

Multi-scale trade-offs between production and bird conservation in grassland based livestock farming systems

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ALIMENTATION
AGRICULTURE
ENVIRONNEMENT



OUTLINE

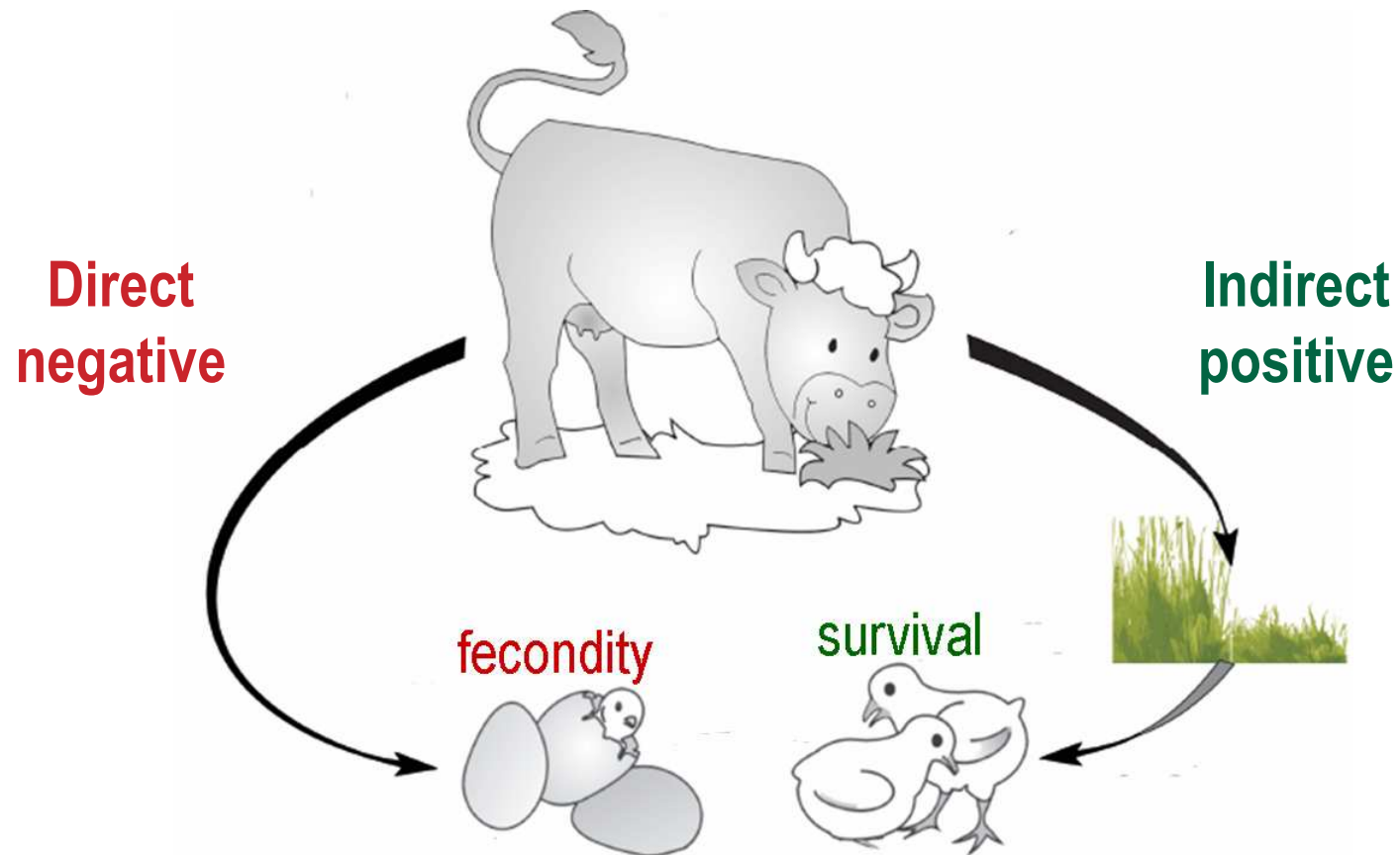
- Problem statement : trade-off & agro-ecological processes
- Methods : dynamic modelling
- Results : trade-offs accross scales
- Conclusion / some perspectives to reconcile production and biodiversity

Problem statement - Trade-off?



Problem statement – Processes involved in trade-off

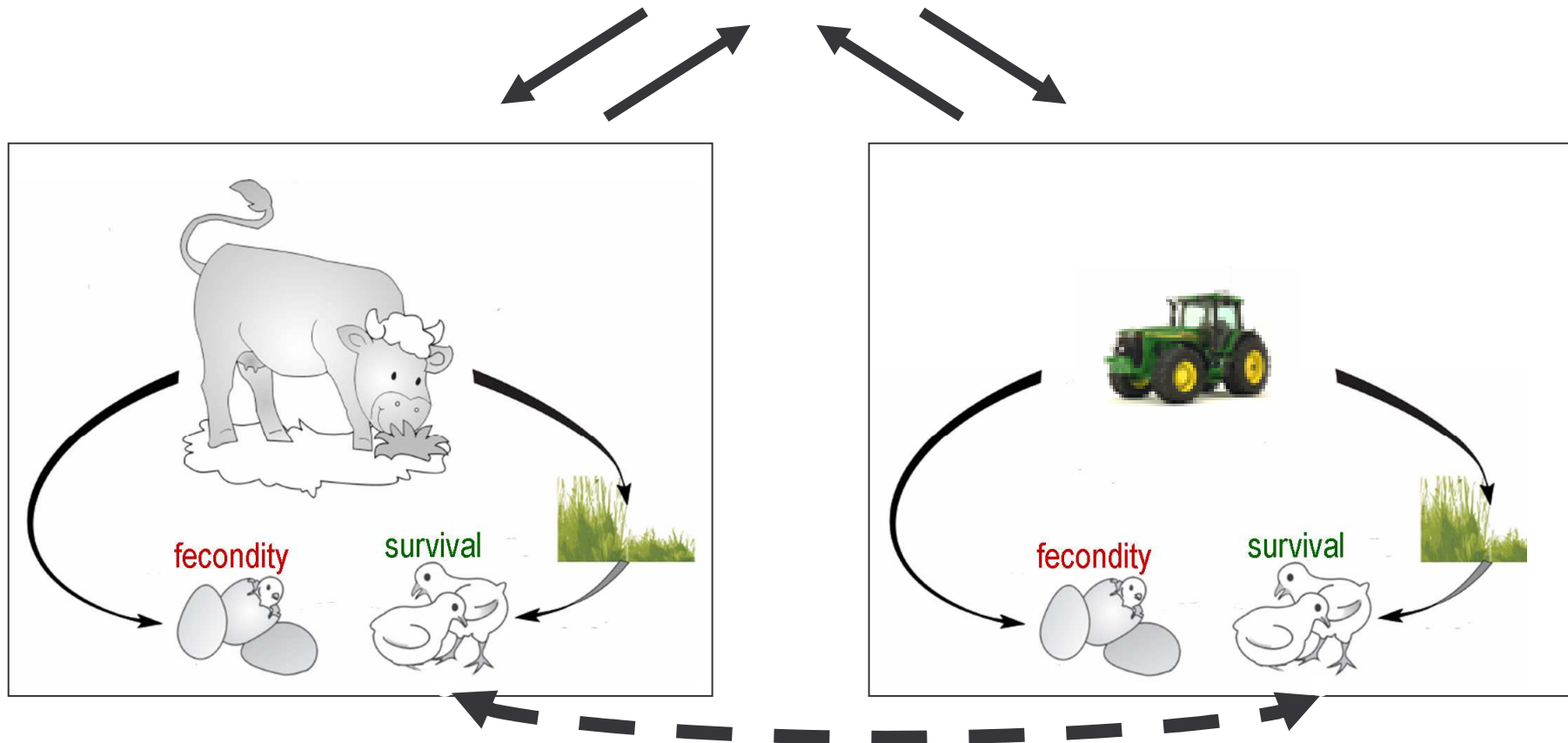
At field scale



Problem statement – Processes involved in trade-off

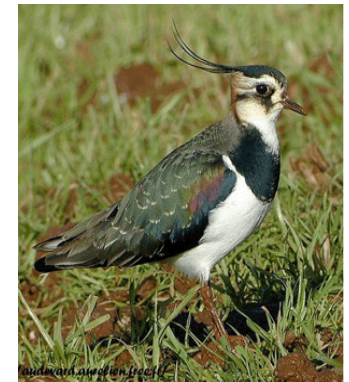
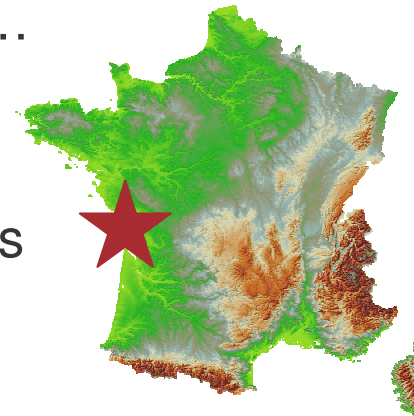
At farm scale

Farmers' decisions

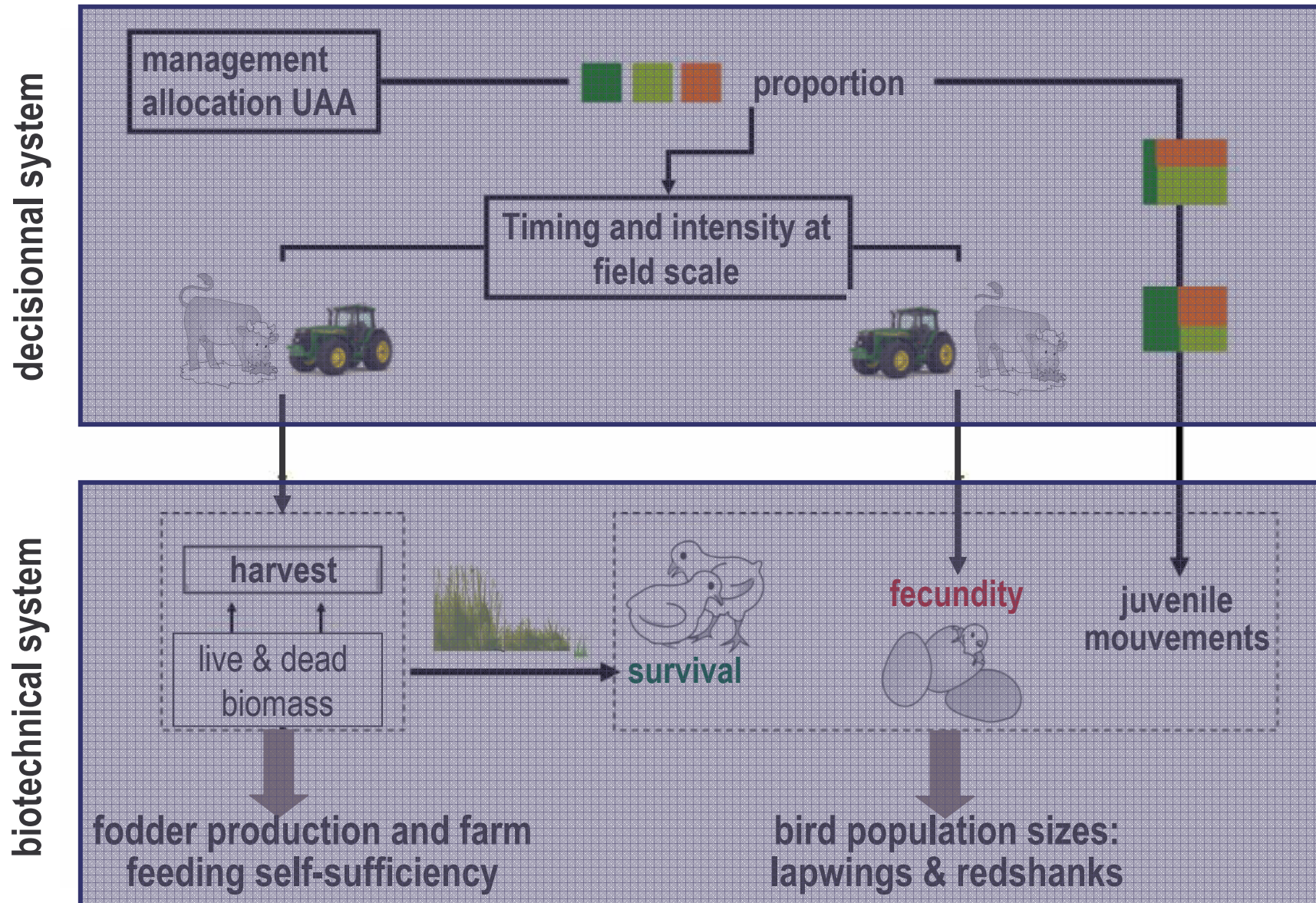


Question & methods

- **Shape of the trade-offs between production and biodiversity at different scales ?**
- **Methods:**
 - Dynamic modelling / viability theory...
 - Case study area: Pays de Loire, wet grasslands = habitat of 2 bird species
 - Data from 67 suckling farms, 0.8 – 2.0 LU /ha fodder area

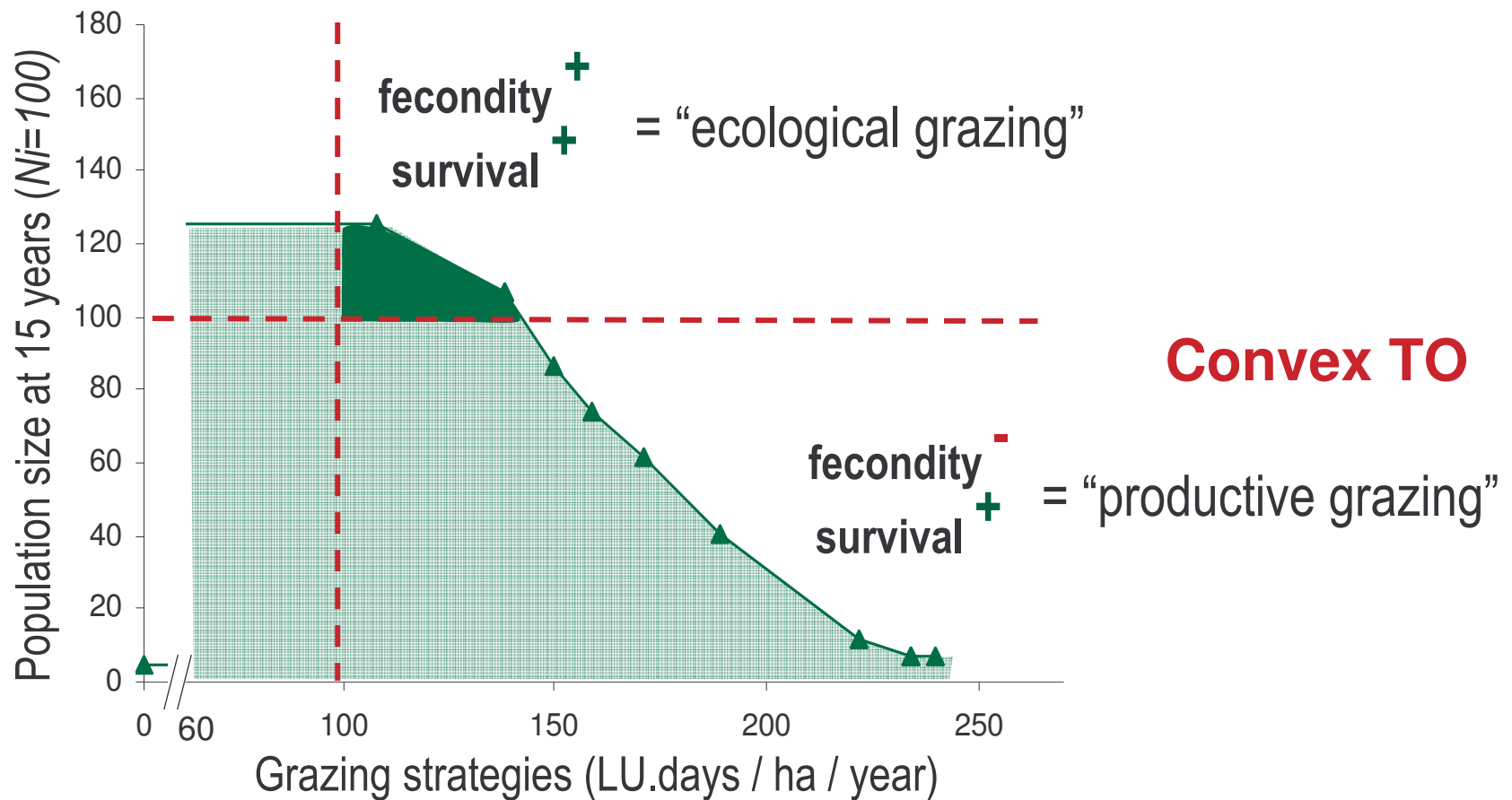


Methods – grassland based suckling farm model



Results – Trade-off at field scale

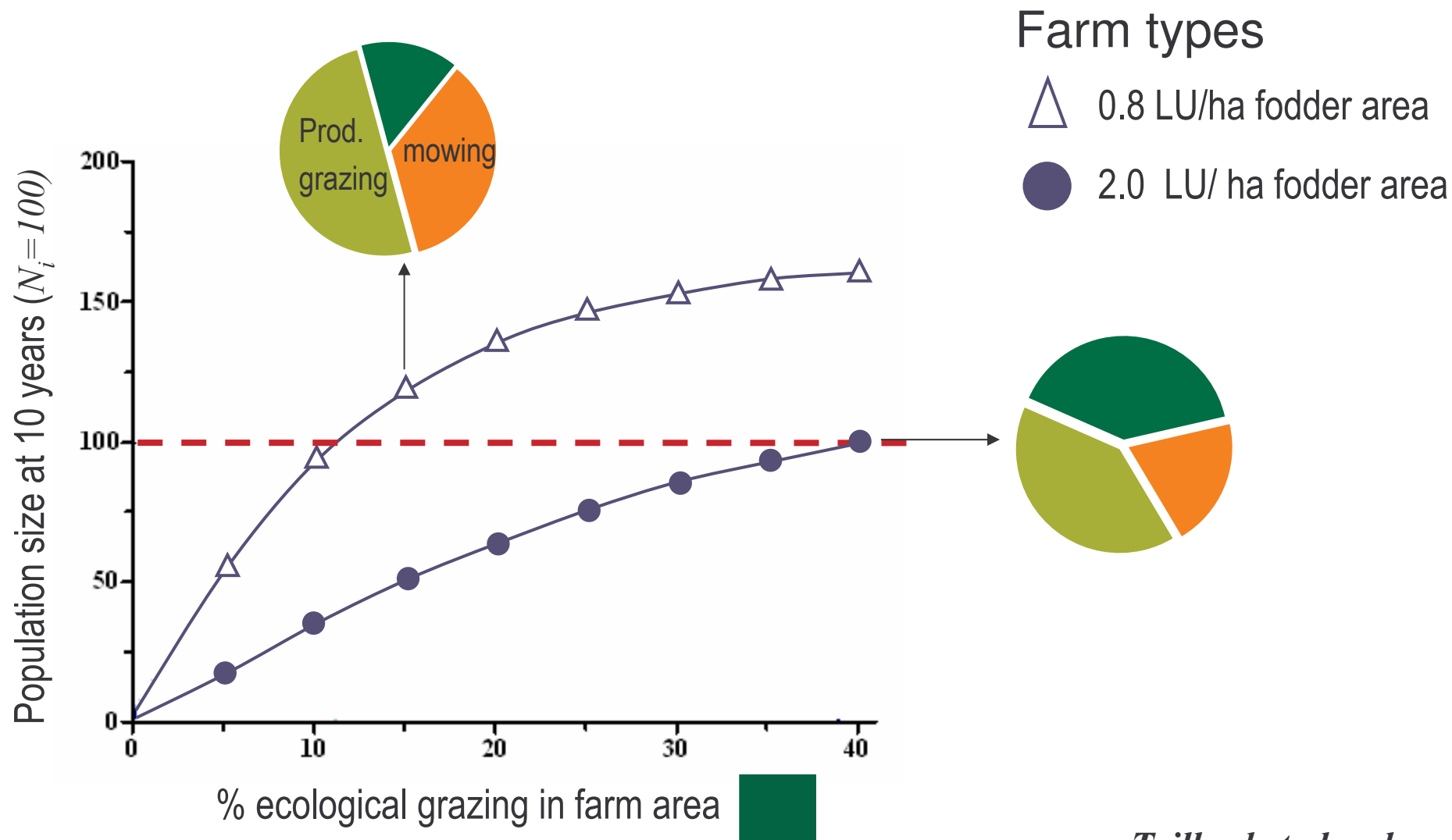
Sabatier et al. 2010
Ecological Modelling



 Set of grazing strategies

 Covable grazing strategies

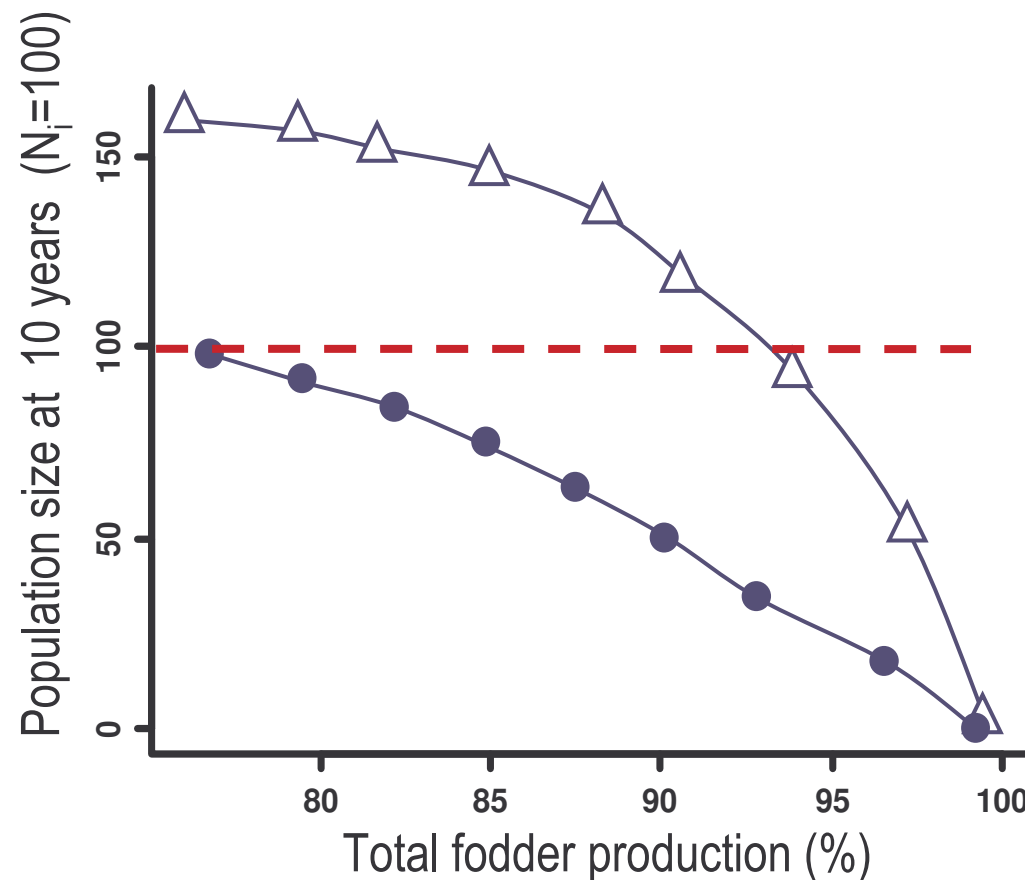
Results – Compensatory effect of ecological grazing



Results – Trade-off at farm scale

Teillard et al. subm.

Easier to achieve co-viability in extensive farms and **not** impossible in more intensive ones...



Concave trade-off

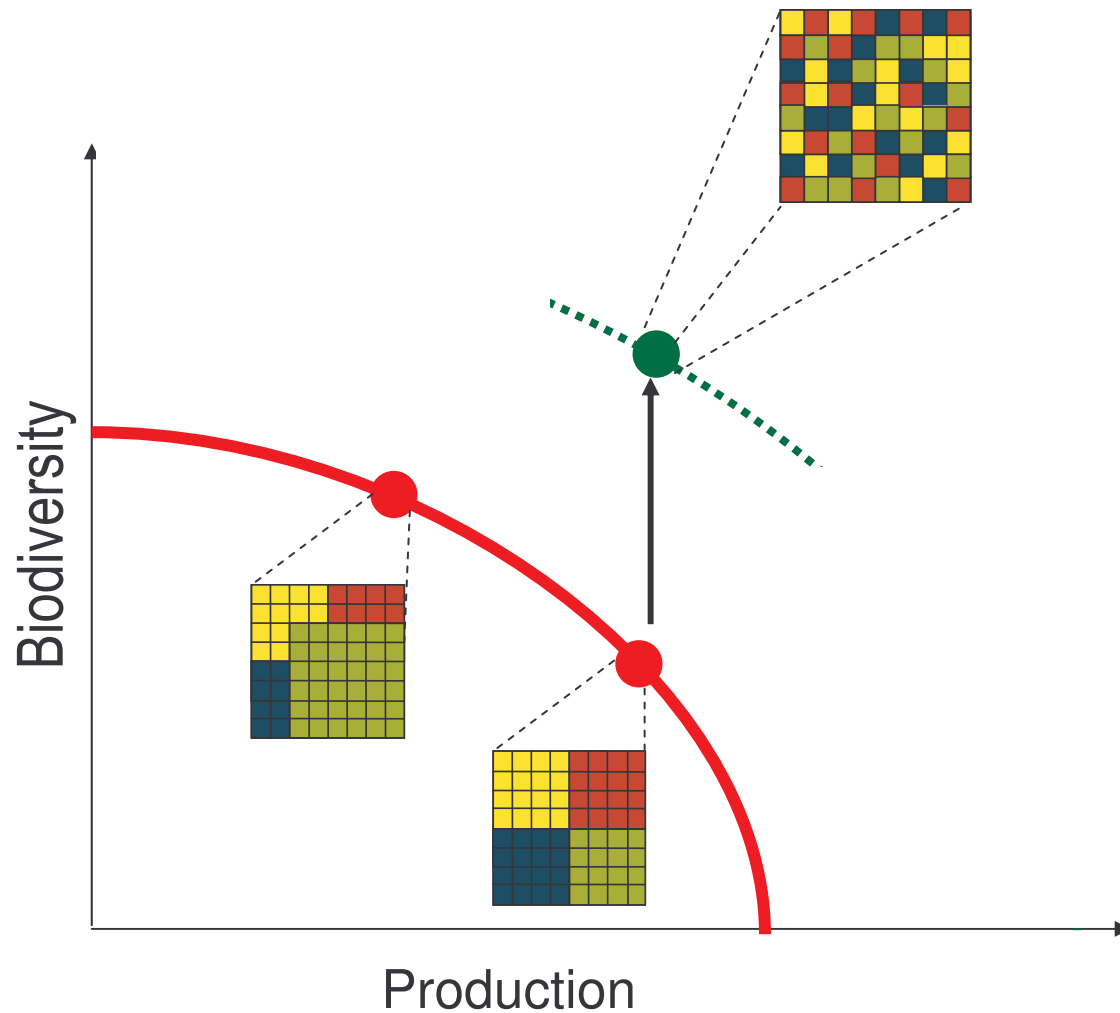
Farm types

△ 0.8 LU/ha FA

● 2.0 LU/ha FA

Results – Trade-off at landscape scale

Sabatier et al. subm.



**Spatial arrangement of
management practices**
= key driver of the
conciliation

Conclusion

- Changes in trade-off shapes accross scales: due to interactions between management regimes
- Even intensive farms can contribute to biodiversity conservation
- Diversity matters!

Perspective

- **THM = Up scaling clearly increases the degree of freedom to reconcile production and biodiversity thanks to compensatory and complementary effects**
- But.....
 - Modifying spatial arrangements of management may require **coordination between farmers** *cf* experience in the Netherland with meadow bird cooperatives
 - Farmers can also take advantage of biodiversity and link it to meat products and direct sale





Merci!



Fundings 2009-2012 :



FarmBird « *Coviability models of
FARMinG and BIRD biodiversity* »