

Spatial Analysis of Anthropogenic Impacts on Gorilla Migratory Pathways in Okwangwo, CRNP, Nigeria

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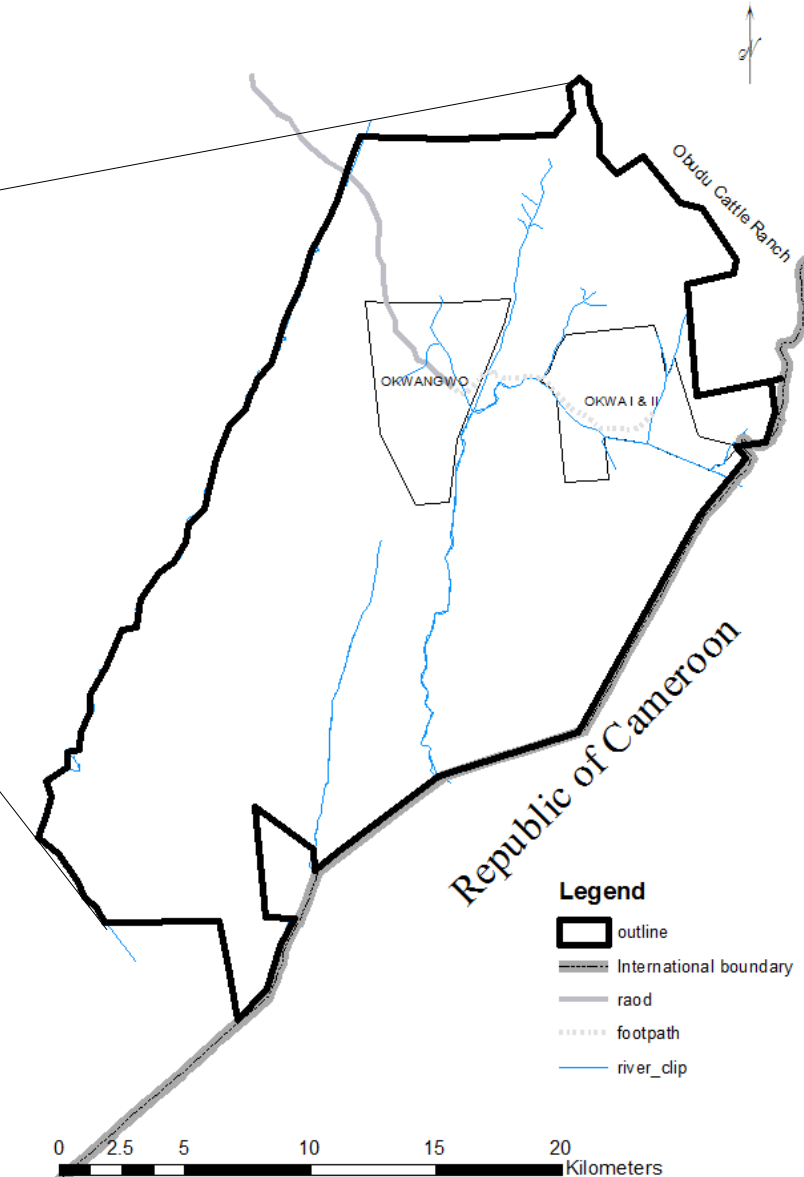
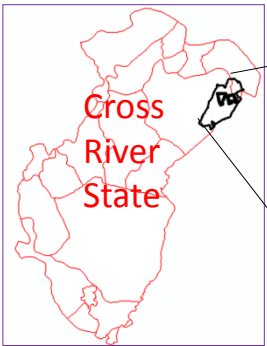
PRESENTATION OUTLINE

- **Introduction**
- **Statement of problem**
- **Aim and Objectives**
- **Why GIS**
- Method
- Results
- Conclusion
- Discussion /Questions

Introduction

- Okwangwo Division is part of the Cross River National Parks (CRNP)
- There are 6 other National parks in Nigeria
- Home to endemic and critically endangered primates
'Gorilla gorilla diehli' (IUCN 2005)
- Host 2 enclave communities

Study area



Statement of problem

- Enclave communities pose some challenges for conservation,
- Reported gorilla–human conflicts
- Humans poach gorilla and gorilla steal/destroy farms).
- Lack of clear demarcated boundaries resulting in unaccountable encroachment into the park and gorillas migratory pathways.
- Unchecked anthropogenic activities in the area could increase the insecurity of both humans and gorillas, thereby thwarting conservation efforts.

Aim and Objective

- The **aim** of the study is to analyze the impact of human activities on the gorilla migratory pathways in the CRNP.
- **Objectives**
 - Examine existing jurisdictional boundary of the park vis-à-vis the enclave communities with a view to establish an accurate border line.
 - Model gorilla migratory pathway
 - Determine and spatially analyze the impacts of anthropogenic activities on migratory route.

Why GIS

- GIS maps representations enable greater understanding of phenomena and help to upscale spatial intelligence for conservation planning.
- Modeling of attributes/ phenomena using GIS provides synoptic visualization and accurate representation.
- Data components are conveniently managed, updated and stored in a trendy GIS environments.
- GIS provides thematic combination of layers that help to reveal relationships between phenomena in ways that cannot be obtained through any other means.

Data Requirement:

- Landsat 7 ETM path 187 row 056
- SRTM data
- Field Data (GPS Coordinates, etc)
- Gazette Document establishing the National Park (i.e Decree № 36 of 1991)
- Relevant existing base map.

Method

- Objective 1:

Examine existing jurisdictional boundary of the park vis-à-vis the enclave communities with a view to establish an accurate border line

- Translate vivid description of park boundary * into map and compare with existing maps in order to delineate accurate park boundaries

*

gazette ordinance document establishing National Parks in Nigeria

Decree 36 of 1991, section 3, 2nd schedule, page A233 – A237

Result 1

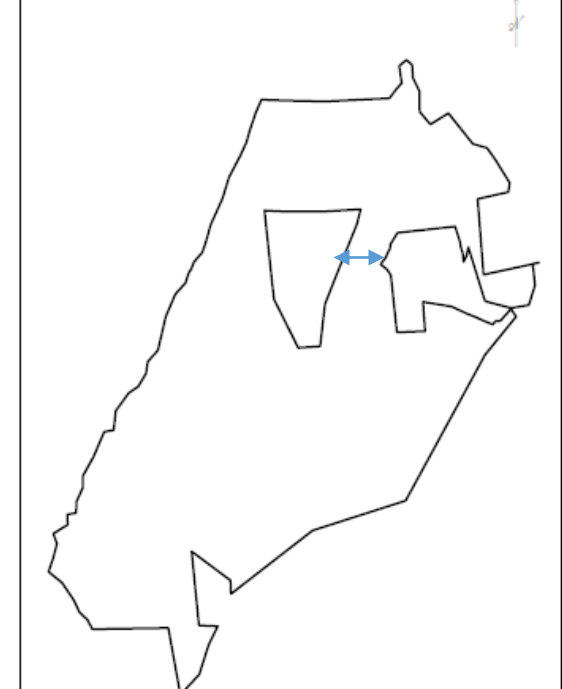
Old Park Boundary



Accurate Representation of Park Boundary



New Park Boundary



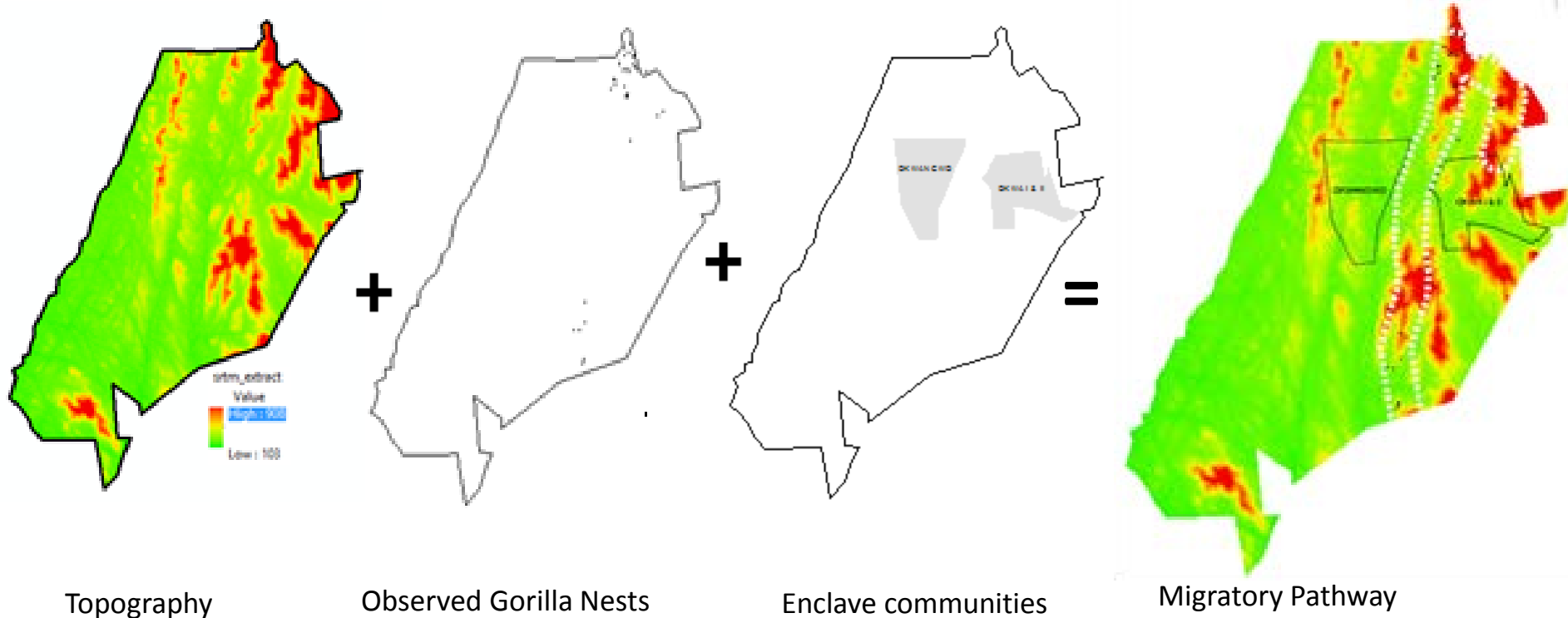
Action plan:

1. Map Validation
2. Translate map to ground - Demarcation type is critical

Method Cont.

- Objective2: Model gorilla migratory pathway
- Gathered information on migration behavior and ecology from literature.
- Identified the most important factors for migration and additional variables that modify factor importance in certain locations.
- Developed conceptual models based on these factors and modifiers.
- Translated each important factor for migration into a GIS layer.
- Combined GIS layers to represent each group's conceptual model and create a migration map.
- Validate statistical associations between map predictions and documented observations - Boyce Index

Result 2



Action plan:

1. Invoke the Agreement on the Conservation of Gorillas and Their Habitats (also called 'the Gorilla Agreement')

Method Cont.

- Objective 3: Determine and spatially analyze the impacts of anthropogenic activities on migratory route.
- Field observation, Data collation and simple tabulations / ranking
- Landsat (LULC classification)

Result 3

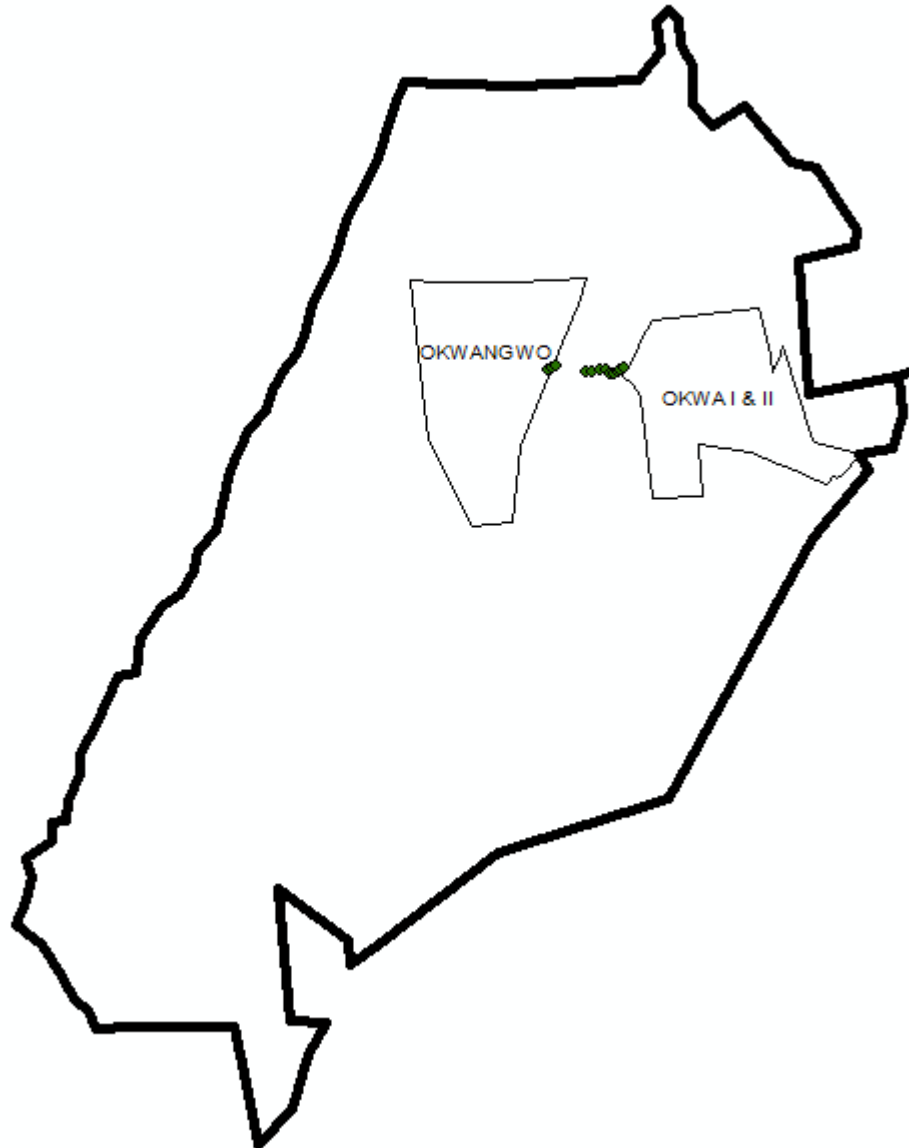
- Anthropogenic Activities affecting gorilla migratory route

Activity	Rating	Remark
Farming	high	Located on migratory route Static Visible activity
Hunting	moderate	Dynamic activity
Logging	low	State moratorium on logging

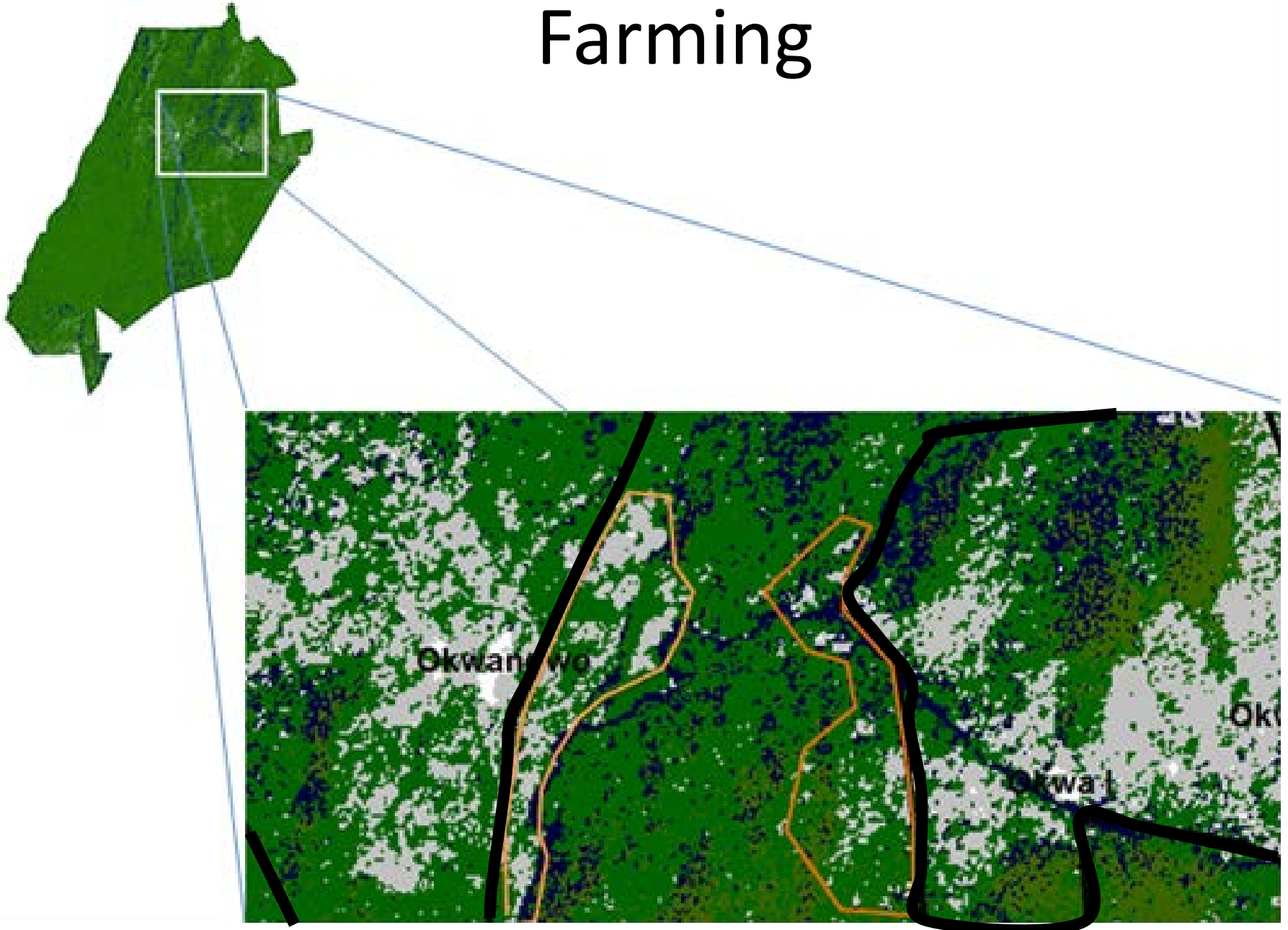
The table below shows the data for the farming encroachment between the enclaves

ID	Farm	x	y	Age	size
1	Cocoa Farm	525329.06	697598.7	7 year old	500 sq m
2	Cocoa Farm	525494.95	697660.2	8 year old	500 sq m
3	Cocoa Farm	525623.94	697767.8	9 year old	500 sq m
4	Old Farmland	526585.72	697544	5 year old	300 sq m
5	Farmland	526776.22	697516.5	> 5 years old	200 sq m
6	Farmland	526813.09	697513.4	> 5 years old	200 sq m
7	Farmland	527074.22	697581.1	> 5 years old	250 sq m
8	Farmland	527276.99	697605.8	> 5 years old	150 sq m
9	Farmland	527421.45	697486.1	> 5 years old	200 sq m
10	Farmland	527525.92	697464.7	> 5 years old	4 hectares
11	Farmland	527642.64	697532.3	> 5 years old	100 sq m
12	Mixed tree crop	527753.21	697615.2	> 5 years old	300 sq m
13	Mixed tree crop	527845.35	697689	> 5 years old	4 hectares

farming encroachment between the enclaves



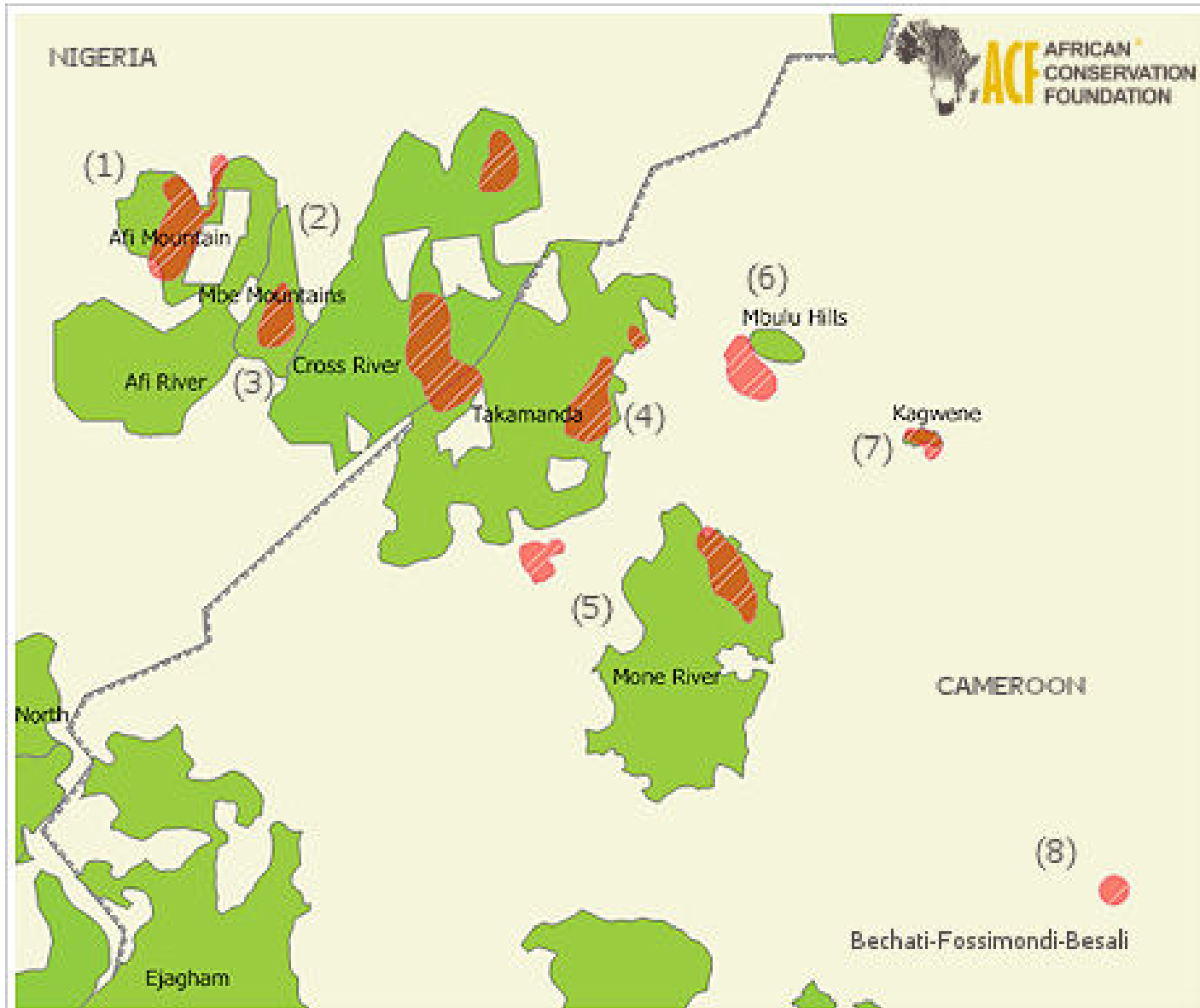
Farming



Action plan:

Enforce confinement to enclave jurisdiction and ~~think relocation~~ (IFF)

Need for trans border 'collaboration



Conclusion

- The study found that improper delineation of park boundaries is resulting to encroachment into gorilla migratory corridors
- Farming and poaching are major anthropogenic activities affecting gorilla migratory routes in the study area.
- The impacts include but not limited to
 - Heightened human-gorilla conflict
 - Destruction of farms
 - Hostilities and disharmony
 - Conservation impediments

Recommendations

Effective conservation of wildlife in the study area require

- Proper ground demarcation of the park boundaries
- Protection of migratory pathways,
- Community sensitization,
- Regional awareness, and reinforcement of trans-border collaboration with neighboring Cameroon

The image shows an outdoor dining area at dusk. In the foreground, there are several long wooden tables with dark green chairs. A paved walkway leads from the tables towards a large, two-story building with stone and wood siding. The area is illuminated by warm string lights hanging from the trees and several tall, black lamp posts with white shades. The background is filled with large, mature trees, and the sky is a pale, overcast grey.

Thank you for your attention, Its nice to be here