CoForChange
PREDICTING THE EFFECTS OF GLOBAL CHANGE ON FOREST BIODIVERSITY IN THE CONGO BASIN

Did a savanna corridor open up across the Central African forests 2500 years ago?

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In order to reconstruct the vegetation dynamics in Central Africa over the past 3000 years, pollen analyses were collected from a number of sedimentary sequences spread over the Congolian forest domain (Figure 1), from the Atlantic side (South Cameroon, Gabon, Western Congo) to the eastern side of the Congo Basin region and the surroundings of Victoria Lake (Maley & Brenac, 1998).

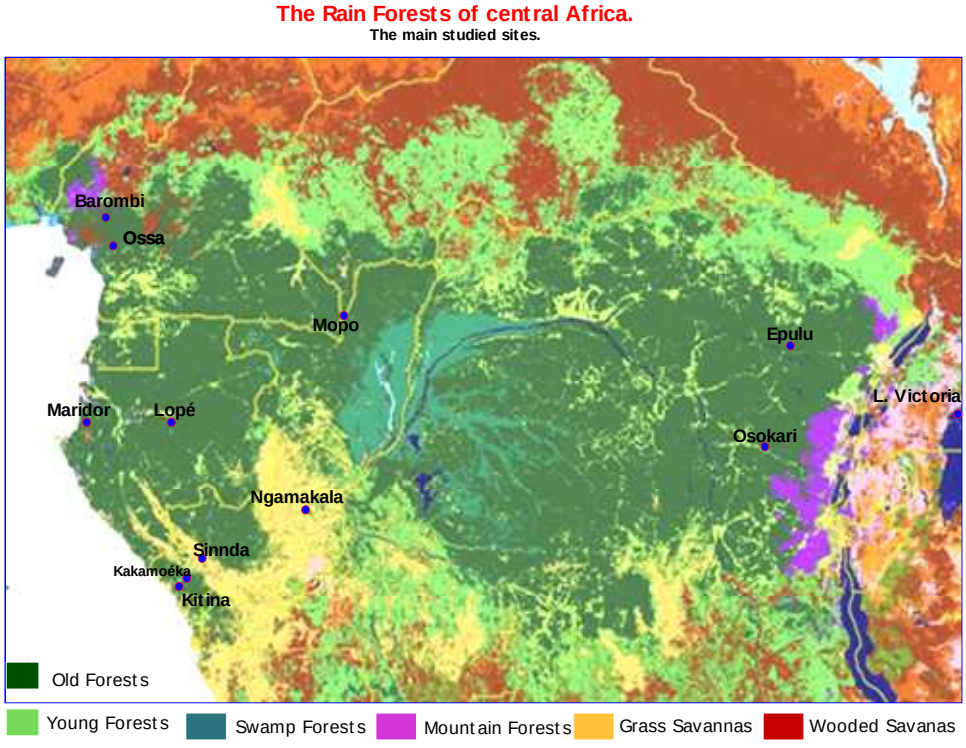


Figure 1. The Congolian forest domain

These records indicate that a significant change in the vegetation occurred throughout the region between 2500 and 2000 BP, wrought by a major disturbance which destroyed or strongly modified the forests. In addition, this disturbance still exerts a major influence on present vegetation formations (Maley, 2001, 2002). In several sites on the western and eastern sides of Congo (e.g. Barombi-Mbo and Mayombe or Osokari and Epulu), a short period of savanna extension was triggered by this event (Figure 2).

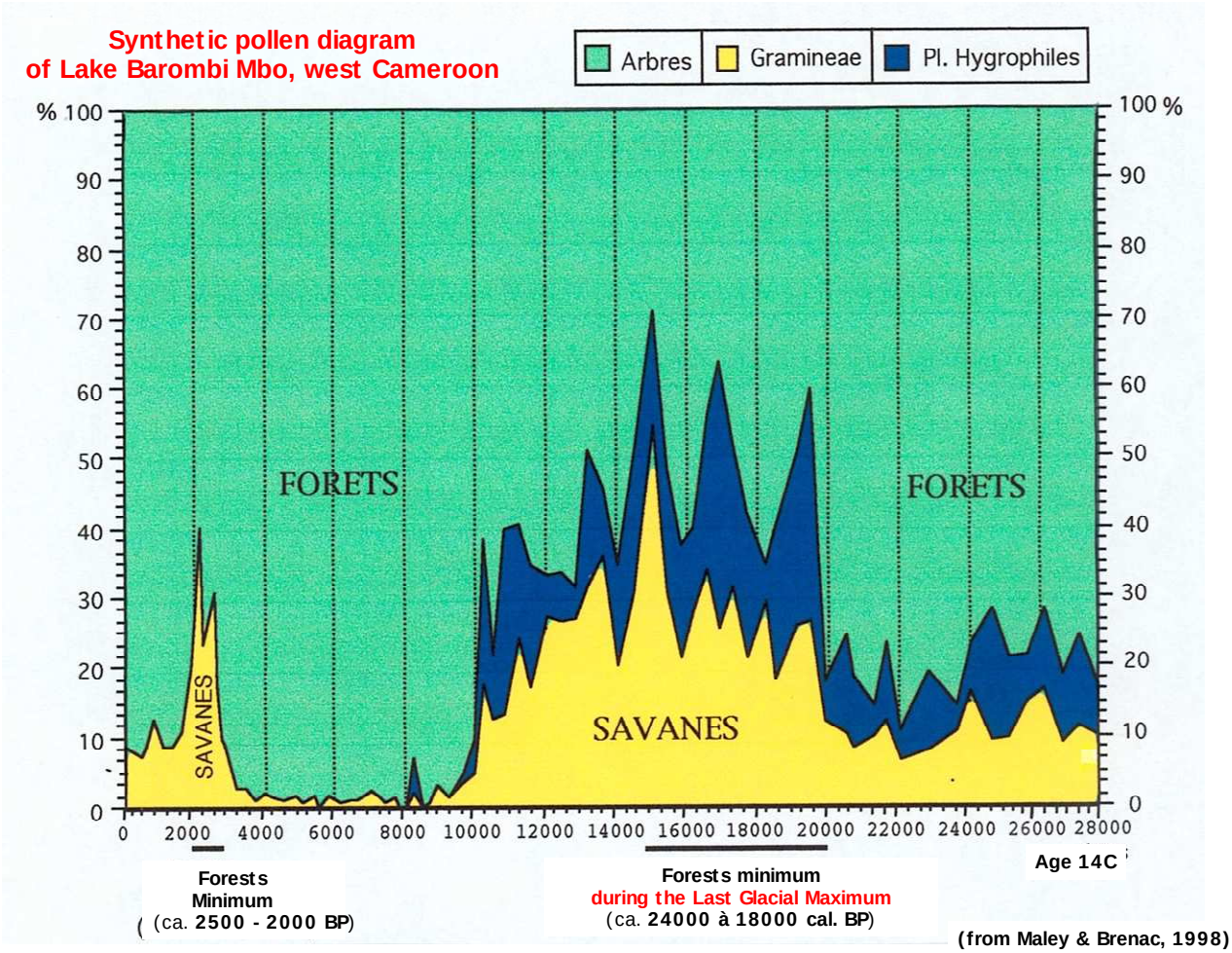
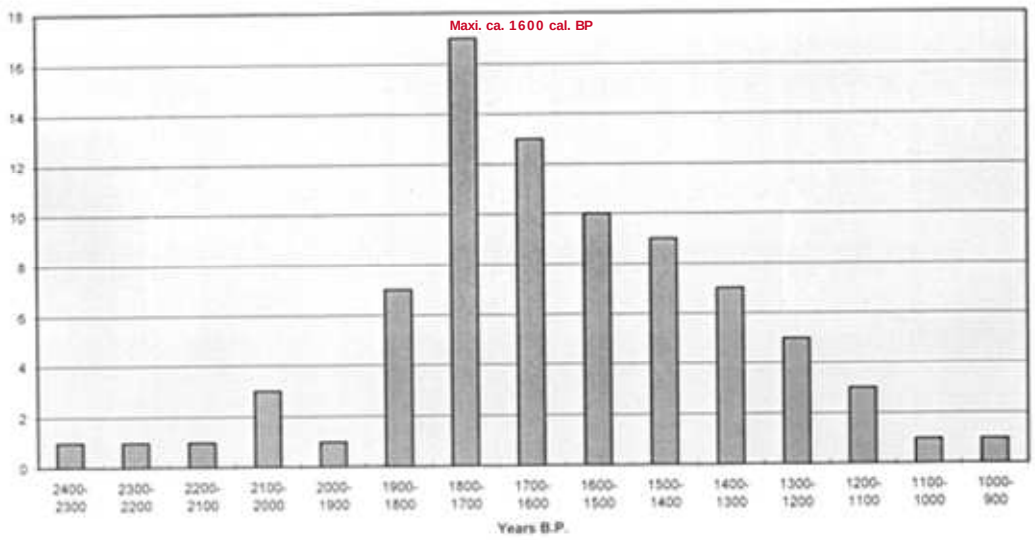


Figure 2. Synthetic pollen diagram of Lake Marombi Mbo

Then, very rapidly, forests started to re-establish (Ngomanda *et al.,* 2005), with a flush of pioneer taxa appearing in many sites, and in particular the oil palm (Maley, 1999 ; Maley et Chepstow-Lusty, 2001), as was observed in the south of the Central African Republic (CAR) (Figure 3).

Réserves de Nouabalé-Ndoki & de Dzangha-Sangha



Entre 1988 et 1995, **en parcourant tout le sud de la Centrafrique**, qui est actuellement couvert de forêts complètement inhabitées, **le Biologiste américain Mike FAY** a collecté de nombreux **noyaux fossiles de Palmier à huile** dans de nombreuses coupes de sols ravinés par des ruisseaux et dans plus de 100 sites différents. Le résultat des datations au radiocarbone effectuées sur plus de 80 échantillons est présenté sur un diagramme de fréquence par tranches de 100 ans (dates non calibrées). **La forme de ce diagramme est typique d'une phase naturelle de développement associée au remplacement progressif d'une végétation pionnière par une plus mature. Dans la région du lac Ossa on retrouve un pic d'extension maximum du Palmier à huile daté aussi vers 1600 cal. BP, âge similaire à celui obtenu dans ce vaste secteur.**

(cf. Maley & Chepstow-Lusty, 2001) **(Maley, 2009)**

Figure 3

These pioneer forests persisted until 1000 – 800 years BP, then the forest recovery continued until the present day, accompanied by an increasing importance of more shade-tolerant taxa.

A core was recently collected in Mopo Swamp, located in Congo near the southern frontier of CAR, close to the centre of the CoForChange study area (Brncic, Willis *et al.*, 2009).

The dominant pollen taxa found in this record spanning the last 2500 years BP have revealed a vegetation history very similar to that previously outlined from the other sites, with a brief savanna extension episode dated 2500 years BP (Figure 4). This record confirms that there has been a greater spatial extension of the savanna vegetation during this interval in time as previously thought.

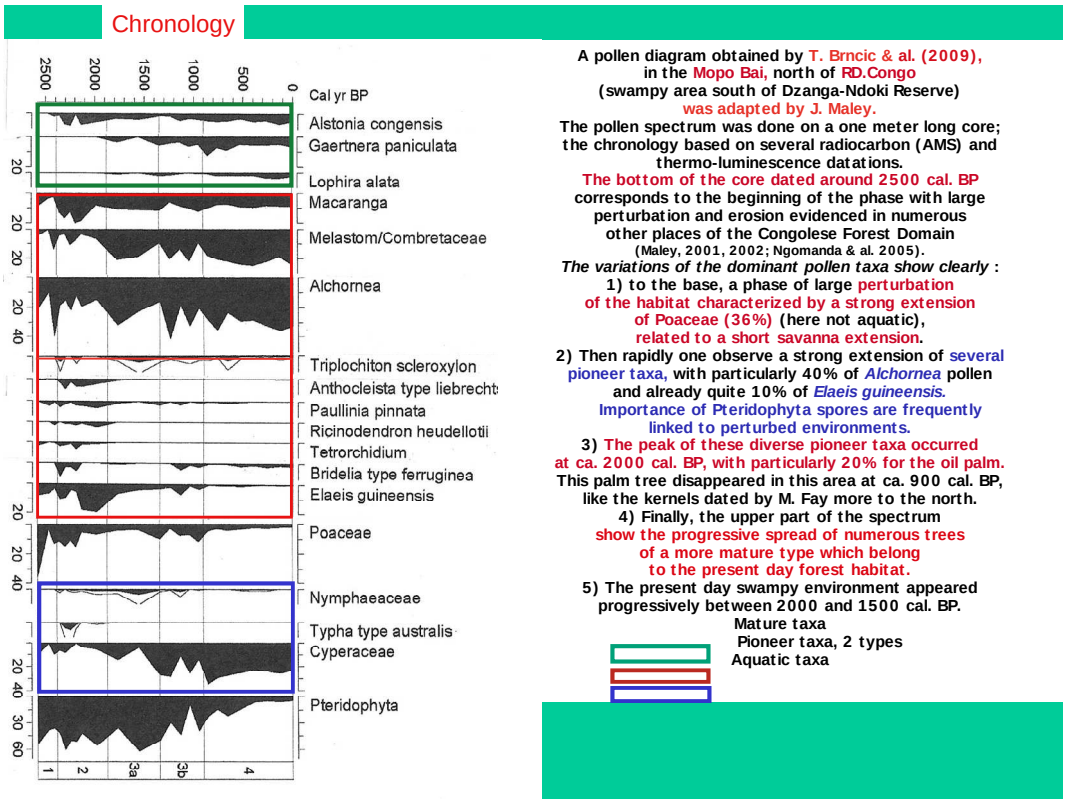


Figure 4. Pollen Diagram in Mopo

Research undertaken in the CoForChange project shall try to validate the hypothesis, proposed by Letouzey in 1968, then precised in 1985, and formalised and dated by Maley in 2001 and 2002 (Figure 5), that a large savanna corridor once opened up across the Central African forests and linked the Northern Sudanian savannas to the Southern Batéké savannas.

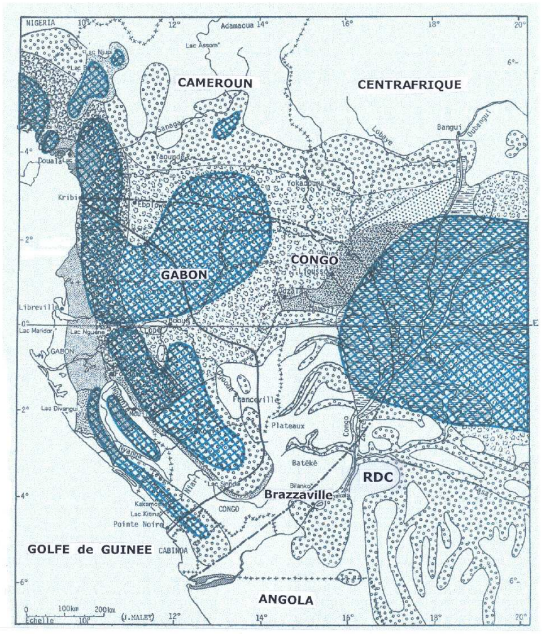


Figure 5. Map of approximative areas of residual forests

Approximative areas of residual forests (blue-shaded areas) during the phase of massive destruction which occurred between 2500 and 2000 years BP. The residual forests were mainly patchworks of pioneer and mature forests. The blank areas were mainly savannas. *(Maley, 2001, 2002)*

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