

A BIODIVERSITY ASSESSMENT BETWEEN PROTECTED AND MANAGED FORESTS IN SOUTHEASTERN CAMEROON

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The Congo Basin, a threatened biodiversity



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More humans ... more pressure

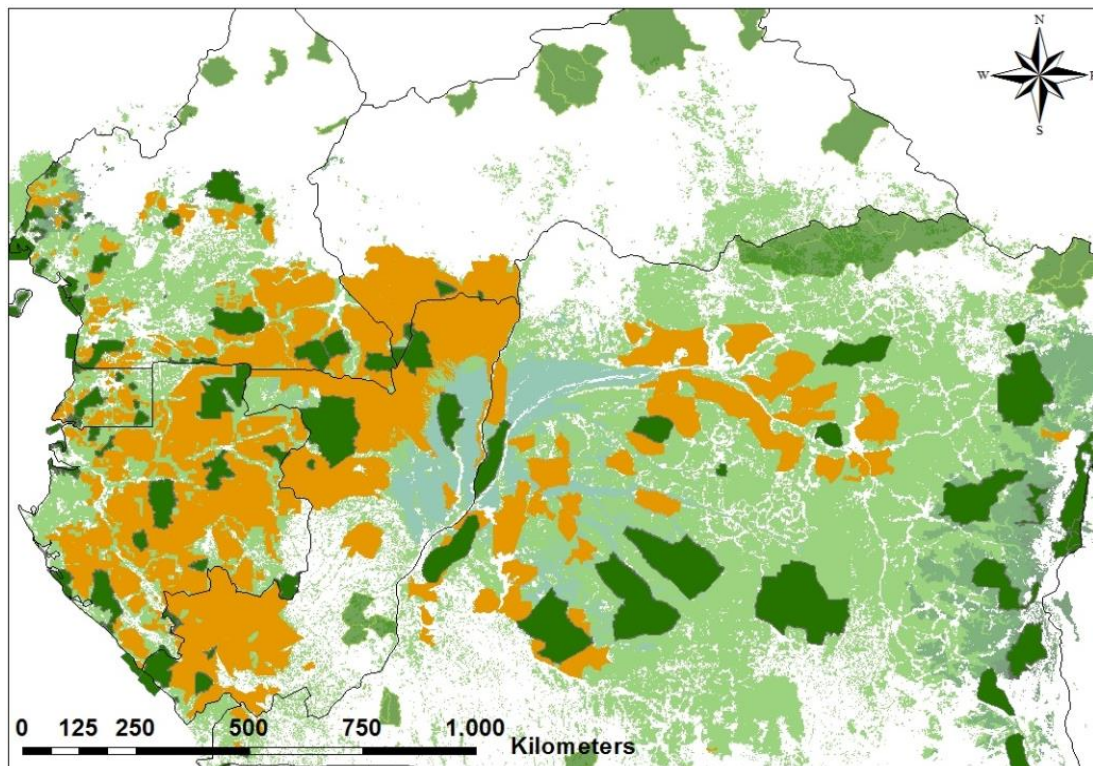


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More humans ... more pressure



Forest allocation in the Congo Basin



Logging concessions

Protected forests

55 millions ha

>

27 millions

(< 10 % sustainably certified)

Objectives

Assessing tree biodiversity & terrestrial wildlife biodiversity

Structure

Richness



Richness & Composition



1°



How degraded are forests along a disturbance gradient ?

2°

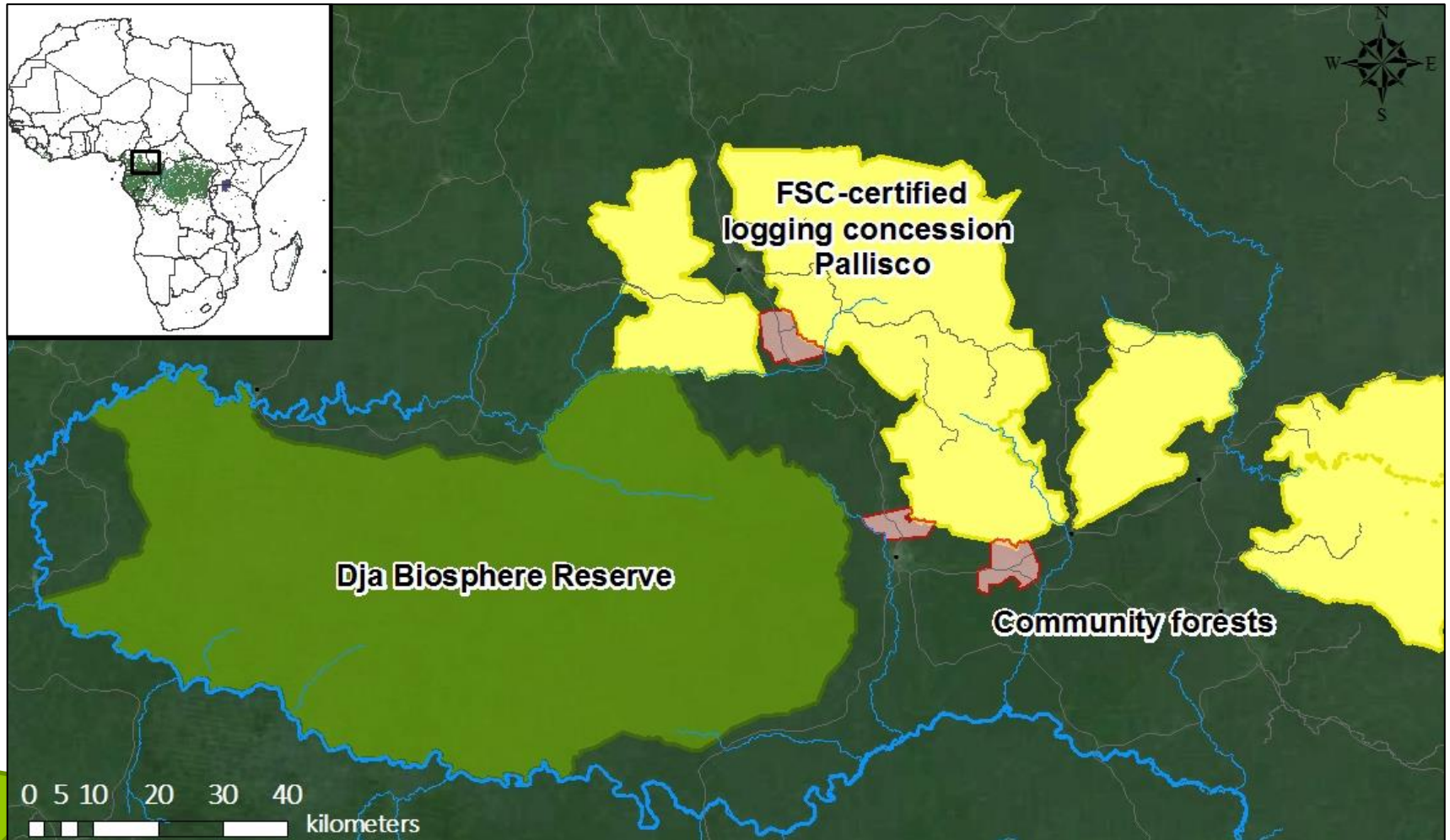


What is the wildlife conservation value of forests along a disturbance gradient ?

Study Area

DJA Never logged >20 years 10-20 years <10 years **CF**

Disturbance gradient →



Methods

Tree Biodiversity 



<http://www.rainfor.org/>

In practice ... 36 Forest plots

Counting

17 370 trees

Identification & herbarium samples

329 species

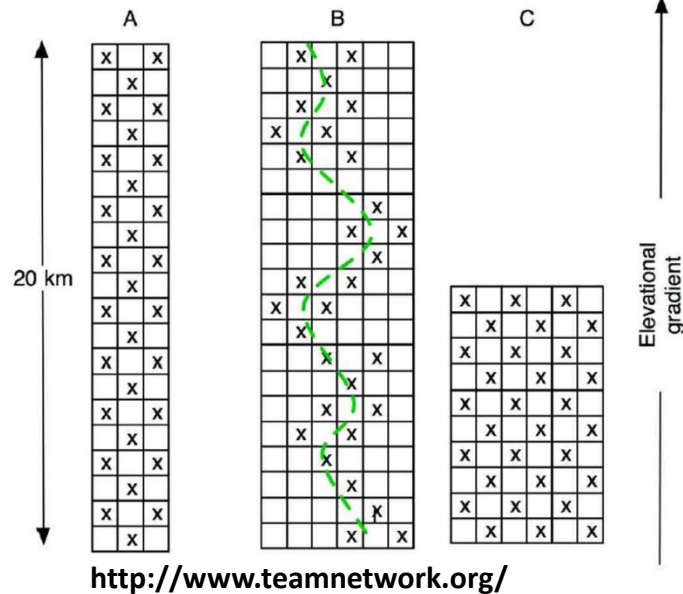
Height measurements

2 274 height data



Methods

Terrestrial wildlife Biodiversity



In practice ... 44 camera traps

- 30 - 50 cm height
- Oriented towards a « wildlife friendly site »
- Clearing vegetation within a 3-4 m radius
- 3 months to reach 1000 trap.days/grid

Results & Discussion

1°

How degraded are forests along a disturbance gradient ?

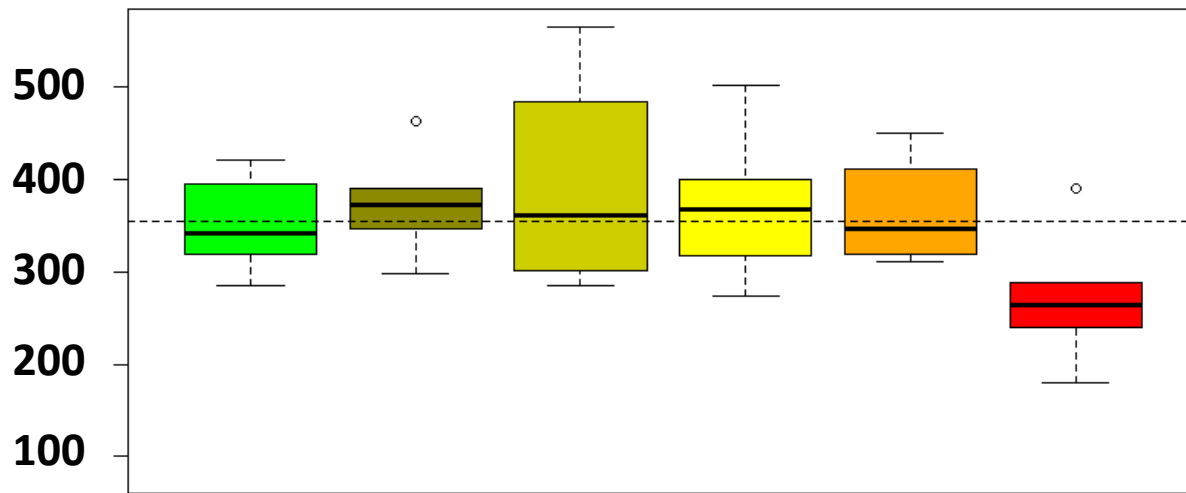


Results & Discussion

1°

How degraded are forests along a disturbance gradient ?

Above Ground Biomass (T/ha)



Comparable AGB between protected & logged forests

Community forests are structurally highly disturbed

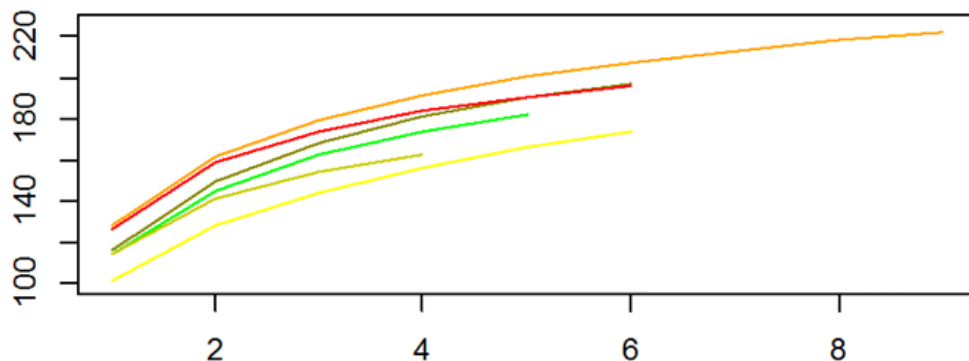
- Dja Biosphere Reserve
- Never logged
- Logged [20-30[years ago
- Logged [10-20[years ago
- Logged < 10 years ago
- Community forests

Results & Discussion

1°

How degraded are forests along a disturbance gradient ?

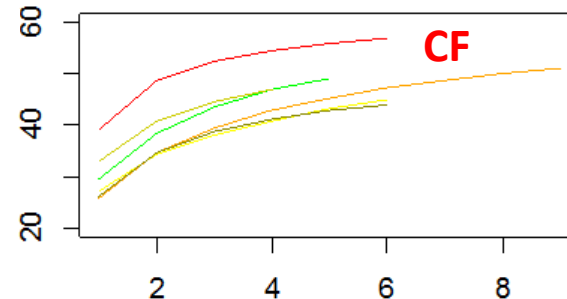
Number of species



Number of plots (ha)

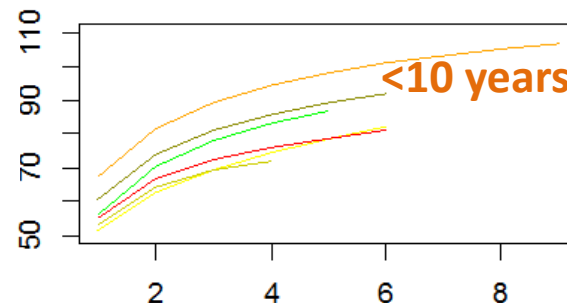
- Dja Biosphere Reserve
- Never logged
- Logged [20-30[years ago
- Logged [10-20[years ago
- Logged < 10 years ago
- Community forests

Number of pioneer sp.



Number of plots (ha)

Number of shade bearer sp.



Number of plots (ha)

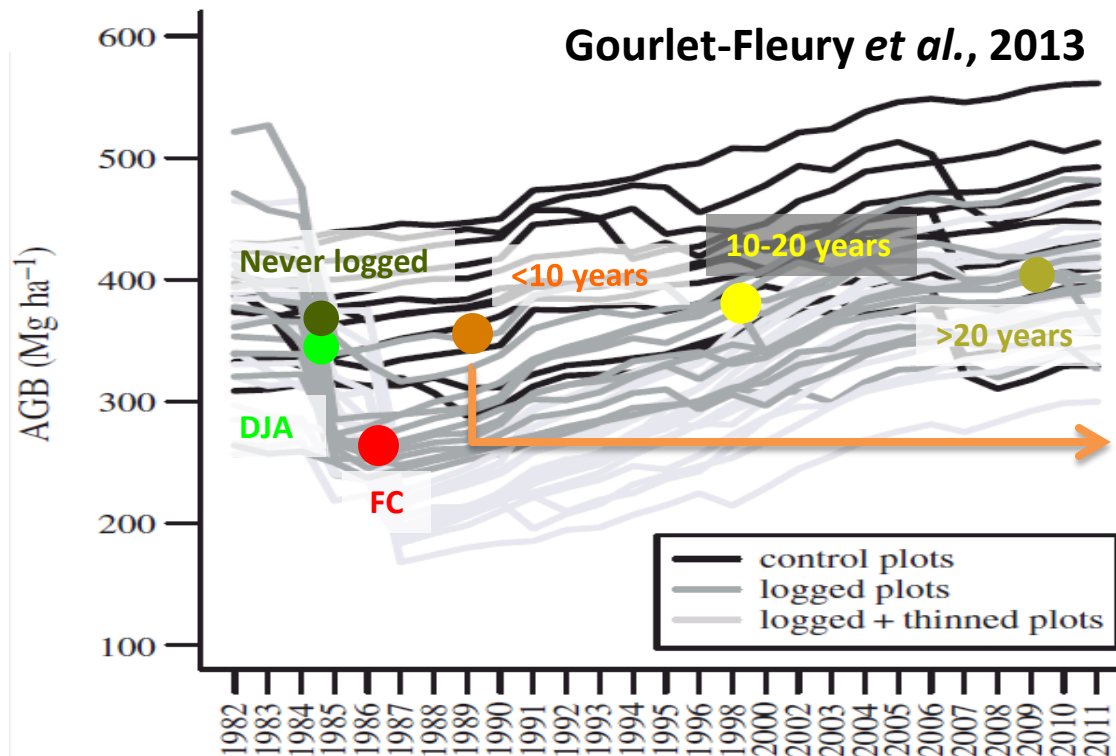
Results & Discussion

1°

How degraded are forests along a disturbance gradient ?



- Similar forest structure indices and richness (Djuikouo *et al.*, 2010; Fayolle *et al.*, 2016; Lewis *et al.*, 2013)
- Biomass recovery addressed by **space-for-time** approaches
- One **time series** data in M'Baïki in Central African Republic (Gourlet-Fleury *et al.*, 2013)



Quick recovery
Large initial AGB
Low logging intensity

Results & Discussion

2°



What is the wildlife conservation value of forests along a disturbance gradient?

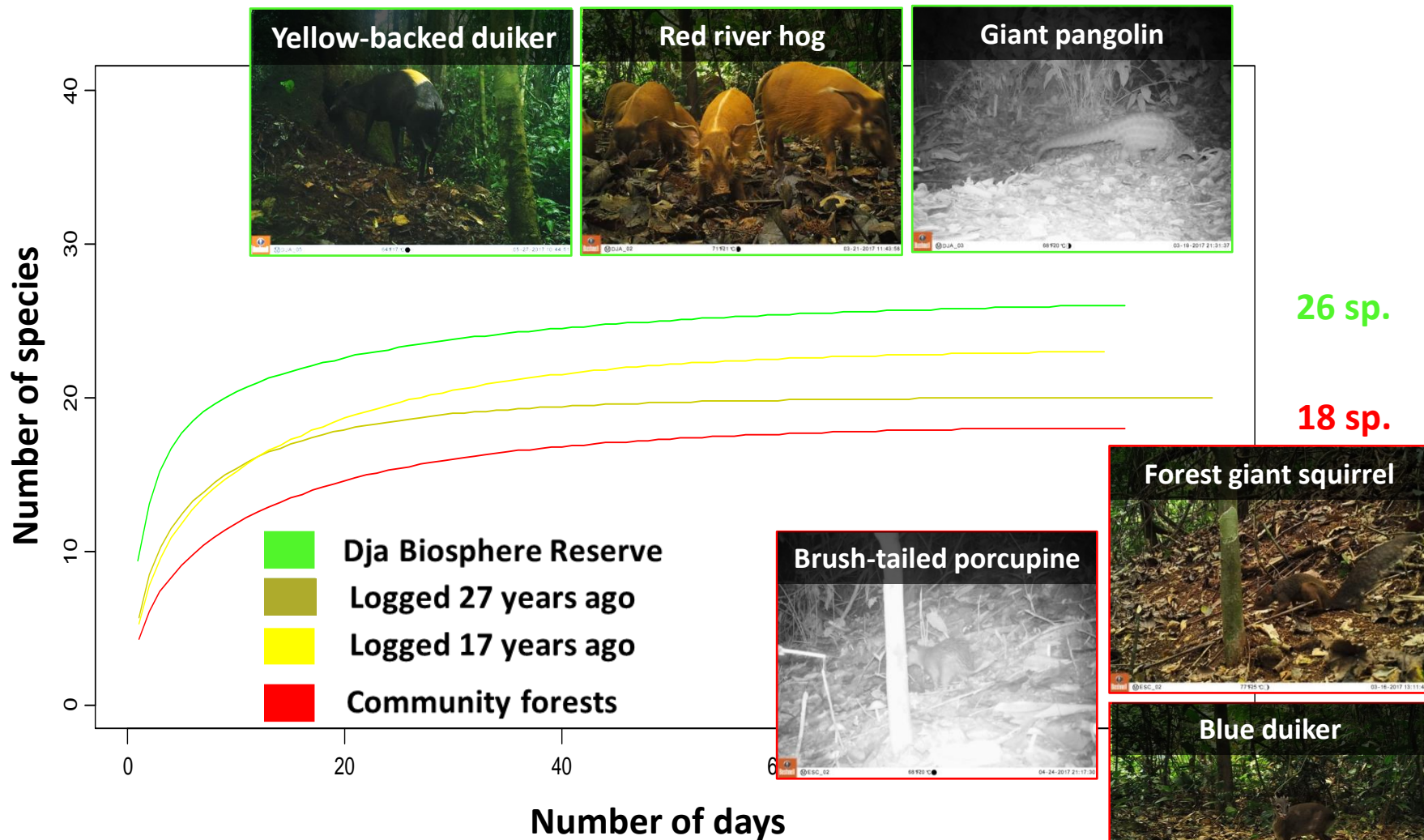


Results & Discussion

2°



What is the wildlife conservation value of forests along a disturbance gradient?



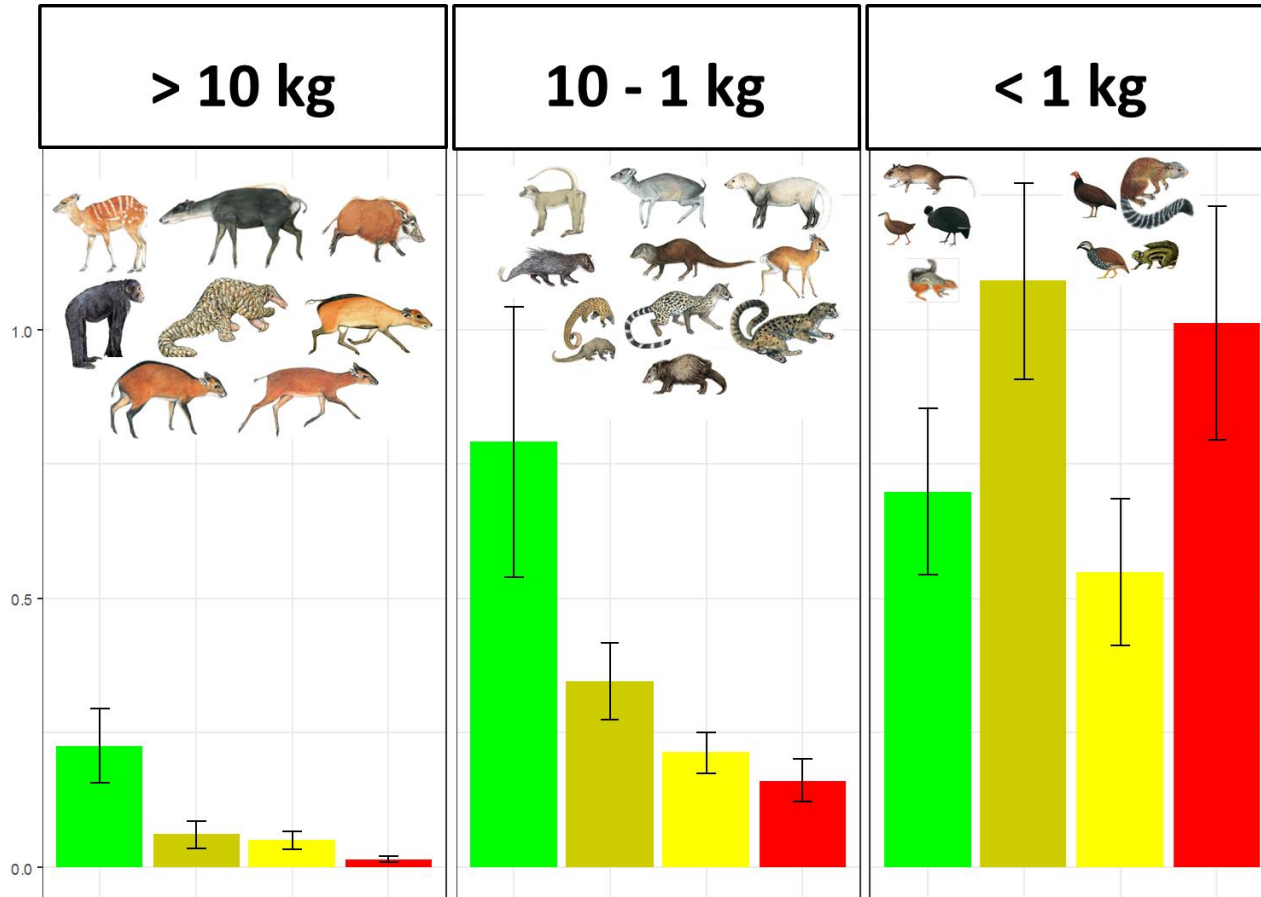
Results & Discussion

2°



What is the wildlife conservation value of forests along a disturbance gradient?

Mean trap rate/day



- Dja Biosphere Reserve
- Logged 27 years ago
- Logged 17 years ago
- Community forests

Results & Discussion

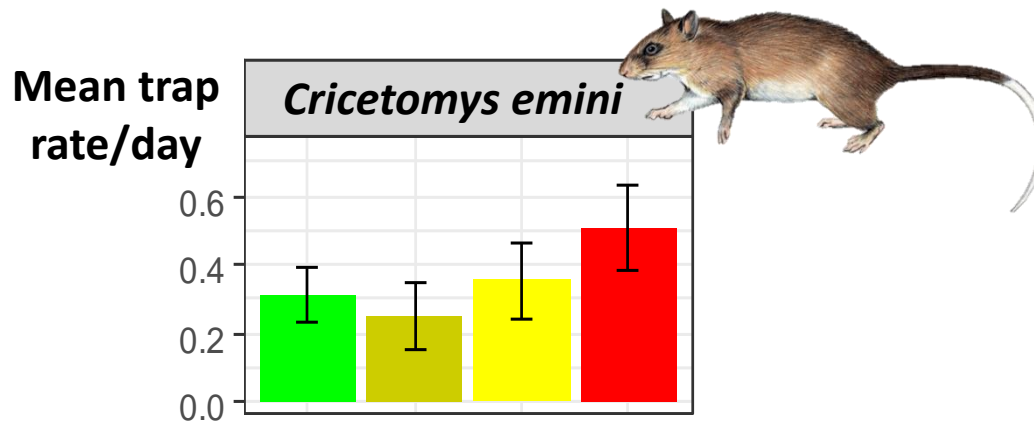
2°



What is the wildlife conservation value of forests along a disturbance gradient?

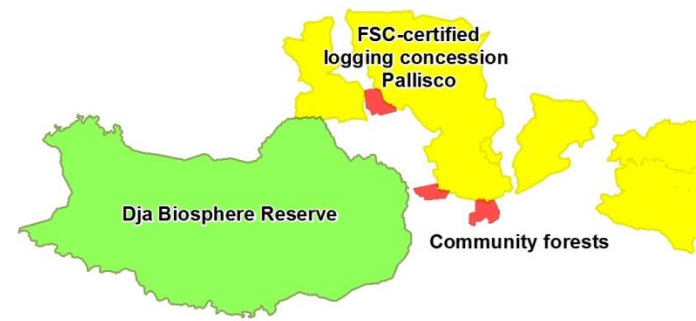


- **Large-bodied** species or species with **slow population dynamics** are the most vulnerable in disturbed areas (van Vliet *et al.*, 2007, 2008)
- Resilient species might be more abundant in disturbed places (**density compensation**) (Peres et Dolman, 2000)



- A **shift in species composition** appeared with overhunting leading to a dominance of small animals and rodents (Bennett *et al.*, 2002; Vermeulen, pers. com.; Gillet, 2016)

Take-home message



“ How degraded are forests along a disturbance gradient ? ”

DJA

Comparable levels of AGB

→ Quick recovery or
structural heterogeneity or
low logging intensity

FSC

**Structurally disturbed &
rich in pioneer species**

CF



“What is the wildlife conservation value of forests along a disturbance gradient? ”

Not a paper park

Endangered or sensitive species present

BUT ↑ Hunting & Accessibility

Defaunated & density compensation

Thank you for your attention !



Research partners



museum



Feel free to ask questions or contact me...



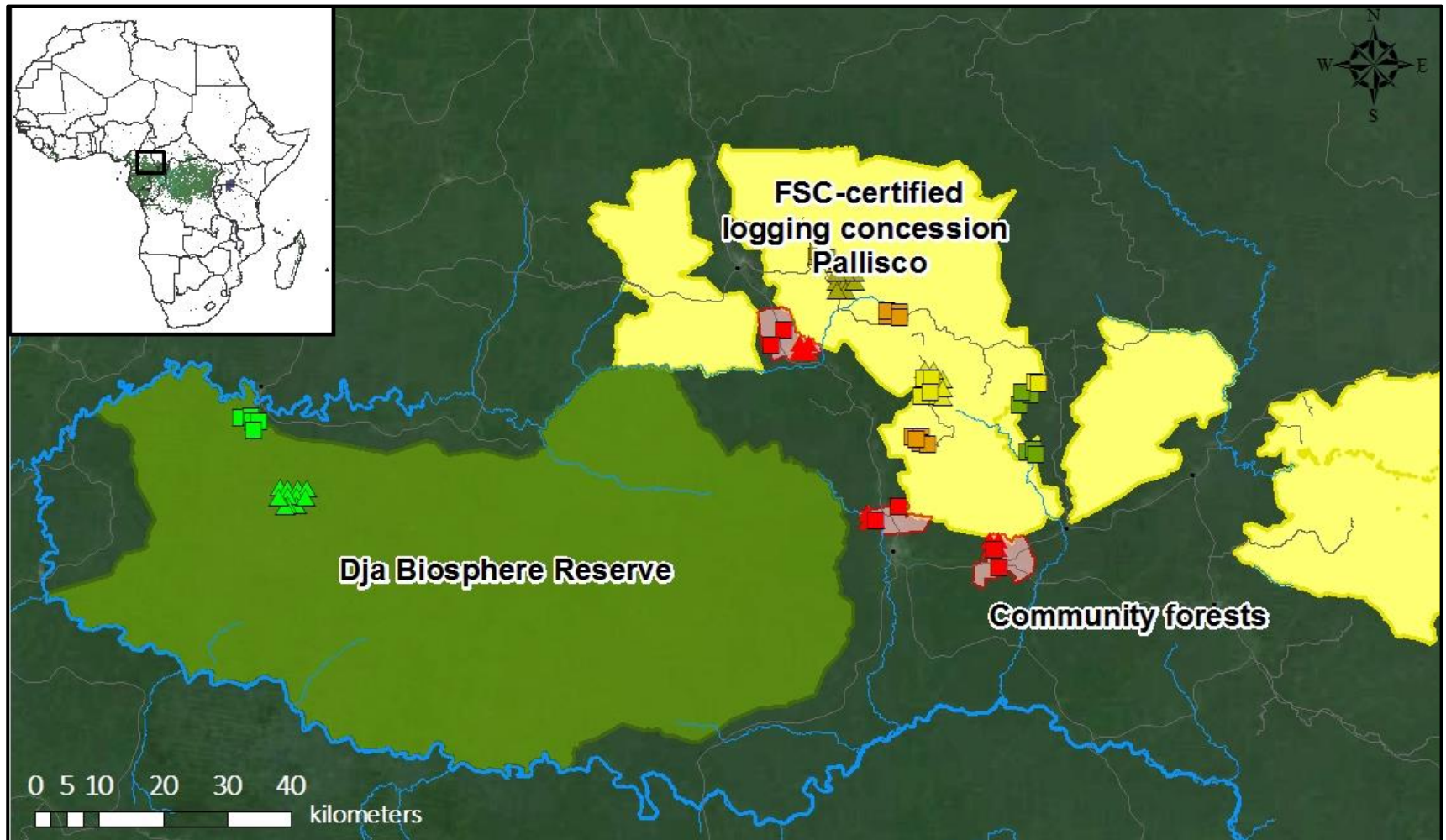
davy.fonteyn@doct.uliege.be



Sampling strategy

DBR Never logged >20 years 10-20 years <10 years **CF**

Disturbance gradient →



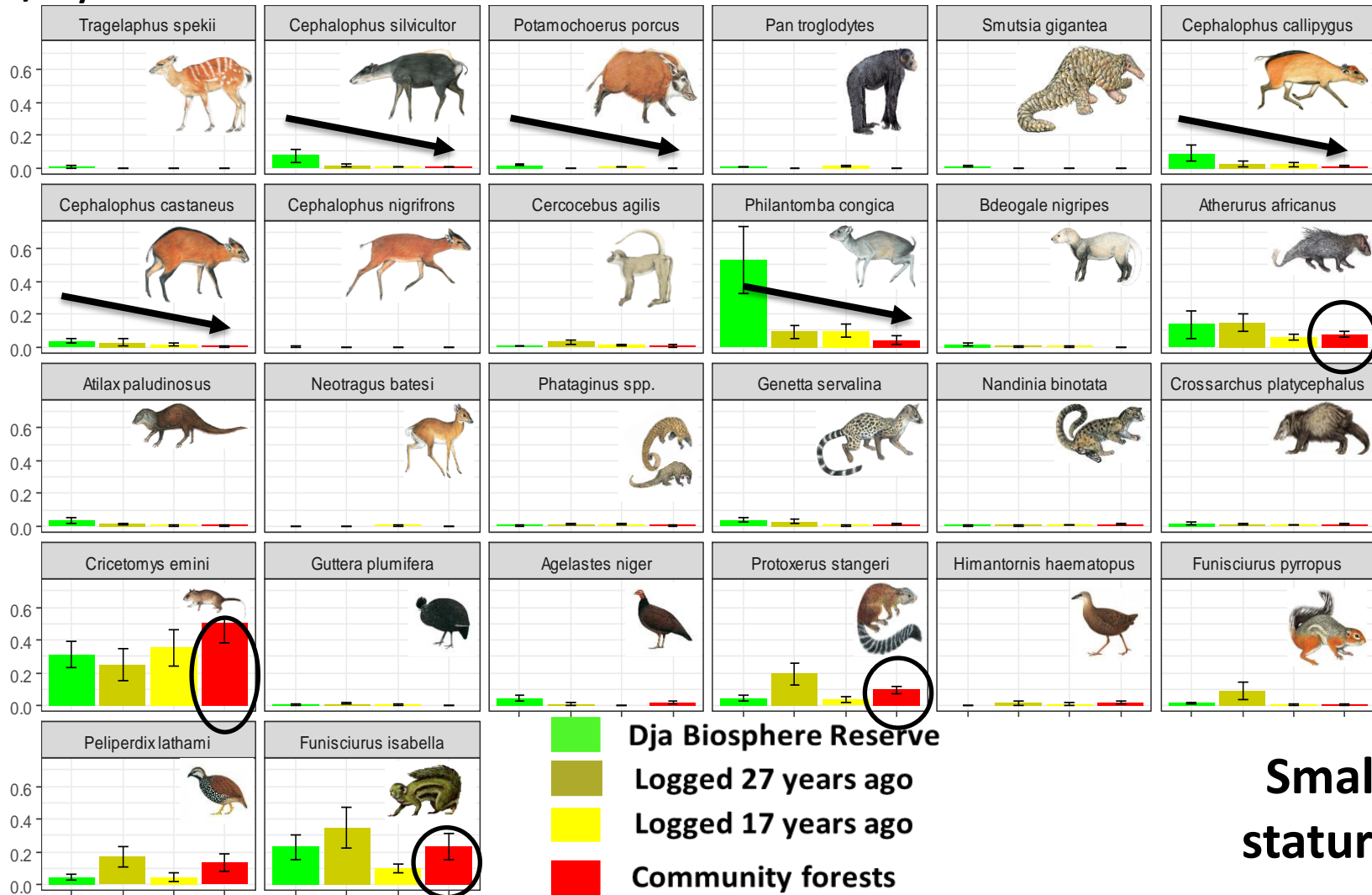
Results & Discussion

2°



What is the wildlife conservation value of forests along a disturbance gradient?

Mean trap rate/day



Body mass

Small-statured

