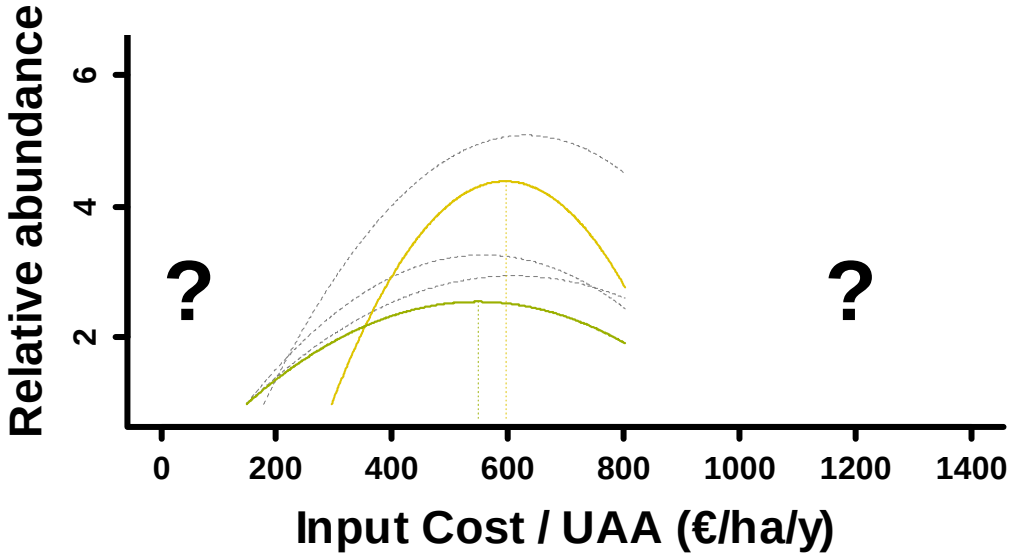


(GLMs on 85 sample points)

Discussion

- LFS maintaining suitable habitats for farmland birds

- Incomplete intensity gradient



- Comparison with other livestock / arable farming systems

- Linking responses to land use strategies

Thank you for your attention

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