



Micro-topography associated to forest edges

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A photograph of a forest edge landscape. In the foreground, there is a grassy area with some dry leaves and twigs. In the background, there is a dense forest of trees with bare branches, suggesting a late autumn or winter setting. The text "Micro-topography associated to forest edges" is overlaid in white.

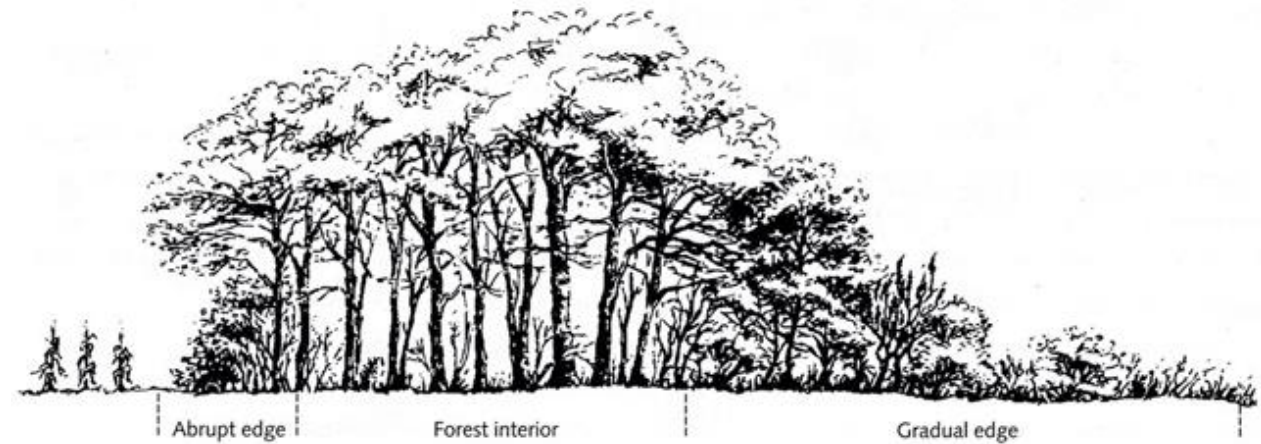
Micro-topography associated to forest edges

Marc Deconchat; Alexis Fayat; Laurent Burnel; Sylvie Ladet

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Forest edges : more than a discontinuity of tree cover



Alignier, A. and M. Deconchat (2013). "Patterns of forest vegetation responses to edge effect as revealed by a continuous approach." *Annals of Forest Science* **70**(6): 601-609.

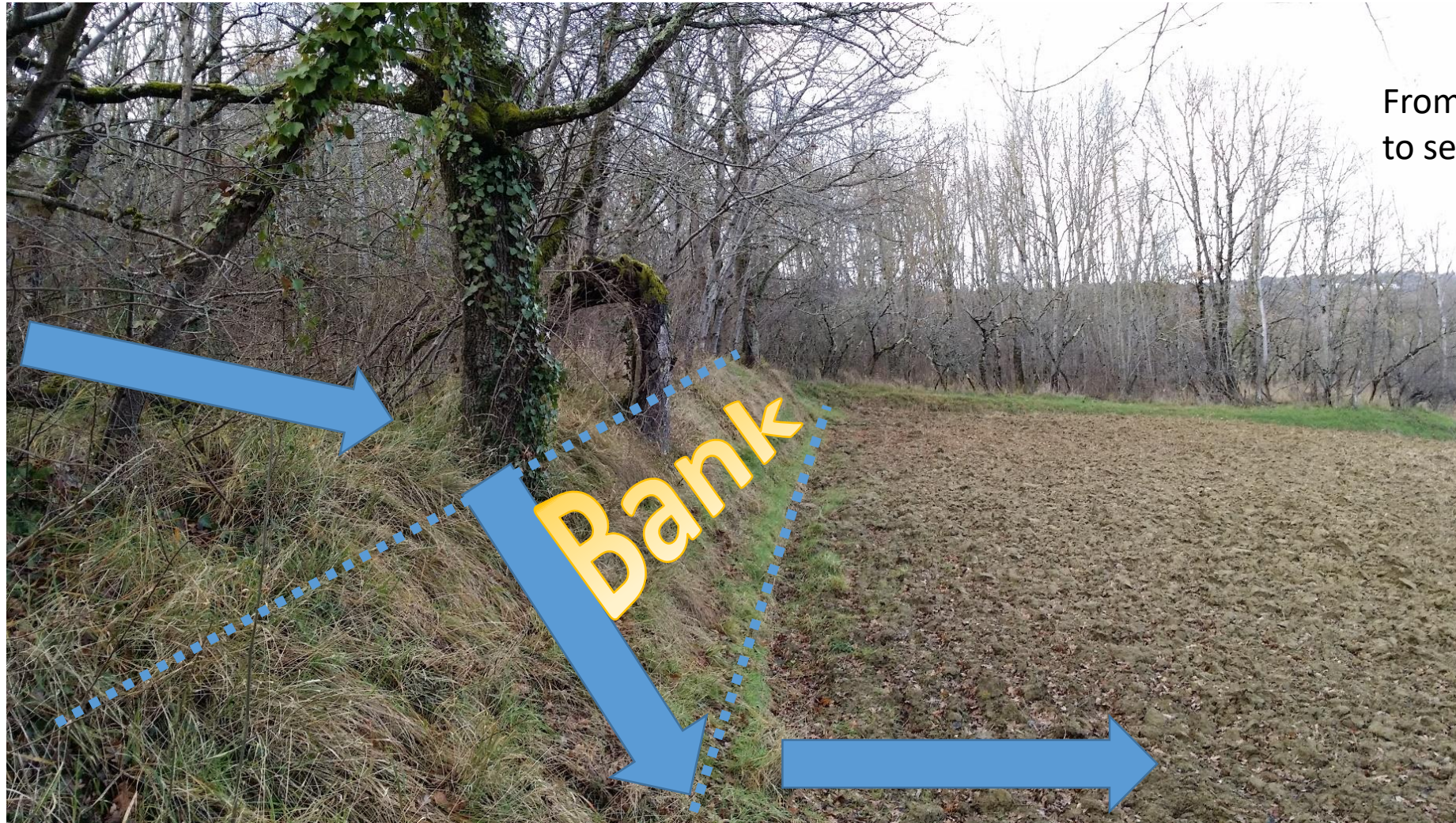
A diversity of micro-topographic features

- Fence
- Stonewall
- Earth bank
- Ditch
- Path
- ...



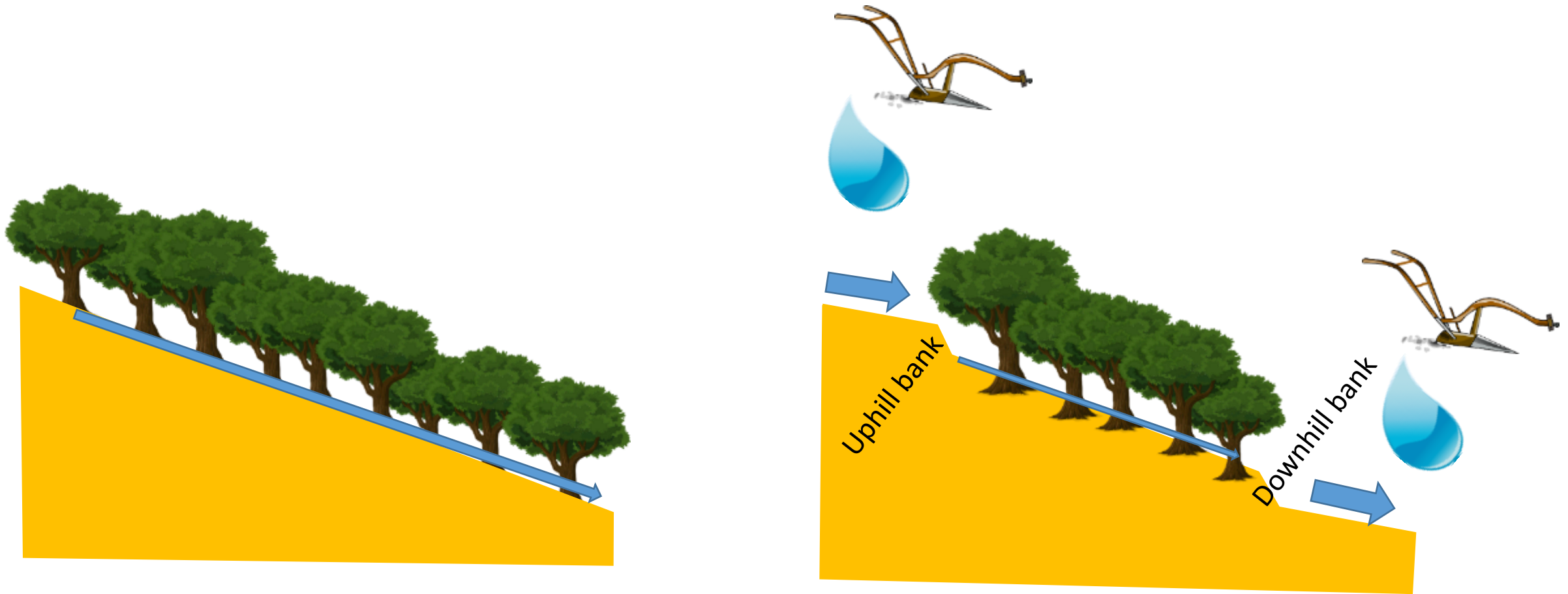
Very few
scientific papers
about these very
common
landscape
components

Banks are very frequent in hilly regions



From decimetres
to several metres

Dynamics of erosive banks on slopes



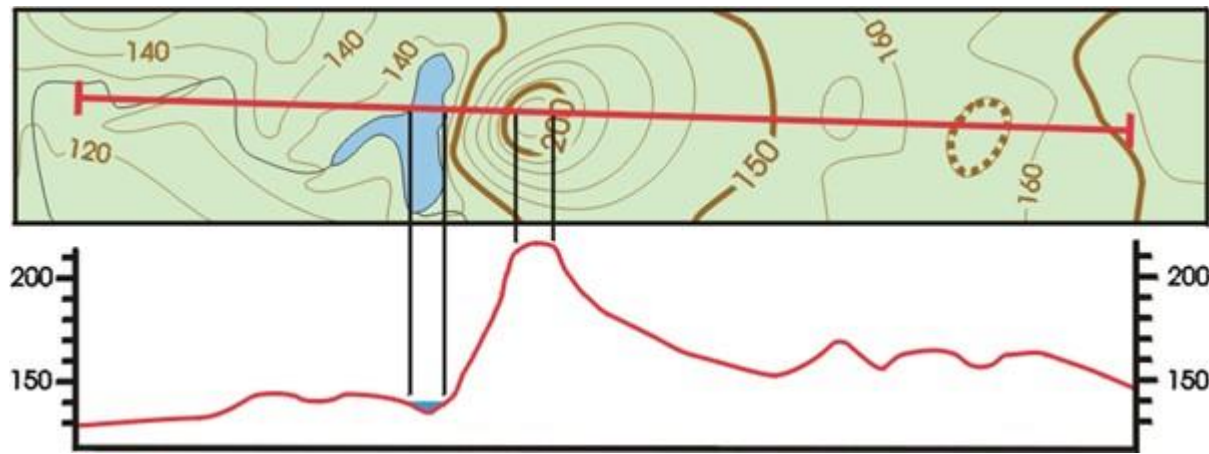
The height of the bank depends on soil, weather, erosive factors (tillage, animals), slope and TIME



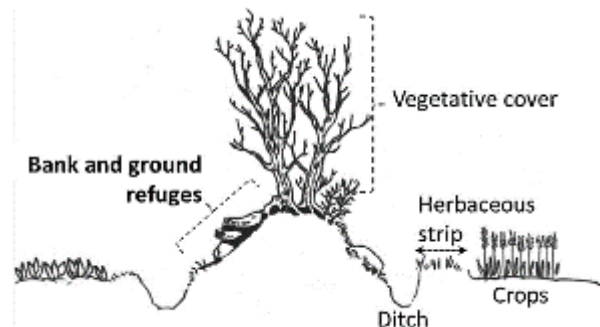
Most of the embankments at the forest edges are created by the discontinuity of erosion process, they are not the reason of the edge location

How to describe? Transect

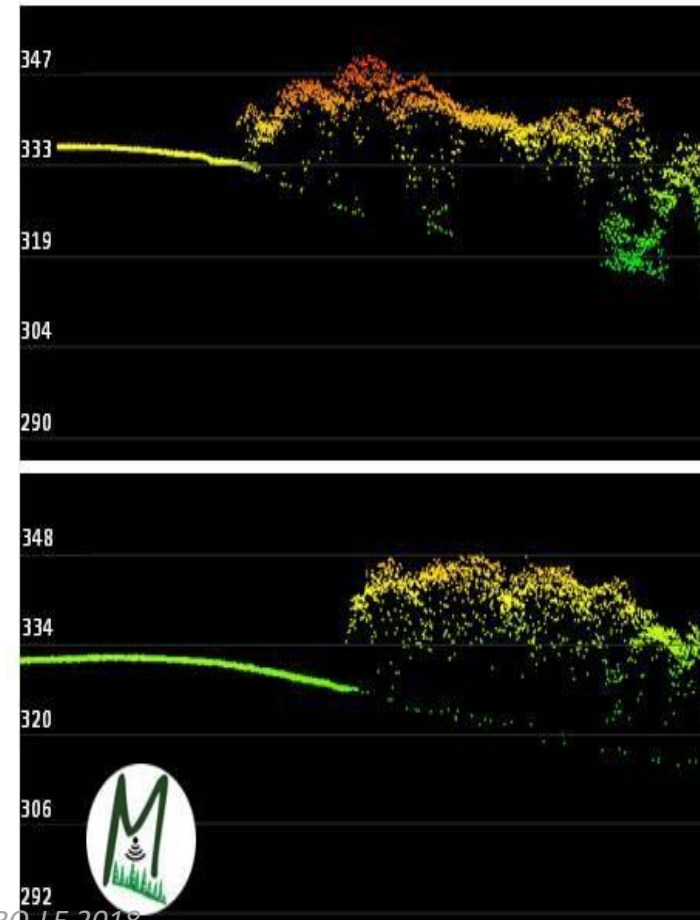
- No standard method for describing edge-related microtopography
- From topographic profil to LIDAR



Lecq, S., A. Loisel, F. Brischoux, S. J. Mullin and X. Bonnet (2017). "Importance of ground refuges for the biodiversity in agricultural hedgerows." *Ecological Indicators* **72**: 615-626.

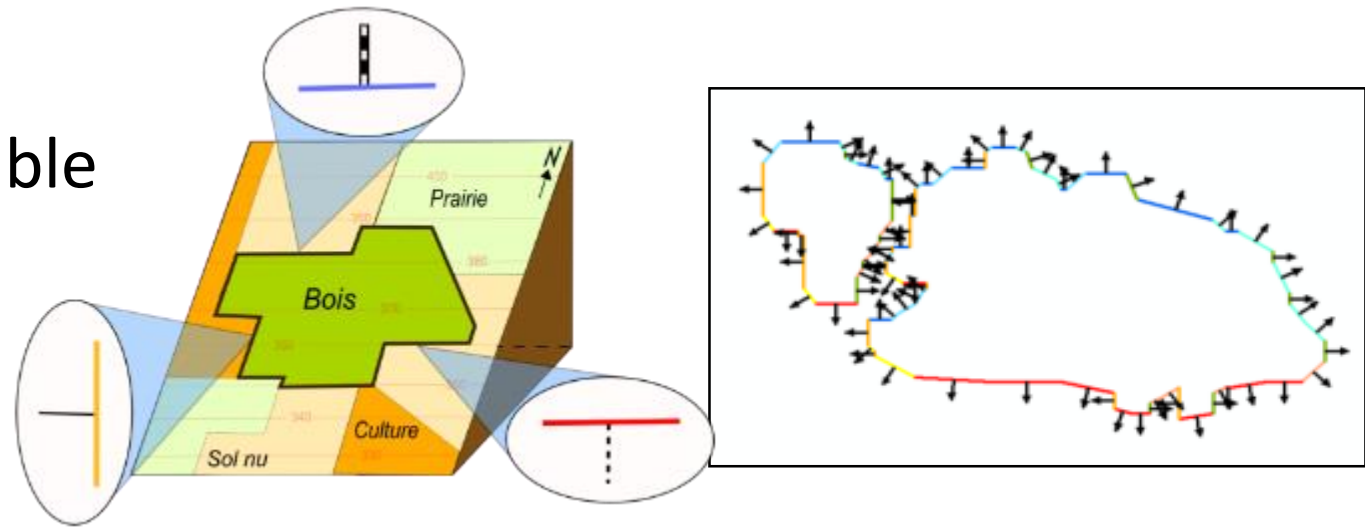
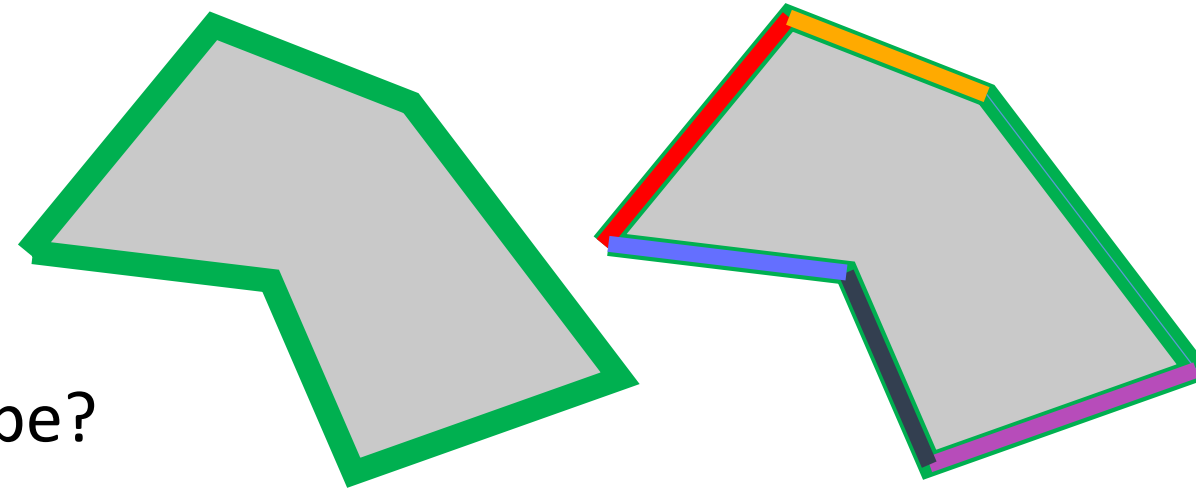


Deconchat et al. forest edges and microtopography- IUFRO LE 2018



Mapping

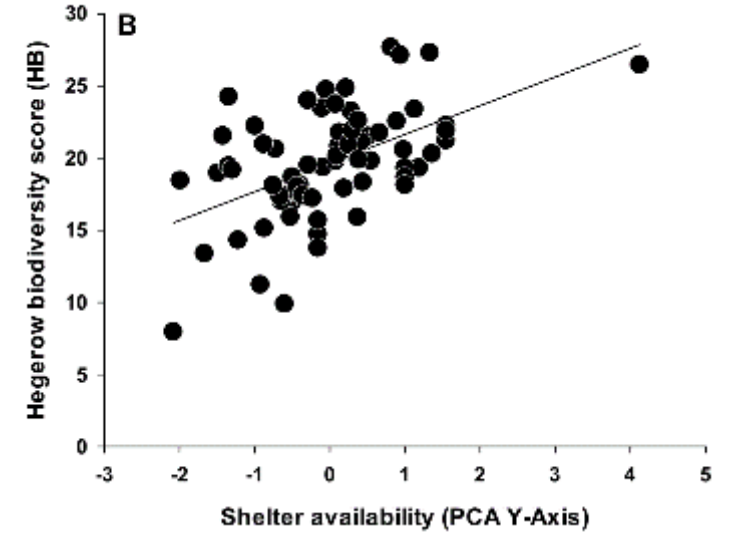
- Where are they located?
- How much is available in the landscape?
- How are they connected?
- No method and no map available



Deconchat, M., S. Ladet and A. Alignier (2011). "Mapedger: an innovative mapping tool for forest edges." *En direct des labos* 41: 2 p.

Roles for biodiversity

- Vegetation
- Arthropods
- Vertebrates
- Micro-habitat



Lecq, S., A. Loisel, F. Brischoux, S. J. Mullin and X. Bonnet (2017). "Importance of ground refuges for the biodiversity in agricultural hedgerows." *Ecological Indicators* **72**: 615-626.



Banks and microtopographic features provide a large range of ecological conditions and can be crucial for many species



Management: who is in charge?

- Who is the manager? The forester or the farmer?
- Use of herbicides or not, burning or not, mowing or not...
- A large diversity of management practices that influence ecological characteristics



Conclusion: The need for a better understanding



Despite their number, diversity and ecological importance, very few studies focused on these microtopographic features in forest edges, at fine and large scales

How is it in your country?

How to compare?

How to develop a method for measurement?

Pawlik, Ł. (2013). "The role of trees in the geomorphic system of forested hillslopes — A review." Earth-Science Reviews **126**: 250-265.