# MONITORING OF CONSERVATION IMPACTS: KEYS EXAMPLES FROM WWF IN THE CONGO BASIN

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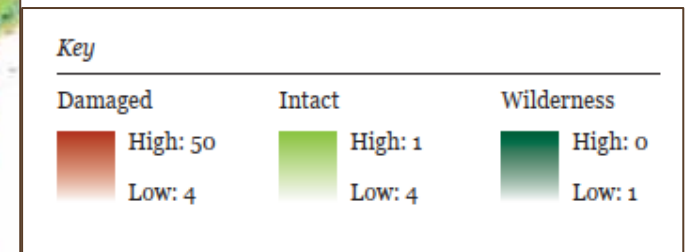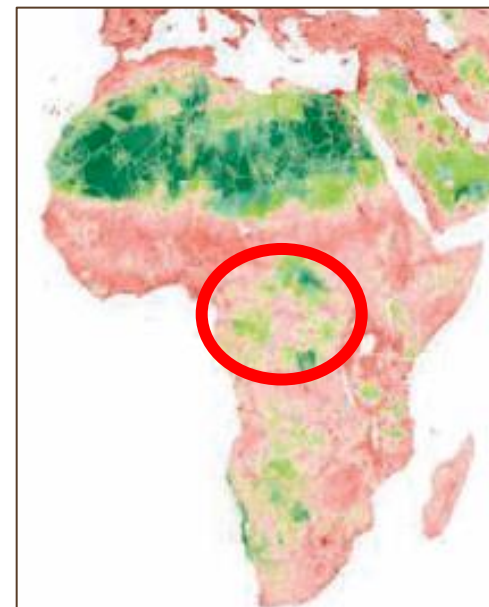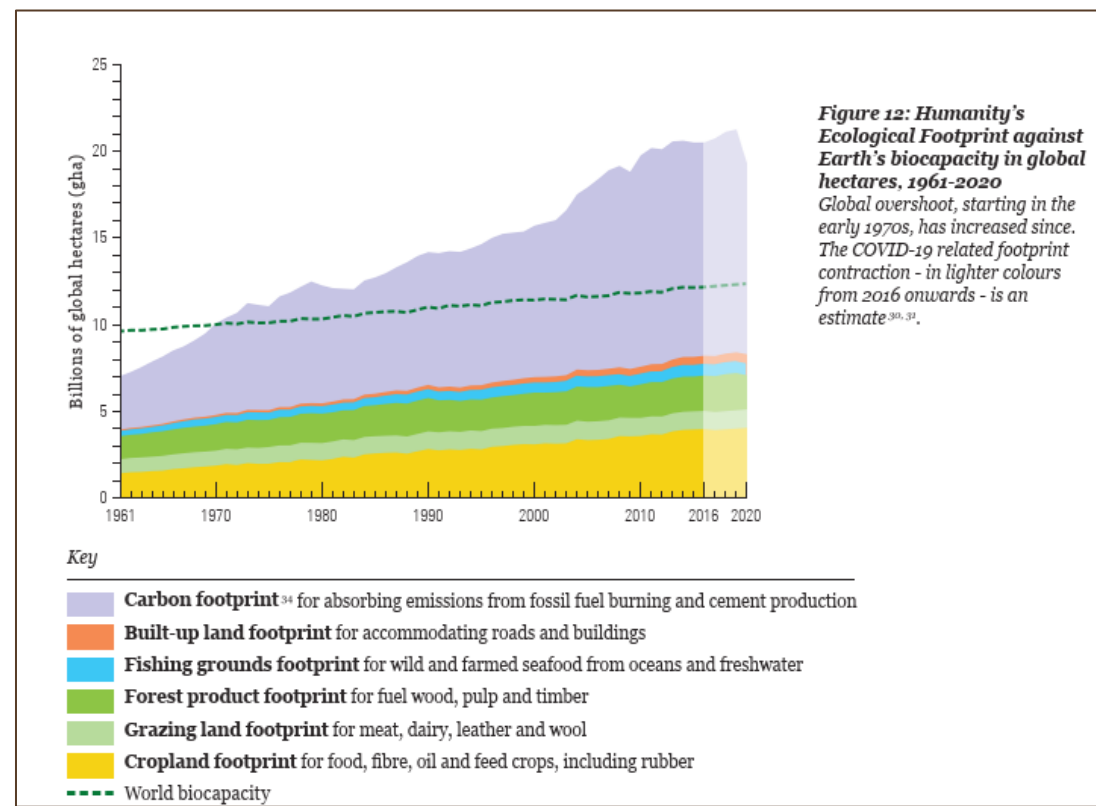*Stéphane Le Duc Yeno*
*Menard Mbende*
*Jonathan Mukesha*
*et al.*

1

# PART I : THE STRATEGY

- **CONTEXT**

- **ECOLOGICAL MONITORING / BIOMONITORING**

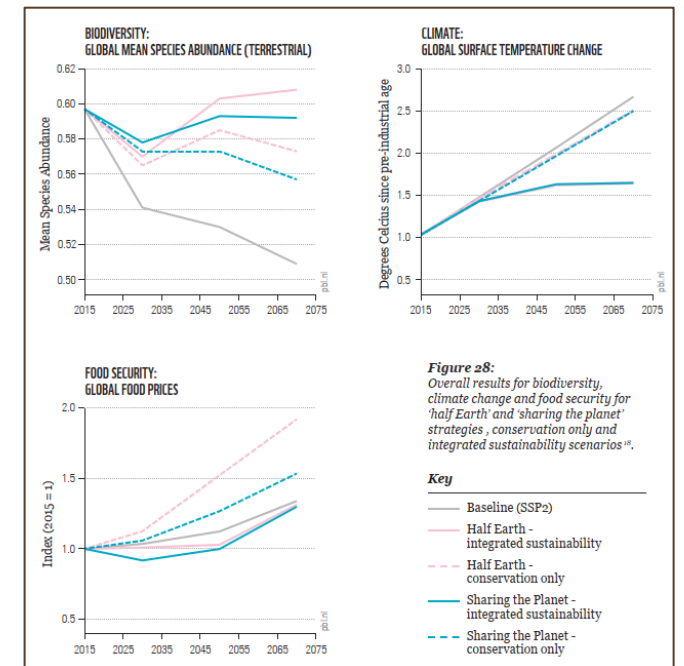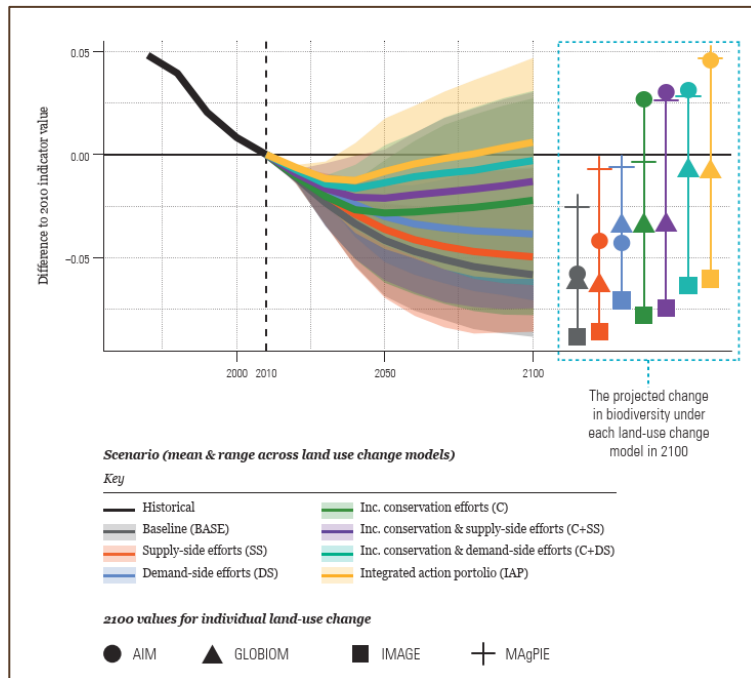- **THE MONITORING STRATEGY**

- **CONCLUSION AND CHALLENGES**

# CONTEXT

- **Increased pressure on biodiversity through over and inadequate exploitation (mining, logging, hunting, farming)**
- **Continuous biodiversity loss: vulnerability of local communities to climate change**
- **Urgent needs to bend the curve**



Figure 12: Humanity's Ecological Footprint against Earth's biocapacity in global hectares, 1961-2020
Global overshoot, starting in the early 1970s, has increased since. The COVID-19 related footprint contraction - in lighter colours from 2016 onwards - is an estimate [30, 31].

Key

- **Carbon footprint** [34] for absorbing emissions from fossil fuel burning and cement production
- **Built-up land footprint** for accommodating roads and buildings
- **Fishing grounds footprint** for wild and farmed seafood from oceans and freshwater
- **Forest product footprint** for fuel wood, pulp and timber
- **Grazing land footprint** for meat, dairy, leather and wool
- **Cropland footprint** for food, fibre, oil and feed crops, including rubber
- World biocapacity



Key

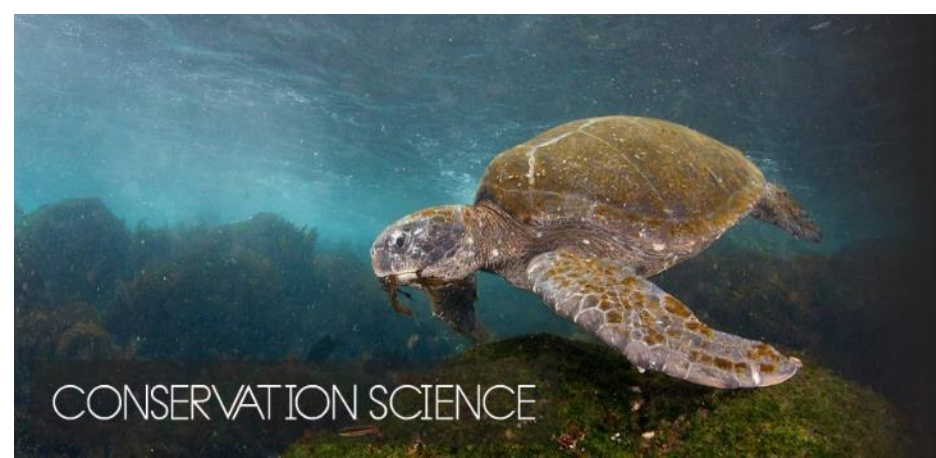| Damaged | Intact | Wilderness |
|---|---|---|
| High: 50 | High: 1 | High: 0 |
| Low: 4 | Low: 4 | Low: 1 |

# INTRODUCTION

- **Huge conservation efforts completed by WWF and its partners in the Congo Basin.**
- **Few impact demonstration through M&E activities**
- **Understanding the state of biodiversity conservation implies a well designed Ecological Monitoring Program**

# BIOMONITORING



CONSERVATION SCIENCE

**Biomonitoring ≈ Ecological Monitoring**

**= Conservation Science**

**Monitoring and Evaluation Program**

**A structured program designed to provide evidences on Conservation Targets and Threats to those targets.**

# BIOMONITORING

**Contribute to optimize conservation results and to apply efficiently the ADAPTIVE MANAGEMENT: Monitoring of the quality of the outputs (Implementation).**
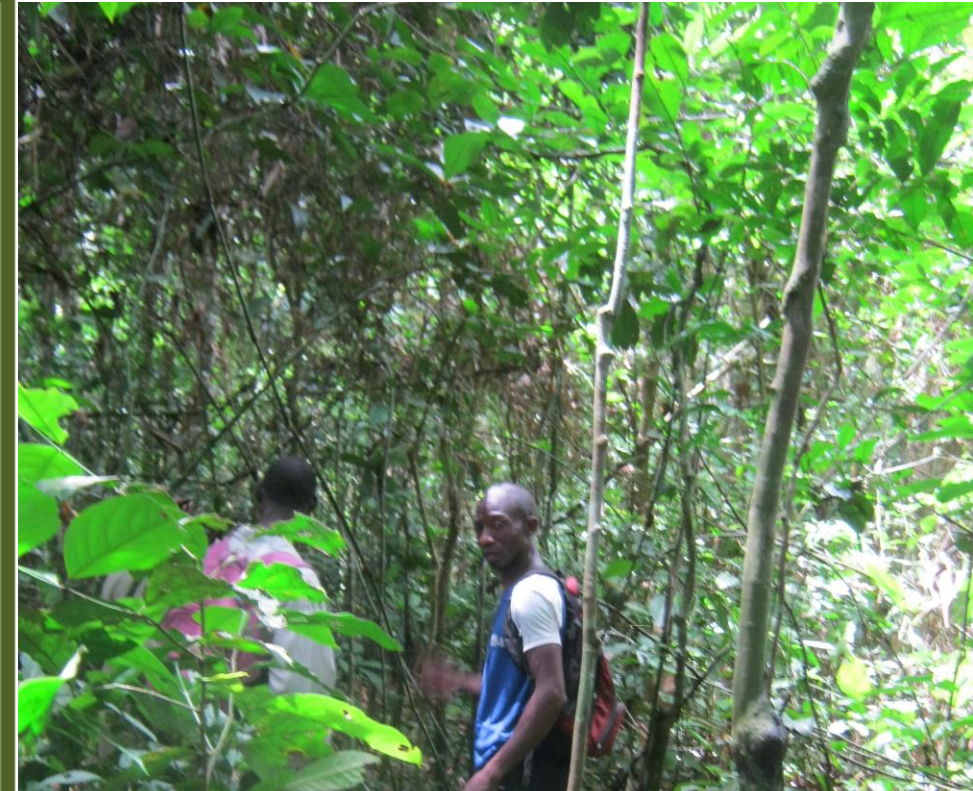
# THE MONITORING STRATEGY
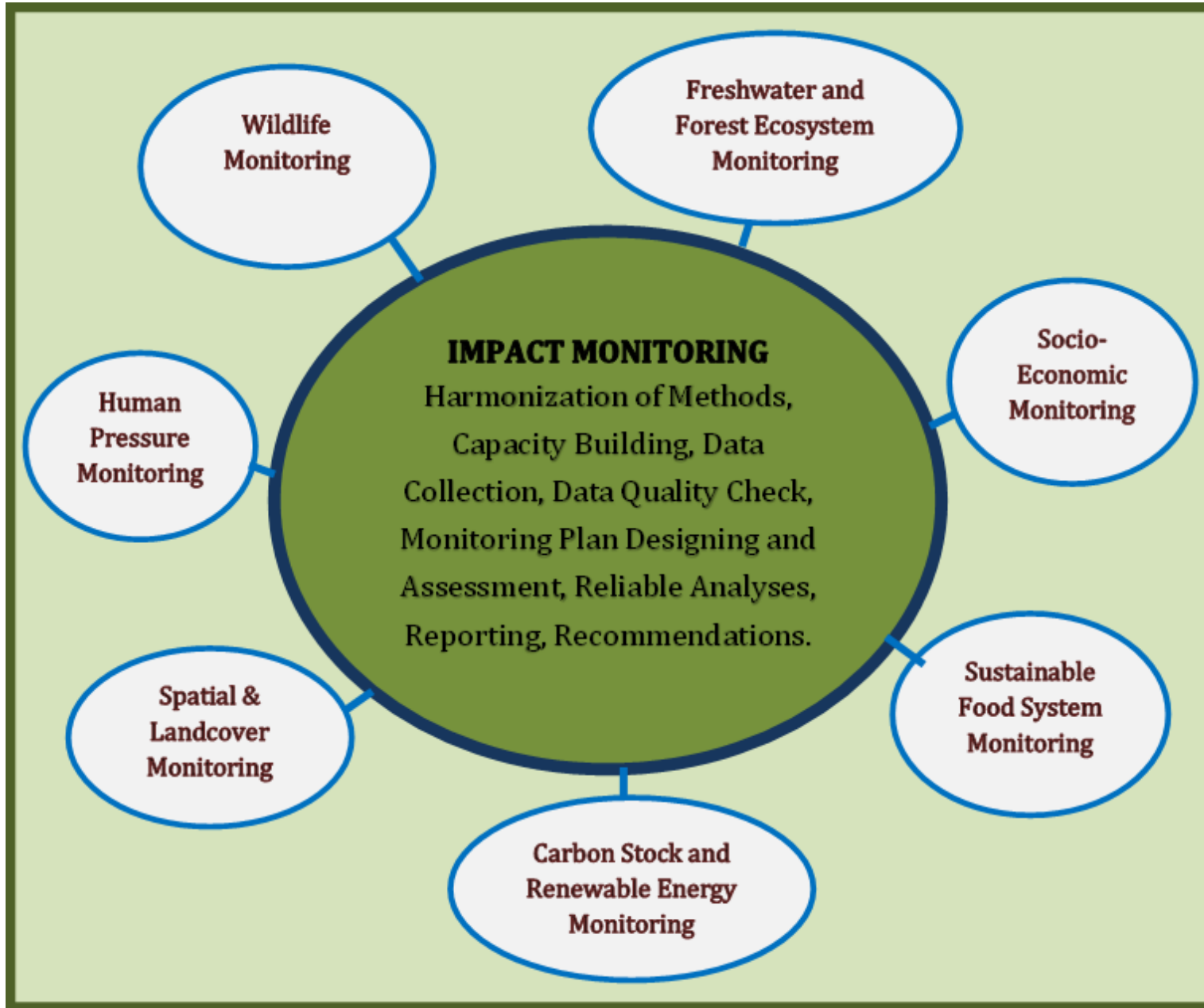
## General Objective

**By 2027, an adequate monitoring and evaluation system for WWF's inclusive conservation efforts, supports the adaptive management of priority landscapes and demonstrates conservation impacts in the Congo basin.**
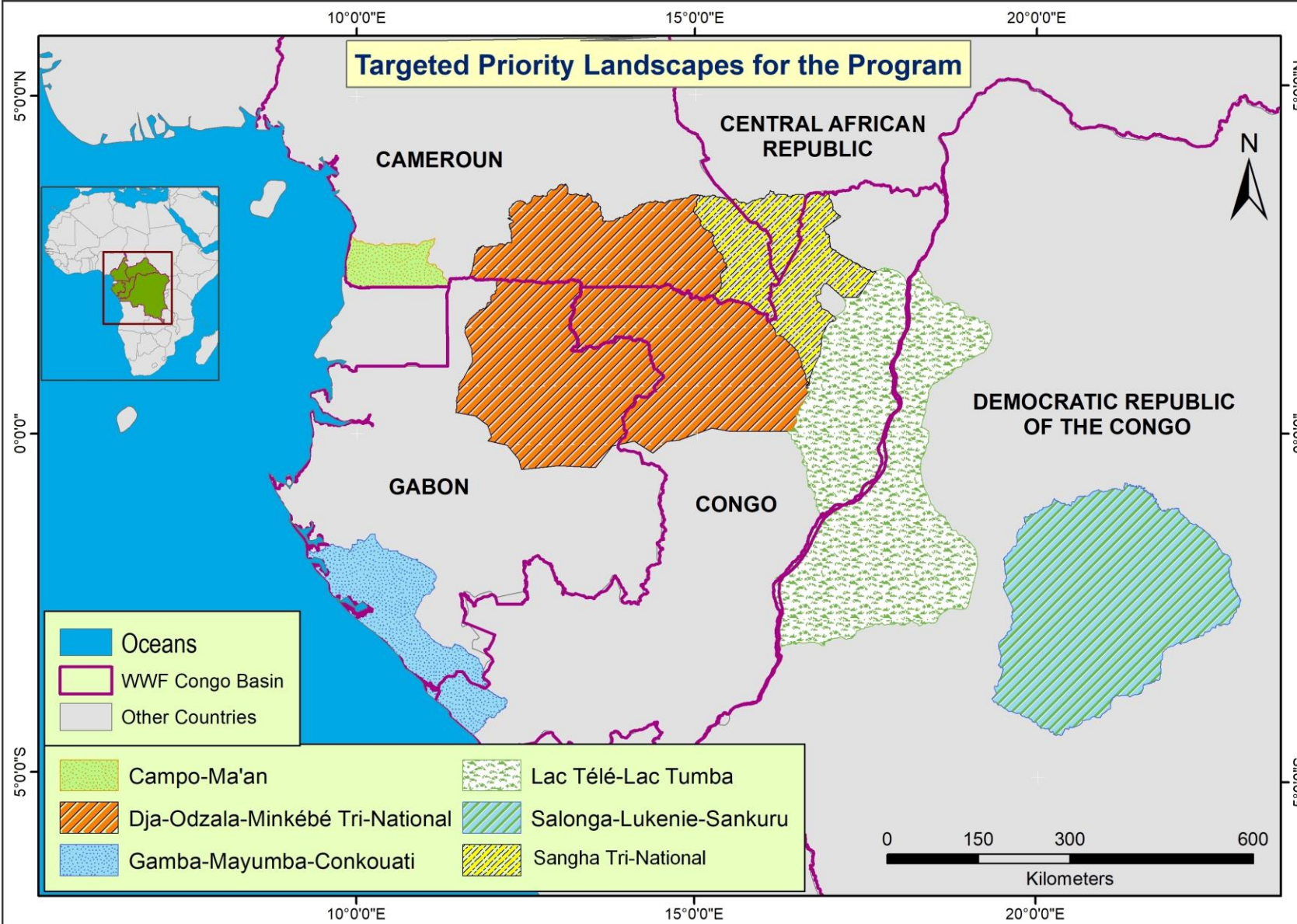
# STRATEGIC AXES: Key strategic actions

**1- Support management activities with useful and reliable data**

**2- Contribute to the evaluation of outcomes and Impacts of conservation programs**

**3- Strengthen stakeholders' capacities for a better performance**

**4- Communicate, manage and valorize data, reports and other products**

**5- Create Partnerships and fundraise**

# KEY COMPONENTS / PILLARS



Wildlife Monitoring

Freshwater and Forest Ecosystem Monitoring

Human Pressure Monitoring

Spatial & Landcover Monitoring

**IMPACT MONITORING**
Harmonization of Methods, Capacity Building, Data Collection, Data Quality Check, Monitoring Plan Designing and Assessment, Reliable Analyses, Reporting, Recommendations.

Socio-Economic Monitoring

Sustainable Food System Monitoring

Carbon Stock and Renewable Energy Monitoring

**Based on the conservation strategies developped by WWF Program Offices in the Congo basin**

# GEOGRAPHIC SCOPE



Targeted Priority Landscapes for the Program

Legend:
- Oceans
- WWF Congo Basin
- Other Countries
- Campo-Ma'an
- Dja-Odzala-Minkébé Tri-National
- Gamba-Mayumba-Conkouati
- Lac Télé-Lac Tumba
- Salonga-Lukenie-Sankuru
- Sangha Tri-National

- **Six landscapes of high priority for WWF**
- **More than 10 Pas with surrounding community forests and logging concessions**

# KEY CHALLENGES

- **Gap in funding for field work (data collection and staff)**

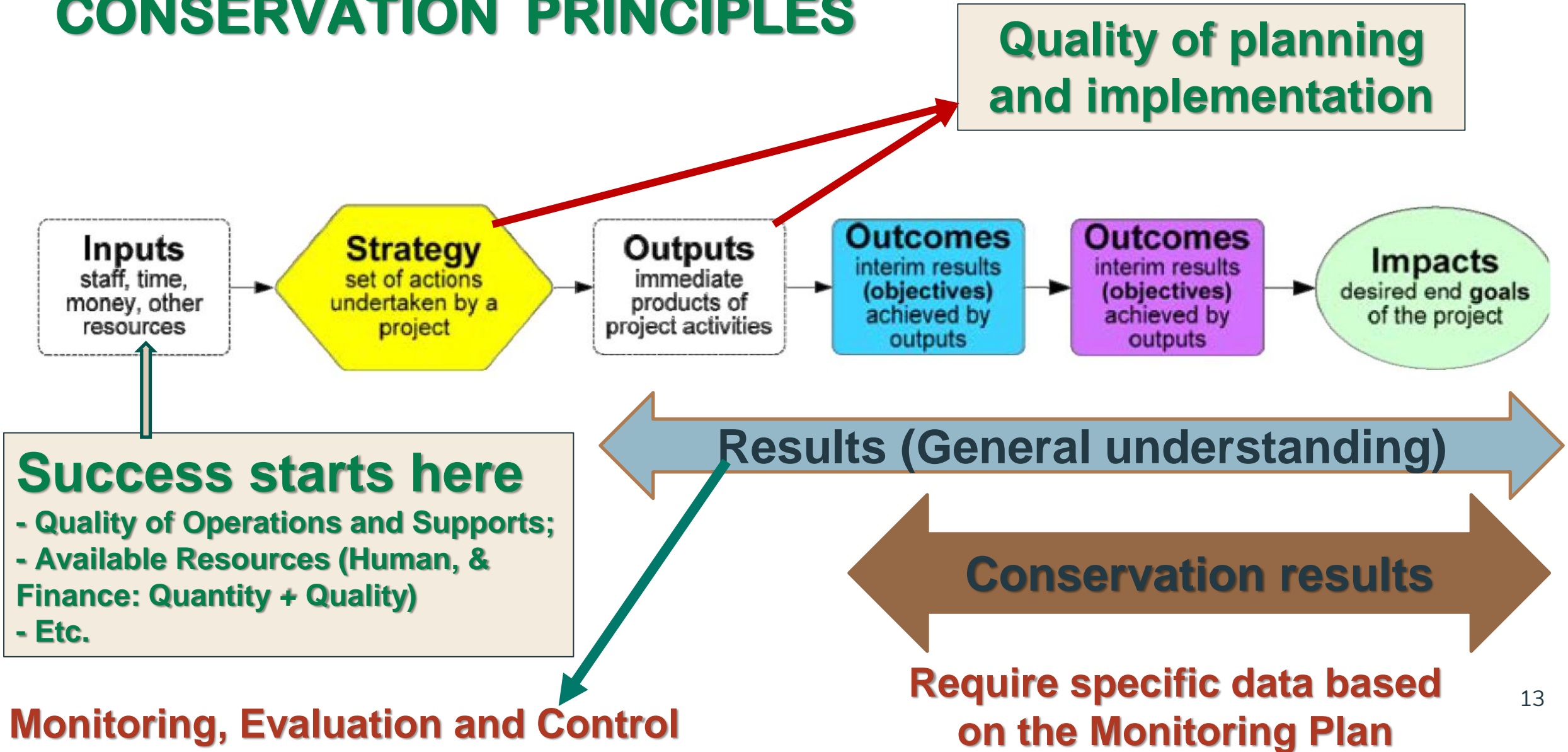- **Poor data sharing and collaboration between organisations**

# PART II : KEY RESULTS

- **NEEDS FOR IMPACTS ACHIEVEMENT**

- **EFFORTS FROM THE PROGRAM**

- **KEY IMPACTS ACHIEVED**

- **CONCLUSION AND CHALLENGES**

# NEEDS FOR IMPACTS ACHIEVEMENT

## CONSERVATION PRINCIPLES

**Quality of planning and implementation**



| Inputs | Strategy | Outputs | Outcomes | Outcomes | Impacts |
|--------|----------|---------|----------|----------|---------|
| staff, time, money, other resources | set of actions undertaken by a project | immediate products of project activities | interim results (objectives) achieved by outputs | interim results (objectives) achieved by outputs | desired end goals of the project |

**Results (General understanding)**

**Conservation results**

## Success starts here

- **Quality of Operations and Supports;**
- **Available Resources (Human, & Finance: Quantity + Quality)**
- **Etc.**

**Monitoring, Evaluation and Control**

**Require specific data based on the Monitoring Plan**

13

# CONSERVATION STRATEGIC PLAN

Ensure adequate monitoring by supporting the elaboration and the implementation of the required detailed plans related to the Project/ Program Startegic Plans.

## STRATEGIC PLAN

The overall plan for a project. A complete strategic plan includes descriptions of a project's scope, vision, & targets; an analysis of project situation; an Action Plan; a Monitoring Plan; & an Operational Plan.

### Action Plan
A description of a project's goals & objectives & the strategies that will be undertaken to abate identified threats & make use of opportunities

### Monitoring Plan
The plan for monitoring your project. It includes information needs, indicators & methods, spatial scale & locations, timeframe, & roles & responsibilities for collecting data.

### Operational Plan
A plan that includes analysis of funding required, human capacity & skills & other non-financial resources required, risk assessment & mitigation, & estimate of project lifespan & exit strategy

### Work Plan
A short-term schedule for implementing an action or monitoring plan. Work plans typically list tasks required, who will be responsible for each task, when each task will need to be undertaken, & how. Money & other resources will be required to implement the work plan.

14

*Source: Adapted from Stewart 2016. Operationalising the Open Standards for the Practice of Conservation*
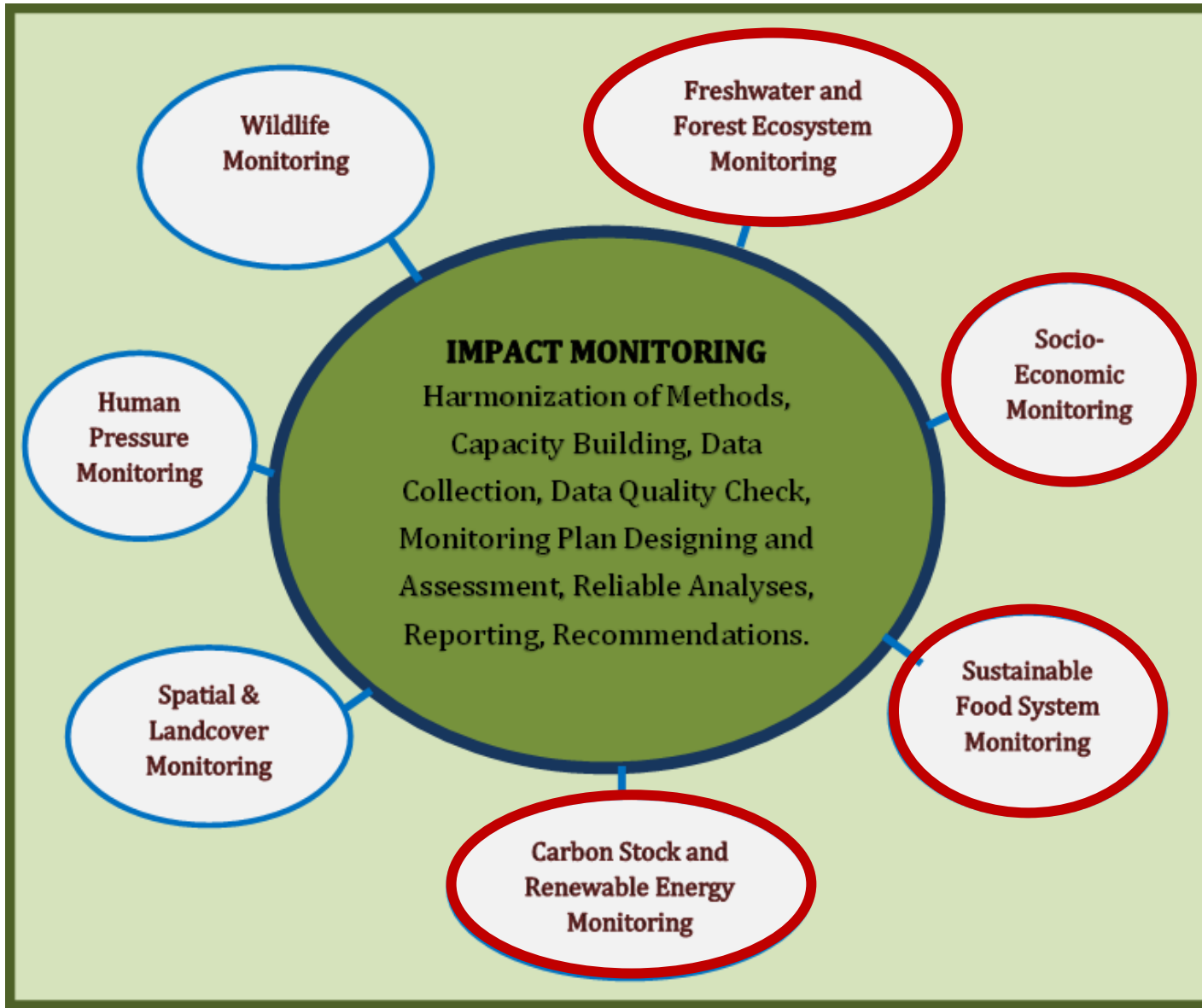
# EFFORTS COMPLETED



**Pillars**

**Pillars in red are under development for implementation**

# EFFORTS COMPLETED

## Training






| Training sessions carried out by the Congo Basin Biomonitoring Team | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Type of training | Year | Cameroon | Gabon | DRC | CAR | RoC | Region | Total |
| Methodology and data collection | 2014 | 2 | 0 | 0 | 0 | 1 | 0 | 3 |
| | 2015 | 1 | 0 | 0 | 2 | 0 | 0 | 3 |
| | 2016 | 1 | 1 | 2 | 0 | 0 | 0 | 4 |
| | 2017 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| | 2018 | 3 | 0 | 2 | 1 | 0 | 0 | 6 |
| | 2019 | 1 | 1 | 1 | 0 | 2 | 0 | 5 |
| | 2020 | 1 | 0 | 1 | 1 | 0 | 0 | 3 |
| | 2021 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | 9 | 4 | 6 | 4 | 3 | 0 | 26 |
| Data Analysis and reporting | 2014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2015 | 2 | 0 | 0 | 0 | 1 | 0 | 3 |
| | 2016 | 1 | 1 | 0 | 1 | 0 | 1 | 4 |
| | 2017 | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| | 2018 | 1 | 1 | 1 | 1 | 2 | 0 | 6 |
| | 2019 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | 2020 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 2021 | 3 | 1 | 0 | 0 | 0 | 0 | 4 |
| | Total | 8 | 4 | 2 | 2 | 3 | 2 | 21 |
| TOTAL | | 17 | 8 | 8 | 6 | 6 | 2 | 47 |

**26 training sessions for data collection (SMART & Wildlife Surveys)**

**21 training for data analysis and reporting (GIS, Distance, Excel, SMART, Camelot, etc.)**
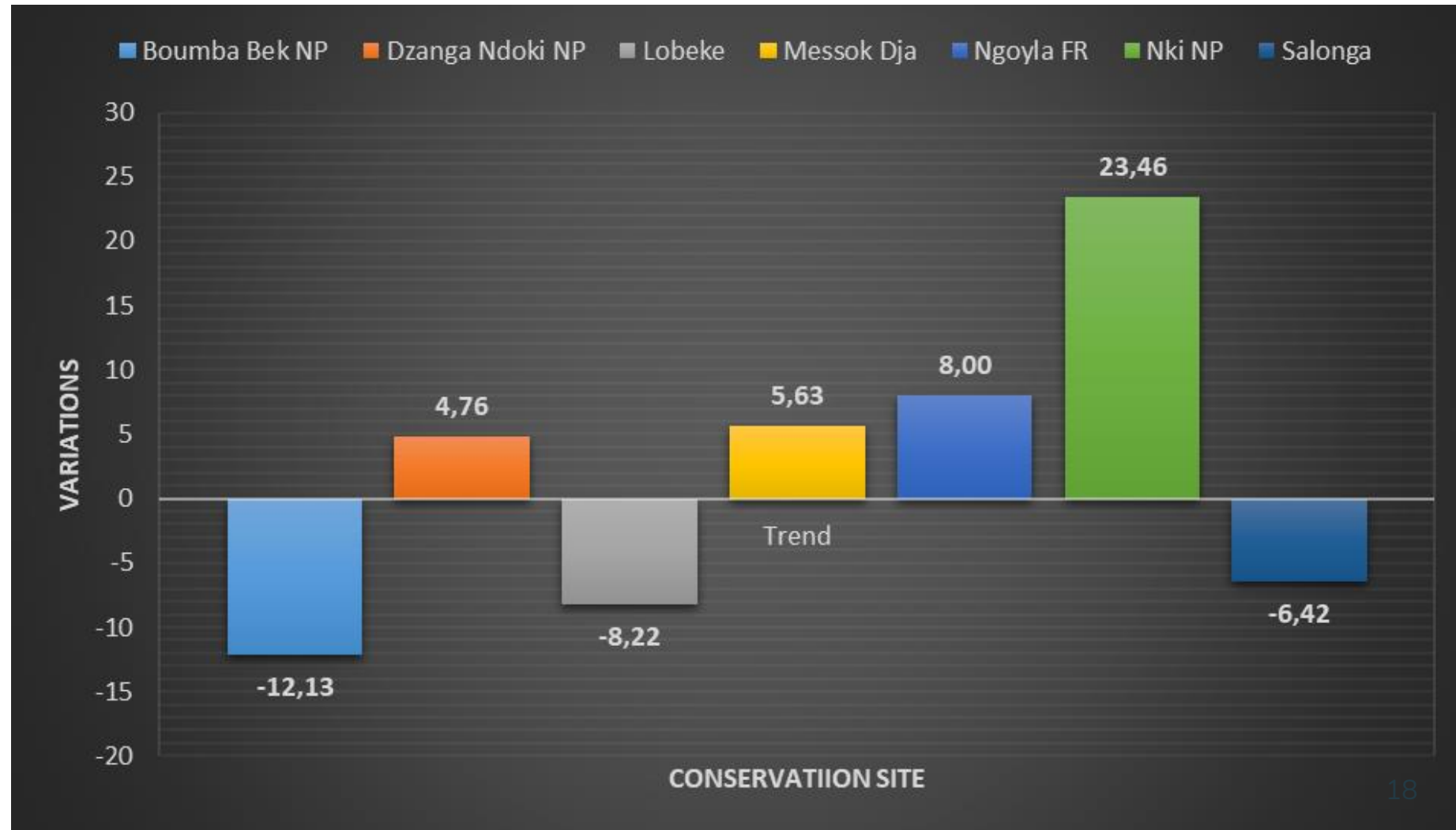
16

# EFFORTS COMPLETED

## Data collection

- **17 wildlife surveys completed by Line Transect Distance Sampling, Camera Trap DS, Occupancy, including Threat Monitoring.**

- **More than 50 sites covered: about 13 millions ha**

- **20 technical reports, and Contribution to 7 scientific papers with the data**

- **Contribution to the Apes Database and the African elephant status**

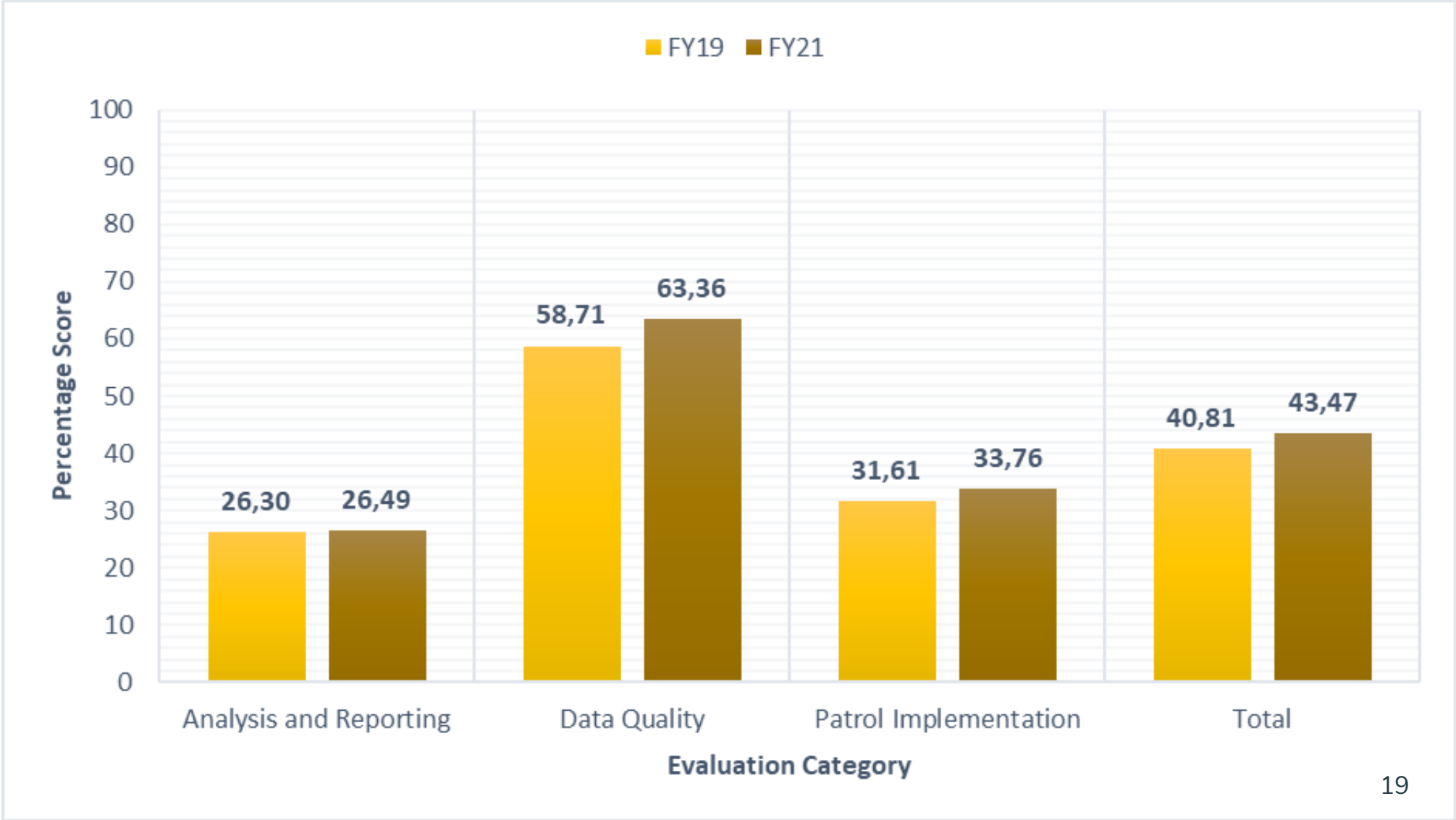- **Forest loss analysis in 4 landscapes: 93 345 km²**

- **Etc.**



Wildlife & Human Activity Survey Sites in the Congo Basin

Legend:
- Wildlife Survey Coverage
- Campo-Ma'an Landscape
- TRIDOM Landscape
- Gamba-Mayumba-Conkouati Landscape
- Lac Télé-Lac Tumba Landscape
- Salonga-Lukenie-Sankuru Landscape
- Sangha Tri-National Landscape
- WWF Central Africa Countries

By Dr Paul N'GORAN
August 2021
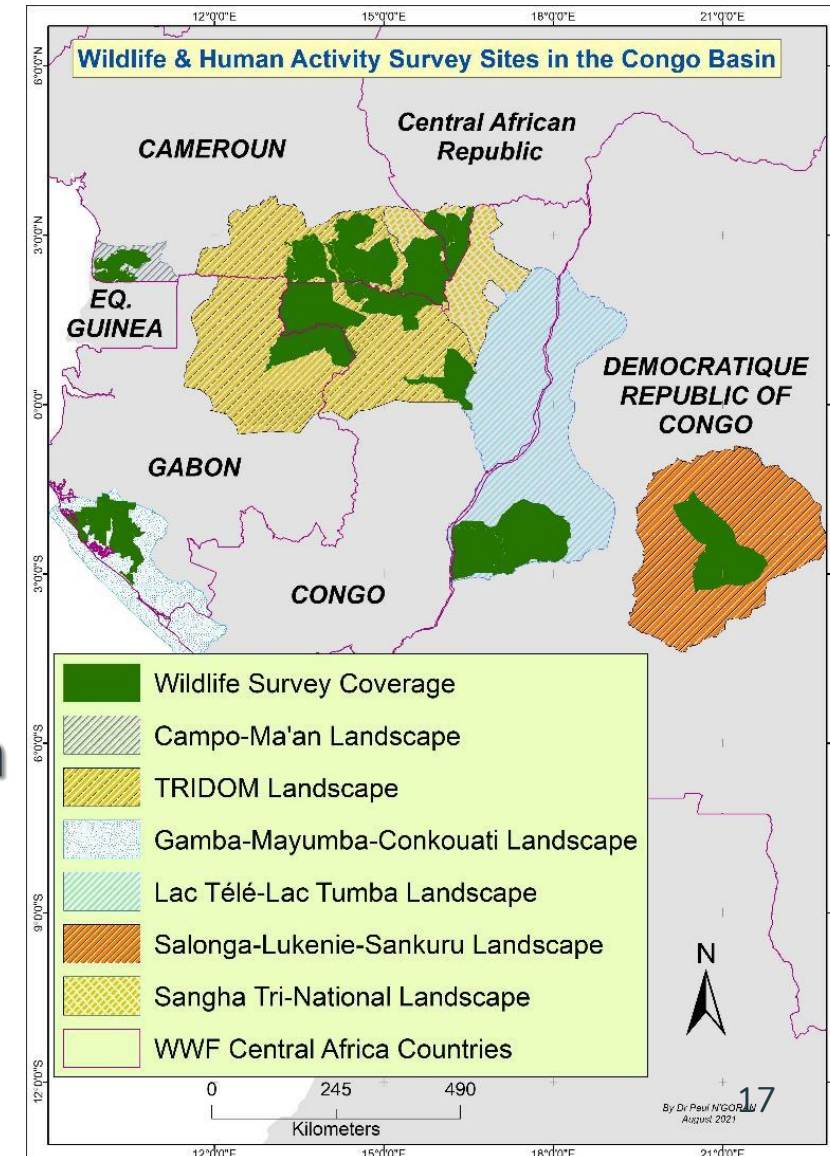
# The SMART Approach

- **Changes in the level implementation of the SMART Approach by governments from 2019 to 2021**

# The SMART Approach

- **Increase in data quality**



Chart: Percentage Score by Evaluation Category (FY19 vs FY21)

| Evaluation Category | FY19 | FY21 |
|---|---|---|
| Analysis and Reporting | 26,30 | 26,49 |
| Data Quality | 58,71 | 63,36 |
| Patrol Implementation | 31,61 | 33,76 |
| Total | 40,81 | 43,47 |

# Forest Loss

- **Higher loss in the coastal forests; Campo lost some forests recently.**

Forest Loss in % of Open + Closed Forests between 2015 - 2019
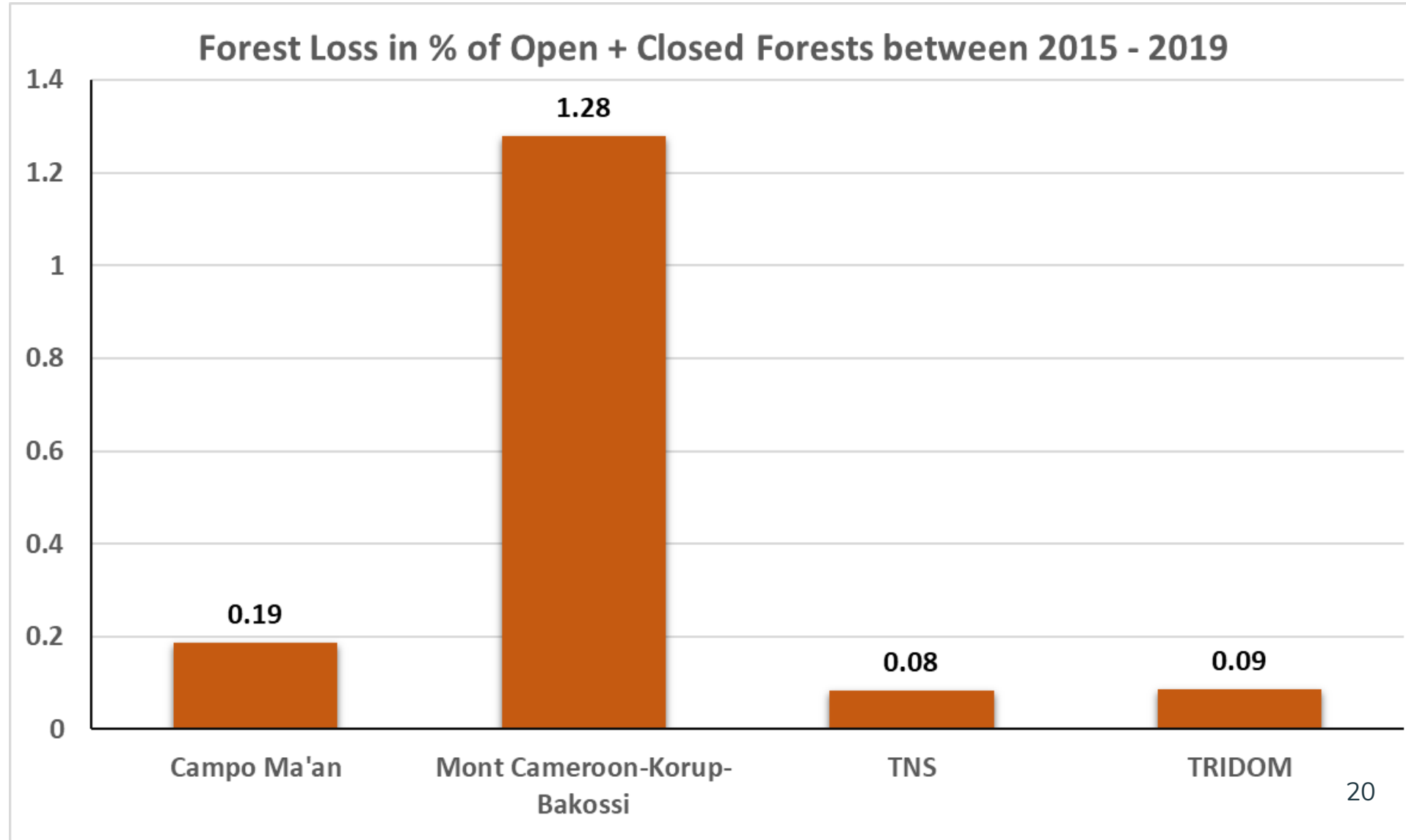
# Habitat suitable for great apes in TNS Cameroon



(a) chimpanzees
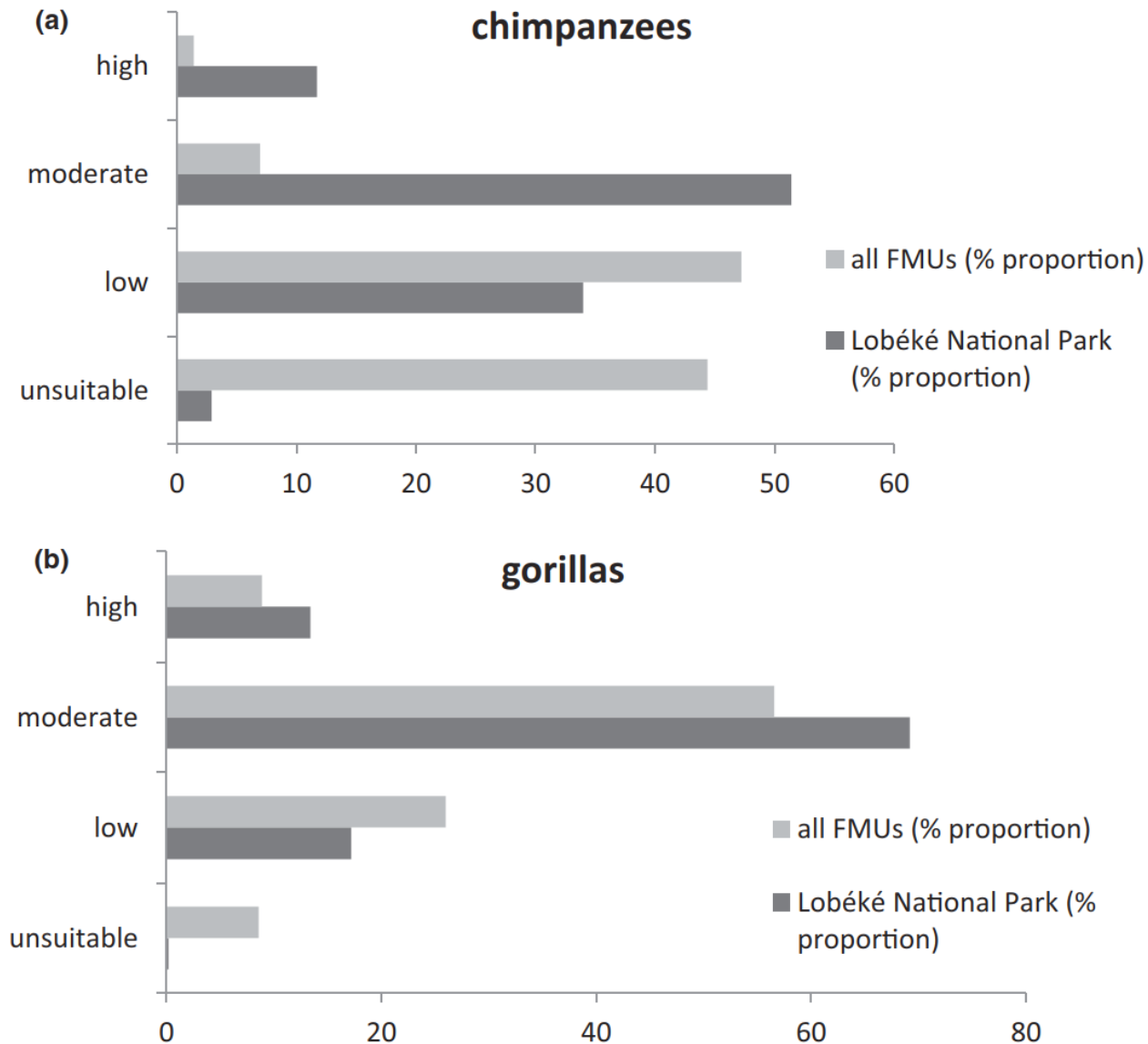
(b) gorillas

- **Habitats suitable (High and Moderate) for chimanpzees and gorillas are higher in the Park than in Forest Concessions**

1. Yisa Ginath Yuh, **Paul K. N'Goran**, Zacharie N. Dongmo, Wiktor Tracz, Elvis Tangwa, Michael Agunbiade, Hjalmar Kuehl, Tene Kwetche Sop, Fotang Chefor. 2020. Mapping suitable great ape habitat in and around the Lobéké National Park, South-East Cameroon. Ecology and Evolution 10: 14282–14299. https://doi.org/10.1002/ece3.7027

# Estimate of 14 wildlife species during one survey by CTDS in Salonga NP

| ID | Species | Selected model a; b; c | Radial distances | Density (ACa) [ind/km²] (95% CIs) | Density (ARo) [ind/km²] (95% CIs) | C.V. ACa; ARo |
|----|---------|------------------------|------------------|-----------------------------------|-----------------------------------|---------------|
| 1 | Congo peafowl | UNI; *co*; 1 | 2,383 | **0.91** (0.66–1.27) | **0.76** (0.55–1.06) | 0.17; 0.17 |
| 2 | Forest elephant | HN; *hp*; 0 | 151 | **0.03** (0.01–0.07) | **0.02** (0.01–0.03) | 0.44; 0.45 |
| 3 | Bonobo | HR; *co*; 0 | 3,658 | **0.70** (0.32–1.53) | **0.54** (0.24–1.21) | 0.41; 0.43 |
| 4 | Allen's swamp monkey | HN; *hp*; 0 | 691 | **0.53** (0.24–1.14) | **0.20** (0.09–0.43) | 0.41; 0.40 |
| 5 | Honey badger | HN; *hp*; 0 | 121 | **0.05** (0.02–0.09) | **0.03** (0.01–0.06) | 0.39; 0.41 |
| 6 | African golden cat | HN; *hp*; 0 | 78 | **0.04** (0.02–0.07) | **0.02** (0.01–0.03) | 0.36; 0.36 |
| 7 | Genets | HN; *hp*; 0 | 374 | **0.27** (0.17–0.43) | **0.18** (0.11–0.28) | 0.24; 0.23 |
| 8 | Cusimanses | HN; *hp*; 0 | 1,104 | **1.16** (0.58–2.36) | **0.62** (0.31–1.26) | 0.37; 0.37 |
| 9 | Aardvark | HN; *hp*; 0 | 255 | **0.20** (0.10–0.34) | **0.15** (0.09–0.26) | 0.27; 0.28 |
| 10 | Giant ground pangolin | HN; *hp*; 0 | 112 | **0.05** (0.02–0.13) | **0.03** (0.01–0.08) | 0.50; 0.54 |
| 11 | Sitatunga | HN; *hp*; 0 | 253 | **0.12** (0.03–0.42) | **0.07** (0.02–0.25) | 0.71; 0.74 |
| 12 | Water chevrotain | HN; *hp*; 0 | 1,250 | **0.72** (0.38–1.35) | **0.68** (0.37–1.27) | 0.33; 0.32 |
| 13 | Brush-tailed porcupine | HN; *hp*; 0 | 1,624 | **0.71** (0.48–1.03) | **0.64** (0.44–0.96) | 0.20; 0.20 |
| 14 | Four-toed sengi | HR; *co*; 0 | 191 | **289.46** (2.67–31,294.00) | **181.09** (2.16–15,177.00) | 17.20; 12.71 |

22

# Stable populations of elephants in Lobéké NP



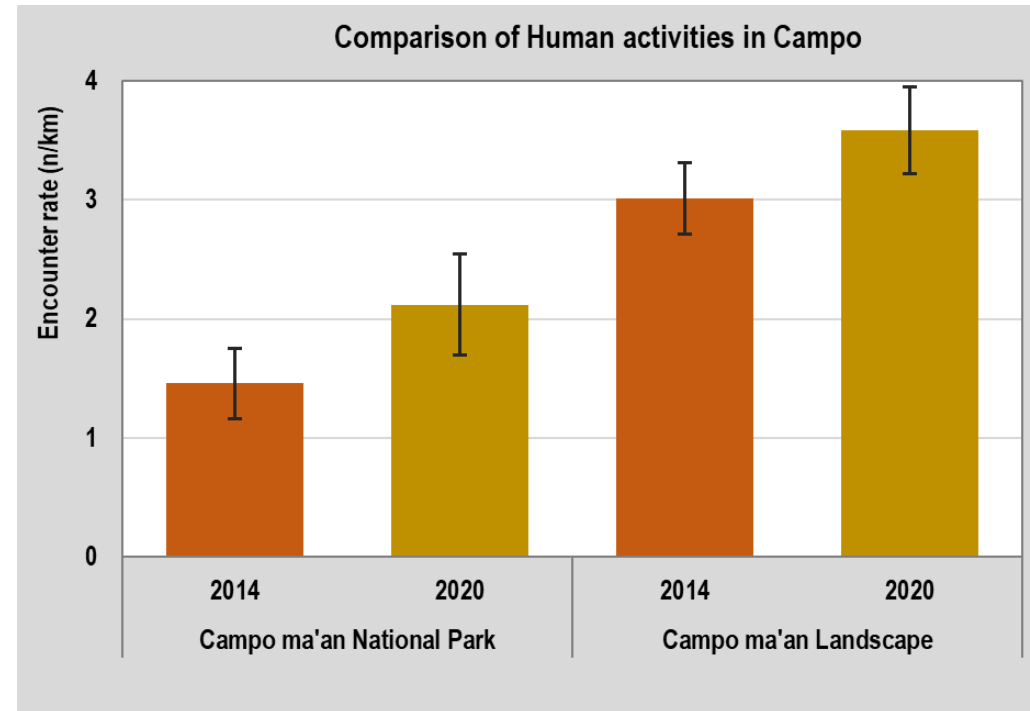Population size of elephants and great apes in Lobéké National Park
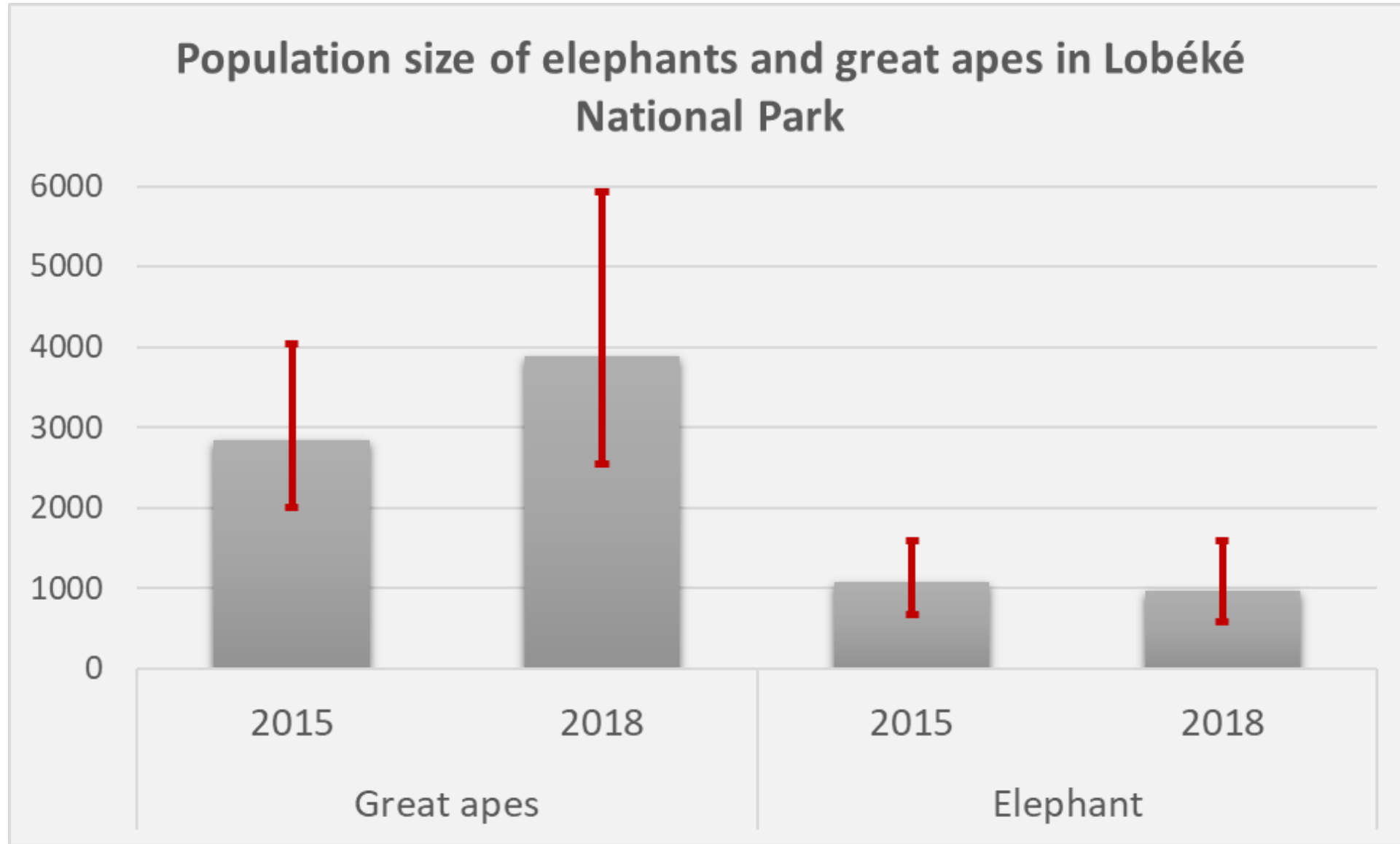
# Stable populations of great apes and decreased elephants populations in Ntokou-Pikounda NP



Comparison of great ape density in Ntokou Pikounda NP
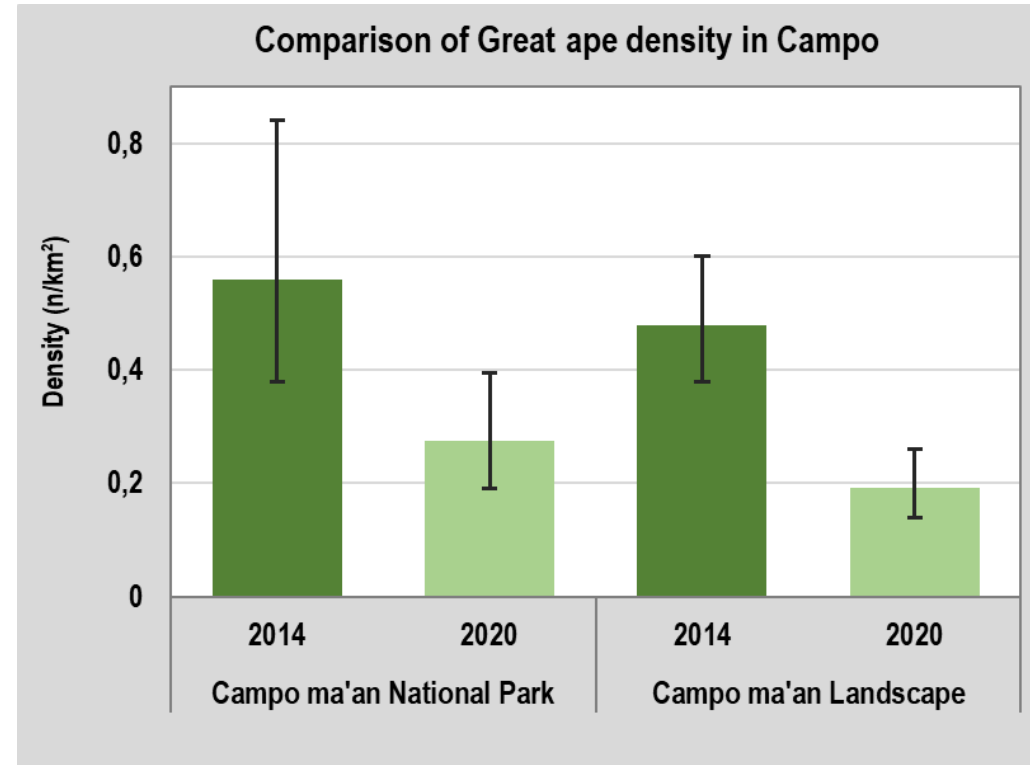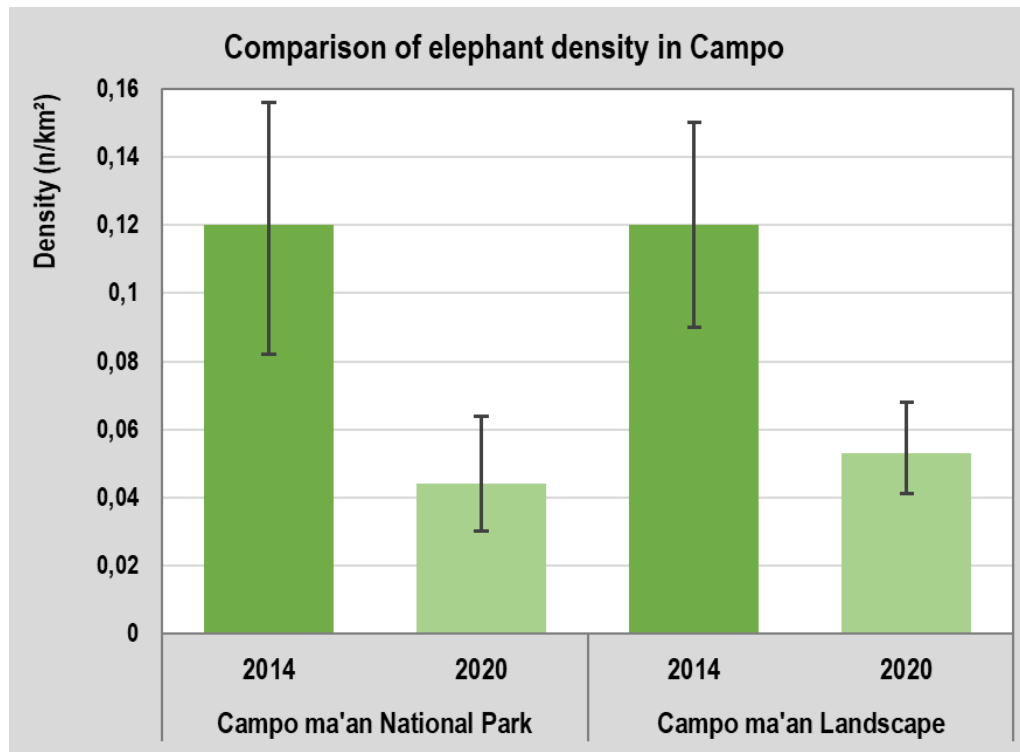


Comparison of elephant density in Ntokou Pikounda NP
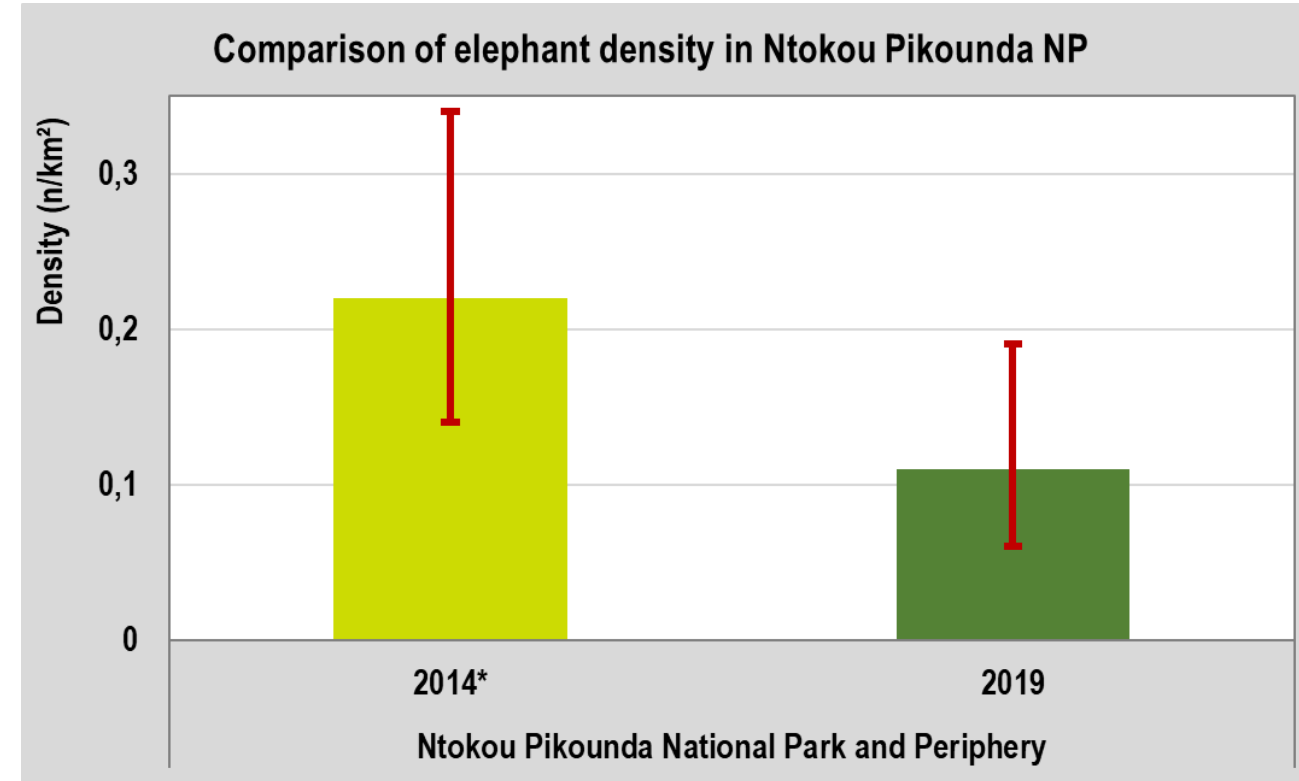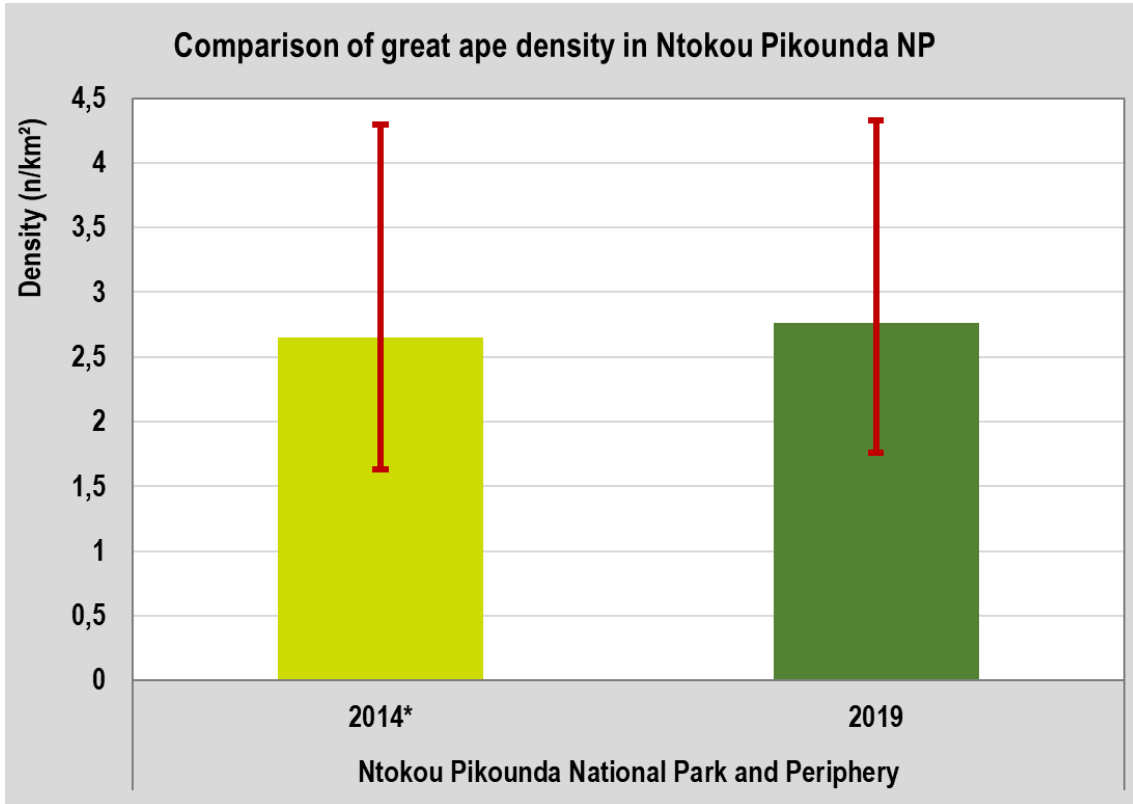
Maisels, F., Strindberg, S., Rayden, T., Kiminou, F., Madzoke, B., Mangonga, P., Ndzai, C. 2014. Étude de l'impact humain sur la faune sauvage dans les paysages forestiers de Ngombé Ntoukou-Pikounda, République du Congo. Fév-Oct 2014, République du Congo. WCS.

**Encounter rate of elephants carcasses in 2014 is more 6 times higher than the one recorded in 2019.**
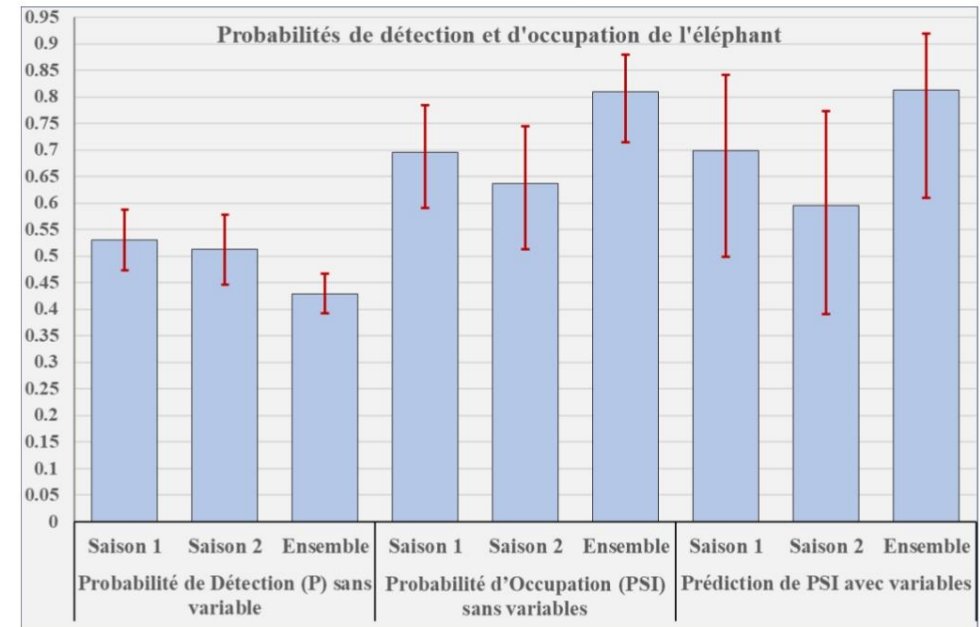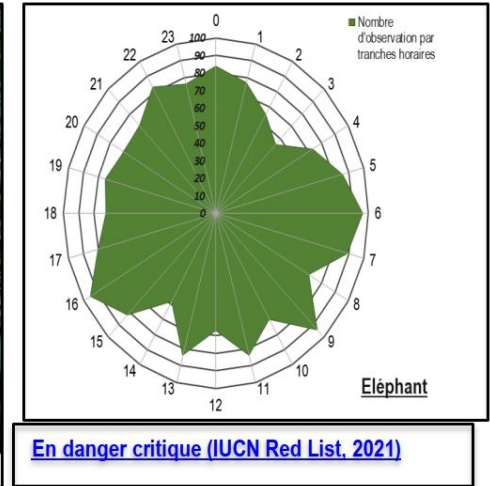
24

# Increased human activities in Campo Ma'an
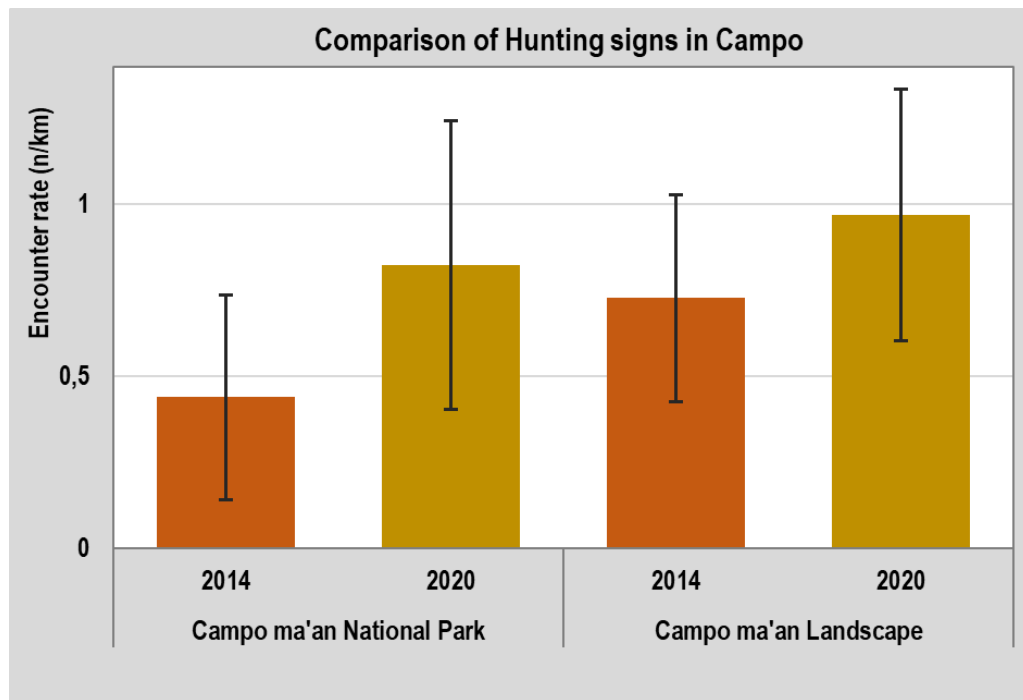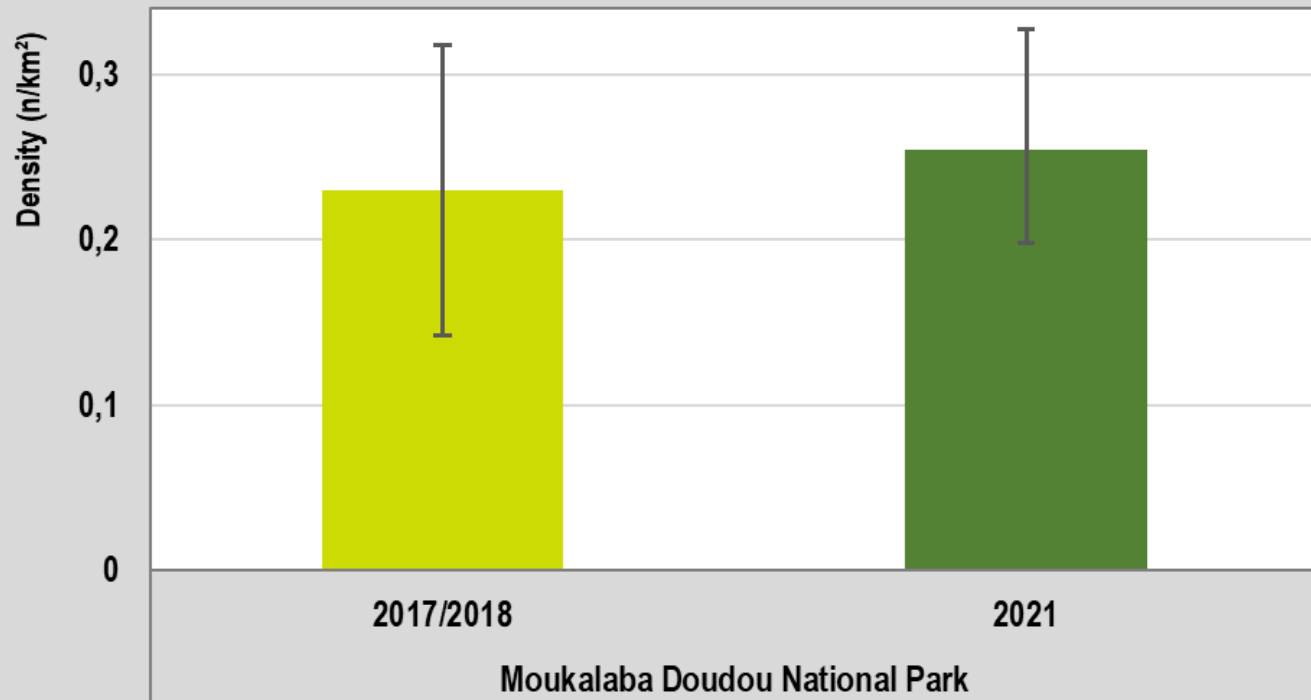
# Decreased populations of great apes and elephants in Campo Ma'an



Comparison of elephant density in Campo
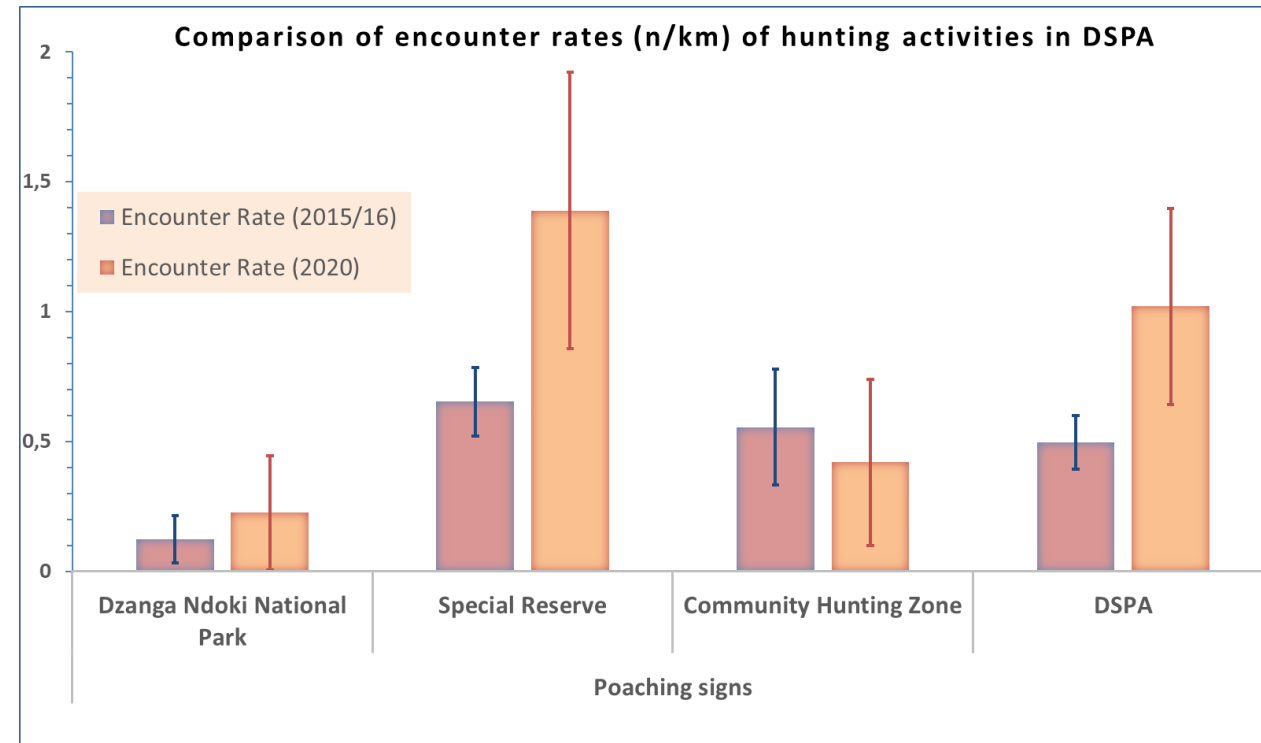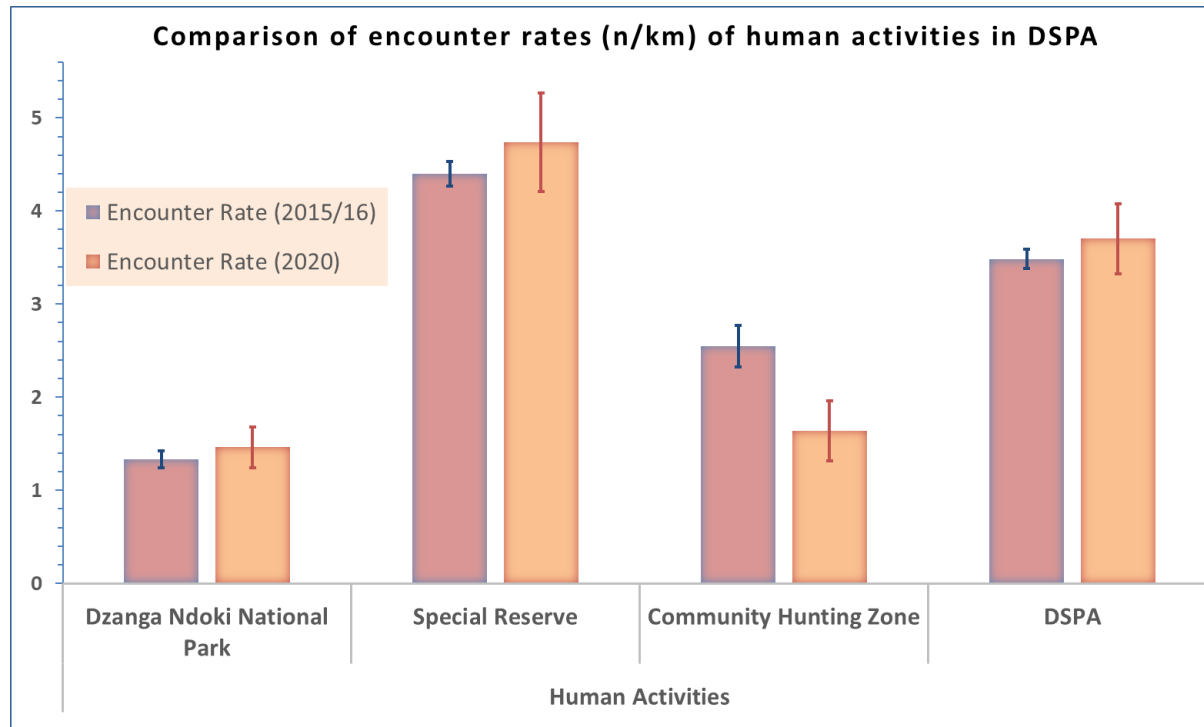


Comparison of Great ape density in Campo

# Stable populations of elephants Moukalaba-Doudou NP



Comparison of elephant density in Moukalaba-Doudou NP



Nombre d'observation par tranches horaires

Eléphant

En danger critique (IUCN Red List, 2021)



Probabilités de détection et d'occupation de l'éléphant

# Increased hunting rate in DSPA
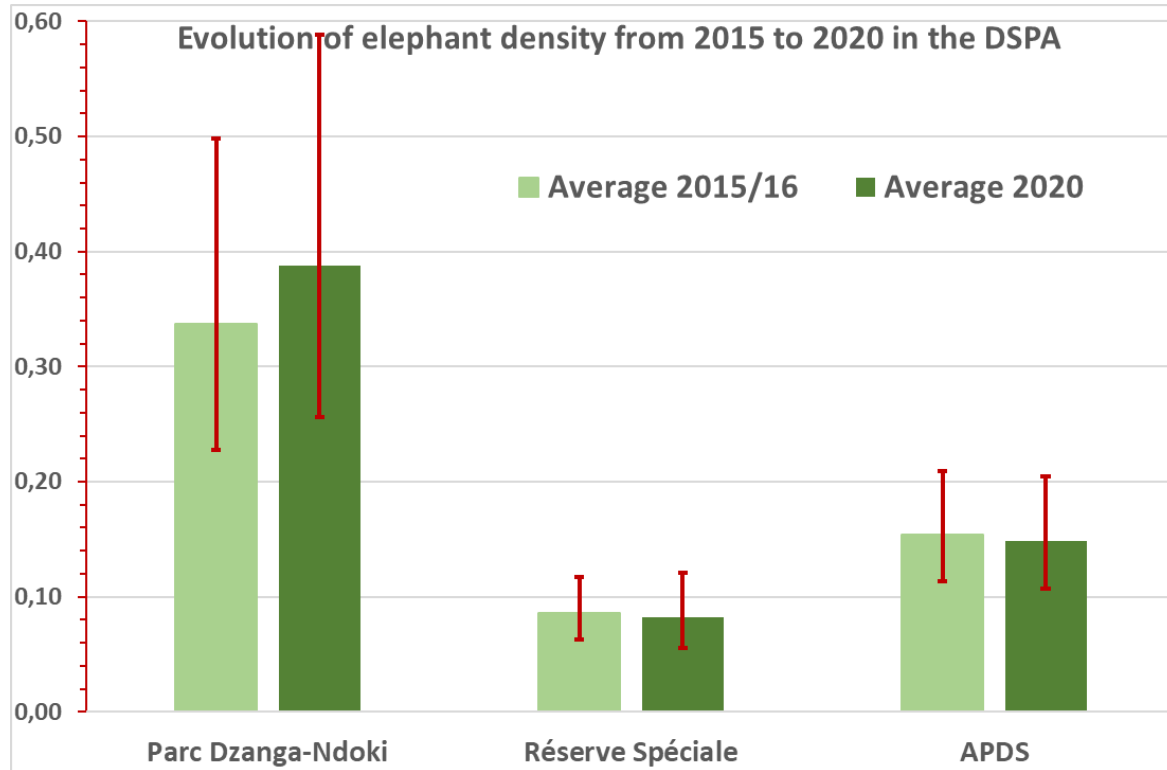


Comparison of encounter rates (n/km) of human activities in DSPA

Comparison of encounter rates (n/km) of hunting activities in DSPA

# Stable populations of great apes and elephants DSPA



Evolution of elephant density from 2015 to 2020 in the DSPA

Evolution of great ape density from 2015 to 2020 in the DSPA
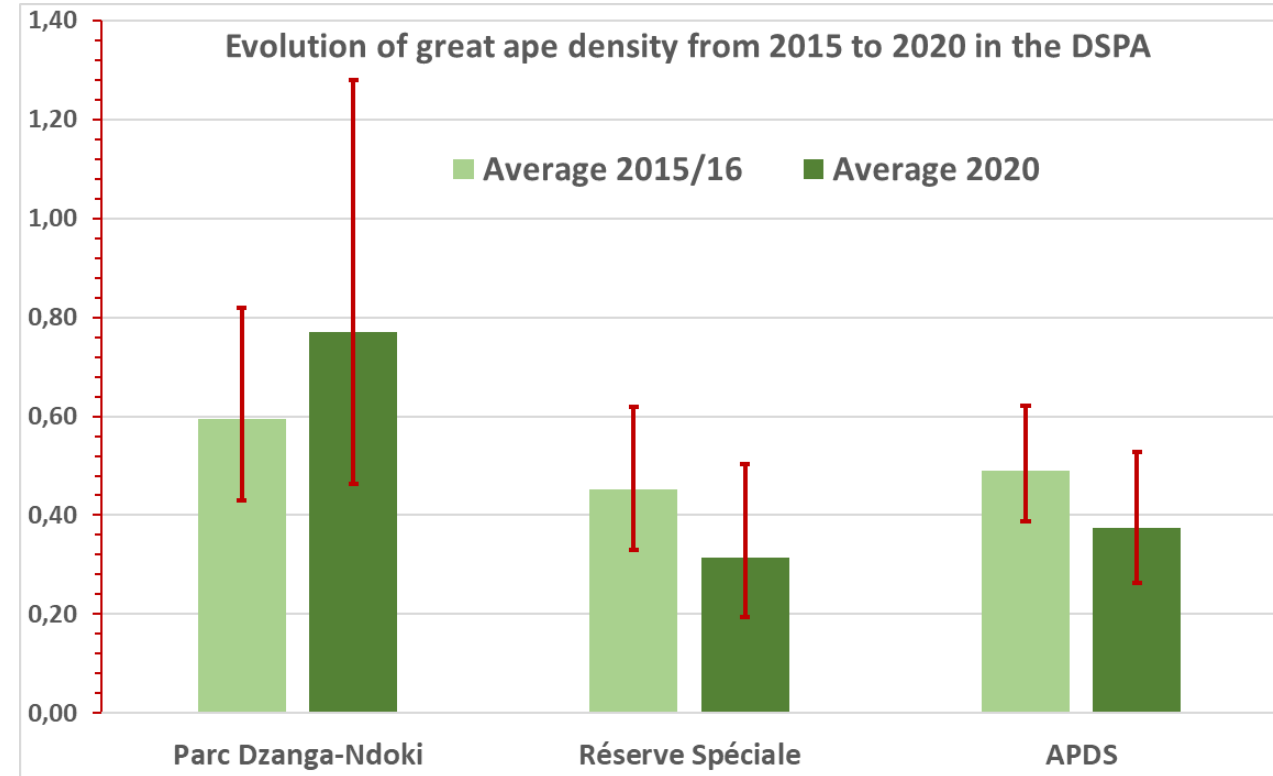
# CONCLUSION

- **Important results achieved**
- **Development of additional tools is ongoing**
- **Development of other pillars is ongoing**
- **Need to increase the effective geographic scope**
- **Increase the collaboration with other organisations**
- **Urgent call for financial support to strongly face the challenges.**

# Thank you for your attention !