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

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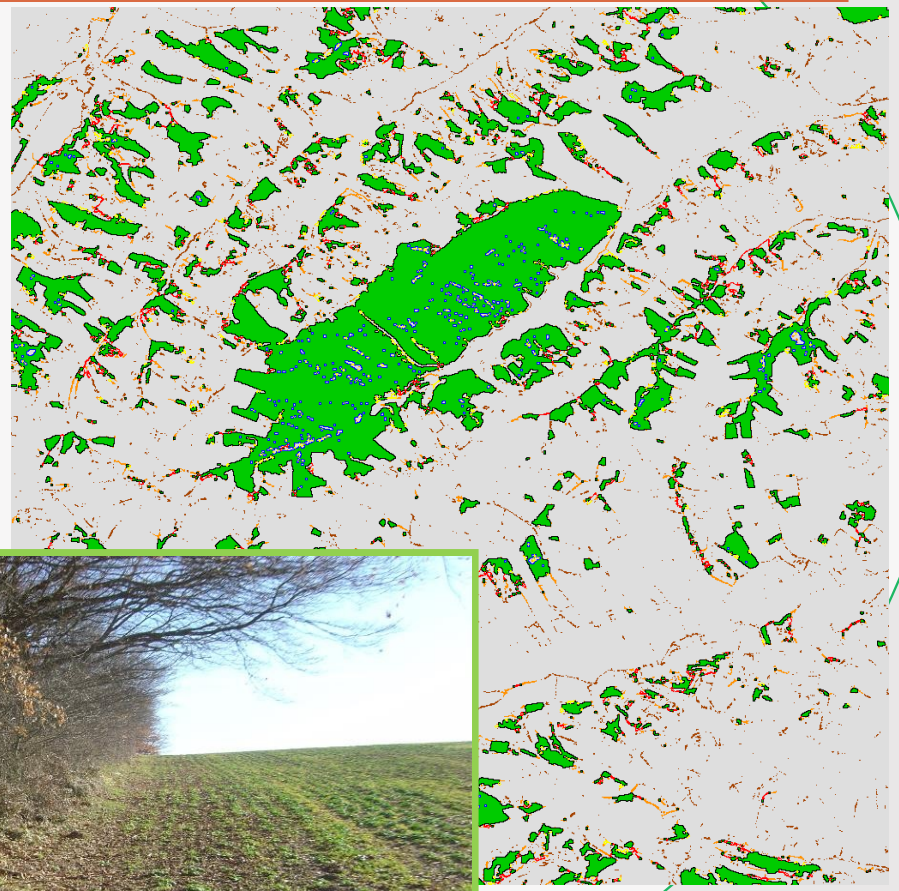
Forest edges: many facets of a very common landscape component

- 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

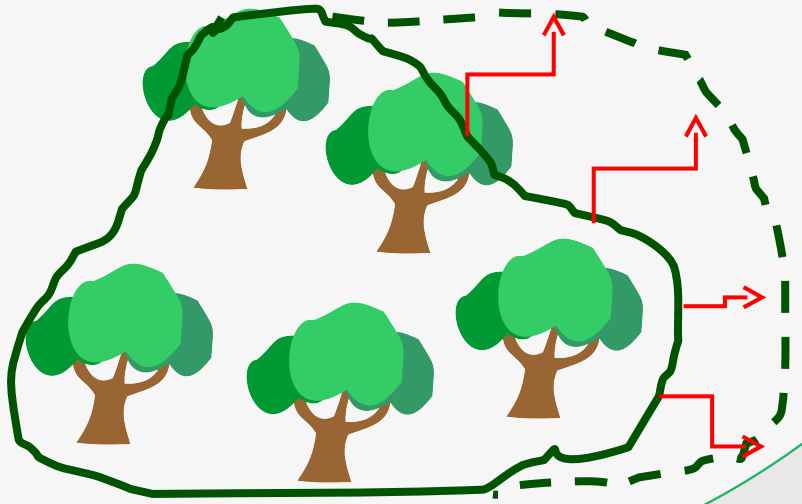


Forest edges: 2 adjacent vegetation structures

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

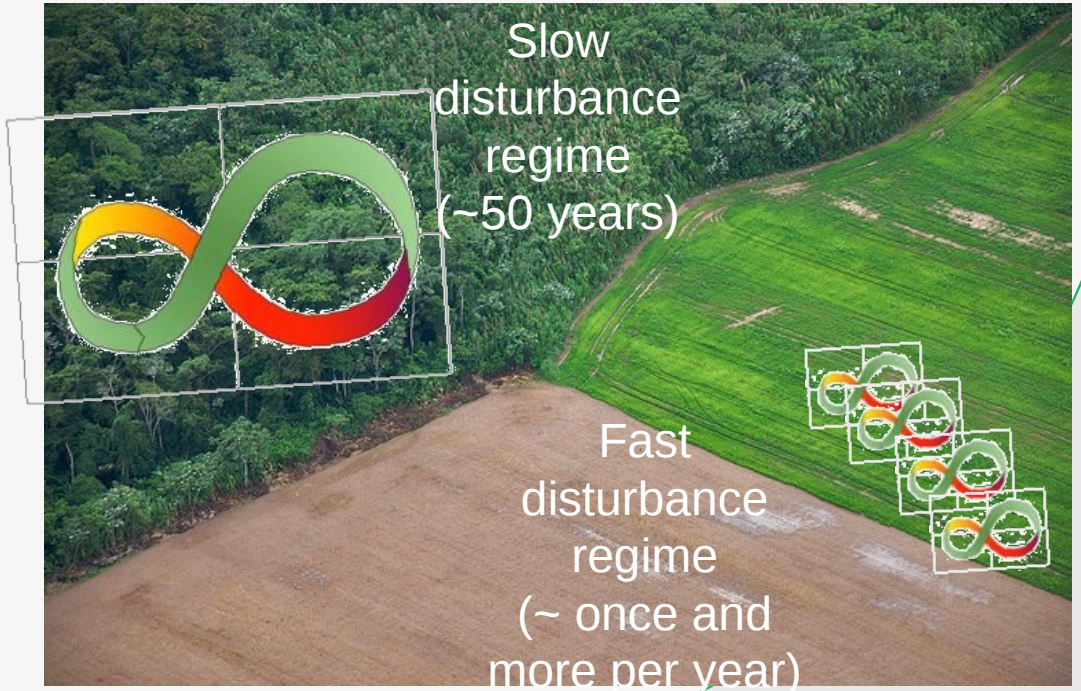
Forest edges: Dynamics

- 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

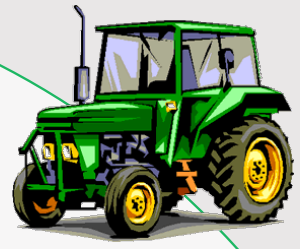


Forest edges: 2 rates of disturbance

- 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



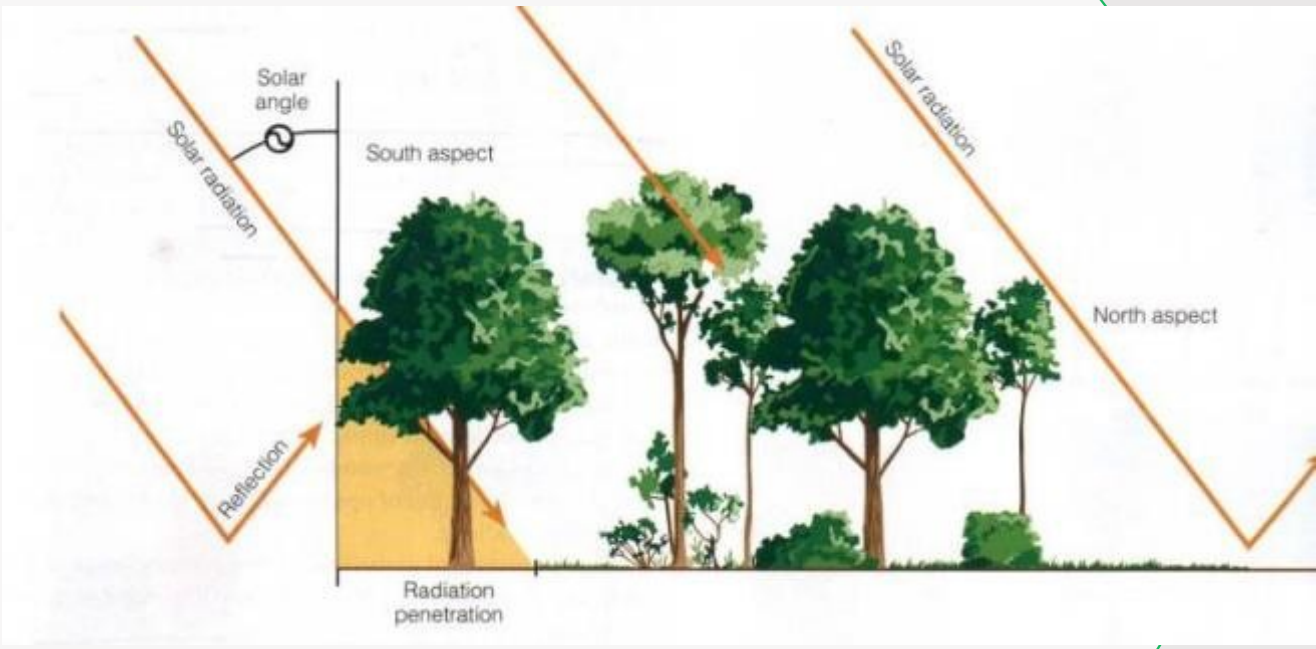
- Forester / farmer
- Their own objectives
- Edges are a consequence of their practices
- Farming is the main origin of forest edges in temperate landscapes
- Private ownership of land induces stability of edges

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

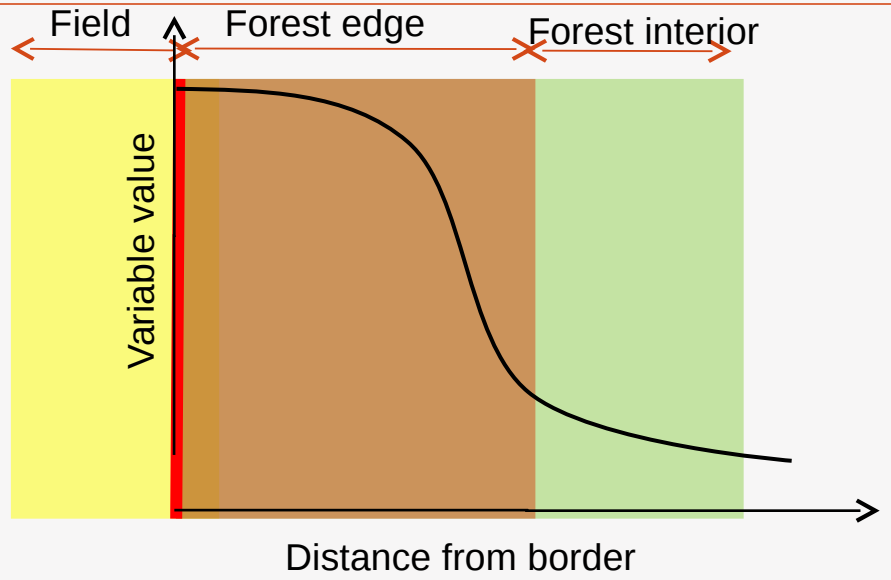
Forest edges: physical gradients

- Discontinuity of vegetation structure heterogeneity
- Gradients of physical parameters



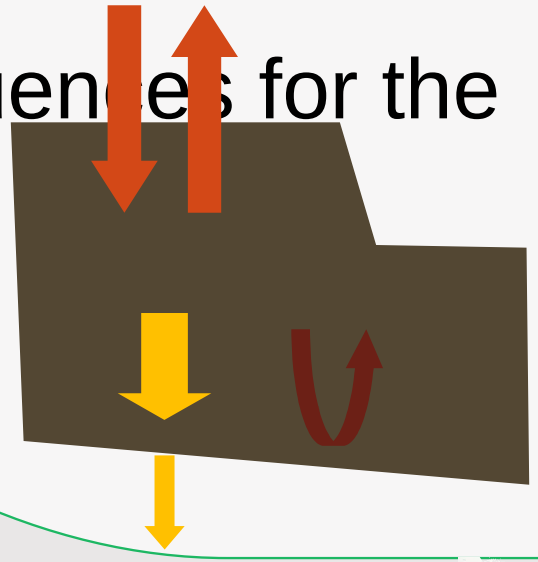
Forest edges: biological gradient

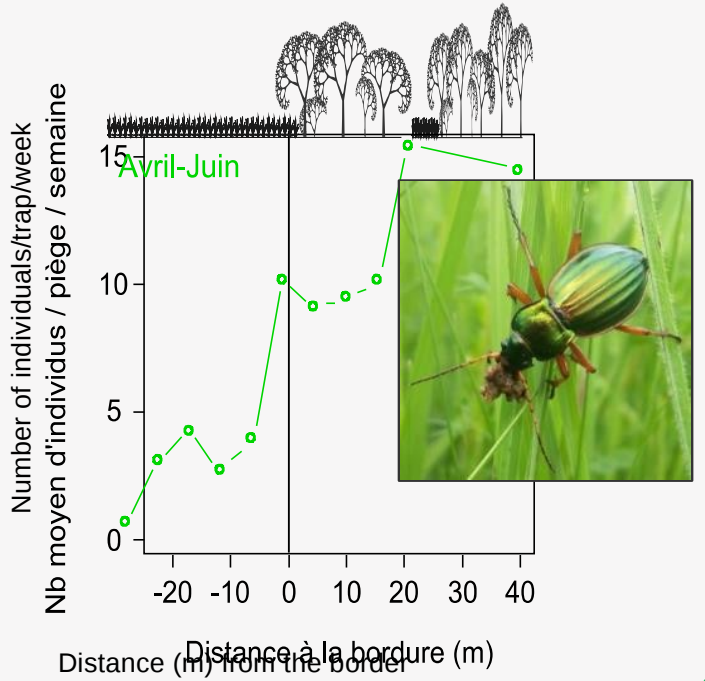
- Species influenced by physical conditions
- Re-distribution of individuals
- Secondary edge effect
- Biological gradient/heterogeneity
- Biological gradient



Forest edges: interfaces between habitats

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



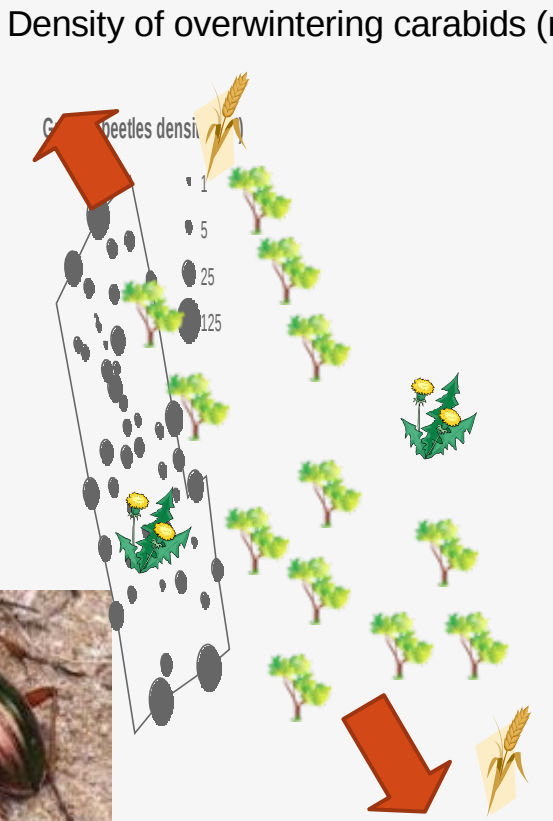


Forest edges: are very diverse

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

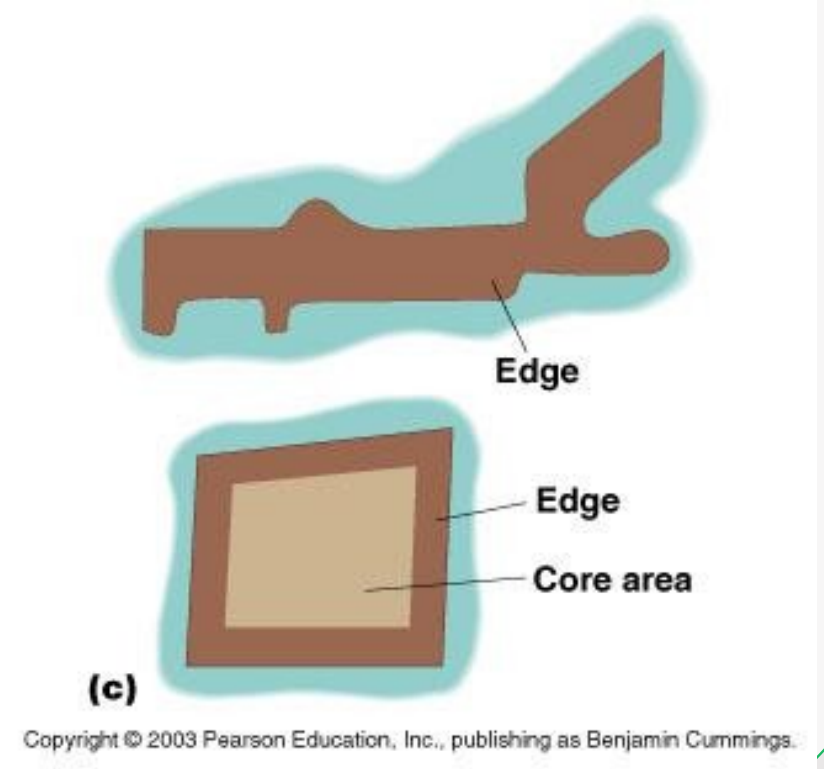
Forest edges: key role in ecosystem services

- 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 spatialy-defined socio-ecological system