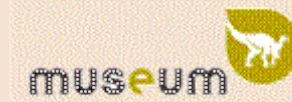


Influence of the elephant (*Loxodonta africana*) on the landscape mosaic and the creation of microhabitats in Burkina Faso

LINCHANT Julie, VERMEULEN Cédric
Séminaire faune 21 octobre 2013



1. Context

- Listed as Vulnerable in the IUCN Red List
- Alarming decrease of elephant populations in West Africa

Habitat fragmentation and loss



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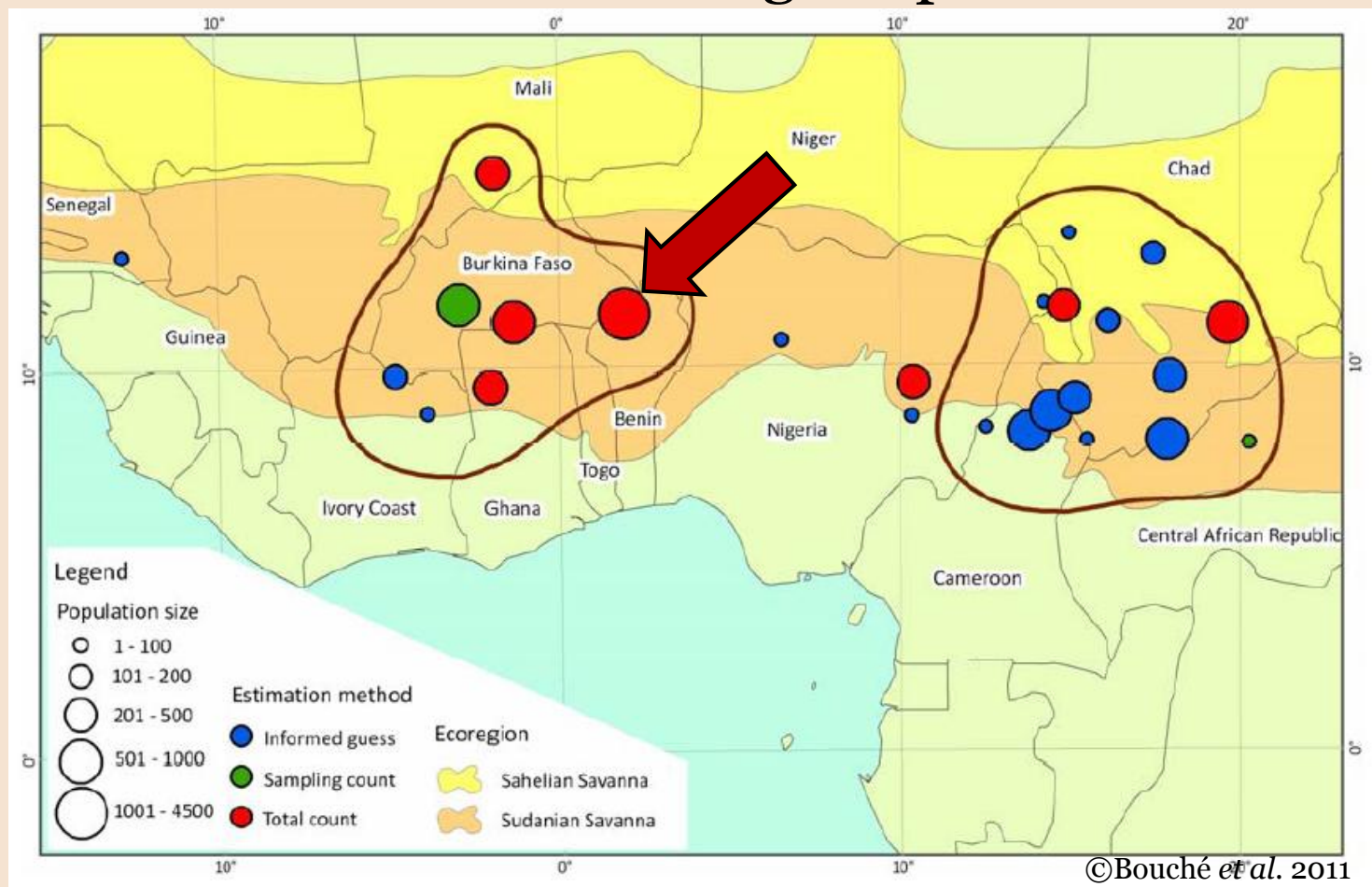
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- Alarming decrease of elephant populations in West Africa

Poaching

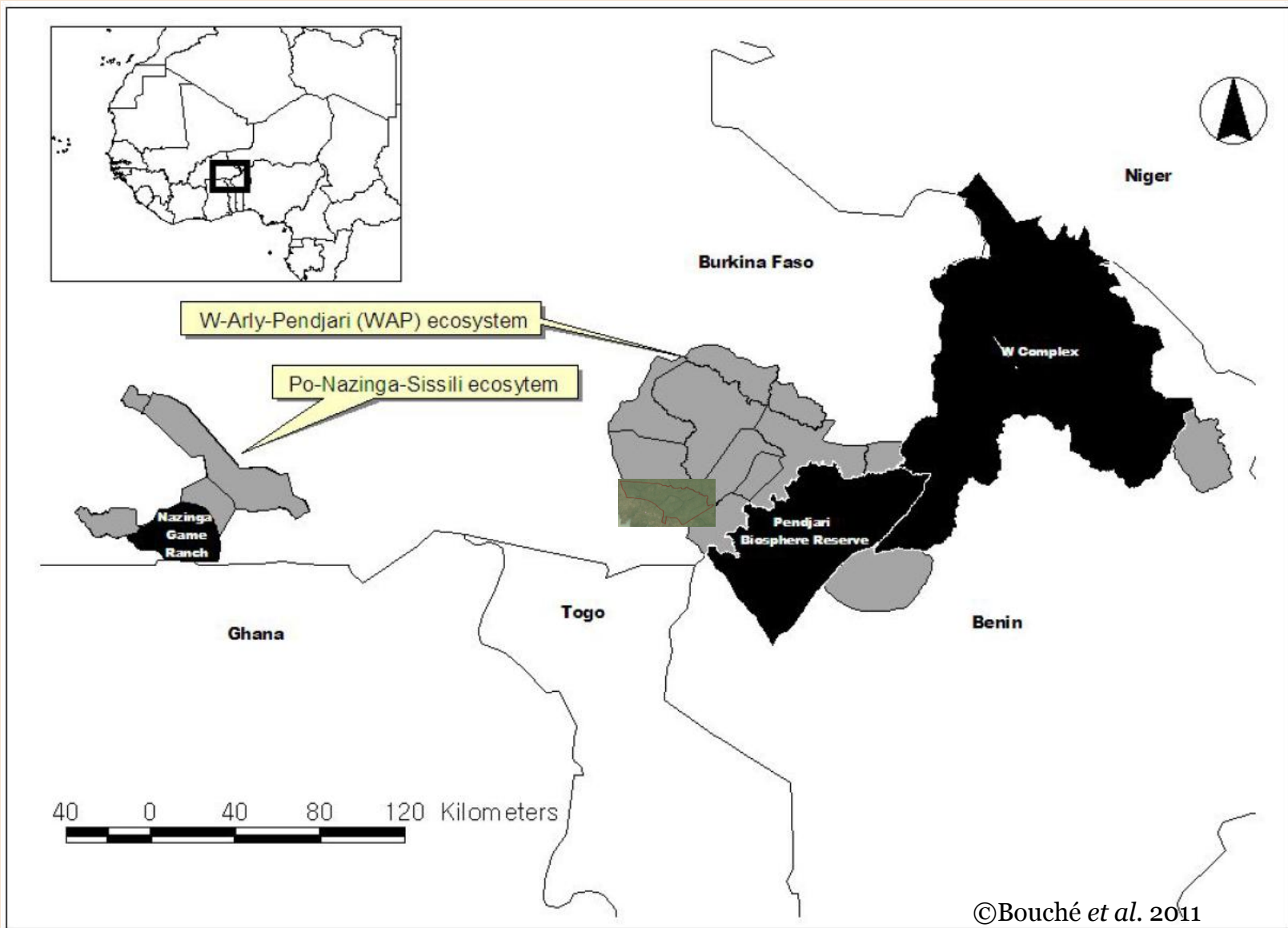


1. Context

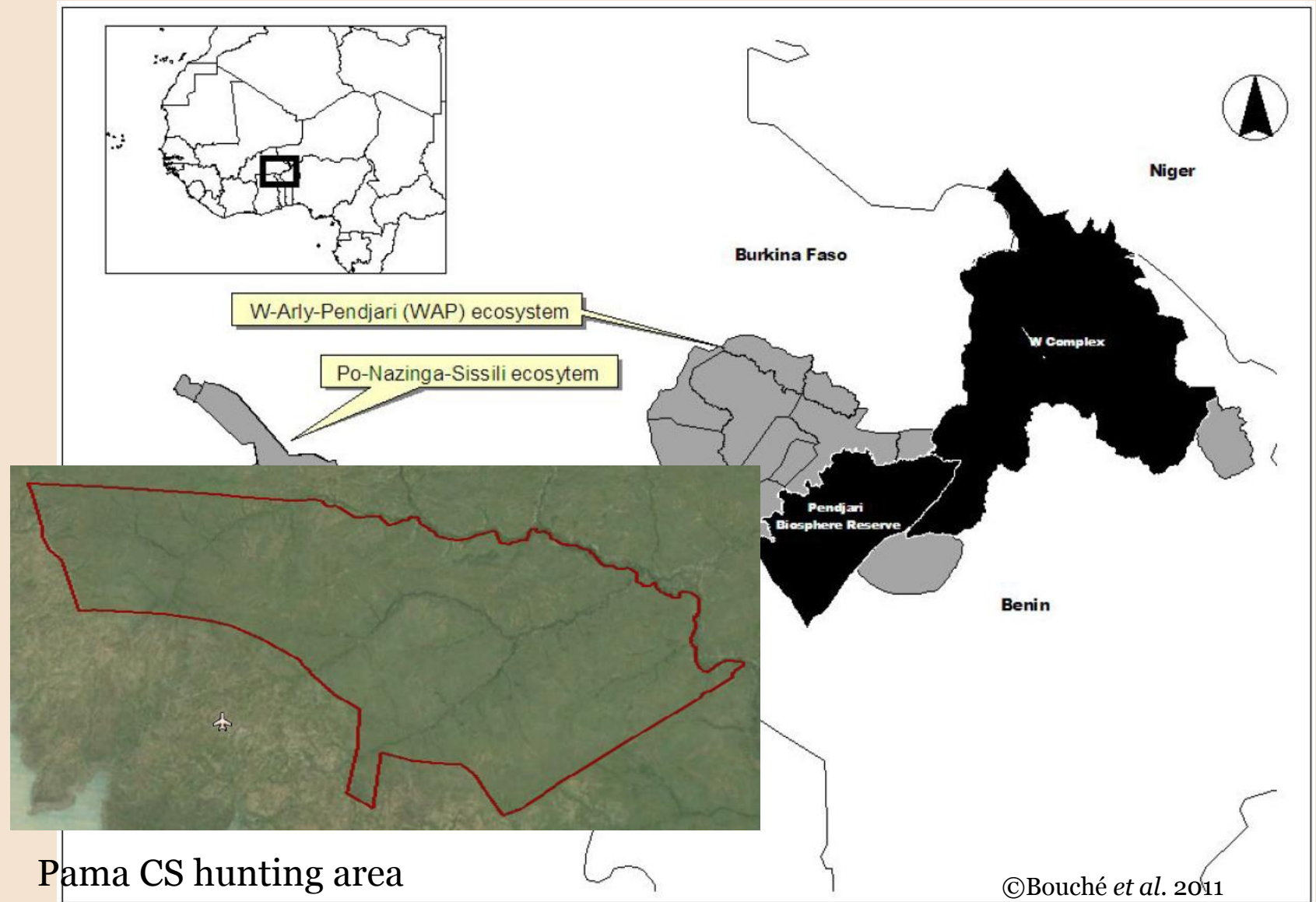
- Paradoxically, important increases of population size on a local scale => refuge in protected areas



1. Context



1. Context



Pama CS hunting area

1. Context

- Sudano-sahelian climat: +/-900 mm
- Dry season from October to April-May
- Woody savannas



1. Context

- Elephants not hunted in West Africa
- Hunting area: installations
 - Waterholes, ponds
 - Controlled fires and green pastures
 - Anti-poaching



=> Increasing densities



1. Context

High densities, a problem?



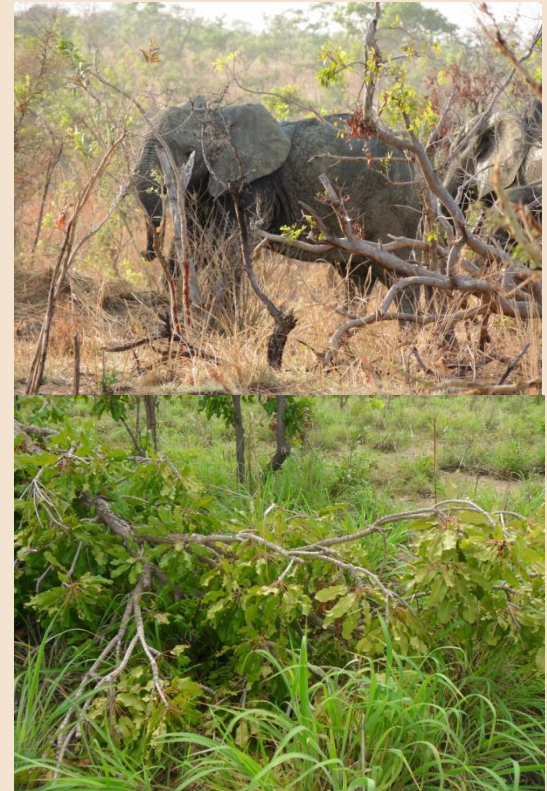
- Damages on the ligneous, degradation of the forested habitats
- Regression of woody savannas towards grassy savannas
- Habitat loss
- Decrease in biodiversity

1. Context

Two other recent theories....

The theory of megaherbivores and the *Ecosystem engineers*

- Provide new food resources
- Modification and complexification of the landscape mosaic
- Creation of new microhabitats
- Positive effect on the biodiversity



2. Hypothesis

- (1) The elephants change the landscape mosaic and create new microhabitats by bringing down trees
- (2) Those microhabitats could increase the diversity and the abundance of micromammalian species



3. Objectives

- Main objective: to verify the theory of megaherbivores and its application in the case of the elephant in the savannas of Burkina Faso
- Specific objectives:
 - (1) Quantifying the creation of microhabitats by the elephants, characterizing them and their environment
 - (2) Analyzing their spatial organization
 - (3) Studying the diversity and the abundance of micromammals in relation with the microhabitats and their repartition



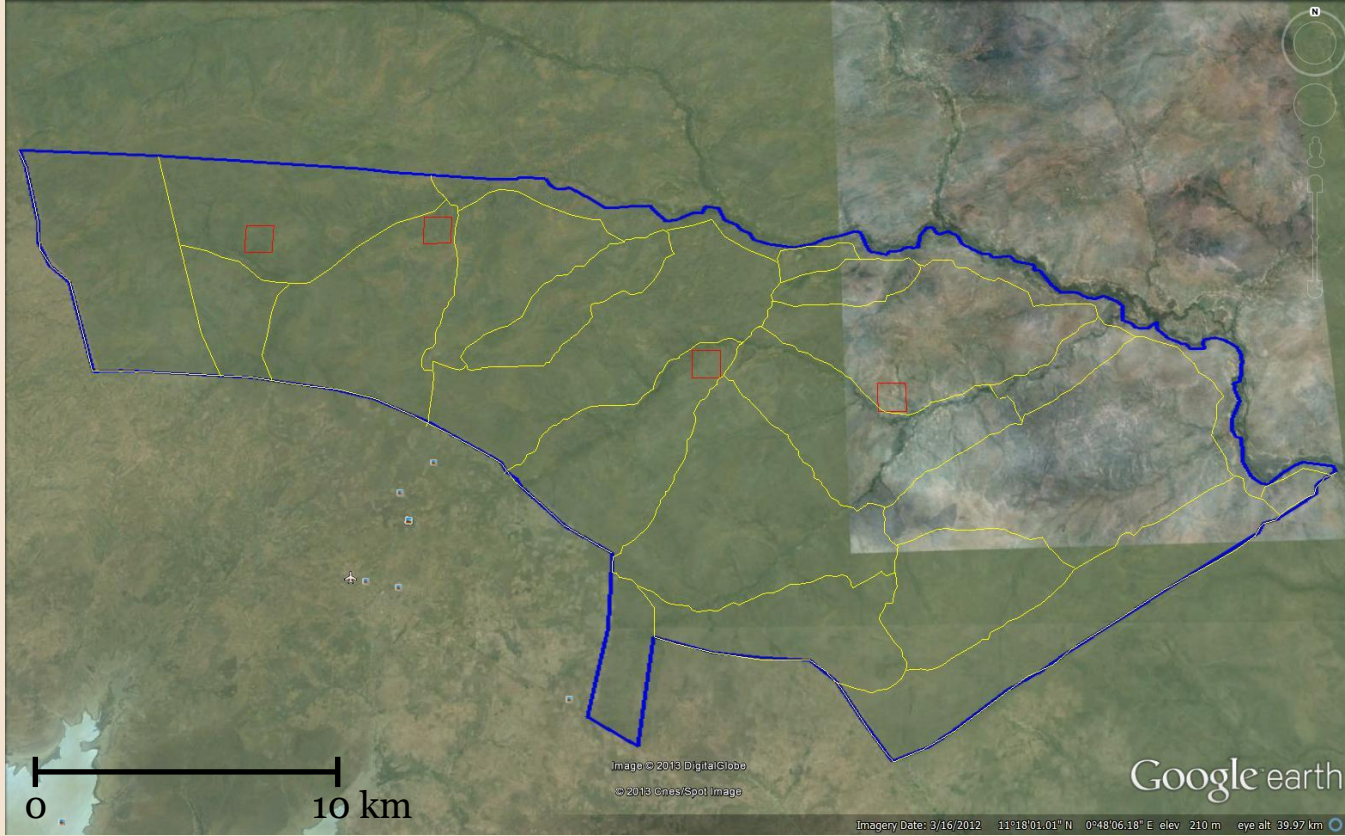
4. Method

- Multi-scalar analysis
- Seasonal analysis (dry and wet seasons)



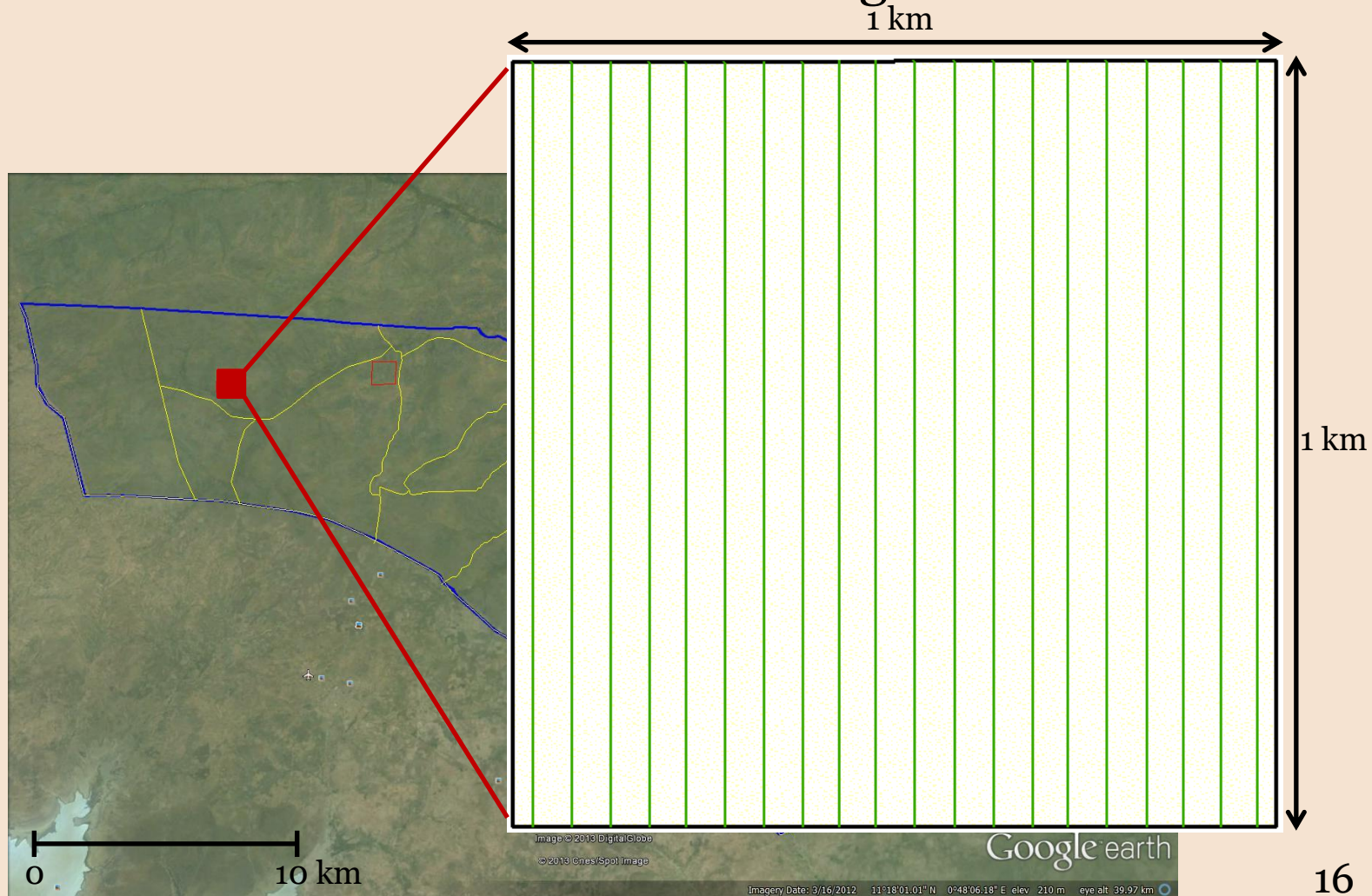
4. Method

- 4 plots of 1 km²: different use and damage densities



4. Method

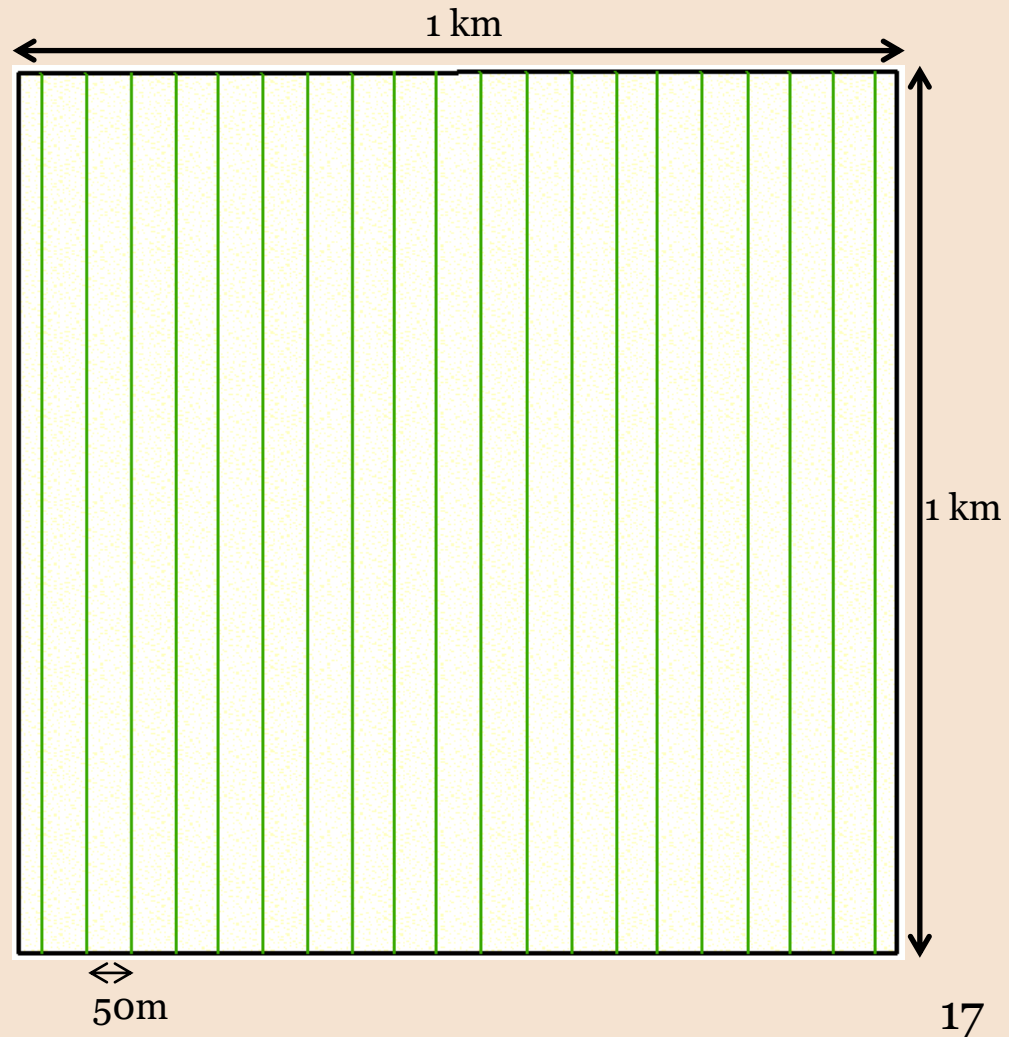
- 4 plots of 1 km²: different use and damage densities



4. Method

A. Microhabitats « fallen trees » inventory

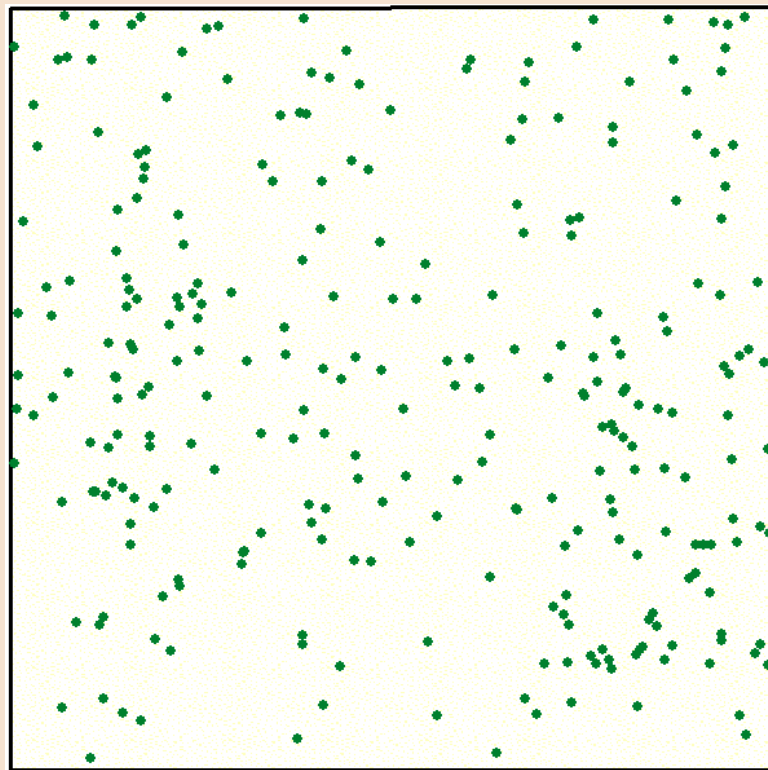
- Exhaustive statement
- Parallel transects of 1 km long every 50 m
- GPS point for every tree
- $D > 15$ cm et $L > 4$ m



4. Method

C. Micromammals trapping (Lambert *et al.* 2006)

- Microhabitats map



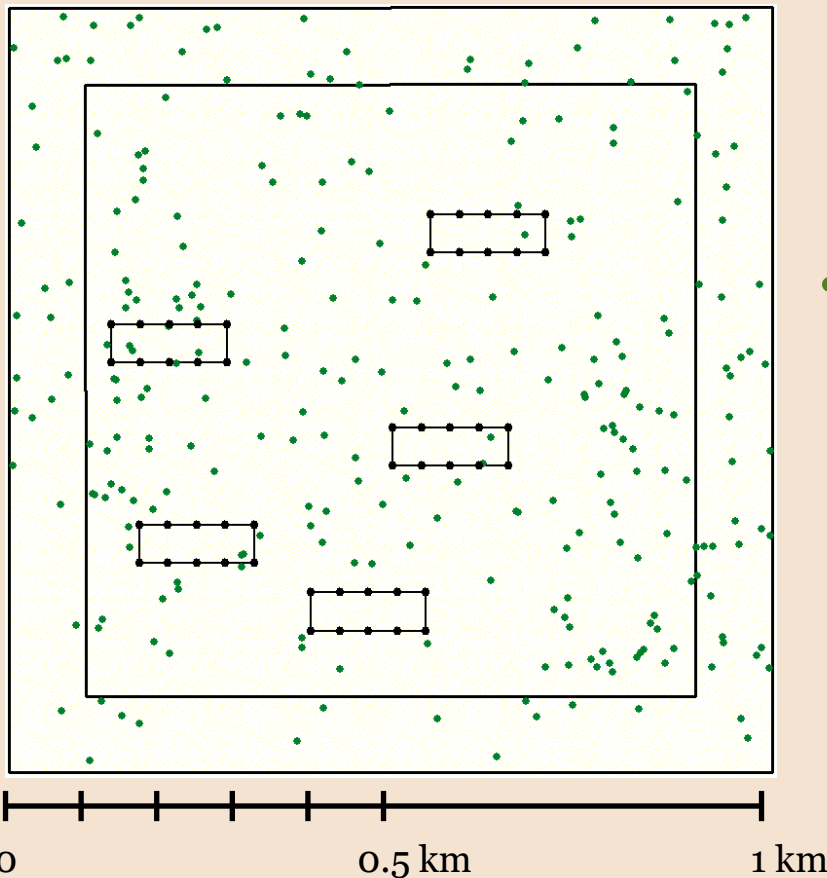
- Microhabitats « fallen trees »

0 0.5 km 1 km

4. Method

C. Micromammals trapping (Lambert *et al.* 2006)

- 5 trapping grids by plot

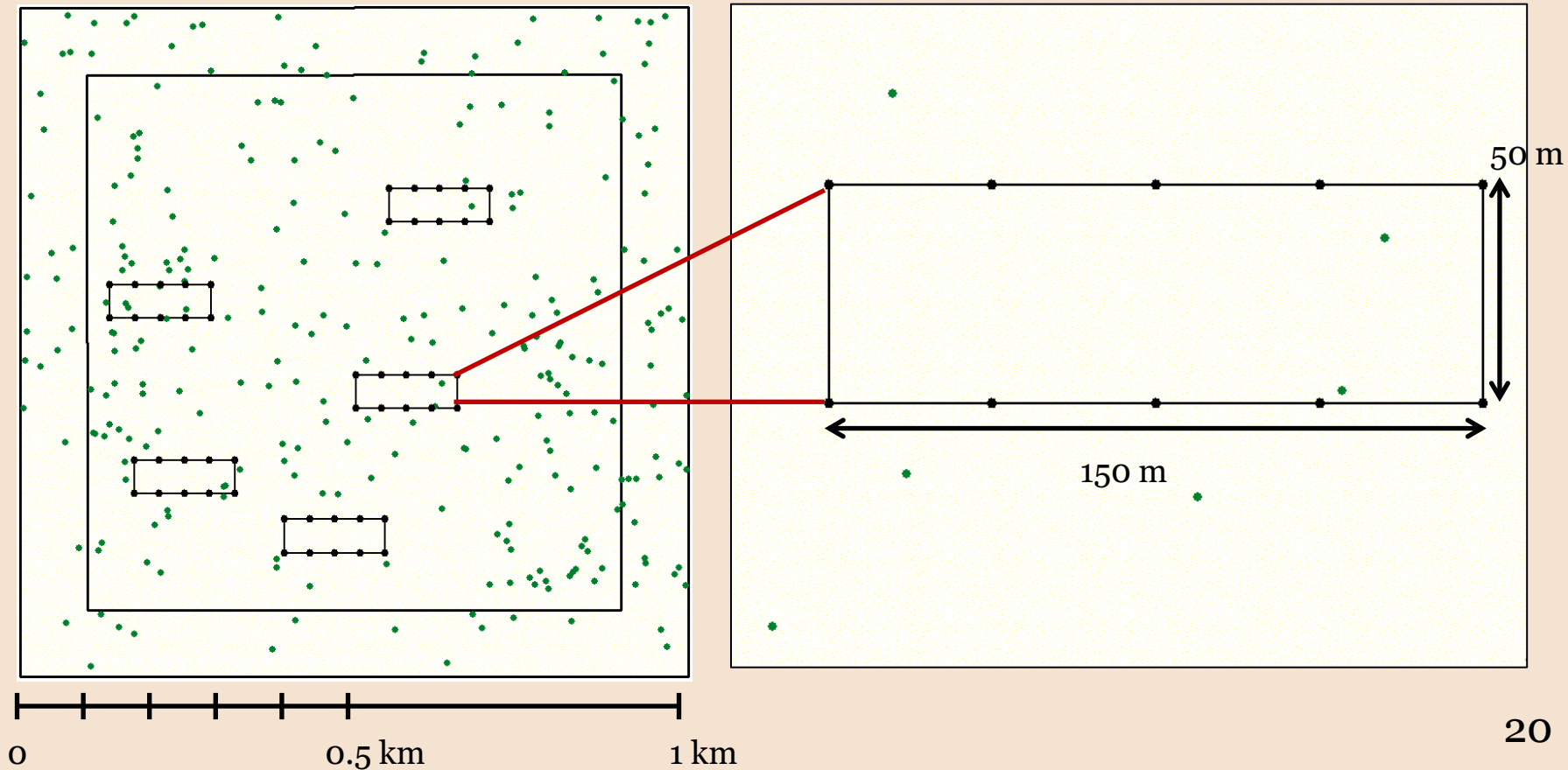


- Microhabitats « fallen trees »

4. Method

C. Micromammals trapping (Lambert *et al.* 2006)

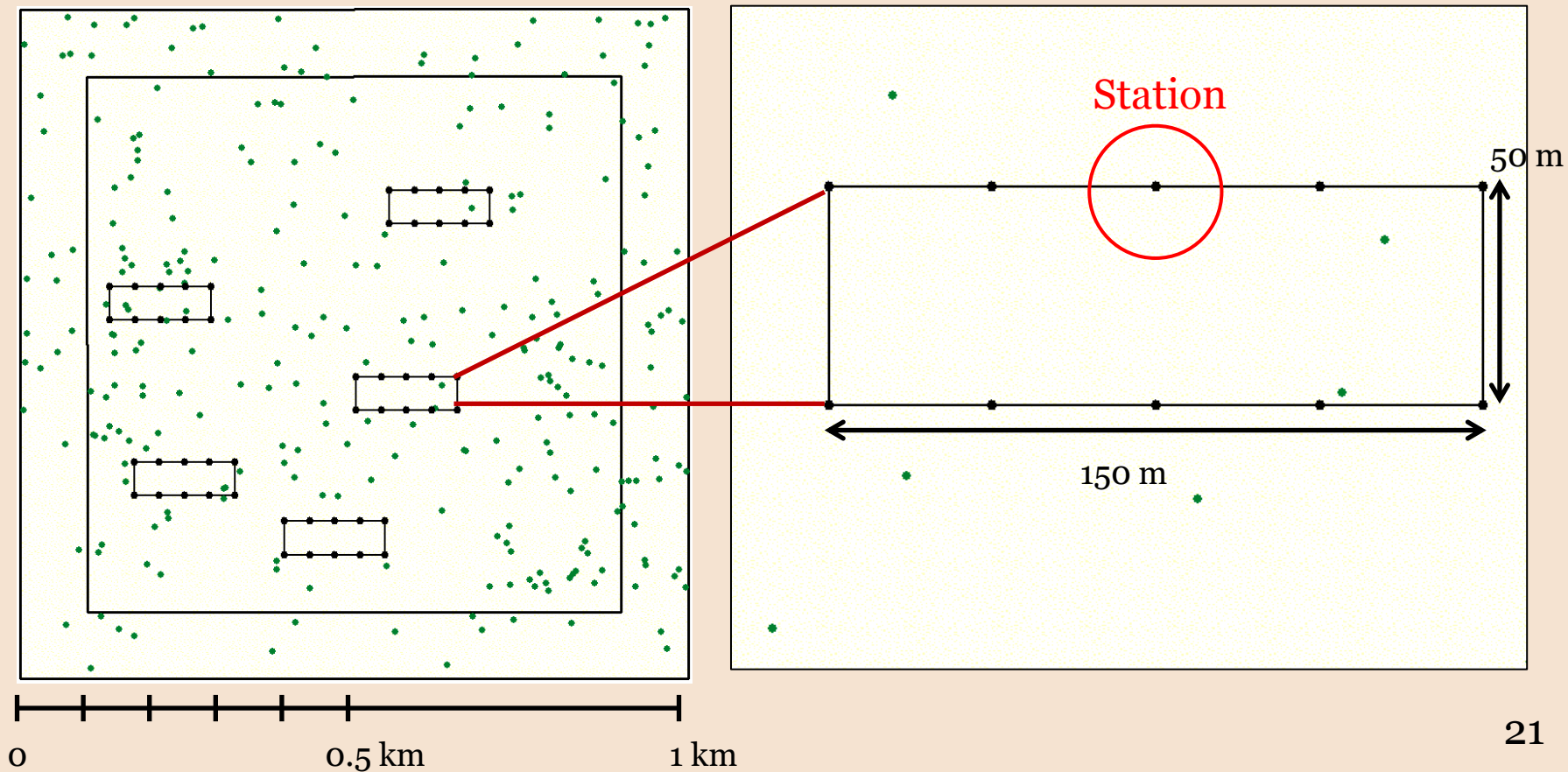
- 5 trapping grids by plot



4. Method

C. Micromammals trapping (Lambert *et al.* 2006)

- Including 10 trapping stations each



4. Method

C. Micromammals trapping (Lambert *et al.* 2006)

- Scherman traps, snap-traps and pitfalls



- Prospected every morning during the trapping session
- Specimens and tissue samples brought to the Royal Belgian Institute of Natural Sciences

4. Method

D. Description of the microhabitats

- Within a radius of 25 m around every trapping station

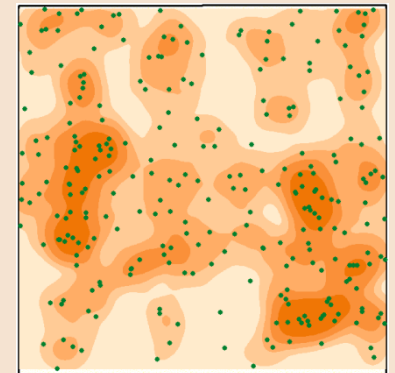
- Composition

- Size, specie, state, ...
- Fruits, seeds, ...
- Burrows, indications of use by other species, ...



- Spatial organization

- Number by station, density by plot
- Connectivity



4. Method

E. Description of the environment (Lambert *et al.* 2006)

- Within a radius of 10 m around every trapping station
- Density of trees, shrubs, herbaceous plants
- Ground cover, covers of the tree and shrub layers
- Food resources : fruits and seeds



5. First results

- There are plans and there is reality...



5. First results

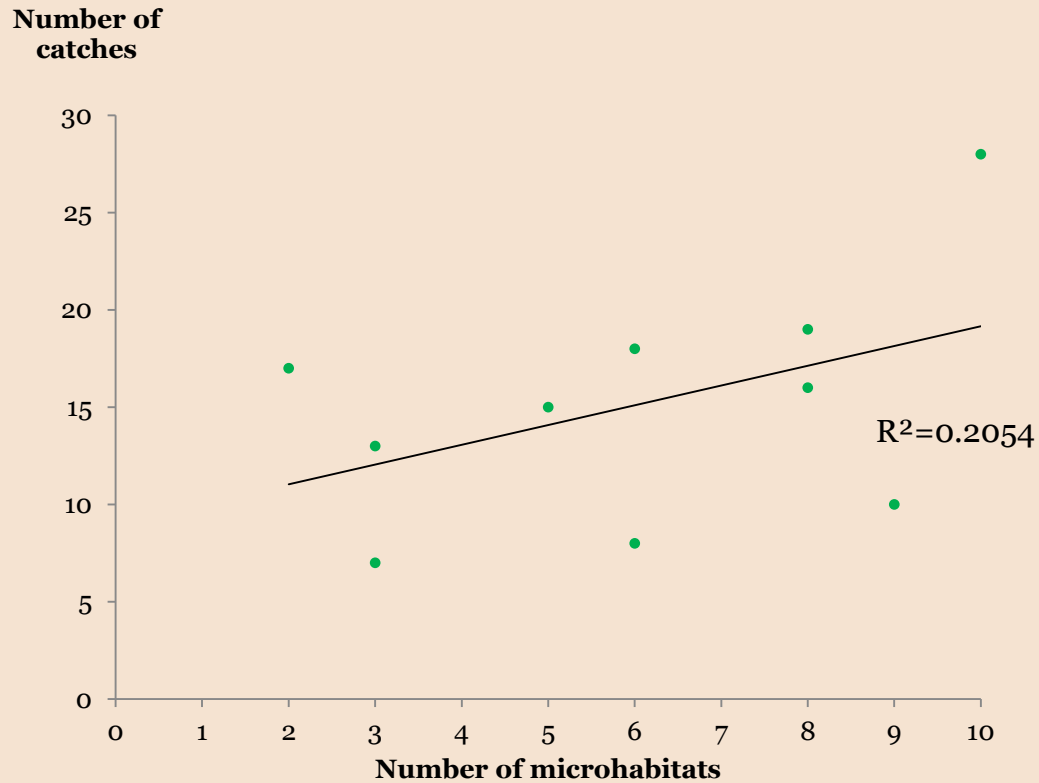
- 2 plots, 13 days trapping session at the beginning of the wet season

	Plot 1 (1km ²)	Plot 2 (1km ²)	Total (2km ²)
Total fallen trees	338	277	615
Characterized microhabitats	36	26	62
Catches	83	73	156

- Genetic analysis at the Museum : under process

5. First results

Number of catches and microhabitats by trapping grid



6. Perspectives

- Necessity of further prospecting:
 - by species
 - at the station level and the impact of the microhabitat density at the plot level
 - impact of the environment
 - effect of the season
 - effect of the microhabitat characteristics
- Discovery of new species ?



Thank you for
your attention