

Pendjari Biosphere reserve



Jean Didier Akpona., Romain Glèlè Kakai

LABEF/FSA/UAC

<http://labef-uac.org/en/>



Facts and dates



Surface Area : 4 800 sq km

Partial Fauna reserve (1954)
Pendjari Total Fauna Reserve (1955)

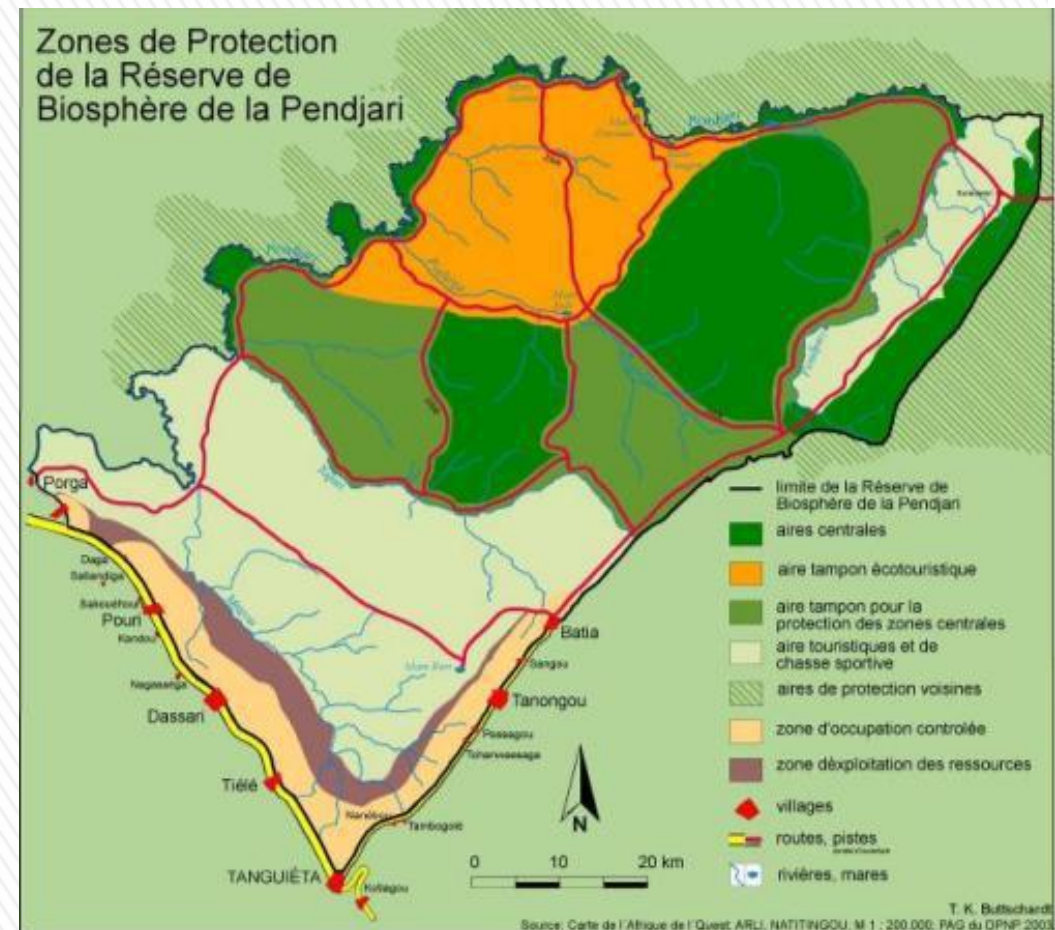
Creation of Cynegetic zone (1959)

National Parc (1961)

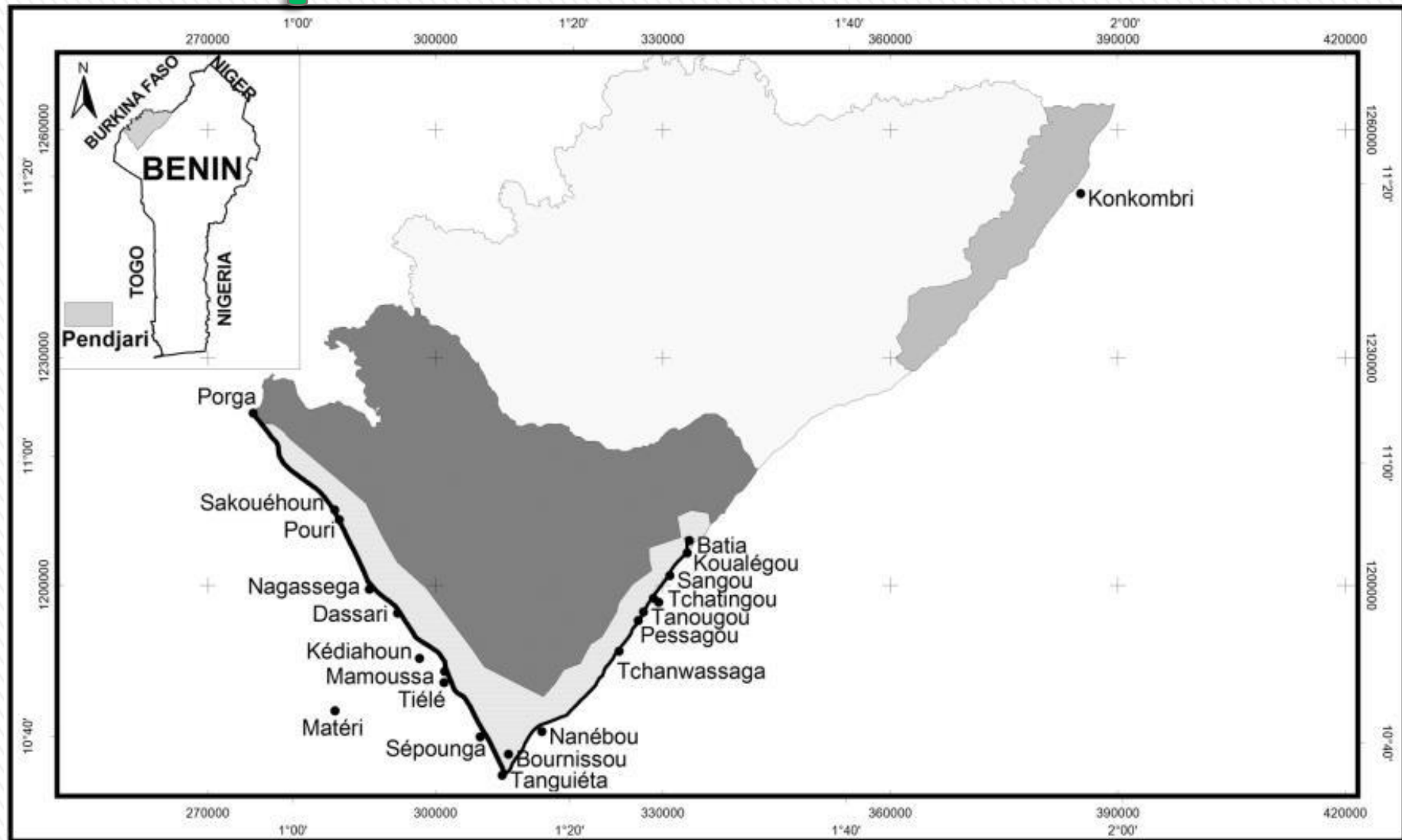
Biosphere Reserve by UNESCO (1986)

RAMSAR Site on the valley of Pendjari River (2007)

World Heritage (2017)



People and zones



In West Africa, a protected ecosystem of comparable size only exists in Côte d'Ivoire with the Comoé National Park.

Climate and hydrography

RBP is relatively well drained with average annual rainfall of 1000 to 1100 mm, comparable to that of southern Benin

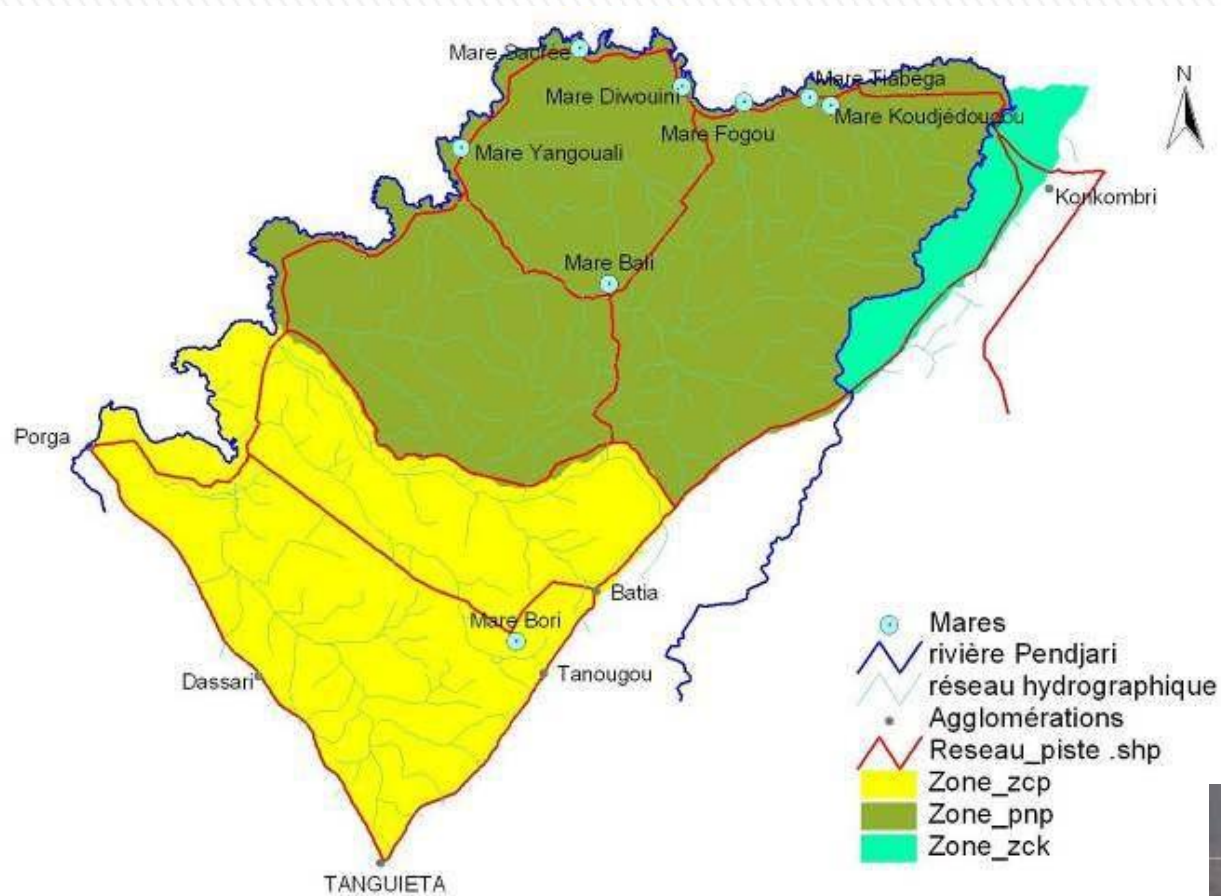
Temperature can increase from 12°C to 40°C in dry season

The Pendjari River, which gave the name to the Reserve, is the only permanent waterway in the RBP. With a total length of 300 km including 200 km in the PNP.

However, there are still many permanent ponds



Hydrography



Ecosystems



La Bondjagou

**Atacora Mountain:
altitude between
400 m to 513 m**



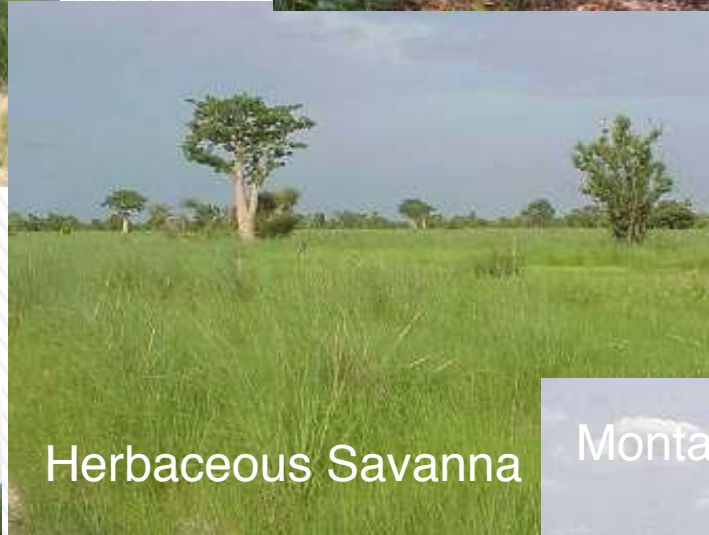
Ecosystems



Shrub Savanna



Riparian forest



Herbaceous Savanna



Wooded Savanna



Mountain vegetation

Recreational sites



Koudou falls

Flora

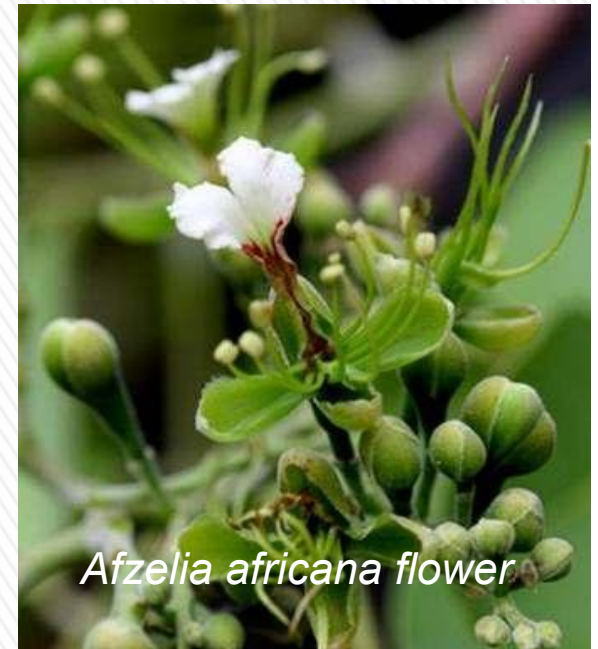
Six (06) plant species found in the Bondjagou forest are listed as in IUCNs Red List (IUCN, 2008). These are *Cordyla pinnata* (Leguminosae), *Azelia africana* (Leguminosae Caesalpinioideae), *Garcinia livingstonei* (Clusiaceae), *Kigelia africana* (Bignoniaceae), *Raphia sudanica* (Arecaceae).

All these plant species are considered endangered (Oumorou, 2009).

The specimen *Thunbergia atacoriensis* (Acanthaceae), endemic in Benin, is only found in the Bondjagou forest (Oumorou, 2009).



Cochlospermum tinctorum flower



Azelia africana flower

Wildlife



Wildlife



Rare, mais de plus en plus
rencontré



Wildlife



warthog



Chacal (*Canis adustus*)



Loriot doré (*Oriolus auratus*)



Squirrel



Euchrysops sahelianus



Barbus sp



Synodontis arnoulti

Population

30,000 direct residents, or 5,000 families, who regularly exploit resources of the reserve. With 14 inhabitants per km²

Three main ethnic groups live in the riparian zone of the ZCP :

Bialbe (65%);
Gourmantchés (23%);
Wama (7%),



Ecosystem services provided



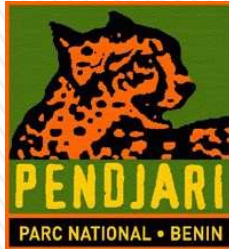
Agriculture
Breeding
Hunting
fishing ...



Other activities



Central elements of management



From 1996-2017 CENAGREF working since then with forest administration for the conservation of the parc



From 2017 to now: African Parks Network with the new government



DIRECTION DU PARC
NATIONAL
DE LA PENDJARI, BENIN

PLAN D'AFFAIRES
2IÈME ÉDITION
(BUSINESS PLAN)
2007-2011

Threats

- » transhumance
- » Poaching
- » Illegal fishing by using insecticide
- » Lumbering...
- » Fire management
- » Increase in demography
- » Extensive agriculture
- » Conflict Human-Wildlife
- » Less understanding of ES importance
- » Poverty





Laboratoire de Biomathématiques &
d'Estimations Forestières

<http://labef-uac.org/en/>

LABEF aims to analyze the applicability of mathematics tools in life sciences and at understanding the interactions between ecological processes, anthropogenic factors and structure of terrestrial ecosystems, with a clear link to management and policy.



LABORATOIRE DE BIOMATHEMATIQUES
ET D'ESTIMATIONS FORESTIERES



UNIVERSITY OF ABOMEY-CALAVI

Overview

- Local supervision of Belgian students in Bénin.
- Five students from Belgian Universities
- Support data collection for two students in Benin
- Participation of Jean Hugé to our monthly seminar

2. *Etudier les systèmes socio-écologiques: vers une démarche systématique et réfléchie*

Jean Hugé

VUB, Biology Department, Ecology & Biodiversity; ULB, Systems Ecology & Resource Management ; Ghent University, Centre for Sustainable Development
Hasselt University, Centre for Environmental Science



Research of students in Pendjari

The aim of the EVAMAB project in Pendjari was to evaluate ecosystem services and to test different ecosystem services assessment tools in order to bring out the most effective ones.

Among these researches we can mention:

- Payments for ecosystem services: an assessment of existing and possible reward mechanisms for ecosystem services in the Pendjari Biosphere Reserve, Benin
- Local perceptions on threats on ecosystem services as well as community perceptions of management change in the Park using the Nominal Group Technique method.
- Mapping Stakeholder perspectives in Pendjari Biosphere reserve using Q methodology.
- Identification of drivers to enter a protected national park and estimating the willingness to accept to not enter the national park



Review on ES paper in Pendjari

A systematic review of ecosystem services research on the Pendjari Biosphere Reserve: current state and the road ahead

Tèwogbadé Jean Didier Akpona., Rodrigie Castro Gbedomon., Anne-Julie Rochette., Jean Ugue., Luc Janssens de Bitchoven., Han de Koeijer., Romain Glele Kakai.

Abstract

The ecosystem services (ES) approach is increasingly used to support environmental planning, management and policy. Its application in the UNESCO-Man and Biosphere reserves is of particular interest as biosphere reserves (BR) are meant to enhance a strong and harmonious relationship between people and protected areas. In this paper, we reviewed systematically the ES studies conducted on the Pendjari Biosphere Reserve (PBR) with the aims to (i) provide a summary of the research effort on ES-Science in PBR, (ii) critically analyze the achievements in ES-Science in PBR, and to (iii) identify the knowledge gaps and road ahead in supporting ES research and its mainstreaming into policy decisions in the PBR. Findings evidenced a growing body of literature on ES studies in PBR with an average of 3.66 studies per year, totaled 44 papers within the past twelve years. Reporting ES were mostly provisioning including agricultural products, wild foods, fish, oyster, fuels, material for construction, honey, medicinal plants, etc. While acknowledging this effort, the state of ES research in PBR showed a discrepancy in reporting ecosystems and use of invalidated tools. In an additional step, the paper identified some practical challenges which limit the development of an efficient ES research in Benin, and advocate for capacity development of stakeholders and a need for adapting ES assessment tools with local contexts.



Awareness Workshop: Ecosystem Services for the Sustainable Management of Biosphere Reserves in Benin.



<http://programme-collaboratif-ecologique-developpement-durable.org/fr/actualites/2016/06/06/les-ecosystemiques-pour-la-gestion-durable>

Policy brief produced



Les services écosystémiques dans la Réserve de Biosphère de la Pendjari

Par : ROCHETTE A.J. (IRSNB, CEBioS), HUGÉ J. (VUB),
AKPONA T.J.D., GBEDOMON R.C. (UAC-LABEF),
VANDERHAEGEN K., VERBIST B. (KULEUVEN), GLEGLE
KAKAI R. (UAC-LABEF), JANSSENS I., GOAD D. (VUB),
JANSSENS DE BISTHOVEN, L. (IRSNB, CEBIOS)

Contexte

Les populations dépendent de la biodiversité pour leur bien-être quotidien, en particulier dans les zones naturelles telles que la **Réserve de Biosphère (RB) de la Pendjari**. Les services fournis par les écosystèmes de cette réserve, les

services écosystémiques (SES), sont donc d'une importance capitale et doivent être conservés pour assurer un développement durable et la subsistance des populations riveraines.

A photograph of three hippos in a river. The hippo on the left has its mouth wide open, showing its teeth and tongue. A large green thought bubble with a dark blue outline is positioned above it, containing the text "Thanks for your attention". Two smaller green circles are connected to the thought bubble by thin lines. In the bottom right corner, there is a grey arrow pointing to the right. The background shows a riverbank with trees.

**Thanks for your
attention**