



# **A socio-ecological framework for the analysis of forest edges dynamics and their consequences on ecosystems services in temperate landscapes**

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# A socio-ecological framework for the analysis of forest edges dynamics and their consequences on ecosystems services in temperate landscapes.

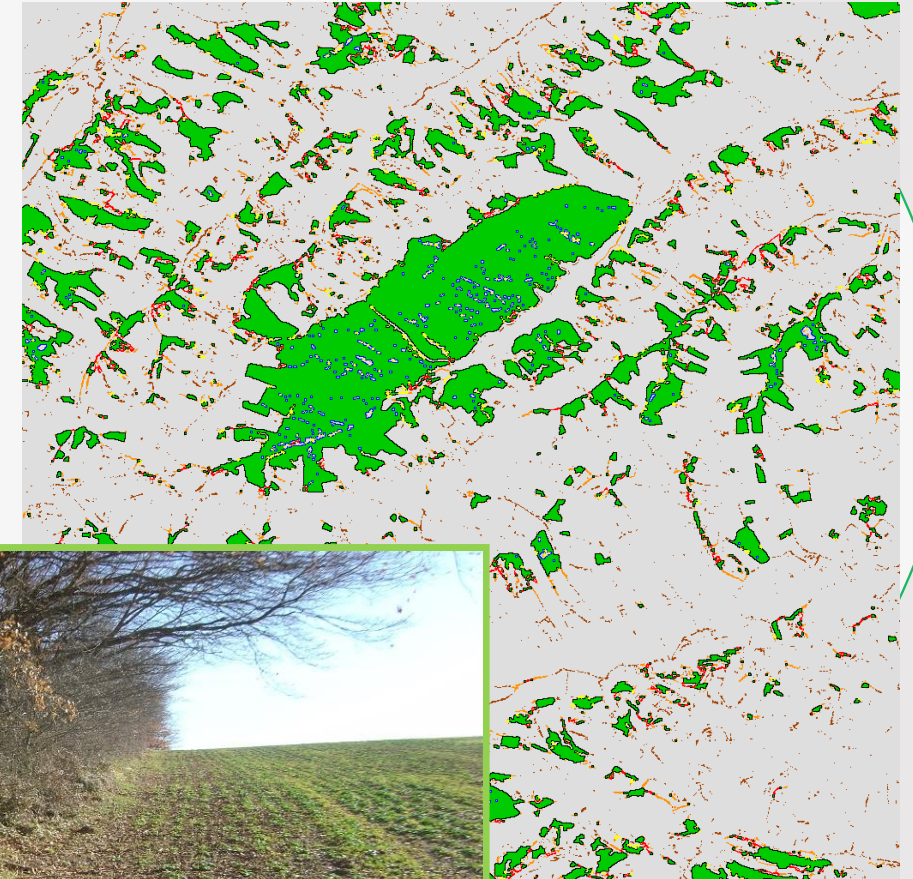
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# Forest edges: many facets of a very common landscape component

- ❑ Forest edges are very common in many temperate landscapes
- ❑ Ecological « edge effect »: what does it mean?
- ❑ Forester/farmer: place of interaction?



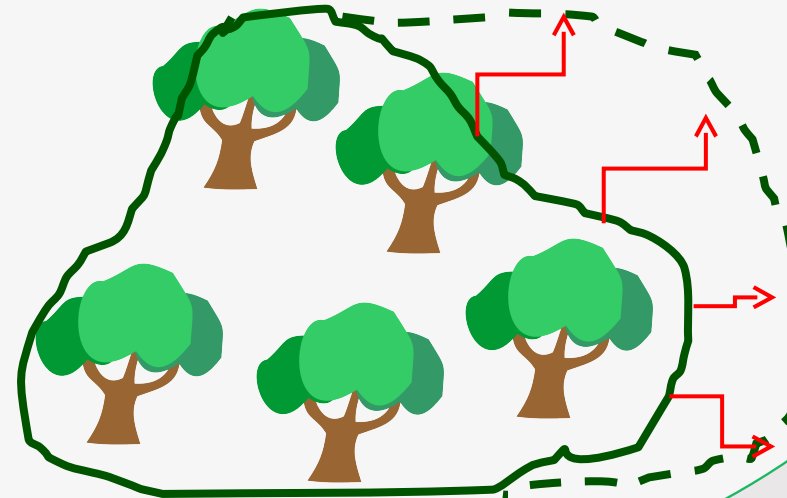
A socio-ecological system

# Forest edges: 2 adjacent vegetation structures

- Forest / non-forest discontinuity
- Different types of forests
- Many possible non-forest habitats
  - Water bodies
  - Human infrastructures
  - « No thing » (cliffs)

# Forest edges: Dynamics

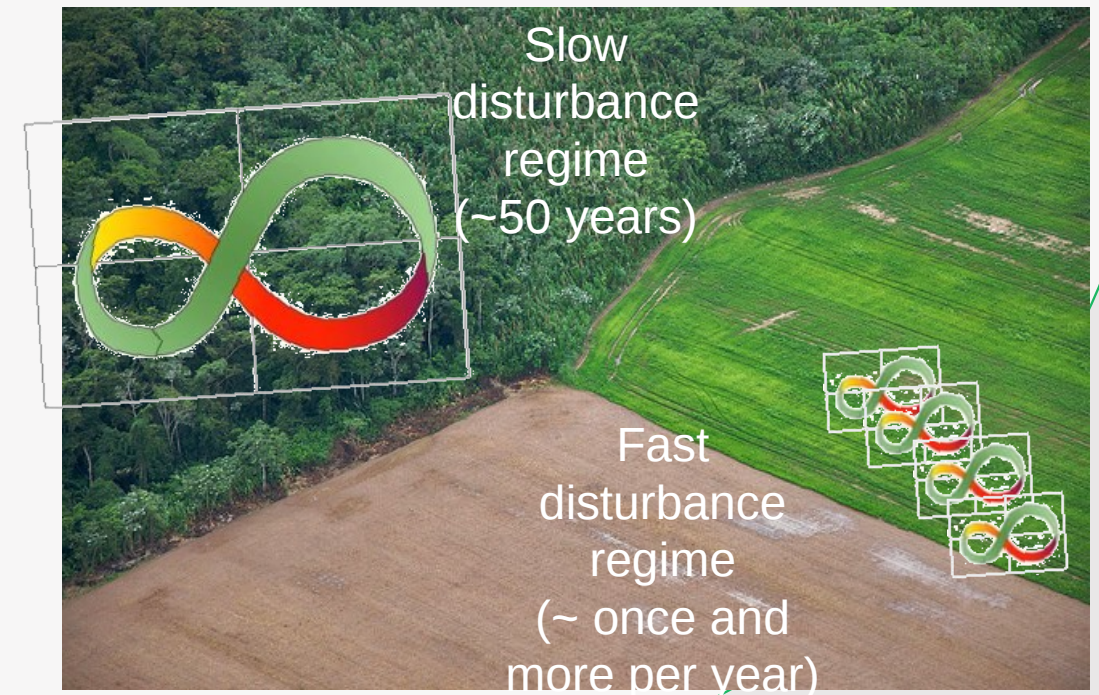
- Natural dynamic of forest is expansion
- Older edges can disappear into the forest behind new edge
- Or, new edge can appear by clearing part of the forest
- Edges have an age





# Forest edges: 2 rates of disturbance

- ❑ Forest edges has to be reset regularly
- ❑ Disturbance of vegetation limits tree expansion
- ❑ Higher rate of disturbance in non-forest habitat than in forest



# Forest edges: 2 managers



- ▢ Forester / farmer
- ▢ Their own objectives
- ▢ Edges are a consequence of their practices
- ▢ Farming is the main origin of forest edges in temperate landscapes
- ▢ Private ownership of land induces stability of edges

# Forest edges: objects of a management

- Edges are consequence of management
- But they are also managed themselves
  - To control tree dynamics
  - To exploit their resources
- Generally managed by/for farmers

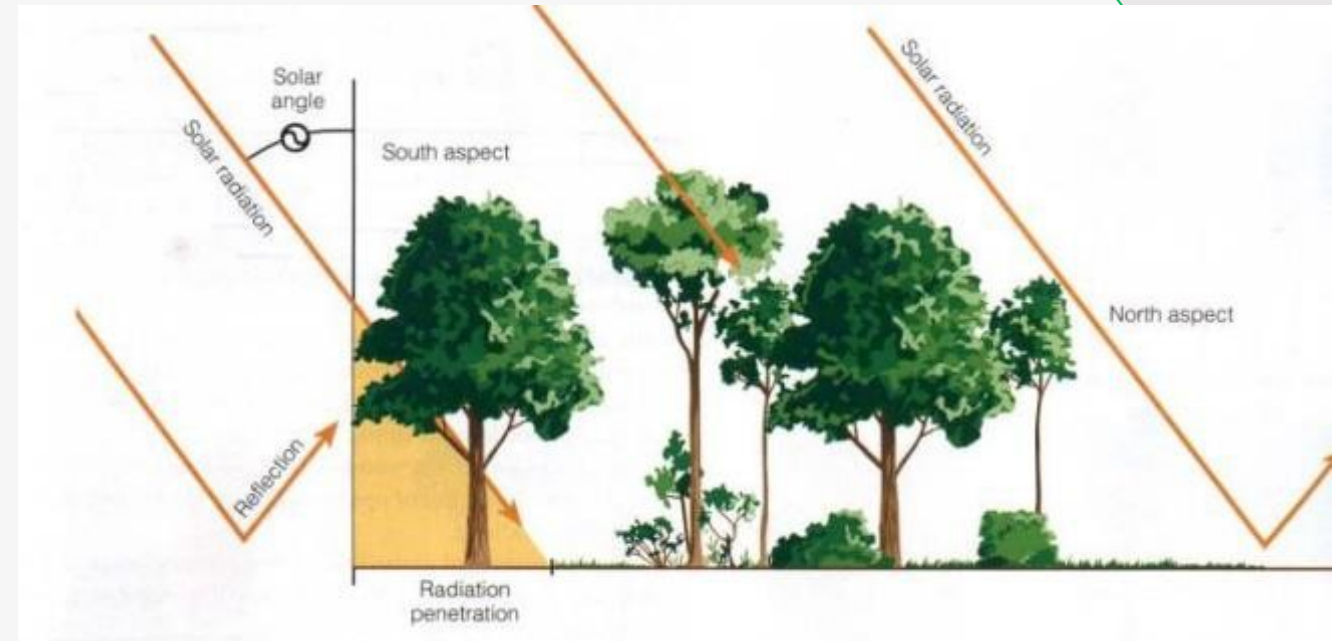


Importance of secondary



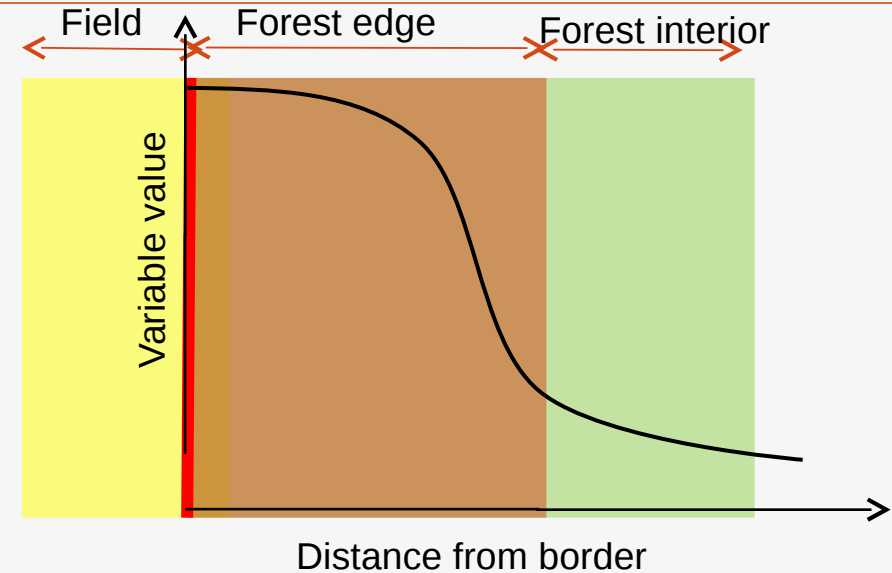
# Forest edges: physical gradients

- Discontinuity of vegetation structure □ heterogeneity
- Gradients of physical parameters



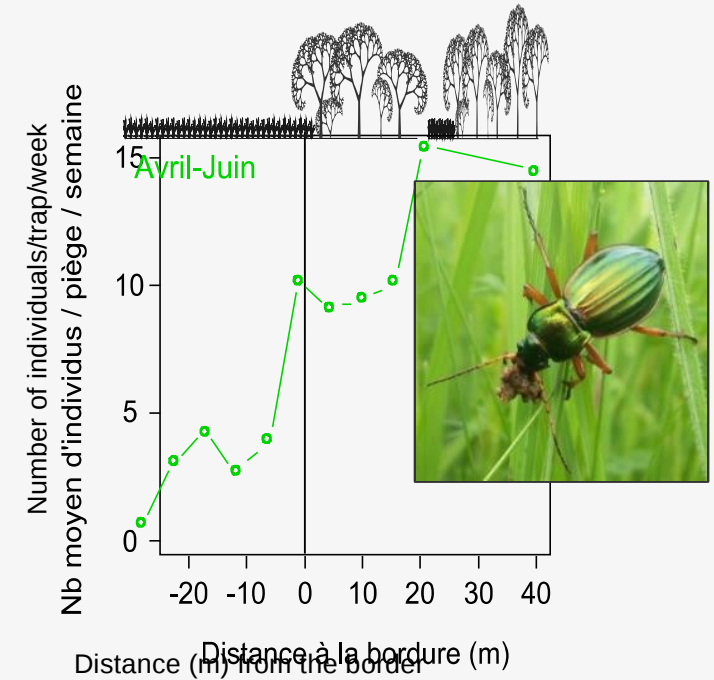
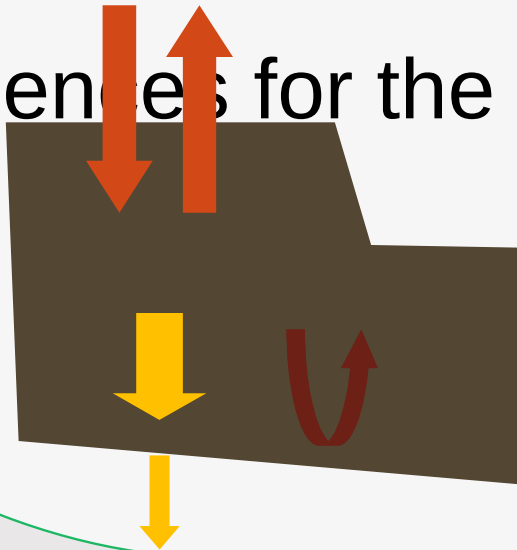
# Forest edges: biological gradient

- Species influenced by physical conditions
- Re-distribution of individuals
- Secondary edge effect
- Biological gradient/heterogeneity



# Forest edges: interfaces between habitats

- Edges influence fluxes of matter, energie, information
- Edges as filters
- Consequences for the adjacent



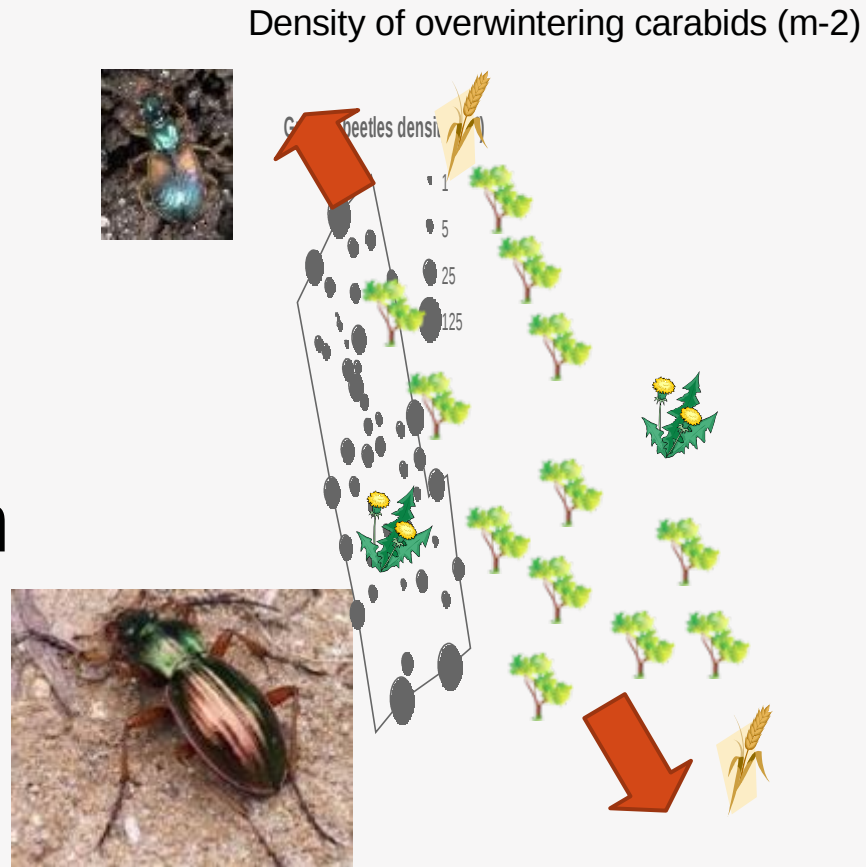
# Forest edges: are very diverse

- Many factors influence edge characteristics
- Which one are the most important for edges effects?
- Which one can we modify?



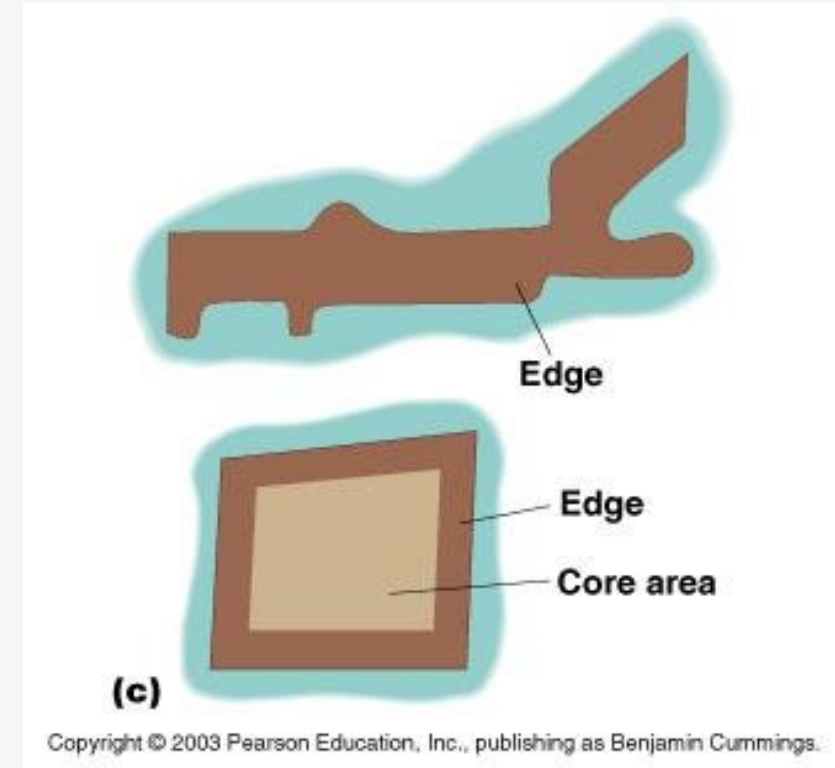
# Forest edges: key role in ecosystem services

- Some fluxes support ecosystem services (or dys-services)
- Modifications of edges may enhance ecosystem



# Forest edges: limits between inside and outside

- At larger scales, edges are limits of forest fragments
- Core area/edge area
- Edge effects at fragment scale are not the same as local edge effect



# Forest edges: a spatially-defined socio-ecological system

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