



TROPICALS SUMMIT

Foreseeing Answers to Global Challenges

LISBON | 4 – 8 NOVEMBER 2024



Density and spatial distribution of the main anthropogenic disturbances in the classified forest of Ouémé Supérieur in North Benin

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November 2024



Context 1/3



- Increasing degradation of biodiversity, Species extinction, Loss of their habitat (FAO, 2010).
- Purpose of protected areas creation (Dudley, 2008)
- Accelerating biodiversity loss (Butchart & al., 2010), and losses in protected areas (Craigie & al., 2010).

- Intensive agriculture,
- Unregulated exploitation of large forested areas,
- Urbanization and industrialization (Sinsin & Kampmann, 2010)

State of Forestry in Benin (1978 to 2010)

85% loss of forest area
30% of vegetation cover lost

(FAO,2010)

Context (2/3)

- ❑ Creation of classified forests following the conclusions of the Earth Summit of Rio de Janeiro in 1992, aimed at restoring the vegetation cover of Benin in full degradation

Classified Forest : Forest under a restrictive regime of people or communities' rights of use exercise of after completion of a classification procedure (Law No. 93-009 of July 2nd, 1993 on forestry in Benin Republic) .

❑ Management approach

- ✓ Under the supervision of the Forestry Administration (DGFRN / Ministry of Environment and Sustainable Development)
- ✓ Technical Units for Forest Management (CTAF)
- ✓ Participatory Land Use Plan

Forest estate regression since 1990
(Sannou & al. 2019; DGFRN, 2014)



Context (3/3)

❖ Disturbance factors of the forest



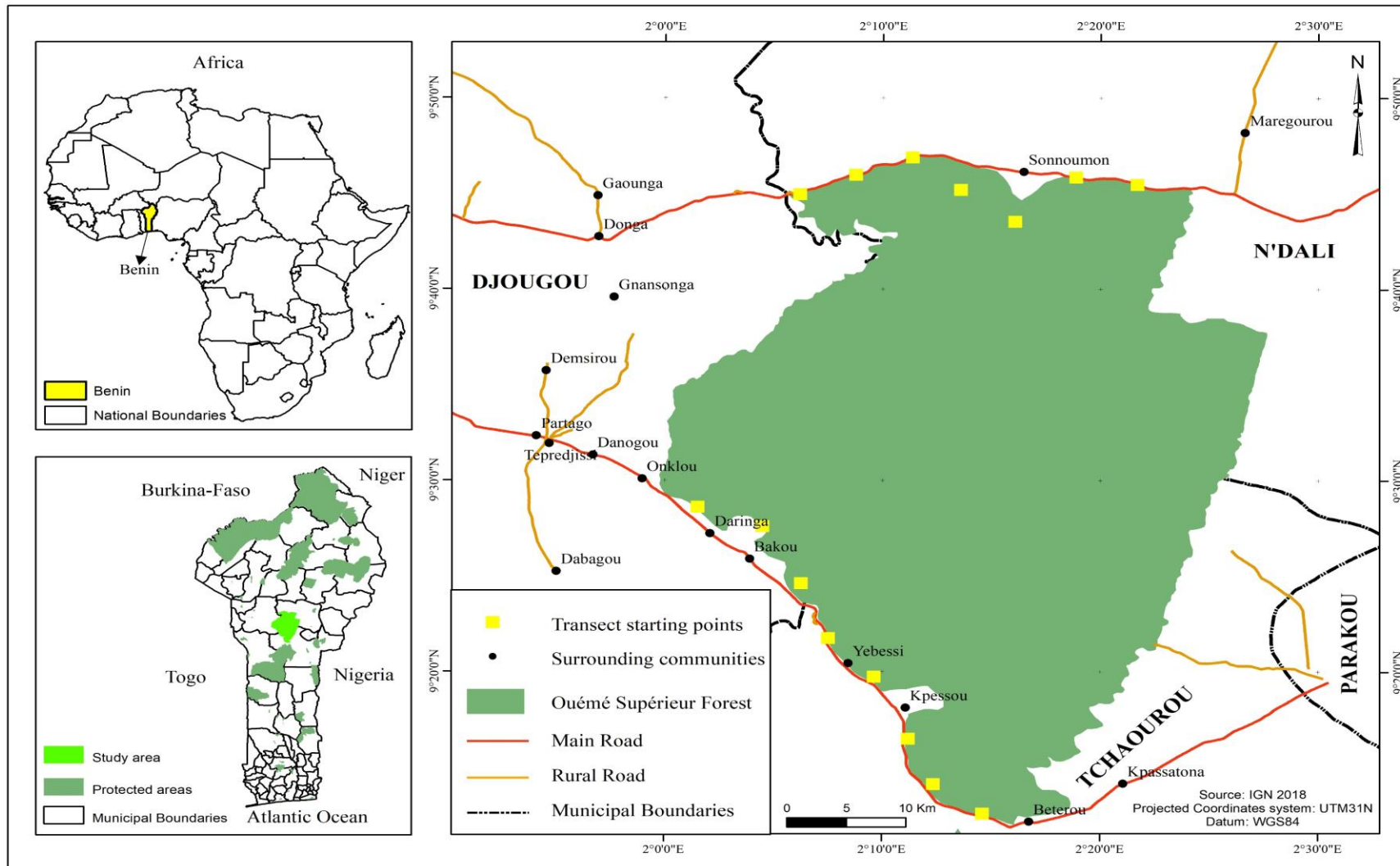
Source: *Prospecting mission, Sept 2022*

Research objective

- Identify and analyze the anthropogenic factors of degradation of natural formations of the classified forest of Ouémé Supérieur

Method (2/2)

✓ Study area



□ 117 542 ha

✓ Location

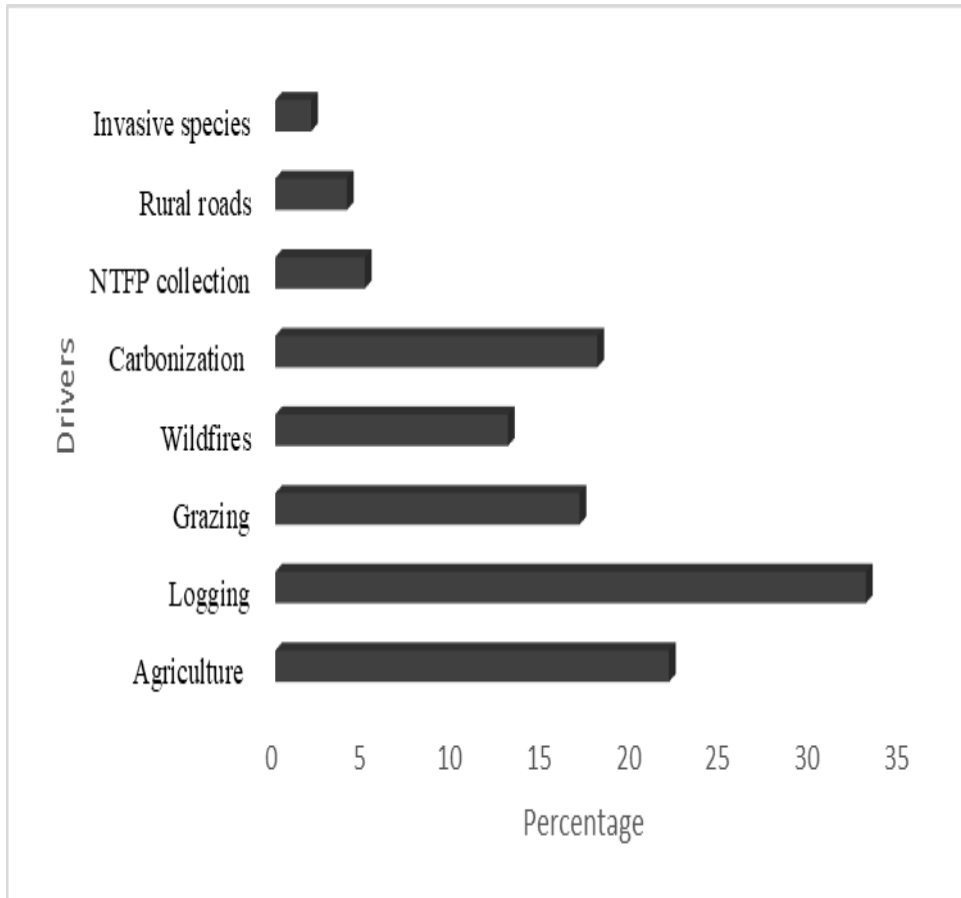
Departments of Borgou and Donga but much more in the Borgou where 3/4 of its area are located

✓ Data collection and Analysis

- Typology of forest disturbance indicators built based on literature and formal interviews with local authorities and forestry administration officers.
 - Line Transect (1000 m)
 - Transects are 5 km apart
 - 300 plots of 500 m² each
 - PCA on Presence-Absence data
 - Test Khi-square independence test (Caustom, 1988)

Results (1/4)

Main anthropogenic disturbances in the classified forest of Ouémé Supérieur . Results are derived from the data of the local community survey of the forest.



Logging



Agriculture



Grazing



Carbonization



Wildfires

Credit: Carlo SODALO 2023, data collection

Results (2/4)

Table 1: Types of disturbance in the Classified Forest of Ouémé Supérieur

	Logging	Agriculture	Grazing	Carbonization	Wildfires
T1	20	0	6	3	12
T2	20	17	6	4	4
T3	20	18	15	10	2
T4	20	7	8	12	0
T5	20	19	4	0	2
T6	20	20	0	0	1
T7	20	10	10	0	0
T8	20	0	1	11	18
T9	20	0	2	1	3
T10	20	1	7	1	3
T11	20	0	15	1	1
T12	20	14	9	3	9
T13	20	0	10	6	3
T14	20	20	2	0	0
T15	20	5	10	5	0
Total	300	131	105	57	58
%	100	43.67	35	19	19.33

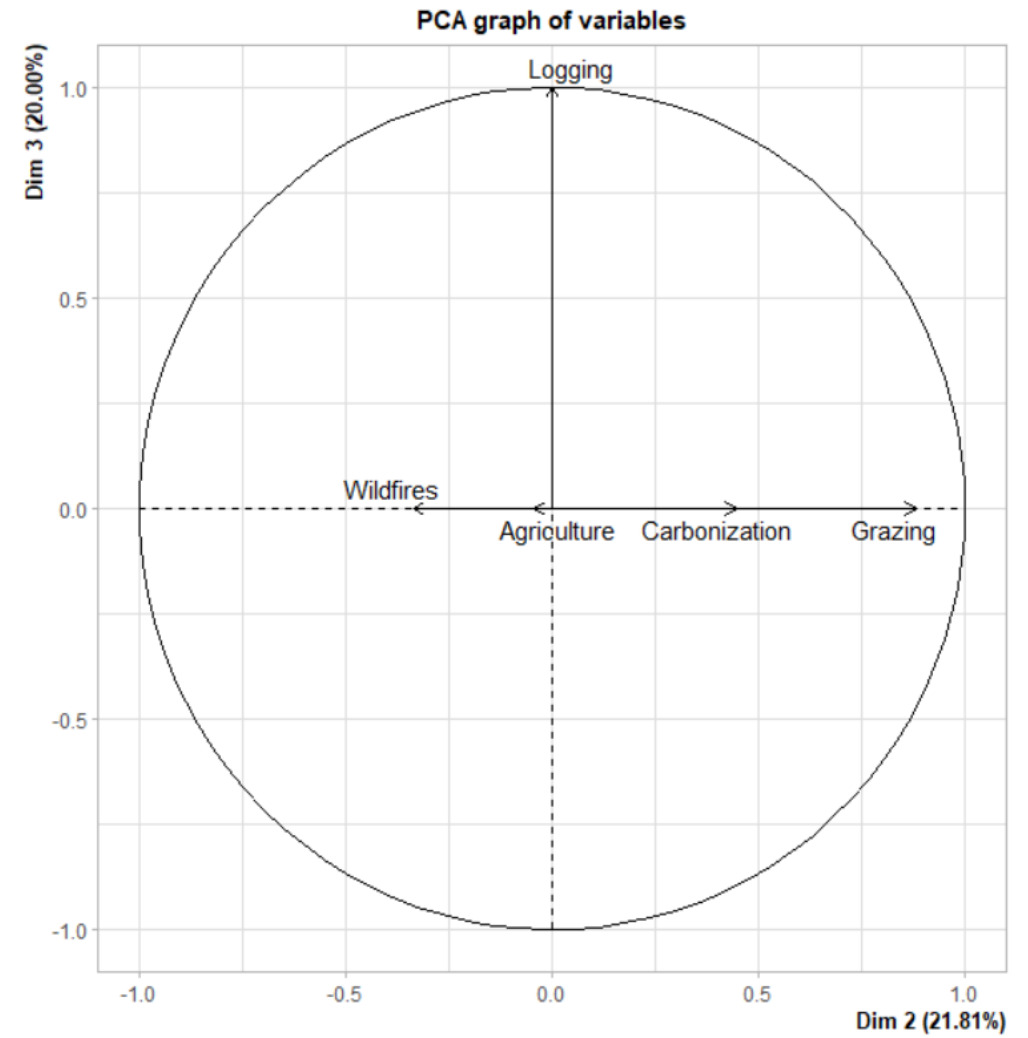
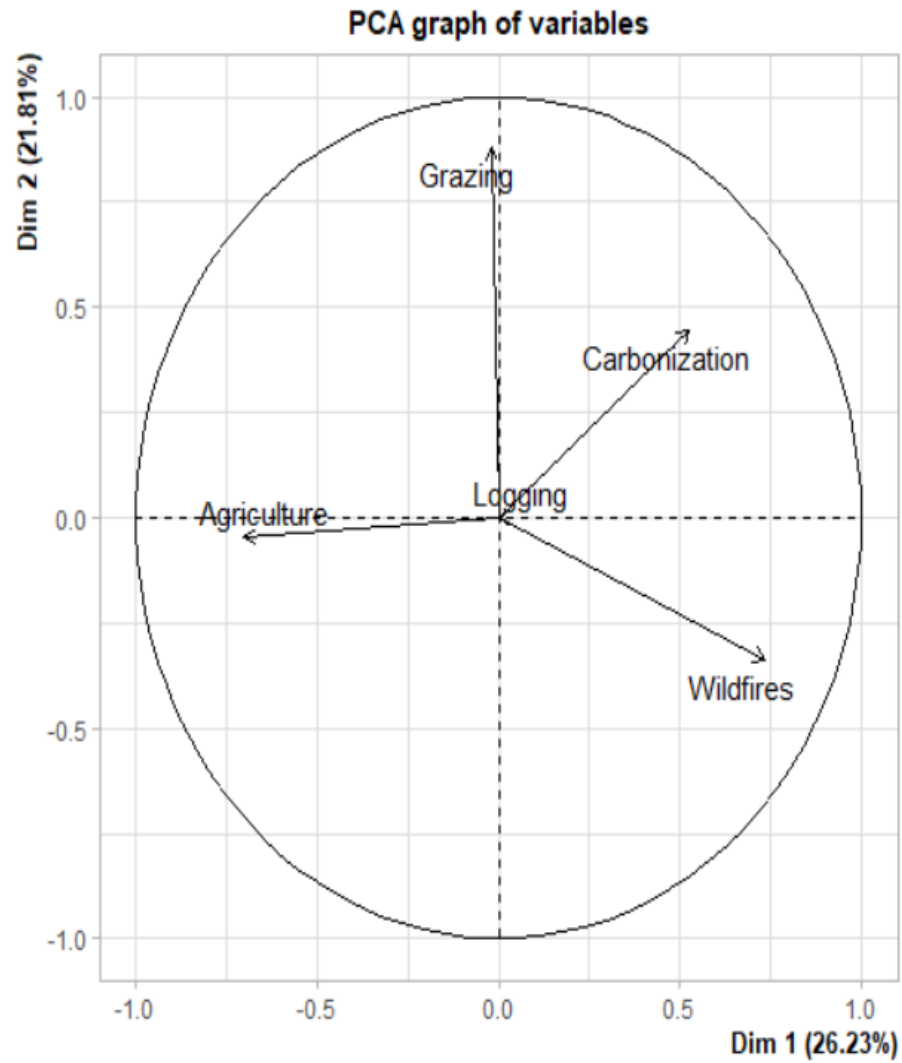
✓ **Friedman Test**

$\chi^2 = 487.68$

p-value < 2.2^{-16}

- Difference between values observed

Results (3/4)



Results (4/4)

Table 2: χ^2 test for association of types of disturbances in the Ouémé Supérieur classified forest. The basic data are taken from the surveys carried out in 300 plots of 500m² within the classified forest of Ouémé Supérieur.

	Agriculture	Carbonization	Wildfires	Grazing
Loggings	4,81 *	115,32 **	112,85 **	27 **
Agriculture	-	3.05 NS	15,41 **	0,48 NS
Carbonization	-	-	4,96 *	2,42 NS
Wildfires	-	-	-	3,72 NS

*NS = Non-Significant ; * = p-value < 0,05 ; ** = p-value < 0,0001*

Conclusion

- ❖ Anthropogenic pressures are abundant, and their distribution is variable in the classified forest of the Ouémé Supérieur. Cuts and agriculture are the most prominent in the study area.
- ❖ Reforestation efforts, such as those undertaken in the meantime by PAMF project in other forests, must be undertaken in the classified forest.
- ❖ The forestry administration is also responsible for increasing the various measures to protect this valuable ecosystem in order to restore degraded areas.
- ❖ The transhumance corridors within this plant formation must be strictly respected at the risk of seeing forest relics disappear



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