



European Conference for Tropical Ecology 2024

# Ecological impacts of carnivores on forest dynamics

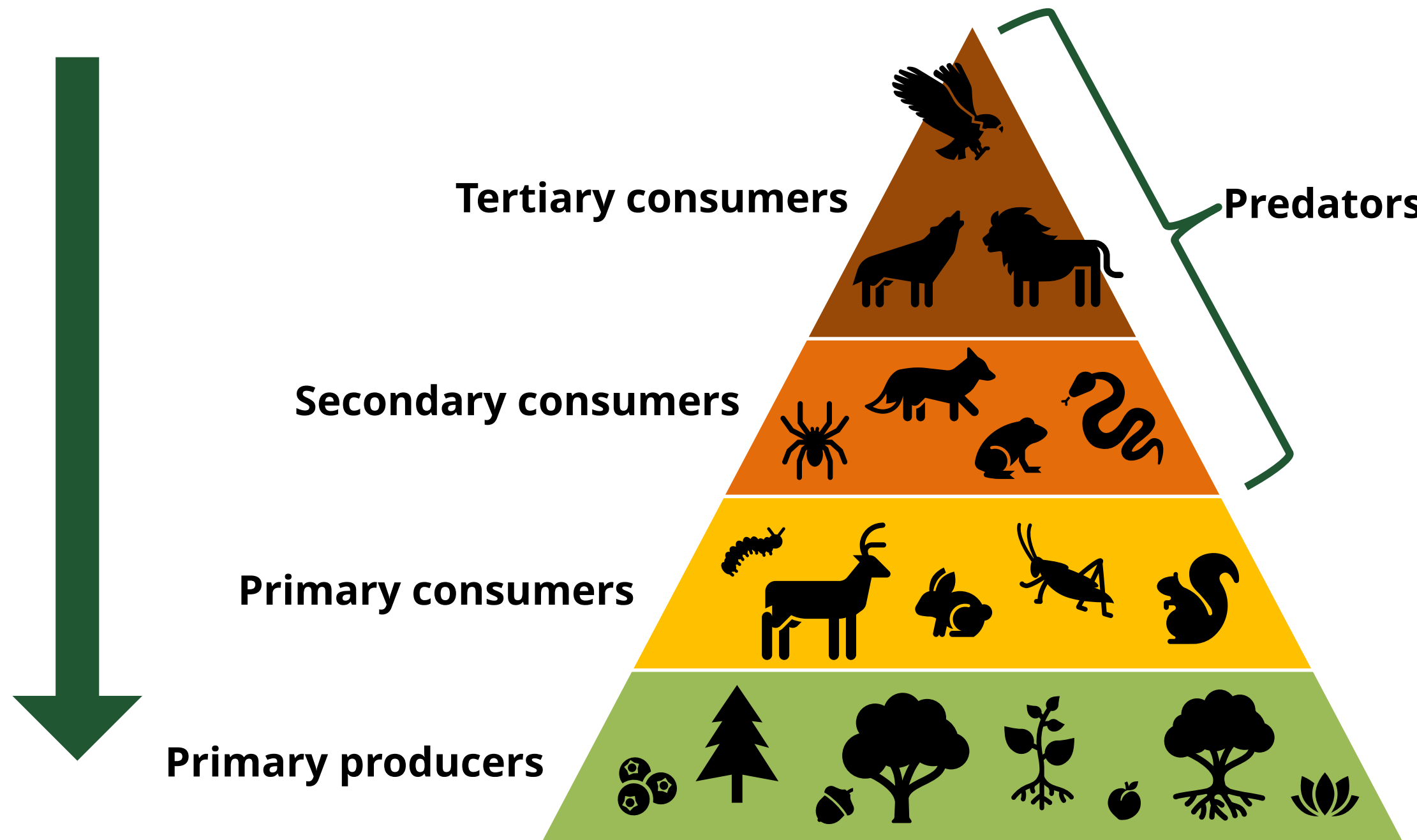
## The study case of Central African wild cats

By Sarah Tossens (ULiège), Marine Drouilly (Panthera) & Jean-Louis Doucet (ULiège)



# TROPHIC CASCADES

*“Trophic cascades are indirect species interactions that originate with **predators** and spread downward through food webs” (Ripple et al., 2016)*



## Highly context-dependent

-  Species involved  
e.g.: trophic position, specific traits
-  Environmental factors  
e.g.: seasonality, primary productivity
-  Others  
e.g.: level of anthropization

# WILD CATS

- Hypercarnivorous
- Solitary & ambush predators
- Emblematic carnivores



**Great potential to  
impact food webs**



# WILD CATS

Systematic review of the literature



61 articles found

80%

Evidence for ecological significance

→ Density-mediated TC

Lethal/consumptive effects

→ Behavior-mediated TC

Risk/non-consumptive effects

## CLASSIC



Ocelot



Agouti



American oil palm

## INTRAGUILD



Iberian lynx



Red fox



European rabbit

## HUMAN-INDUCED



Human



Puma



Mule deer

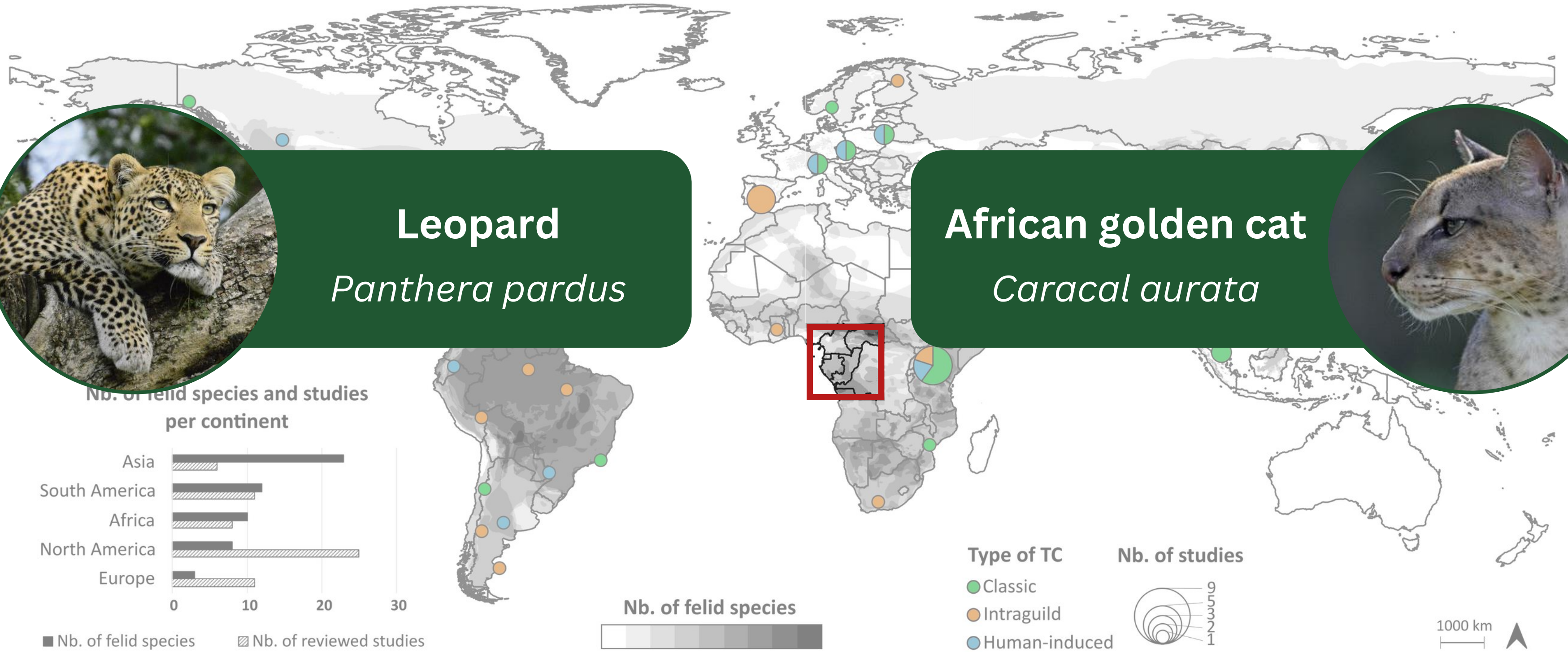
# WILD CATS



**Leopard**  
*Panthera pardus*

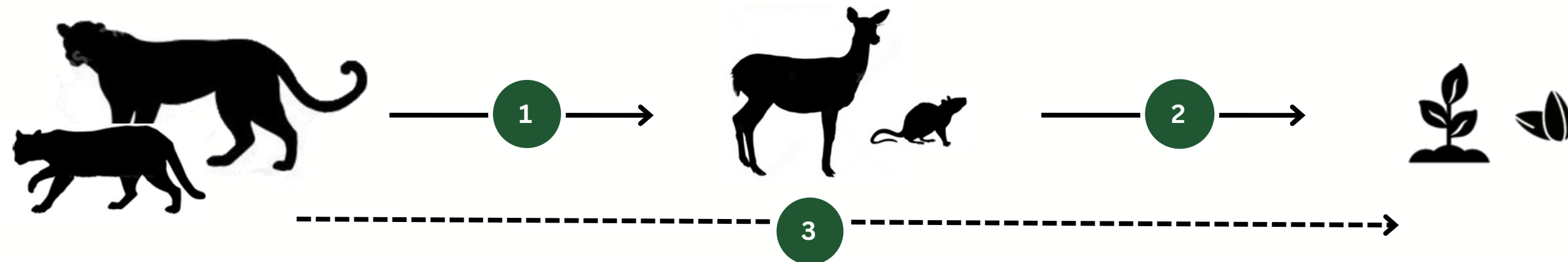


**African golden cat**  
*Caracal aurata*



# OBJECTIVES

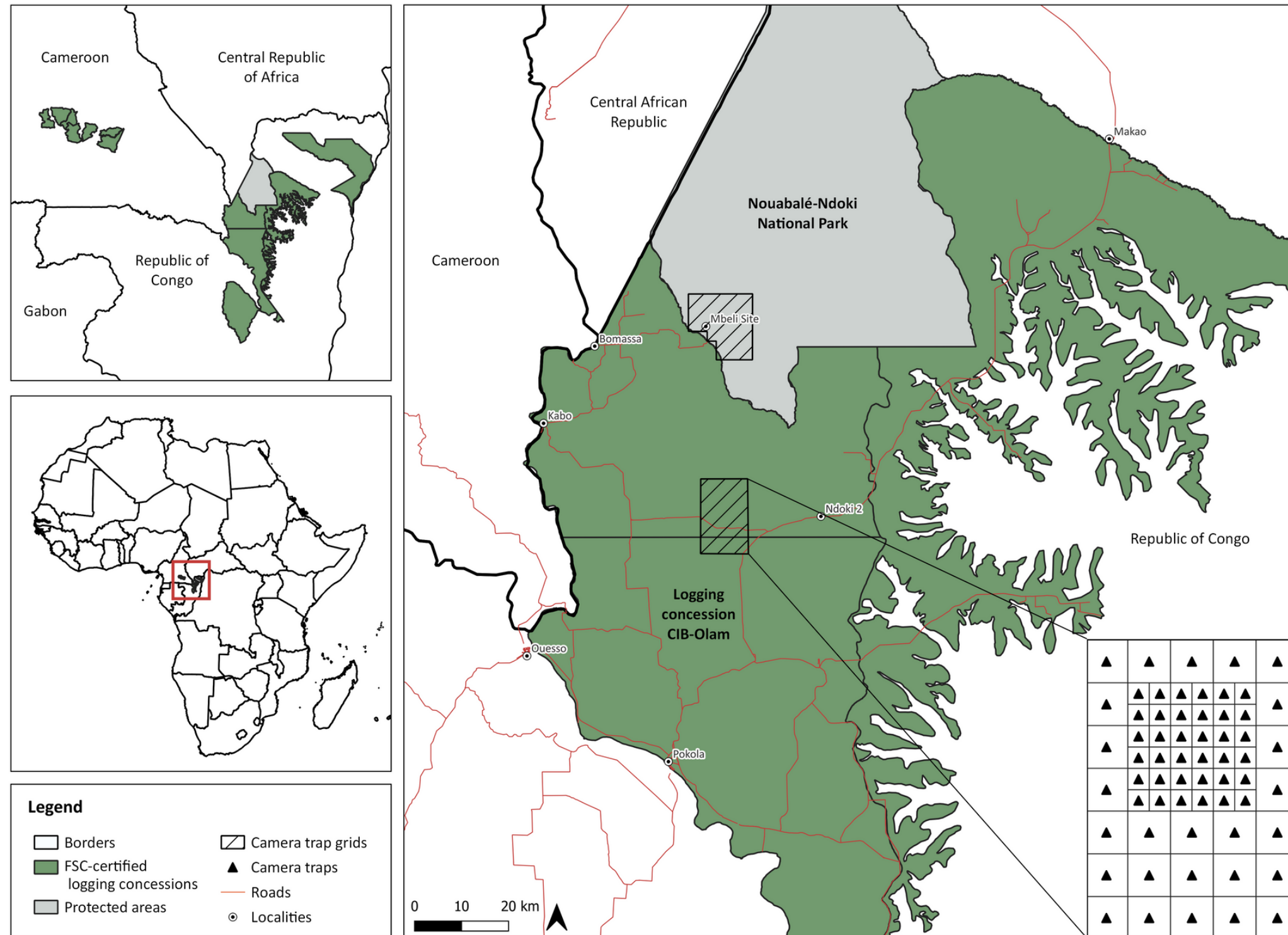
**General:** Assessing the direct and indirect impacts of the local disappearance of the two largest forest carnivores in Central Africa on forest regeneration through trophic cascades





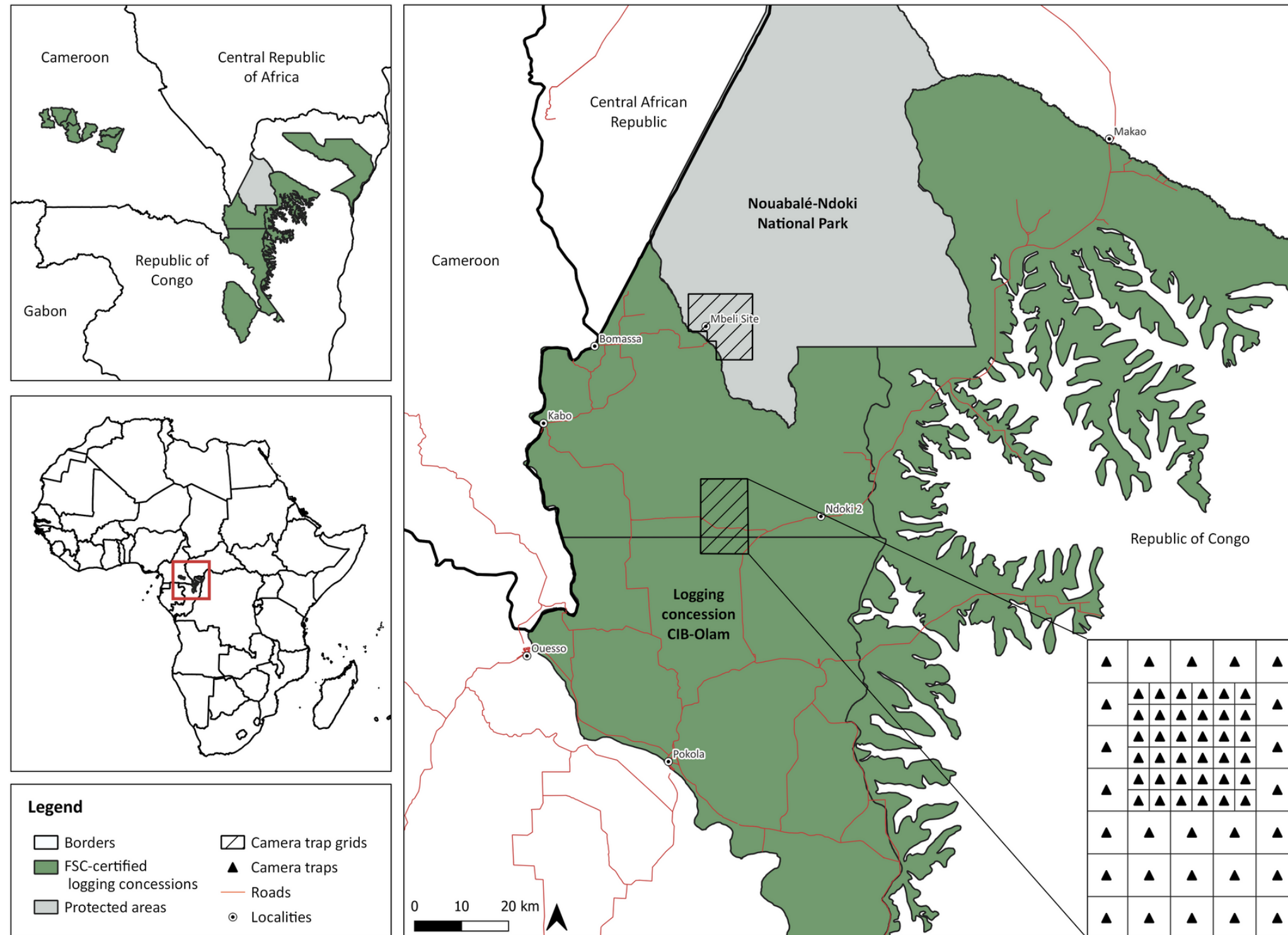
**METHODS & PRELIMINARY  
RESULTS**

## 1.1) CAMERA TRAP SURVEYS





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- 3 x 63 camera trap stations installed = 378 CT
- ~4 months of survey
- ~320 000 pictures collected (2/3)

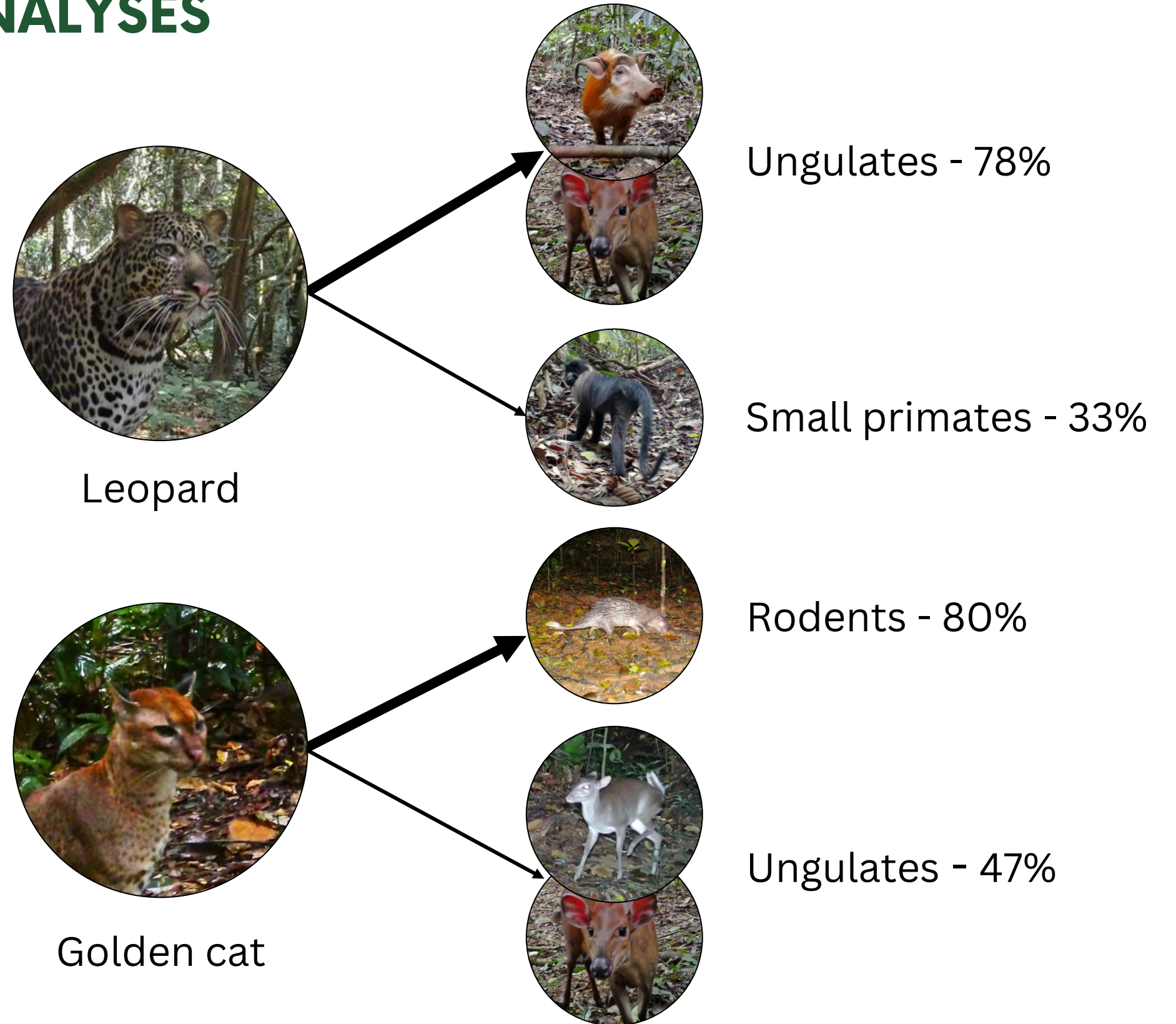
→ Estimates of wild cat population densities

→ Calculation of relative abundance indices of prey species

## 1.2) SCAT COLLECTION & GENETIC ANALYSES

- 32 scat samples collected
- Scat collection still in progress...

→ Identification of golden cat & leopard diet



## 2.1) MONITORING OF SEED PREDATION & DISPERSION

- 5 species monitored

*Bobgunnia fistuloides*

*Chrysophyllum lacourtianum*

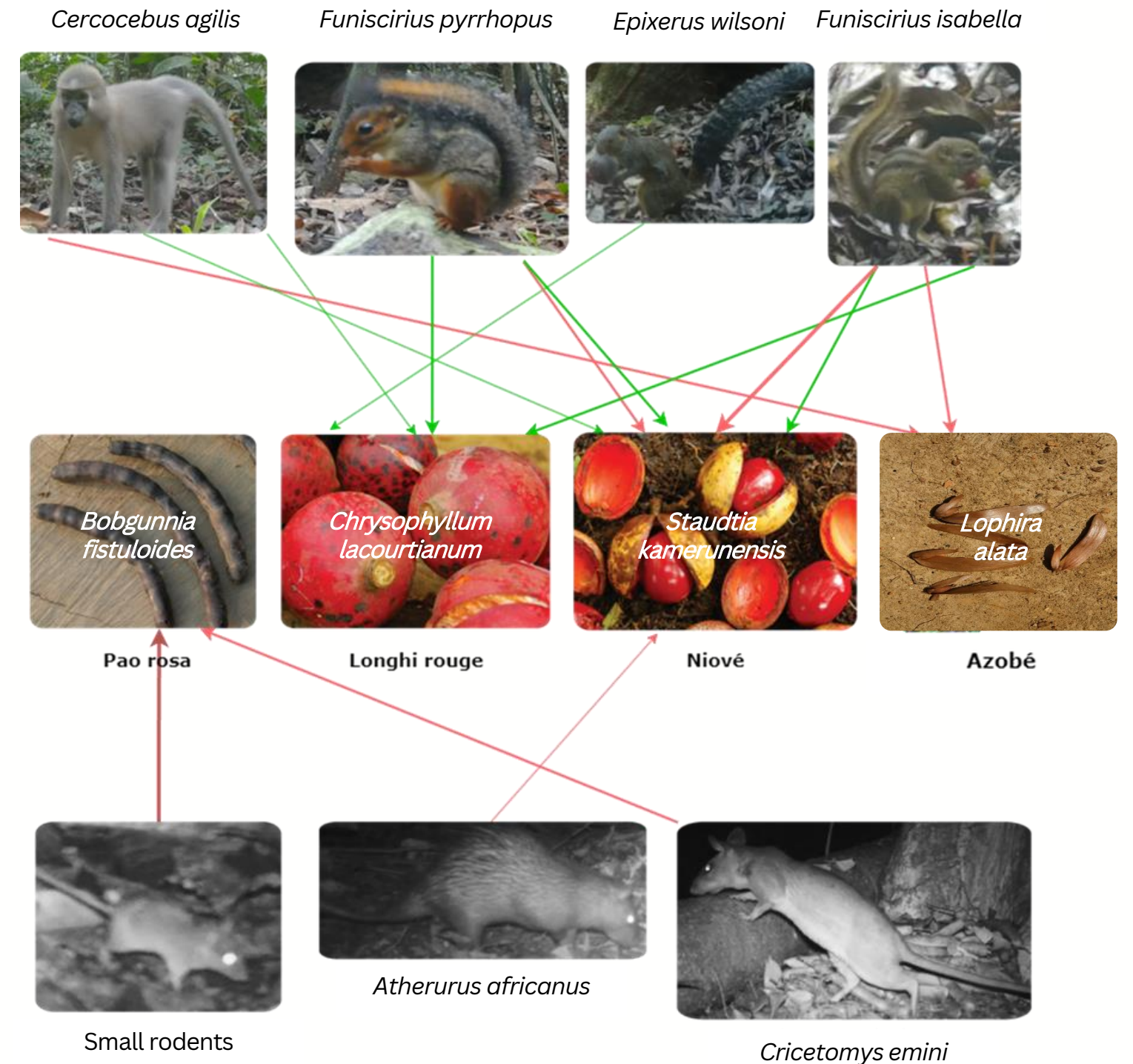
*Staudtia kamerunensis*

*Lophira alata*

*Entandrophragma cylindricum*

- 8 camera traps/sp.

- ~ 5 weeks

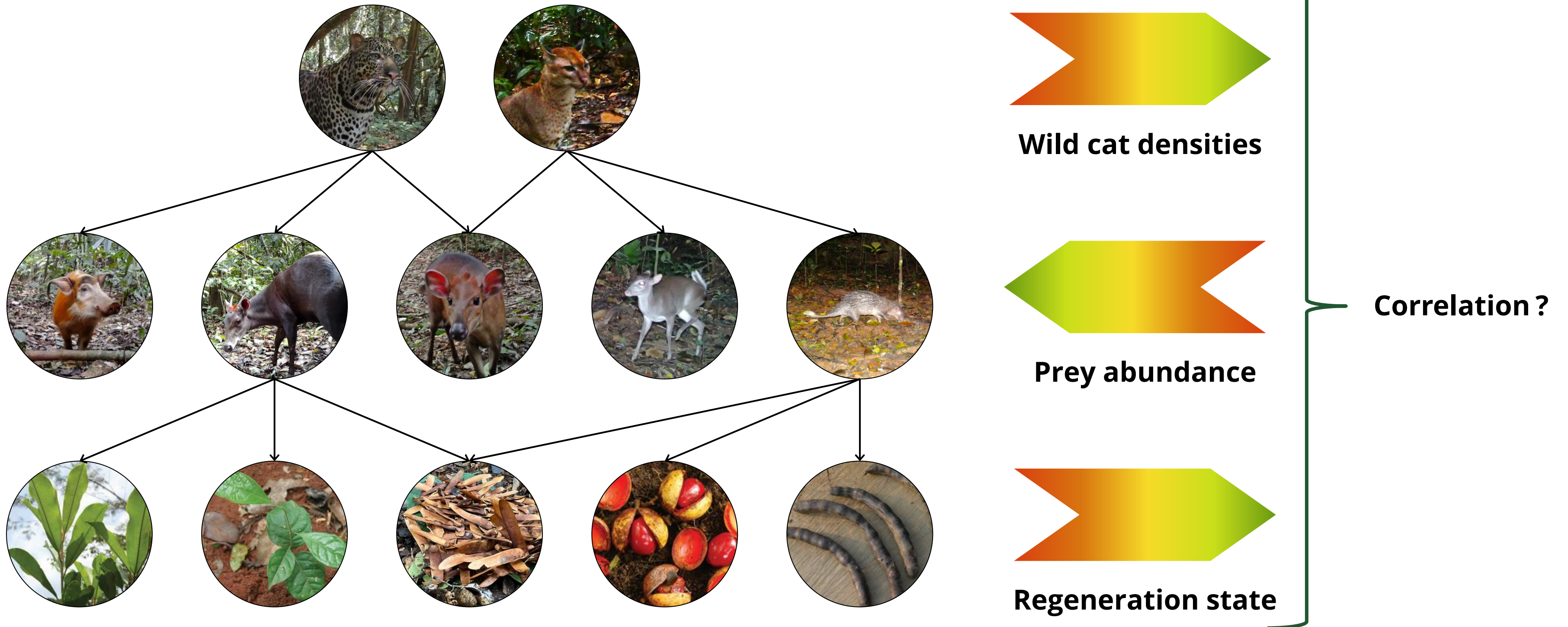


## 2.2) MONITORING OF SEEDLING PREDATION

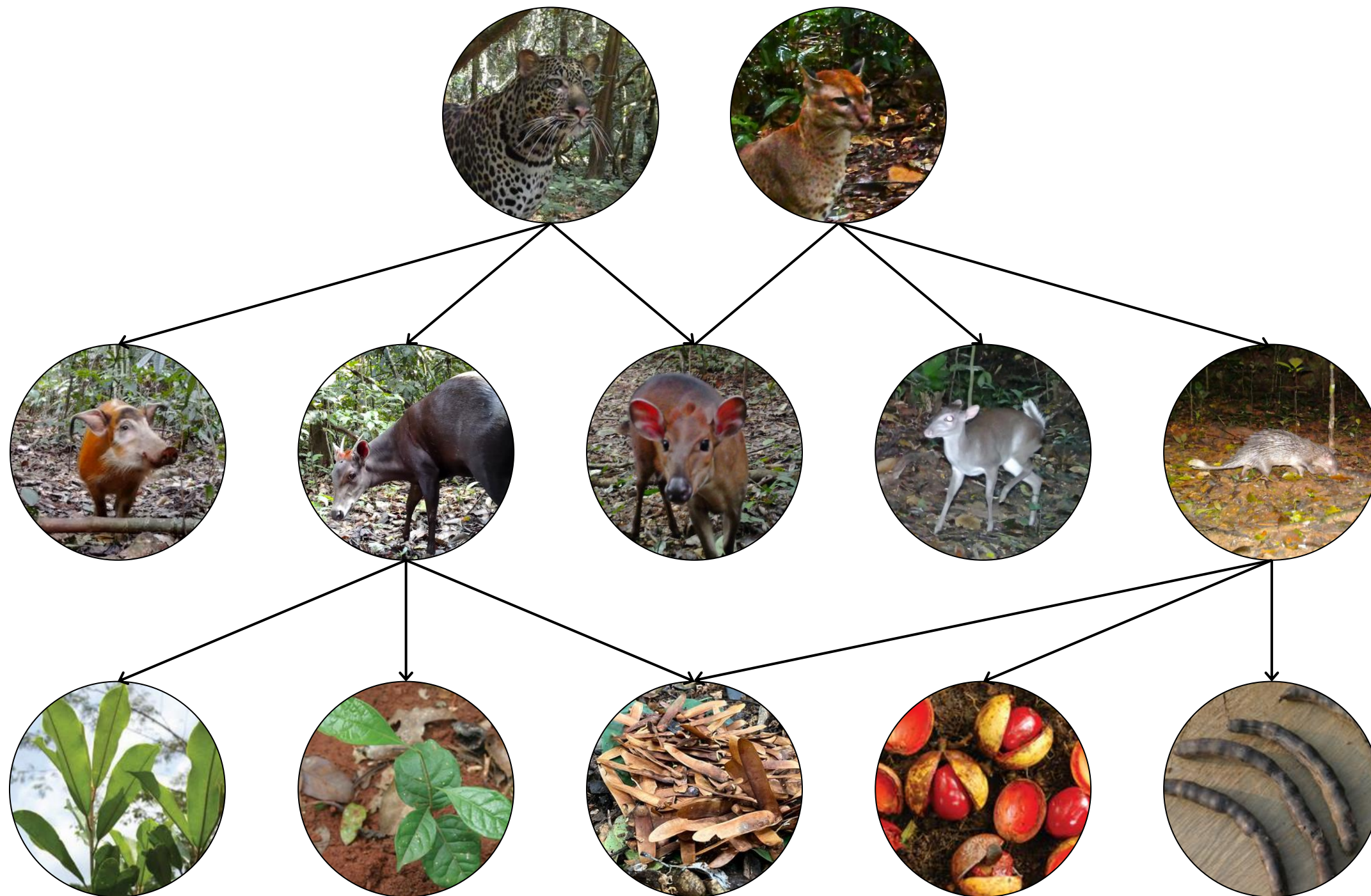
- Census of damage in 84 reforested logging gaps
- 20 exclosures paired with control plots
- 25 CT facing seedlings



## 3.1) PARTIAL RECONSTRUCTION OF THE LOCAL FOOD WEB



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Wild cat densities



Prey abundance



Regeneration state

→ **Correlative analyses** between sites

+ **Covariates** (e.g.: hunting pressure)

## 3.2) "LANDSCAPE OF FEAR" EXPERIMENT



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# STUDY PERSPECTIVES

A leopard is lying on its side on a patch of reddish-brown earth in a forest. The leopard's body is covered in its characteristic spotted pattern. The background is filled with dense green foliage, including various ferns and broad-leaved plants. The lighting is natural, suggesting a daytime setting in a shaded forest environment.

1

**Addressing knowledge gaps** on the distribution and ecology of leopards and golden cats & some fauna-flora interactions in the semi-deciduous forests of Central Africa

2

**Combining correlative analyses and experiments** to explore the ecological role of leopards and golden cats on the food web & the impacts of their prey on forest dynamics

3

**Assessing the role of sustainably managed logging concessions** in conserving wild cats & maintaining healthy ecosystems

# THANK YOU

Upcoming results...

Stay tuned!



Sarah Tossens



sarah.tossens@uliege.be



Photo & video credits: D. van de Sande, B. Weckx, S. Noël, B. Morris, P. Du Preez, C. Greene, O. Guder, J. Snoek, L. Bahaa el-dinh, S. Tossens, M. Ruwet, J.-L. Doucet, R. Blervacq, Q. Meunier

