

Changing Fire Governance in Gabon's Plateaux Bateke Savanna Landscape

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Abstract

In many African savannas, anthropogenic fire regimes are changing for reasons that are poorly understood. However, these changes will likely impact landscapes. Using the case of the Teke-Alima people of Gabon's savannas, the transition from communal, annual hunting fires, organised by land chiefs, to semi-annual, hunting fires lit by individuals is explored through a fire governance analysis. The centralisation of authority over natural resources with the state was key in changing the fire regime in the 1960s. This shift resulted from the reduction of customary authority over fire use and was compounded by the introduction of guns, population movements, and the rise of the Bateke elite. Today, the state is considering co-management of some areas, and fire is being used to manage landscapes created by historic fire governance. Understanding the past regimes that created the current landscape, and engaging with the people who are still part of the remnant customary system will be critical for shaping future management decisions.

Keywords: fire governance, customary rule, savanna, landscape, management, Plateaux Bateke, Gabon

INTRODUCTION

In Africa's savannas, fire is perceived variously—as a threat, management tool, and livelihood necessity. Over time, these perceptions have changed how the natural resources are governed with fire in Africa (Laris and Wardell 2006), and have resulted in changes to policies (Wardell et al. 2004), fire regimes¹ (Archibald et al. 2012), vegetation structure (Sheuyange et al. 2005; Gil-Romera et al. 2011), savanna management (du Toit et al. 2003; Goldammer and de Ronde 2004) and customary use (Fairhead and Leach 1996; Kull 2004; Laris 2004). Sixty-eight percent of African savannas may burn in a given year

(Roy et al. 2008) with human impacts on fire regimes being substantial (Archibald et al. 2011). Many studies in African savannas have been conducted in well known protected areas (PAs) where fire regimes are controlled by researchers or the state (Louppe et al. 1995; Dublin 1996; van Wilgen et al. 2007). In contrast, most savannas are located outside of PAs, and are managed by local people, the state, or have no management. However, the fire governance and resulting regimes in these savannas remain poorly understood (Sheuyange et al. 2005). In recent years, 77% of fire regimes worldwide in fire-dependent ecosystems such as African savannas have been altered due to changes in national policies and customary fire use, amongst other factors (Global Fire Initiative 2004). However, customary fire use still remains little studied, including its evolution or its role in structuring landscapes.

Research on African customary burning has focused on historic fire regimes and landscape impacts (Sheuyange et al. 2005; Butz 2009; Gil-Romera et al. 2011), rationale (Hough 1993; Eriksen 2007), current-day regimes (Mbow et al. 2000; Laris 2002), and political ecology (Fairhead and Leach 1996; Kull 2004). Few have focused on fire governance.

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‘Fire governance’ generally describes the interaction of state agencies to manage fire in a landscape (Morehouse et al. 2011). However, here it is defined as the institutions and rules that determine how fire is used in an area, and how rights holders (those with customary rights to the area) participate in these decisions (Sensu Ostrom 2009).

Fire governance directly impacts management decisions and fire regimes, which, then impacts ecosystems. Globally, past fire governance has shaped present day landscapes with well known examples, including Australian aboriginal fire regimes determining vegetation types (Bird et al. 2008), and native North American regimes changing forest cover (Nowacki and Abrams 2008). In Africa, changes in customary fire regimes often began with colonial anti-fire policies, which became a part of centralised state bureaucracy that is still enforced today (Laris and Wardell 2006).

In Central Africa, the savanna landscape is dynamic, with the present day climate favouring the expansion of forest into the savanna (Schwartz et al. 1996; Mitchard et al. 2009), and a thickening of the savanna itself (Favier et al. 2004). In these savannas, fire does not stop forest progression (de Foresta 1990), and protection of the forest edge favours forest expansion (King et al. 1997). Although climate change is one factor that impacts African savanna vegetation dynamics (Delire et al. 2008; Zelazowski 2010), changes in fire governance could also play a role. In Central Africa, issues include controlling and using fire to manage landscapes. In some PAs, fire is used to maintain historic landscapes (Jeffery et al. 2014). How, and if, to maintain these historic landscapes is a question for land managers, and if maintained, then with what regime?

Since fire governance influences management decisions and the resulting landscape, the basis for these decisions must factor in how previous governance structures created the present landscape (Marcucci 2000). Culture is thought to drive landscape change (Nassauer 1995; Bürgi et al. 2004), and be a backdrop against which to evaluate current governance (Szabó 2010). When historical land use is understood, management decisions can be made (Foster et al. 2003). In all landscapes, there are particular “keystone processes” through which a landscape may be altered, including “landscape forming cultural processes” (Marcucci 2000). Fire is one such process.

Fire governance through suppression policies was a powerful force on West African landscapes (Schmitz 1996), however, such policies were less enforced in Central Africa, where little research has been done. Savanna fires have occurred in Central Africa’s Plateaux Bateke² since approximately 2,100 BCE (Schwartz 1988). There, conservation actors sometimes assume that fire is destructive and uncontrolled (Ikamba 2006; USAID-CARPE 2006). However, this viewpoint seems uninformed by cultural and historical aspects of how the institutions governing natural resources have changed, and with them bringing change to resource use practices and ecosystems.

What past fire regimes created the present western Plateaux Bateke landscape? In the past 50 years, regimes have shifted

from annual, dry-season fires to semi-annual, all-season fires, changes that are causing the savanna structure to thicken (Walters 2012). However, the changes in governance that determined these regimes have not been analysed. Using a fire governance framework, the evolving fire governance in Gabon’s Bateke Plateaux is analysed in the context of changes in customary and statutory institutions and rules, and rights holder participation during the precolonial, colonial and present day periods, and ultimately links the changing fire governance to the changing landscapes.

METHODOLOGY

Fieldwork was conducted in Gabon’s Plateaux Bateke (Haut Ogooué province) over a period of 18 months between 2006 and 2008, with visits in 2009 and 2010, and continued contact to the present day. Work centred on Ekouyi-Mbouma but extended to neighbouring villages (Figure 1). The historical literature was consulted from colonial archives, and triangulated to the degree possible with interviews with elders. Site-based information on current hunting practices and fire governance was collected using participant observation, semi-structured interviews, group discussions and mapping. The author interacted with the local community in as many ways as possible, including living in Mbouma, and participating in gathering, fishing, agricultural, and ceremonial activities, and by helping the community with medical care, education, and transport. Informal interviews

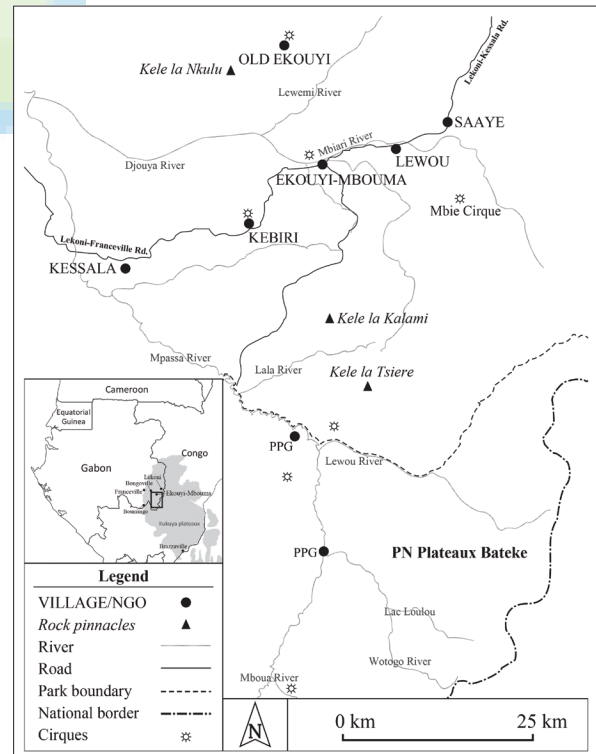


Figure 1

Map of the study site

Source: Originally published in Walters et al. 2014; printed with permission from African Study Monographs

occurred regularly, and were recorded in 800 entries in an Access database. Follow-up, formal, semi-structured, recorded interviews were conducted with 38 elders. Interviews were conducted in French or Bateke, the latter with the help of a translator. All informants names have been changed. A survey on knowledge of historic fire governance was conducted in five villages with 121 participants, aged over 16; it was pre-tested in a nearby village outside the immediate study area. From 2010 to present, the author has advised the *Agence Nationale des Parcs Nationaux* (National Agency for National Parks, ANPN) on fire management in and around Gabon's national parks.

The study area is located in the forest savanna mosaic transition zone of the Guineo-Congolian forest (White 1983). The savannas are located on Kalahari sands (Haddon 2000), dominated by *Hymenocardoa acida* trees and common grasses, and associated with locally endemic forbs (Walters et al. 2012). The Teke-Alima people rely on forest and savanna resources through hunting, gathering, and subsistence agriculture; there is no large-scale grazing, with only small goat herds maintained in the villages and absent from the wider landscape, hunting areas occupy most of the area. Fire is used in the savanna for hunting animals, gathering plants and edible insects, and for creating back-burned areas that protected savanna agricultural fields and villages from late season, uncontrolled fires. Fire is also set in the forest as part of a swidden agricultural system (Walters 2010). Small savanna fires occur in the rainy season initiated by both lightning and people, and larger fires occur in the dry season lit only by people (Walters 2012).

The Teke-Alima people—migrated into the eastern Plateaux Bateke around 350 BCE—occupy a series of tablelands, spanning more than 120,000 sq. km across southeastern Gabon, central Republic of Congo, and southwestern Democratic Republic of Congo. Across the plateaus, resource use was administered by land chiefs who controlled territories, including those of Brazzaville (Vansina 1973; Dupré and Féau 1998), the Koukouya Plateau (Soret 1973; Bonnafé 1978), southern Congo (Dupré and Pinçon 1997), and the study area. This suggests that the evolution of fire governance is relevant for many Bateke inhabitants and the general area. This case study focuses on the Teke-Alima of southeastern Gabon. The Teke-Alima were forced to migrate through warfare into the study site around 1840 (Lotte 1953), where they continued their pattern of establishing new savanna villages every few years (Guillot 1980), around which, trees were planted and forests grew. Numerous village forests dot the savanna landscape, and are a testimony to historic migration patterns and the impact that they had on structuring their landscape at this time (Aubréville 1949: 318).

The Bateke of Gabon were once linked to the supreme Bateke ruler, the Makoko, who sold Bateke lands to French traders on the Congo River in 1880. Since 1967, the Bateke have been linked to Gabon's presidential family, benefiting from elite connections, which may impact natural resource use. Illegal, intensive hunting, using fire, occurs on both sides of the border with Gabon and the Republic of Congo, and constitutes a conservation issue for the area and the local people (Gami

2003). A national park was declared in Gabon's uninhabited³ Bateke hunting territories in 2002 (République Gabonaise 2005), and the fire management plans are under development (ANPN In press b), with the possibility of collaborating with the people living near the park's buffer zone (ANPN In press a).

ARGUMENT

Bateke fire use during European exploration

Observations from 135 years ago by the explorer de Brazza and his colleagues in their dry season treks across the Plateaux Bateke offer insight into the burning conducted at that time (Brunschwig 1972). Although one must be careful in interpreting these observations as they were likely influenced by Eurocentric viewpoints of fire use at the time (which were evolving towards an anti-fire stance (Consigny 1937), they are the only known testimony to the fire use in that period. de Brazza discusses fire's ecosystem impacts, its utility in warfare, and its beauty. Reports from his colleagues describe the annual fire drive hunt and its link with subsistence (Guiral 1889: 154; de Chavannes 1935: 94). During his first trek, de Brazza encountered his first land chief (de Brazza 1887: 54).

The Teke-Alima were organised on the basis of domains or *ntse*, each having a land chief, or *ngantse*. There was a lineage-based hierarchy, where lineages were grouped into villages, domains, and then countries (Ebouli 2001), with each level having a chief (Vansina 1990), and ultimately ruled by a supreme land chief. According to Vansina (1973: 323), "The authority of the squire [land chief] derived from the 'unbreakable mystical bond' which had always existed between the squire and the *nkira* [*nkira*=land spirit] of the domain." Territories constituted a magicopolitical space where the land chief maintained balance between the spiritual powers of the domain spirits (and ancestors) and the physical well-being, including food supply through hunting, of the constituent villages (Ebouli 2001). According to one land chief, Pierre Andza, the land chief's main function was to "protect his people" (Survey: Kebiri, August 29, 2007); village chiefs Daniel Ololo and Yaja interpreted the land chief's role as "protecting his territory and managing his people (Survey: Kebiri, 26 July 2007; Lewou September 16, 2007). This balance was kept, in part, by worshipping the land fetish (Cabrol n.d.), described as a bell, and unique per lineage; it was housed in the *olebe* [*olebe*=a village structure for the gathering of men], and venerated in public and initiate-only ceremonies. Andza described it as his power, which enables him to protect the Vagha domain. Giving the example of his response in the case that a lion was ravaging his domain, he would take his bell and go to the nearby river with offerings of kola nuts, tobacco, salt, and oil. He would cry out to the ancestors for protection. He would then repeat this action in the cirque behind the village. After this, safety for the people of the domain would be ensured (Interview: Kebiri, August 20, 2008).

The Teke-Alima likely imported their burning practices from the adjacent Koukouya Plateau (Bonnafé 1987: 224-

226). In that area, the land chief controlled the timing and location of fires (Sautter 1960; Vansina 1973). The largest were set during the long dry season from July to September as part of the communal fire drives (Guiral 1889; Papy 1949; Sautter 1960; Vansina 1973). Most fires were set annually (de Chavannes 1886), and some areas were left as unburned ‘refugia’ in order to provide protection for animals (Sautter 1960; Vansina 1973). Some Bateke groups left areas unburned two to five years, and then rotated the area back into annual burning, while others seem to have burned the same areas year after year (Sautter 1960). In one account, an average estimated fire size of two to four sq. km was reported, over 200 such fires around five villages were observed (Sautter 1960).

In the study area, there are ten domains with publicly known limits defined by rivers, ridges, and small forests in the savanna. Most of the domain was reserved for the dry season fire drive with the possibility that a land chief would decide not to burn his domain that year. In the event a domain was to be burned, the limits were designated before the fire season, and people were warned. Domains were delimited into permanent burn units called *ewa*; each domain would be burned unit by unit. The day of the hunt, hunters Mbia, Alna, and Yaja indicate that the land chiefs of the involved domains would meet at a hunting station (a small forest) (Interview: Lewou, April 14, 2008). There, one would see great dances, and each domain’s magician, who would be blessing the hunt (Deschamps 1962: 64). Every domain had their land spirit. These ceremonies ensured that each domain dealt with its land spirits, in order to assure a successful hunt. Each land chief brought his own fire specialists—the *otiugui*—for lighting their fires. The nets would extend for kilometres (Dusselje 1910), with each hunter bringing a net, with some 50 hunters joining their nets end to end. The fire specialists would run a lighting relay along the edge of the burn unit. Animals were then driven by the fire into the nets. Women would follow, gathering small animals that had been killed. Land fertility was governed, in part, by ceremonies over which the land chief presided for transgressions against the domain, blessing the domain, and for guaranteeing the hunt’s success (Walters et al. 2014).

Unauthorised burning was considered to be a transgression against the domain’s ancestors. The Teke-Alima people were resolute in not burning in the off season, or without authorisation from the land chief, sometimes stopping the usage of their territories by neighbouring people who burned indiscriminately (Sautter 1960). Severe penalties were employed, including making peace with ancestral spirits, fines in raphia cloths, and payment in the form of slavery, or the loss of a daughter in marriage (Dupré 1994; Mouayini Opou 2005). There are women near the study area who were married under these circumstances; as indicated by one informant, “before if one didn’t have money, one even took their young daughter. Like that you go to give her to the land chief because he will take the girl and she will become his wife, it

was like that” (Interview: Lekoni, November 19, 2007). By comparison, to the northeast of the study site, the land chief levied high fines in the case of theft, including being sold into slavery. The theft of a gun exacted 30 raphia cloths, while stolen chickens and hoes required only ten (Badier 1929). These fines, in comparison to those for unauthorised burning, demonstrate the seriousness of pyrocrimes. However, the acts of unauthorised burning were also believed to have spiritual consequences that would be manifested by sickness or death and required penance for angering the ancestors. Informants recalled all the previously mentioned fines and consequences but additionally the sacrifices of goats, chickens, and red wine to ancestors.

The canton and the land chief: transition in power and fire regime

Prior to European contact, customary chiefs regulated societal and environmental problems. Beginning with their encounters with European explorers, the land chief and his authority over burning and hunting was increasingly challenged. This was a part of dramatic social changes that followed European contact. For the Bateke, the reorganisation of their territory began with de Brazza’s voyages, which resulted in mapping their territories and creating treaties that opened them to French colonisation. de Brazza soon realized that his operations in Bateke territory would only be successful if authorised by the land chief (Guiral 1889: 342), thus setting the scene for future French influence on the land chief office.

The French formally organised French Equatorial Africa (AEF) into administrative units in 1909 in Gabon (Metegue-N’Nah 1981), and established the canton in 1920 (Gray 2002). At first, the French nominated traditional authorities to represent them. These were chosen for their likelihood to work well with the colonial government, and an act described as the “suppression of traditional chief-hood” (Metegue-N’nah 1981: 47). Despite the original canton chiefs being selected from families with customary authority, by 1937, fluency in French and an understanding of administration were required (Ongala 2005). The French then empowered secretaries that had formerly served under the canton chiefs. These new literate leaders were not respected by the population since they did not carry the customary authority of their predecessors (Ongala 2005; Oligui 2007).⁴

Informants recall this shift from customary to state rule in a negative light where customary chiefs were unified with the colonial administration. In the late 1950s, in the broader landscape, many inter-village disputes erupted, involving bloodshed and imprisonment. Accounts by informants are mirrored in histories of Gabon’s struggles against colonial rule, calling it a “regime of terror” (Oligui 2007: 86), and included bloody tax revolts (Metegue-N’nah 1981); similar struggles are reported from the Teke-Tsayi territory just south of the study area (Dupré 1990). In this context, the land chief could not exercise authority over fire use.

Restructuring fire governance during the colonial period

In the 1960s a transition occurred. In an interview, the chief of Kebiri village, Daniel Ololo, aged 77, states (Kebiri, October 4, 2007):

We no longer hunt like this because when Bongo [the recently deceased Bateke president] came [1967], all the [hunting] domains became his, the land chiefs are all dead, and he told us not to burn the savanna. If you burn and someone is hurt, the chief of that land will be arrested; he will die in prison. This is why we no longer burn the savanna.

The land chiefs are dead, even the people who placed their nets are dead. Look at these villages, there is no one. But if you need to burn, who are you going to burn with? This is why we have left the *lasele* [a large expanse of grassland reserved for the annual fire drive organized by the land chief].

We must forget about these domains. But today, if a child says that this domain is his father's, and if someone dies by a gunshot and if one calls [to ask for an explanation] the land chief will go to prison. We must no longer count on these domains. All the children who have remained, we all refused saying that the owners of these domains are all dead. We the younger ones will follow the ways of the white man. There are no more domains.

In the survey, most respondents indicated that the last communal fire drive, in which, they participated was in the late 1960s. Today, the fire drive and its near-annual fire regime are extinct. This extinction was triggered by changes in fire governance including the near elimination of customary law, changing hunting technology, and migration.

One of the fundamental changes over the land chief's rule was the introduction of the colonial idea of vacant lands. As early as 1899, the French established legal rights over the then thought 'unoccupied areas' (or vacant lands) in Gabon (Jaffré 2003), and the then Congolese portion of the AEF (1946), where the study site is located. The colonial government perceived migratory village establishment as evidence of lack of "attachment to land" (Kinata 2001: 44), by contrast, the Teke-Tio of neighbouring Congo used land very extensively (Vansina 1973) and permitted others to use it, sometimes ceding most rights, and only retaining ownership and the right to visit their dead (Soret 1963). However, the Plateaux Bateke was one of the most remote areas for both the Brazzaville and Libreville administrations, and was the least administered part of the AEF (Sautter 1960). Compounded by the Bateke refusing to trade or contribute labour and the failure of nearby concessions (Coquery-Vidrovitch 1972), the Bateke and their lands were largely left alone.

Laws regulating hunting came into effect in 1929 in the AEF. Through a series of changes, hunting laws first regulated larger animals and hunting technology with the fire drive being

forbidden (AEF 1936). Later laws introduced hunting seasons and banned commercial hunting (AEF 1944). Collective hunting was permitted (excluding the fire drive) and regulated by the governor. Hunting zones were identified, including in the Plateaux Bateke around Zanaga, Congo-Brazzaville. Net hunting was only allowed in the forest (AEF 1956), but enforcement was probably rare.

At the same time that colonial laws were removing control of hunting from the land chiefs, fire use was also being targeted, as it was considered to be a threat to colonial timber resources (Humbert 1938; Pitot 1953). In the AEF, bush fire was outlawed at the beginning of the last century (AEF 1904). Later, only fires for establishing plantations and villages were permitted, and in the presence of the subdivision chief. In the case of an unauthorised fire, all able-bodied males within five kilometres were required to extinguish it. The fines associated with illegal fires were up to XAF 5,000 and imprisonment for up to two years (AEF 1941). Five years later fire was forbidden near classified forests (AEF 1946). The only fires tolerated were those for pasture management, cleaning, and agriculture, which, only covered a portion of Bateke lands as most of their land was reserved for hunting.

Mbia (Interview: Ekouyi-Mbouma, September 30, 2007) remembers when the colonial authorities visited the village in 1955 to ban the fire drive, believing that it killed too many animals and proposing that guns be used to only kill one to two animals as needed. However, at this time, only local chiefs owned guns. According to Ntumi, "when guns arrived, we were told that guns should be first purchased by the chiefs." (Interview: Mbouma, October 3, 2007). Limited gun ownership meant that the majority of hunting occurred as communally conducted net hunts, such as the fire drive, which continued despite the law.

Guns were likely rare in Central Africa in the seventeenth and the eighteenth centuries (Martin 1970), and unequally distributed in the Plateaux Bateke (Gochet 1892: 188; Ballay 1885: 282-283; Decazes 1885; Guiral 1889: 163; Bernault 1996: 312). However, they were in demand everywhere by the 1880s. They were owned by people of high status (Bernault 1996: 311), such as the Makoko (Brunschwig 1972: 63) or the Sky Lords (the equivalent of land chiefs in the nearby Koukouya Plateau) (Bonnafé 1987: 59), and were one of the highest forms of trade 'currency', ranking just below slaves and ivory (Vansina 1973: 304-305). Elite ownership continued into the late colonial era, where gun ownership in the AEF was only permitted for administrators and village chiefs until the late 1950s (Bernault 1996: 286). However, this changed in the 1960s; according to Mpampu, "At independence, this is when we won the 12 gauge" (Interview: Ekouyi, 29 September 2007).

Fire governance post independence

Gabon became independent from France in 1960. By then, the authority of the land chiefs was severely limited by colonial

laws on fire use and hunting. Additionally, at this time, gun technology and mass migration movements brought the land chief's authority to a standstill, and fire governance changed. One of the major changes was the resettlement of people to roadsides, or *regroupement*, which allowed the government to provide education and health services to people while accessing taxes and labour (Coquery-Vidrovitch 1972: 493).

Regroupement contributed to the decline of the land chief's authority over traditional fire use and emptied the countryside, estranging villagers from their domains. In comparing maps pre and post *regroupement*, villages that were once scattered throughout Gabon are almost solely grouped along roads (Pourtier 1989). In many parts of Gabon, *regroupement* was carried out as late as the 1970s (Pourtier 1989), leaving many Bateke villages situated in their ancestral lands longer than those that had been resettled at the policy's inception in 1919. This relocation to new sites disrupted the way in which the land chiefs functioned. Since people no longer lived in their domains, and as customary rule waned, hunting and burning traditions changed. When land chief Kanini recounted the settlement of his village away from his domain, he indicated that the Bawumbu people, where he was resettled, told his people "Go back home to your domains" (Interview: Malundu, July 1, 2008). Furthermore, they initially forbade cultivating and gathering activities by the Teke immigrants. For many years, these Teke went back to their domains to conduct fire drives, but later abandoned these practices.

Several informants claimed that the rural exodus removed youth from the village, leaving fewer people to carry out fire drives. Many Gabonese migrated to urban centres just after independence and then subsequently during the oil boom (Wunder 2003), with the urban population in Gabon nearly doubling between 1955 and 1965, and being the biggest move from rural to urban areas in sub-Saharan Africa (United Nations 2005). This left rural Gabon with a population of elderly, women, and children, typical of the study site villages.

When Gabon gained independence, many laws from the AEF were transferred into state law, including hunting laws (AEF 1960). Land tenure was clarified in the 1960s through a series of laws, which gave most land rights to the government. All territory outside of village jurisdiction (according to the state) fell under state law (République Gabonaise 1963). In 1967, the law enabled villages to control and exploit lands for subsistence up to five kilometres from the village centre (République Gabonaise 1967), despite village territories being much larger than this, as noted in the previous section. The notion of vacant land, or land in between villages, was imported from French law into Gabon's *Code Civil* (République Gabonaise 1972: Article 539). Article 542 recognises communal property but only for occupied lands.

As these new state laws were introduced, new hunting technology entered the study area on a large scale. By independence, the Gabonese population was eager to obtain guns freely, having been deprived for so long. Gun purchase policies from the colonial period were reversed and ownership politicised, by 1961, state politics in both Gabon and Congo

used gun donations to foster votes and reduce support for the opposition (Bernault 1996), an event remembered by several informants. After independence, Mbia remembers the increased availability of the 12-gauge, attributed to the former president, Bongo-Ondimba, who gave preferential gun access to his Bateke people.

Gun access at this time contributed to a decline in the communal fire drive. As one resident of Ekouyi indicated, "People have stopped burning the savannas because the elders are tired and because guns appeared. Today, I believe that every young man has a gun and so burning is finished." (Interview: Gorgie, Ekouyi-Mbouma, September 25, 2007). And guns were thought to be responsible for wildlife depletion; according to Ampia, "guns have now finished off the wildlife, but the hunting net doesn't work as well as the gun." (Interview: Lekoni, November 19, 2007). However, the replacement of communal net hunting with solitary gun hunting was not immediate or geographically ubiquitous; there was a phasing in of guns during communal hunts throughout the Plateaux (Badier 1929; Sautter 1960). Today, in the Haut Ogooué, communal net hunting still accounts for 10.4% of all hunting types, with net hunting for porcupine being common (Carpeneto et al. 2007).

Former fire drive customary rules were possible through a graduated sanction system, one of the elements that make such systems enforceable (Ostrom 1990). Despite the penalties associated with unauthorised burning prior to independence, 88% of the survey respondents indicated that today there are no penalties for savanna burning without authorisation.

Present day fire governance

Residents in the domains of Ekouyi-Mbouma no longer need authorisation to burn, and hunting of the prized Grimm's Duiker is against the law. As Alna indicated, "Today, we burn for nothing", and then explained that in the past one would want to know who had started an unauthorised fire, whereas today, this is no longer the case (Interview: Lewu, July 9, 2007). Nevertheless, hunting remains a strong tradition, linked to subsistence, commerce and hospitality.

The Teke-Alima people have been directly linked to the presidency in Gabon since 1967. They are favoured for national political posts; their position in Gabonese society is one of affluence and power, giving them resources, which are then introduced back to their villages, particularly during their village vacations where they spend money to improve access to medical care, education, employment, and entertainment. These elites identify strongly with their villages, having been born there, and so, still considering themselves as villagers who are only in the capital city for work, as noted by Nicolas Ondighi, a former member of the government intelligence unit (Interview: Libreville, June 14, 2008).

Many of these gifts are often given on behalf of native politicians forging links between family and politics. Although many elites spend time in their villages, not all have the same following. In the words of Minister Okala, from the study site, in describing the best way to relate to the village constituency,

“One must be at the service of the people for them to be at your service” (Interview: Lewou, September 12, 2007). In the view of Nicolas Ondigi, the former president would maintain ties to the area through remaining informed about local level activities and maintaining contacts at the village level (Interview: Lekoni, March 14, 2008).

In addition to the new roots and political support gained by the urban elite, they enjoy power over village decisions and access to traditional medicine and sorcery consultations. Some members of the elite are known hunters, and some political activities in the villages lead to hunting fires. During the study period, several non-dry-season firings for hunting were conducted to secure meat as gifts and supply food for political events in January, March, and May of 2007. Each burn was related to visits by politicians during political election campaigns during the rainy season, a time when 98% of the survey respondents indicated that it was not a good season to burn. During visits of the Bateke political elite, hunters would obtain meat for their visitors, using recently burned savanna. One young hunter, Jean Kapi, once indicated to me in a private conversation, with shame (because he knew it was a threatened species in Gabon), how he and another hunter had killed a Grimm's Duiker to give to the Minister Okala (August 26, 2008, Ekouyi). However, this gift of meat was matched by the one from national assembly member Mathieu Yulu, and additionally from women who conducted a fishing expedition, and also gave a bushpig, all gifts to Minister Okala during the same visit.

This use of fire for hunting is not considered by the Bateke to be negative. As Alna explained, hunting epitomises hospitality. “It makes me ashamed”, he indicated, to serve guests dishes without meat (Interview: Ekouyi-Mbouma, April 6, 2008). Alna went on to explain that, when a visitor arrives in a village, villagers hunt to provide a meal for them, whether asked to do so or not. Minister Okala indicated that it was more than meat provision, but was an “honour” to hunt for guests (Interview: Franceville, Gabon, November 25, 2010). The acts of burning and hunting establish a bond between the villager and the visitor or the elite, and these are an integral part of village hospitality and sociopolitical activity today. As one hunter, Ampari, indicated in May 2007 (Ekouyi-Mbouma), “When the Water and Forestry agents came, they forebode us to hunt, but we always burned the savanna when the president arrived to find him something to eat.”

Today, only 60% of the survey respondents knew what a land chief was. Most land chiefs are now dead, and the remaining ones are elderly. Domain traditions are kept by fewer and fewer people. As Etienne Nturi indicated, “The land chiefs are over; the only ones left are we, the grandsons” (Interview: Mbouma, July 1, 2007). Today's fires are motivated by commercialised and subsistence hunting, political activity, foraging, hospitality and pleasure. This, in conjunction with a lack of respecting the rules, has resulted in a semi-annual fire regime.

In 1994, Grimm's Duiker (République Gabonaise 1994), the main target of the Bateke fire drive became a protected species in Gabon. Despite being abundant in adjacent countries, its

distribution limit is just inside Gabon's borders in the Plateaux Bateke, where it is hunted intensely by commercial operators. Efforts in the past 10 years, by conservation organisations, to apply Gabon's hunting laws in the Plateaux Bateke have targeted this species for environmental education efforts. Educational materials have demonstrated the negative aspects of net hunting and fire use, bringing dishonour on the local consumption of this prized meat (Ikamba 2006).

In 2002, the *Parc National des Plateaux Bateke* [*Parc National des Plateaux Bateke*=Plateau Bateke National Park] was created in Bateke hunting domains where villages had been abandoned in the 1960s. Although the Park is subject to unmanaged fires set by poachers from both sides of the border (Gami 2003), it is managed for its savanna landscape, rare species, and in light of the tradition of Bateke fire use. ANPN is developing a fire plan (ANPN In press b), and there is planned community engagement through establishing committees to co-manage the buffer zones [through the *Comité Communautaire de Gestion Locale*=Local Community Management Committee, CCGL] (ANPN In press a). Once these steps occur, fire management over the Park and its buffer zone will change, differing drastically from the adjacent Bateke hunting territories. How the ANPN engages with the communities will be critical for success in developing a culturally sensitive management plan, and one that is operable over such a large, flammable savanna territory, created by historic fire regimes.

CONCLUSION

Fire regimes continue to change across Africa (Archibald et al. 2012), modifying ecosystems in their wake, however, this change is likely only part of a chain of fire management, and control events over longer time periods of regime change (Hughes et al. 2013). In the case of the Bateke Plateaux, fire governance has changed significantly in the past 130 years. At the end of the nineteenth century, fire use was governed by land chiefs who used ceremonies and rituals to appease the ancestors, and fines and consequences to punish fire crimes. During the colonial era, laws on hunting, fire, and land were introduced. However, by the 1960s Bateke fire governance changed as customary control over lands and fire was reduced, guns became common, statutory laws were unenforced, and people emigrated, leaving very little in place that resembled the former system. The fire regime had changed from annual to semi-annual (Table 1).

Today's savannas have been transformed from common pool resources to open access which are just now beginning to be transformed, in ANPN territory, to closed-access with co-managed buffer zones. Currently, in the absence of effective customary or state regulation, individuals are able to hunt and burn several times a year resulting in a semi-annual fire regime. The combination of affluence in Gabon and poverty in the Republic of Congo leaves the landscape overhunted (Bout 2006).

As states move to decentralise authority over natural resources, the context of the original centralisation of power

Table 1
Evolving fire governance and the resulting fire regimes in Gabon's Plateaux Bateke

Time period	Governance			Fire regime
	Institution	Rules	Rights holder participation	
Precolonial Pre-1880s	Land Chief system	a) Bateke norms of fire, hunting, and land use b) Fines c) Consequences d) Ceremonies	a) Ceremony participation b) Followed rules c) Communal hunting	a) Annual fires b) Controlled
Colonial 1880s-1960	a) Land Chief system b) Colonial government	a) Colonial laws b) Fire control c) Hunting control d) Gun control e) Land control	a) Ceremony participation b) Followed rules c) Communal hunting	Transition
Postcolonial 1960-present day	State government	a) State laws b) Grimm's duiker illegal to hunt	a) Ceremony participation b) No fear of consequences for breaking customary or statutory laws c) Individual hunting	a) Semi-annual fires b) Not controlled

must be taken into account. Periods of historical resistance by local people to other authorities controlling resource use must be considered, as shown in cases from eastern, western and southern Africa (Neumann 2005; Lund 2006; Beymar-Farris and Bassett 2012). Not mastering the history or culture of the area where states and outsiders work, places the relationship with local people and the viability of the interventions at risk (Waylen et al. 2010). Furthermore, remnants of the land chief system remain, including ceremonies and understandings of abundance of natural resources, which, contrasts to ideas prevalent in conservation (Walters et al. in review). The resulting changed fire regime creates a challenge for management, as today's landscape is a product of the past fire governance and its fire regime. In Australia, changed fire regimes have created new landscapes (Miller et al. 2006), and management agencies are considering historic and new fire regimes (Burrows and Christensen 1990), and co-management with Aboriginal groups (Parr et al. 2009). Historical fire regimes and governance are recognised as important elements of landscape management (Anderen et al. 1998).

However, mastering the history and interest groups is not enough, solutions must be proposed (Kull 2004: 266). Although in Gabon's case where fire use was banned in the colonial era, there was little enforcement and no informants indicated feeling ashamed of their burning practices—all openly identified their fires and those of others. This contrasts greatly with certain periods in Mali (Laris 2004), Guinea Conakry (Fairhead and Leach 1996) and Madagascar (Kull 2004). It may mean that the Government of Gabon will have fewer problems to solve in terms of righting defamed customary fire use. However, by contrast, some customary uses of fire are now extinct. The challenge, particularly for the ANPN, is how to manage its savanna resources in and around PAs in the absence of a working customary system while

collaborating with those who still apply parts of the system. In West Africa, Fairhead and Leach (1996: 294) proposed to move away from strictly outsider interventions, but instead, to create enabling policy and socioeconomic conditions, which, favour effective local resource management. In the Plateaux Bateke, management, particularly in the adjacent areas, is meant to be participatory, through the CCGLs. It will be critical to situate this modern form of resource management in relation to the past authority of the land chiefs and the vestiges of customary practices which continue to impact how savannas are burned and understandings of natural resource abundance and scarcity (Walters et al. 2014; Walters et al. in review).

Should ANPN use the historic fire regime to maintain the landscape? Today, other parks in Gabon are adapting fire management to preserve historic landscapes (Jeffery et al. 2014). Perhaps this can be done in the Plateaux area, in part, through engagement with the Bateke living near the buffer zone of the Park. To engage with these communities, some suggestions are offered. Firstly, the historical hunting territories in the park and their link to fire management could be recognised, creating a basis for fire management in terms of fire setting methods. Secondly, consultation with those who once managed historic fires is critical. Although the fire regimes have changed in the past 50 years, Bateke fire specialists can advise on regimes. This can be done through engagement with the CCGLs, and engaging with fire specialists as advisors and consulting with both men and women, who have different burning practices (Walters 2010). Thirdly, given that fire management can be intensive to manage in terms of human resources, seasonal work can be given to local fire specialists to carry out the fire plan in the park and the buffer zone, creating employment and co-managed fire use. Finally, the promotion of Bateke cultural fire use can facilitate transfer of fire knowledge to Bateke youth, ensuring that the culture of fire, valued by the ANPN and

which created the present-day landscape is not lost, something that is done in some Australian parks (Parr et al. 2009).

Moving beyond the Plateaux, greater effort needs to be made to understand why, how, and in which political and cultural contexts fire regimes change and how they will continue to change as land management evolves, particularly in the context of climate change (Moritz et al. 2012). Past fire governance impacts current landscape structure, and if management agencies want to preserve the landscape that resulted from the previous fire regimes, then they need to understand these regimes, and work towards management goals underpinned by historic landscape shaping processes. Such understandings will ultimately help simultaneously use fire to manage for livelihoods, reduce threats, and maintain cultural, biodiverse landscapes.

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NOTES

1. A fire regime is the way in which fire is used in a site including variations in ignition and frequency (Goldammer and de Ronde 2004).
2. Plateaux Bateke is the accepted geographical name of the region.
3. Prior to the 1960s, villages were located in what is now the Parc National des Plateaux Bateke. However, in the 1960's the state *regroupement* policy in the area was enforced whereby people moved to areas now located outside of the Park.
4. These colonial administration tactics were the same throughout West and Central Africa (Nuesiri 2014).

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