Micro-topography associated to forest edges

Marc Deconchat, Alexis Fayat, Laurent Burnel, Sylvie Ladet

Micro-topography associated to forest edges

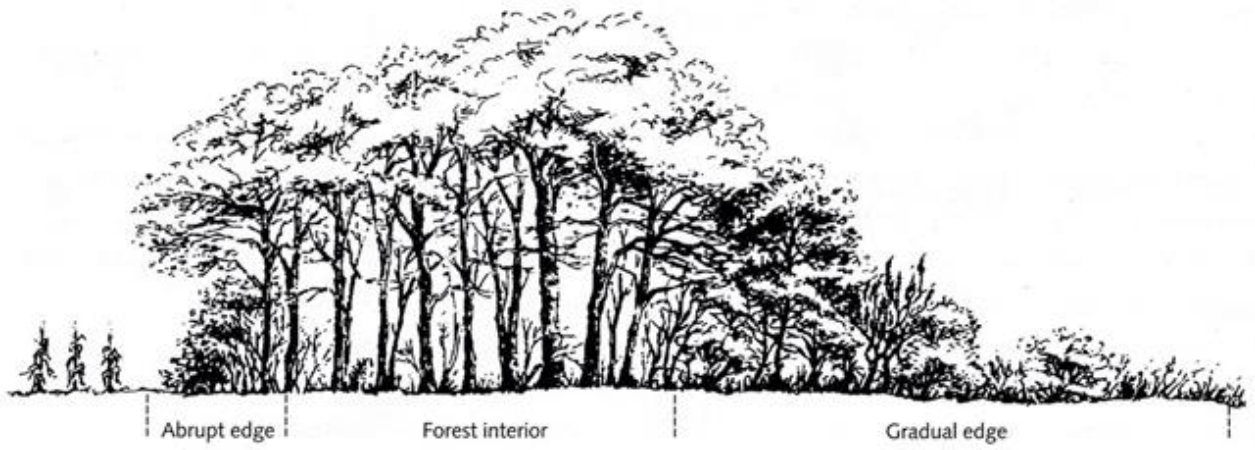
Marc Deconchat; Alexis Fayat; Laurent Burnel; Sylvie Ladet

marc.deconchat@inra.fr

DYNAFOR
UMR 1201 | INRA - INP TOULOUSE

IUFRO CONFERENCE POSADAS 2018
October 1-5 | ARGENTINA

Forest edges : more than a discontinuity of tree cover



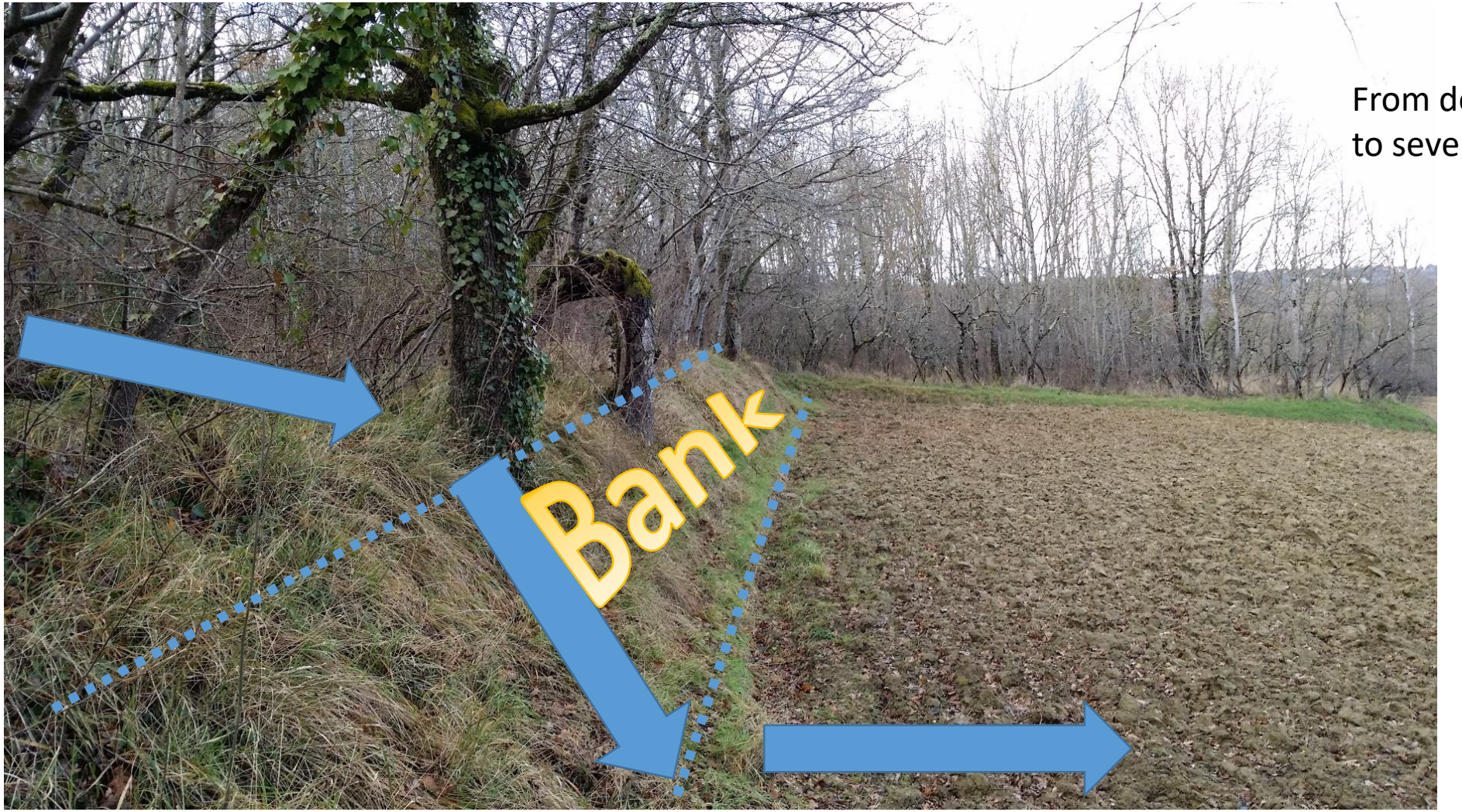
Alignier, A. and M. Deconchat (2013). "Patterns of forest vegetation responses to edge effect as revealed by a continuous approach." Annals of Forest Science **70**(6): 601-609.

A diversity of micro-topographic features

- Fence
- Stonewall
- Earth bank
- Ditch
- Path
- …

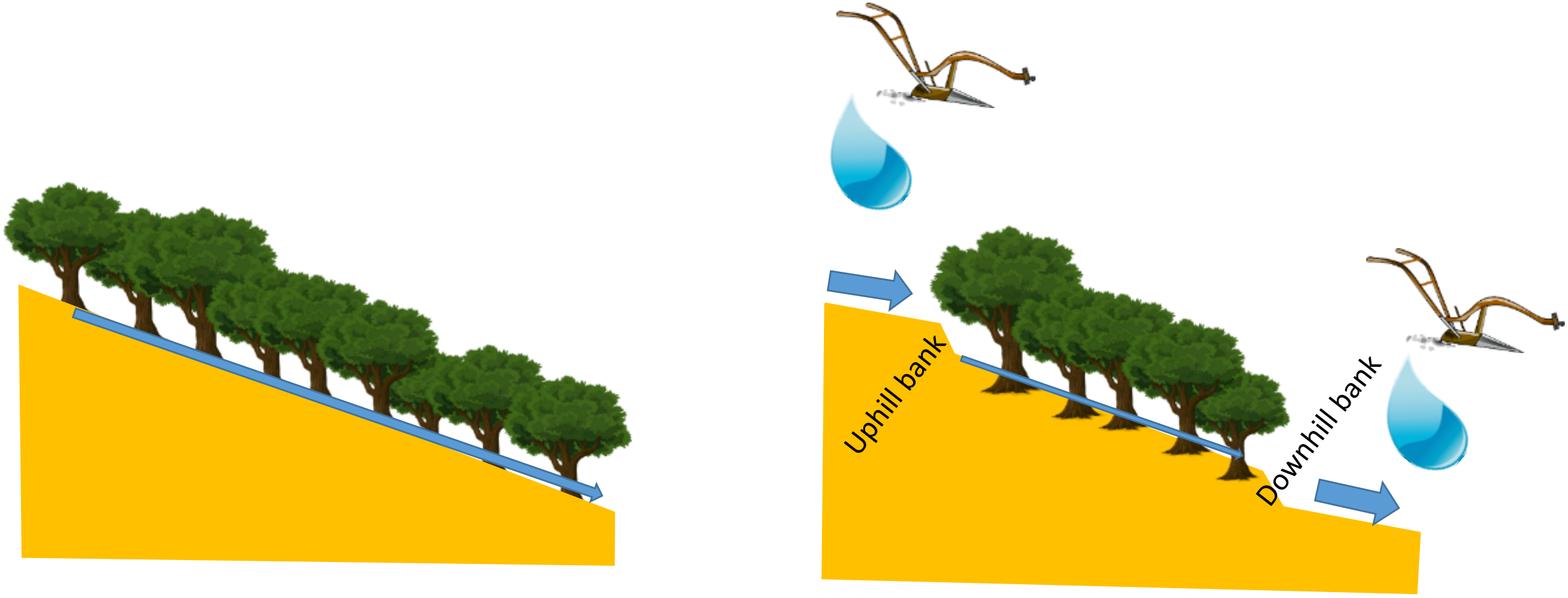
Very few scientific papers about these very common landscape components

Banks are very frequent in hilly regions



From decimetres
to several metres

Dynamics of erosive banks on slopes

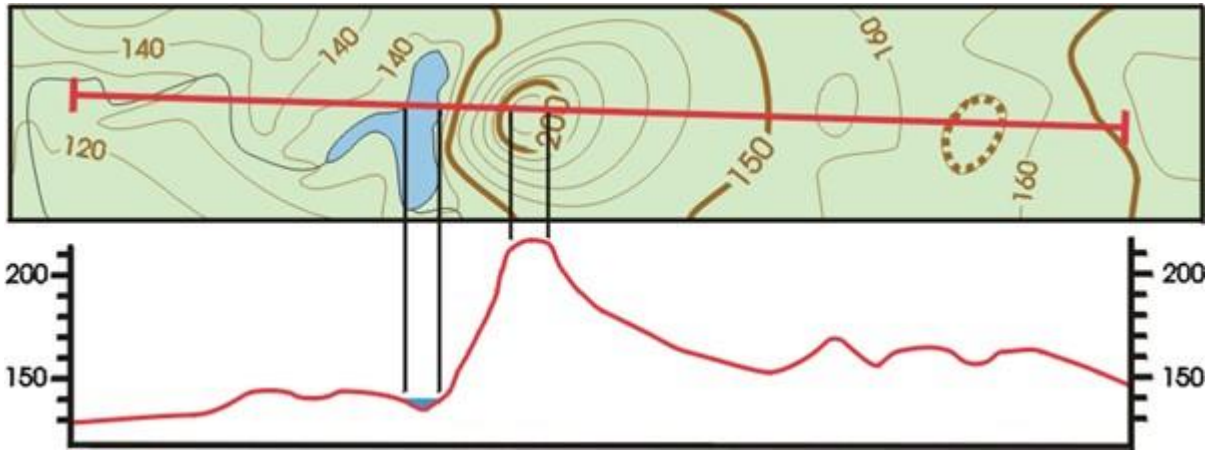


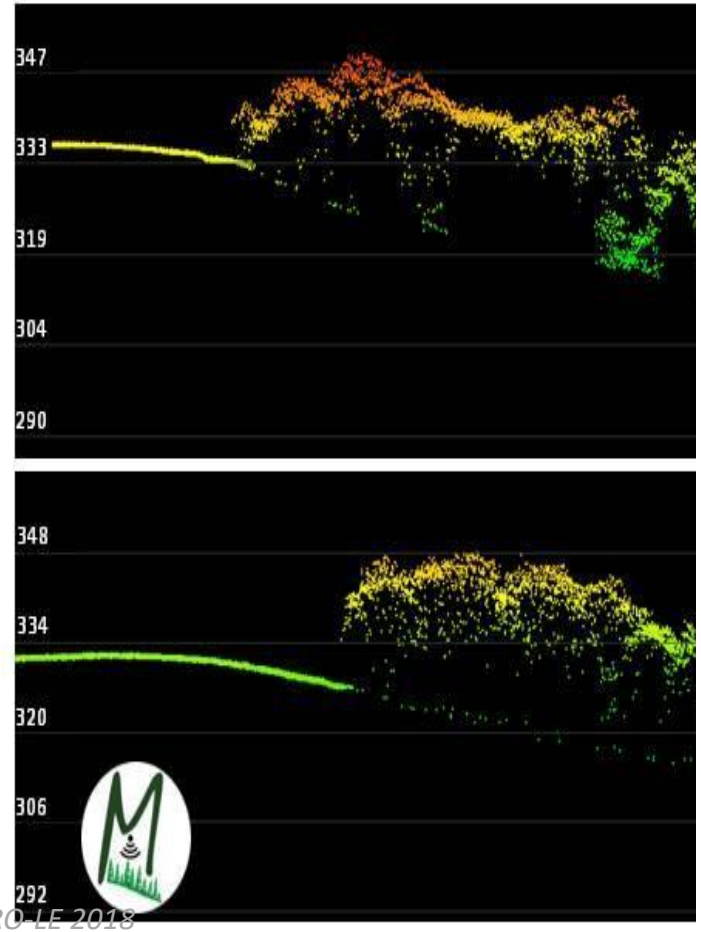
The height of the bank depends on soil, weather, erosive factors (tillage, animals), slope and TIME

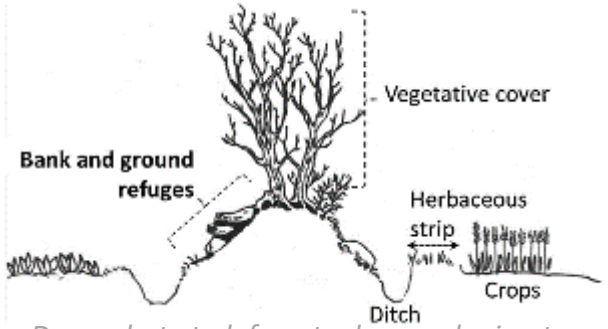
Most of the embankments at the forest edges are created by the discontinuity of erosion process, they are not the reason of the edge location

How to describe? Transect

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

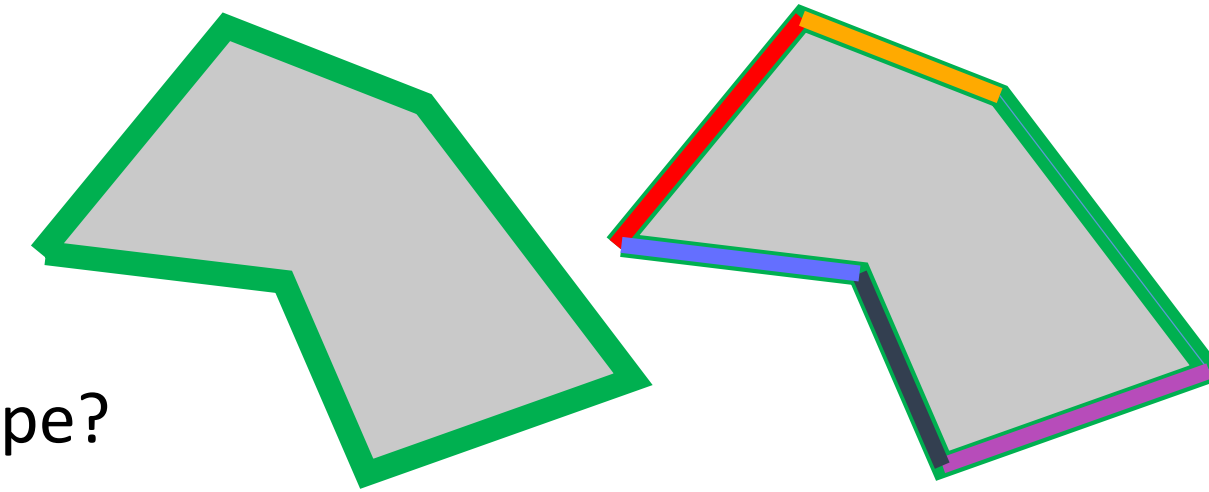






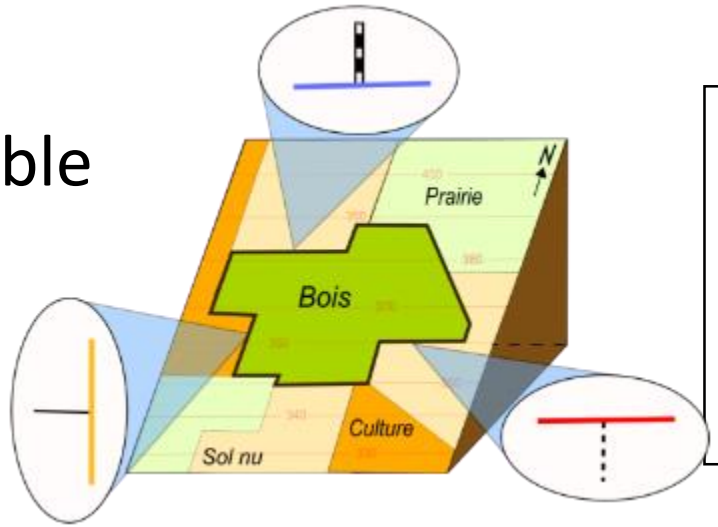
Lecq, S., A. Loisel, F. Brischoux, S. J. Mullin and X. Bonnet (2017). "Importance of ground refuges for the biodiversity in agricultural hedgerows." Ecological Indicators **72**: 615-626.

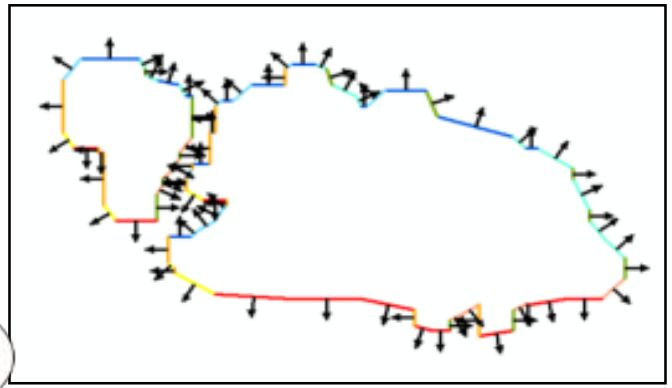
Mapping



- Where are they located?
- How much is available in the landscape?
- How are they connected?

- No method and no map available

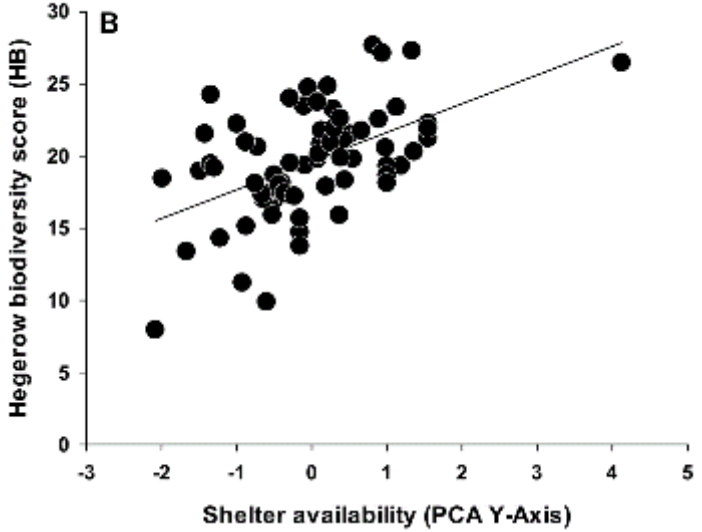




Deconchat, M., S. Ladet and A. Alignier (2011). "Mapedger: an innovative mapping tool for forest edges." En direct des labos 41: 2 p.

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

Conclcusion: 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.