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# Forests for agriculture: new perspectives in European landscapes

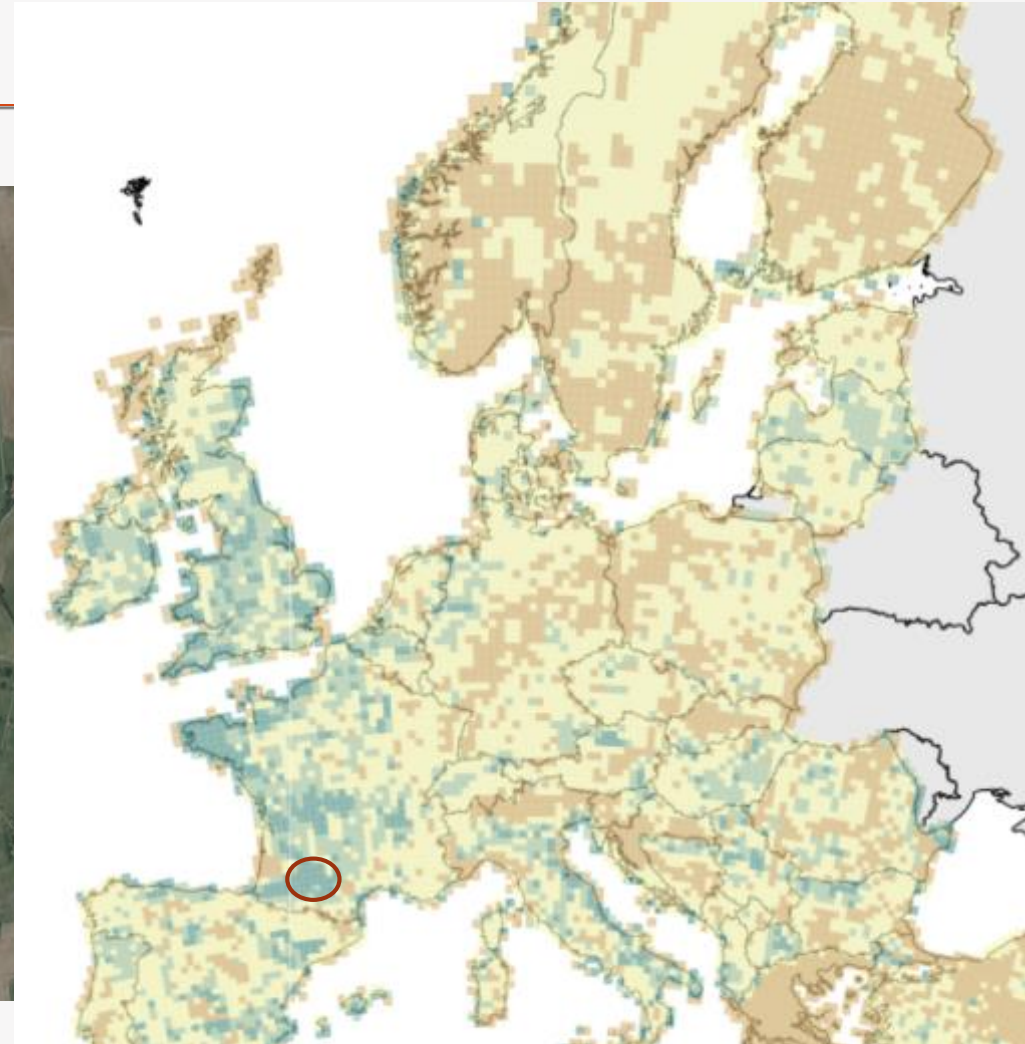
**Deconchat, Marc;** Andrieu, Emilie



UMR1201 Dynafor INRA/INP ENSAT/ INP EIPurpan  
Dynamiques et écologie des paysages agriforestiers  
[dynafor.toulouse.inra.fr](http://dynafor.toulouse.inra.fr)

IUFRO-LE, Halle

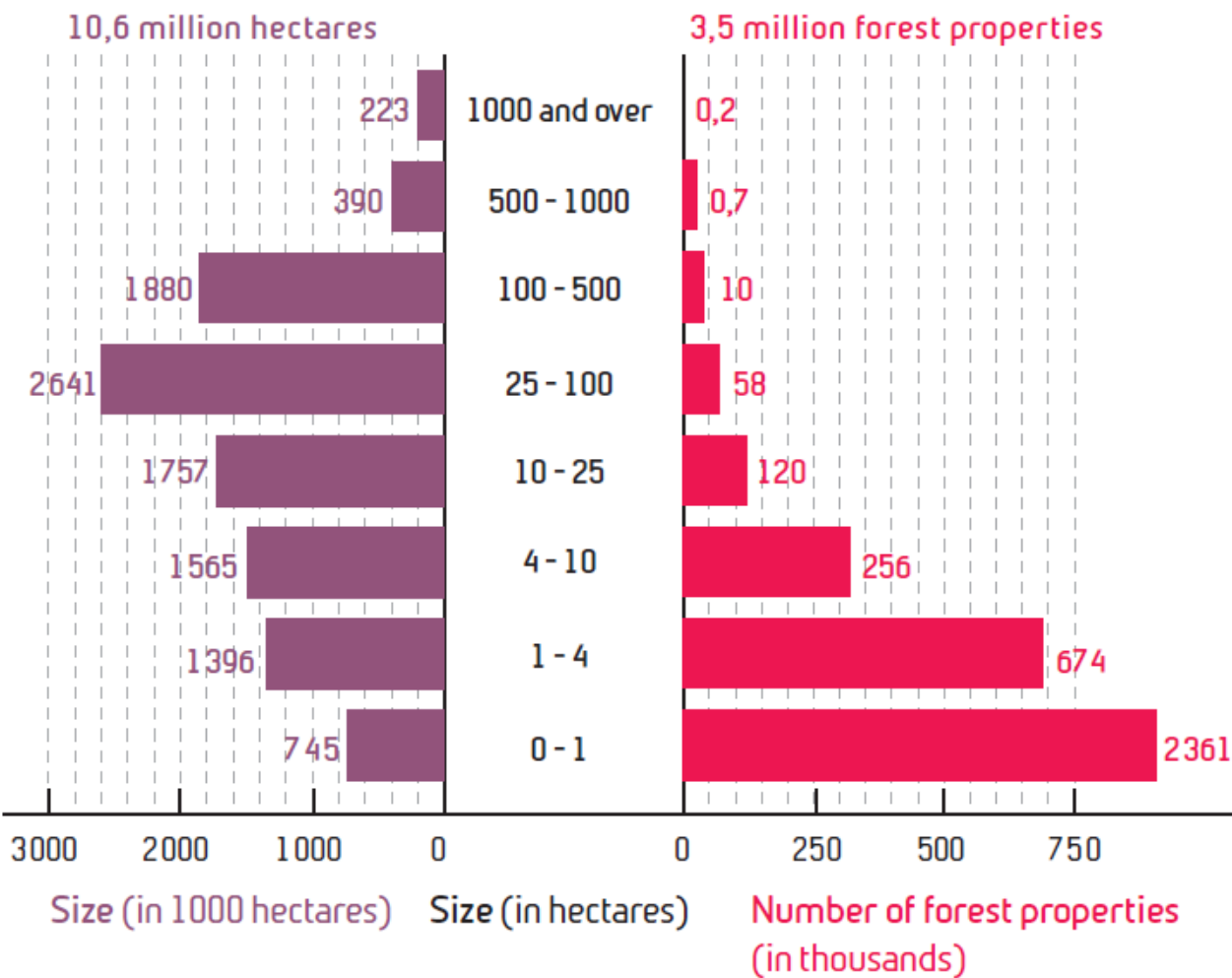
# Many small forest patches in European landscapes



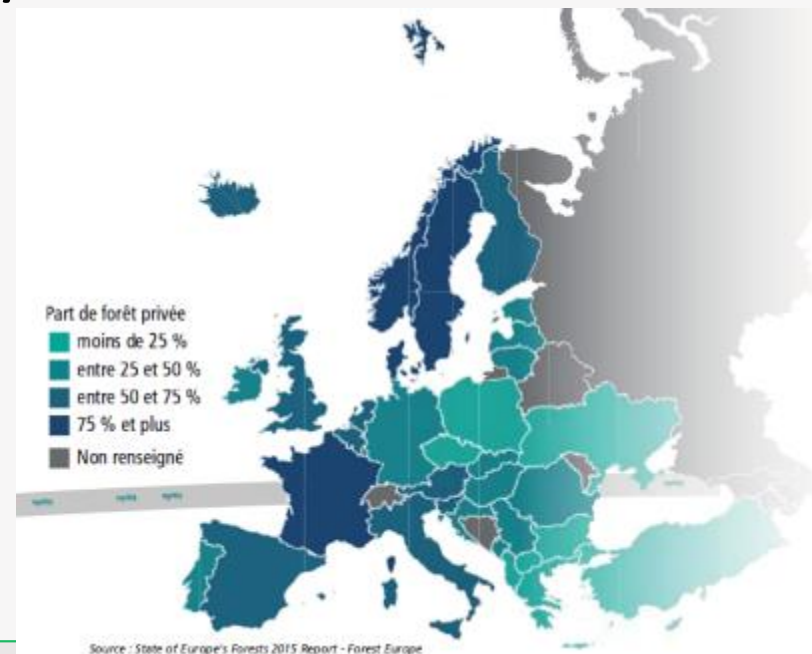
Proportion of « islets » (Guidos) in 25km squares  
(High - Low)

# Small private properties in France and Europe

## PRIVATELY OWNED FORESTS BY SIZE



- Mean: 9 ha
- ~ 1/2 of private forests cover **less than 25 ha**
- 2/3 cover smaller than 1ha



# Small scale forestry



Brandl, H., 2007. **The small-scale forestry group 1986–2006: an overview on the group activities during the last 20 years.** *Small-scale Forestry* 6, 1-18.

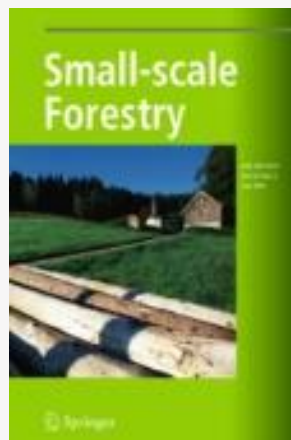
## 3.08.00 - SMALL-SCALE FORESTRY

### Coordinator:

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Germany

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[Brett Butler](#), United States  
[Heimo Karppinen](#), Finland  
[Jessica Leahy](#), United States



Wiersum, K.F., Elands, B.H.M., Hoogstra, M.A., 2005. **Small-scale forest ownership across Europe: Characteristics and future potential.** *Small-scale Forest Economics, Management and Policy* 4, 1-19.

Nijnik, M., Nijnik, A., Bizikova, L., 2009. **Analysing the Development of Small-Scale Forestry in Central and Eastern Europe.** *Small-scale Forestry* 8, 159-174.

# But lack of knowledge on farm forests

*Farm forest:* forest (woodlot) owned by active farmer

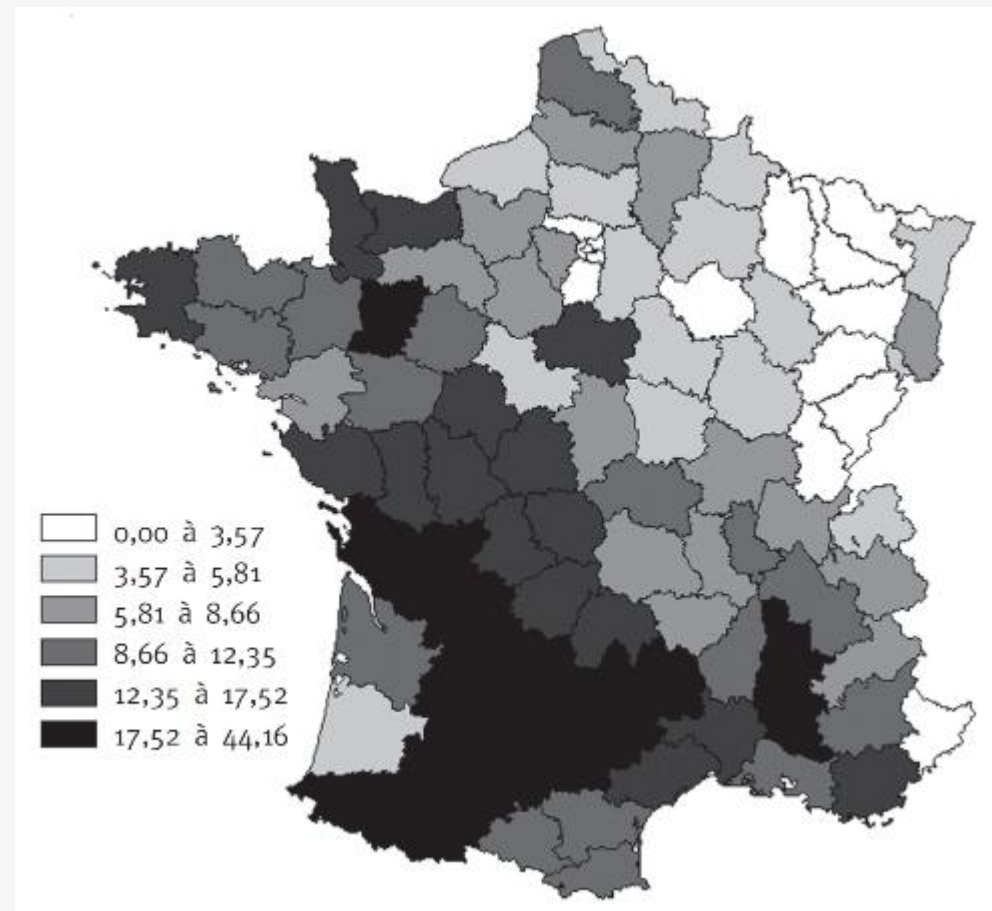
17% of French private forest area (and up to 44% in several departments) is farm forests

Few and not reliable statistics

**OR**

*Farm forest:* forest owned or managed by active or retired farmer, or in direct interaction with farming.

Broader view not taken into account in statistics

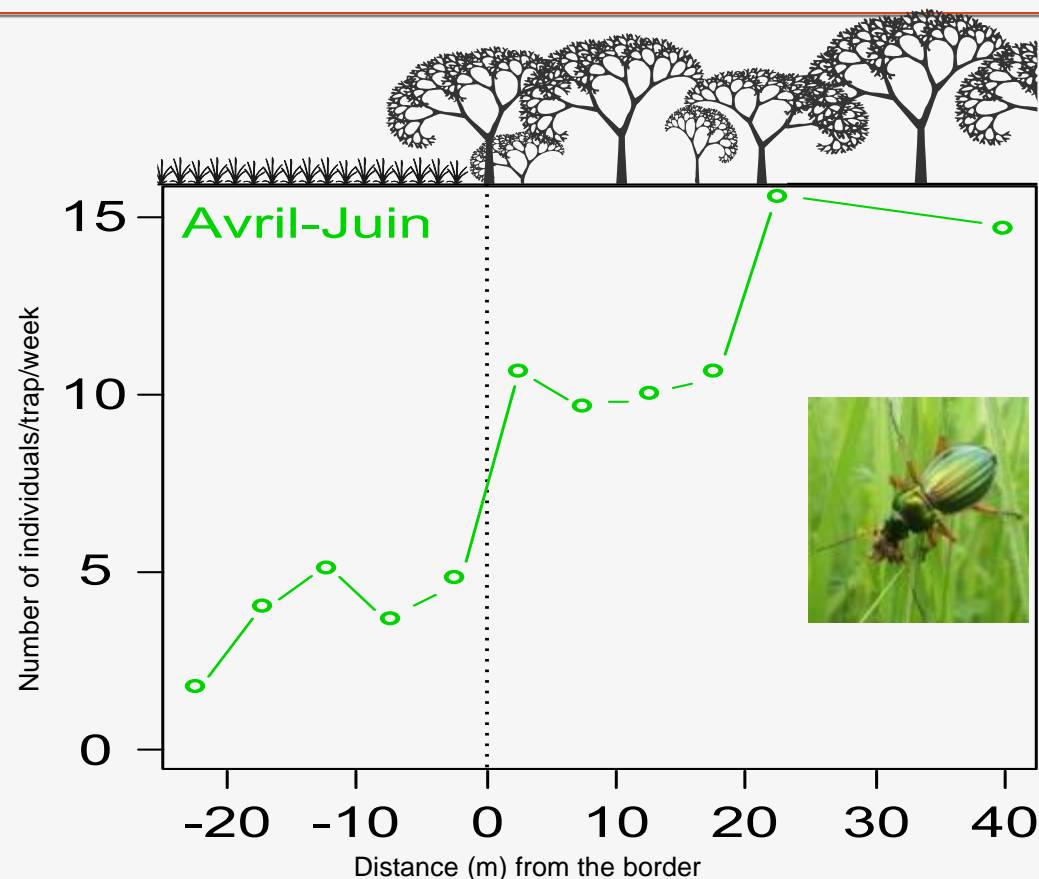


Cinotti, B., Normandin, D., 2002. **Exploitants agricoles et propriété forestière : où est passée la "forêt paysanne" ?** *Revue Forestière Française* LIV, 311-328.

# Ecological interactions with farmland

- Ecological infrastructure = more stable in time than most of the crops
- Edges as interfaces
- Species move between forest and crops

Maybe not all the time, but crucial when populations collapse in cropland



Roume, A., Deconchat, M., Raison, L., Balent, G., Ouin, A., 2011. **Edge effects on ground beetles at the woodlot-field interface are short-range and asymmetrical.** *Agricultural and Forest Entomology* 13, 395-403.

# Ecosystem services: a long list

**Table 1** Ecosystem services delivered by small forest patches embedded in agricultural landscapes that are assessed in this review (right part), grouped in five classes according to their spatial characteristics (left part), after [30]

## In situ services

= services delivered within the forest patch

## Local-proximal services

= services depending on the spatial proximity of the forest patch

## Directional flow-related services

= services extending from the forest patch to the point of use

## Global services

= services independent from the forest patch location

## User movement-related services

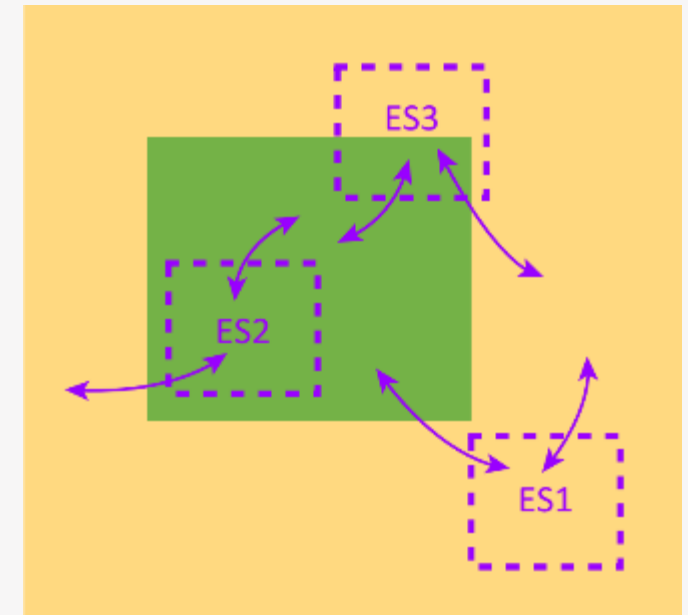
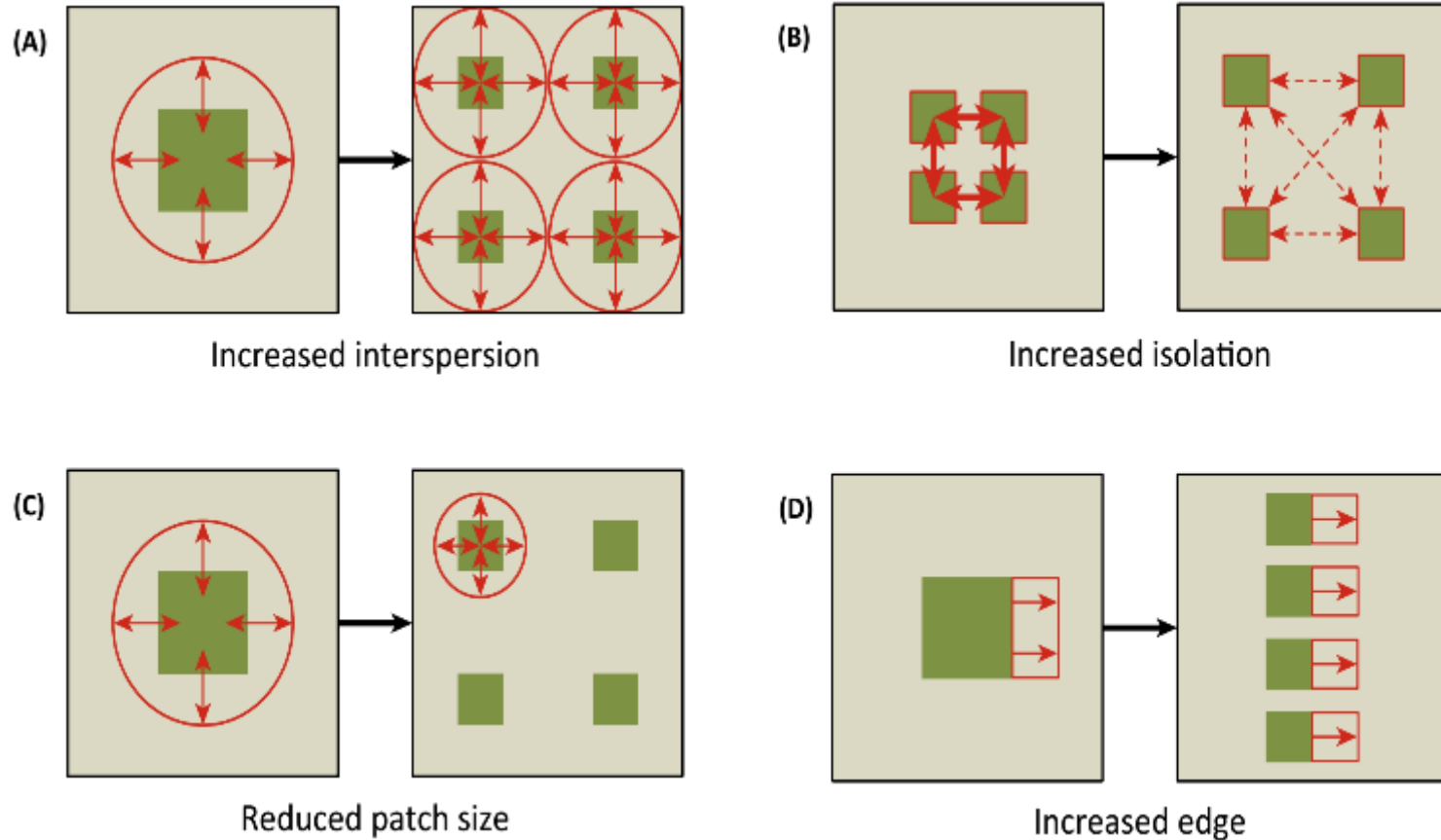
= services involving a movement of people towards the forest patches

- Biodiversity
- Wood production
- Wild food production
- Biological invasion risk (*disservice*)
- Disturbance regulation
- Habitat & refuge
- Biological pest control
- Pollination
- Infectious diseases (*disservice*)
- Water regulation
- Water supply
- Erosion control
- Carbon storage & climate regulation
- Recreational activities
- Aesthetics
- Construction of local identity

Decocq, G., Andrieu, E., Brunet, J., Chabrierie, O., De Frenne, P., De Smedt, P., Deconchat, M., Diekmann, M., Ehrmann, S., Giffard, B., Mifsud, E.G., Hansen, K., Hermy, M., Kolb, A., Lenoir, J., Liira, J., Moldan, F., Prokofieva, I., Rosenqvist, L., Varela, E., Valdés, A., Verheyen, K., Wulf, M., **2016. Ecosystem Services from Small Forest Patches in Agricultural Landscapes.** *Current Forestry Reports* 2, 30-44.



# Fragmentation: lower services on a larger area. Or is it more complicated ?



Andrieu, E., Vialatte, A., Sirami, C., 2015.  
**Misconceptions of Fragmentation's Effects on Ecosystem Services: A Response to Mitchell et al.** *Trends Ecol Evol* 30, 633-634.

Mitchell, M.G., Suarez-Castro, A.F., Martinez-Harms, M., Maron, M., McAlpine, C., Gaston, K.J., Johansen, K., Rhodes, J.R., 2015. **Reframing landscape fragmentation's effects on ecosystem services.** *Trends Ecol Evol* 30, 190-198.

# Biomass: an old story but still a huge potential

- High volumes available (many mature forests)
- Scattered in the countryside
  - How to collect?
  - But close to potential final users
- New logging and processing technics
- New markets and customers
- How farmers may include forestry activities in their system?

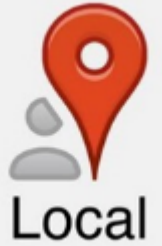


# Source of products for agriculture

- Mulching with wood chips for plantation (horticulture)
- Organic matter (compost) and Biochar for crops
- Bedding for livestock
- Fence post and wood based structures
- ...
- How to help farmers to use more of their own wood or the wood of their neighbours?



# Think local in a global world




- Products and services to be used locally
- Strongly dependent on land characteristics
  - What can be produced? What is needed?
- But with a better connection with other places through new technologies
- How to get more income from a low value raw material?



# Think social

- Forests are not just trees and wood: a place where to live, a symbol
- High cultural values associated to the forests in many regions
  - Sourdril, A., Andrieu, E., Cabanettes, A., Elyakime, B., Ladet, S., 2012. How to maintain domesticity of usages in small rural forests? Lessons from forest management continuity through a French case study. *Ecol. Soc.* 17.
- Need to develop participatory approaches to take into account social perceptions



- 
- A scenic view of a rural landscape featuring rolling hills, green fields, and scattered trees. In the distance, a small building is visible on a hillside. The foreground shows some green foliage on the left and right sides.
- ◉ Woods are available in rural landscapes
  - ◉ There are new opportunities to use them
  - ◉ More benefits can be obtained from products and services
  - ◉ If they are in accordance with people willings