

*Int. Zoo Yb.* (2019) **53**: 1–15

DOI:10.1111/izy.12236

## The Mali Elephant Project: protecting elephants amidst conflict and poverty

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This short report shows how it has been possible to protect a small yet important, highly vulnerable, remnant population of desert-adapted African elephants *Loxodonta africana* that roams through a vast, populated area of Mali, which in recent years has become lawless and subject to an aggressive jihadist insurgency. Initial studies showed how ecosystem trends threatened elephant survival and local livelihoods, and exacerbated human–human and human–elephant conflict. A combination of adaptive management and action research methods was used to understand the social, economic, political and environmental aspects of this complex system. This knowledge served to derive intervention strategies that attempted to tackle the underlying drivers of threat to elephant survival. Central to this approach was the reinforcement of existing attitudes towards elephants and the use of collaborative methods. Local communities were empowered to counter resource over-exploitation and degradation by devising resource-management systems that were rooted in existing practice and provided tangible livelihood benefits from elephant conservation. When lawlessness overtook the elephant range in 2012, it became subject to attacks by armed groups, a deepening insurgency and elephant poaching. The existing community work proved key to respond to the escalation of poaching in 2015, as it had engaged local people in the conservation effort, improving their lives and securing local ‘buy-in’. This facilitated the work of the newly created anti-poaching unit, which was trained to operate according to an ‘intelligent’ and ethical doctrine that used local information to cope with the insecurity and target its efforts.

**Key-words:** action research; adaptive management; anti-poaching; commons management; community-based natural-resource management; conservation attitudes; elephant conservation; human–elephant conflict resolution; illegal wildlife trade; social–ecological system.

### INTRODUCTION

This short report shows how it has been possible to protect a small yet important,

highly vulnerable population of desert-adapted African elephants *Loxodonta africana* (Plate 1) that roams through a vast, populated area (c. 32 000 km<sup>2</sup>), which in recent years has become lawless and subject to an aggressive jihadist insurgency. This has been possible through regarding the elephant range as a complex social–ecological system with social, political and ecological components. To shift the range from a state of degradation and threat to its elephant population, to a safe reserve with a supporting human community required a suite of tools and approaches.

This combination of adaptive management and action research represents a disciplined process of inquiry focused on guiding action on the ground. It draws on inspiration from Elinor Ostrom’s principles on ‘managing the commons’ and Donella Meadows views on identifying ‘leverage points’ (i.e. places within a complex system where a small shift can produce big changes), whereby actions have maximal impact in effecting systems change (Ostrom, 1990; Meadows, 1999).

### West African elephants

Elephants once occupied a largely continuous range across West Africa, from the coastal forests to the Sahara, but are now restricted to small, highly fragmented, geographically isolated populations (Thouless *et al.*, 2016). The collapse of the elephant range, caused by poaching for the ivory trade, human encroachment and the

concurrent lack of conservation and scientific attention, is alarming.

In the Gourma region of Mali, poaching by local nomadic people has traditionally been very low; however, in the 1980s, illegal hunting from vehicles by urban Malians became more of a threat to the Gourma elephants (Olivier, 1983). Possibly because of the tolerance of local people, the isolation of the region and the small, low-quality tusks, the population largely escaped the intense poaching of the 1980s, while all populations that once existed across the Sahel were extirpated. The Gourma elephant population is the most northerly in existence since the Mauritanian elephants became extinct in the Assaba mountains in the 1980s (Douglas-Hamilton, 1979). As one of the most important populations in the West African region, it is accorded a high priority in the regional elephant strategy (IUCN SSC, 2005).

This population of elephants has evolved a nomadic strategy that includes a unique migration circuit to cope with the widely dispersed and variable nature of the Gourma's resources. According to Bruno La Marche, who carried out (unpublished) research in the 1970s, the elephants lived in relative harmony with the locals of the Gourma. This coexistence continued into the 1980s and 1990s (Olivier, 1983; Maiga, 1996; Jachmann, unpubl.; see also Bradshaw & Allen, 2003), but the recent trends of reduced rainfall, along with the spread of agriculture, burgeoning livestock and settled human communities with water development programmes, have changed the relationship between elephants, humans and the Sahelian ecosystem (Jachmann, unpubl.). Humans and elephants are competing more heavily for the same resources (land, crops, water), which results in increasing scope for conflict (Olivier, 1983; Pringle & Diakité, 1992; Blake *et al.*, 2003; Canney *et al.*, 2007; Jachmann, unpubl.).

### Elephant range in Mali

The elephants inhabit the Gourma region, ranging throughout the year broadly within

the bend of the Niger River in Mali southward to the border region with Burkina Faso, generally between 14.30°N and 16.50°N, and 0.55°W and 2.55°W (Fig. 1).

There is a north–south gradient in vegetation with the north characterized by open sandy steppe and savannah with sparse trees, sparsely vegetated dune formations, and shrubby woodland stands occurring in bottomlands and drainage-ways. The south is dominated by bands of low and relatively thick ‘tiger bush’ complex alternating with dune, open steppe and vegetated dune formations.

The west of the region is delimited by a chain of lakes previously fed by the flood of the Niger River and used by elephants and humans, but these have been mostly dry for the past 25 years. A series of small semi-permanent lakes runs through the northern half of the region, fed by surface water run-off from local rainfall. Only two of these lakes – Banzena and Gossi – tend to retain water throughout the dry season, and human populations and elephants rely heavily on them. Since the 1980s, humans have occupied the area around Lake Gossi and the elephants no longer use this resource. Water sources in the southern half of the region tend to persist only during the wet and early dry season.

A marked rainfall gradient spans the Gourma, with average annual rainfall of 450 mm in the extreme southern range, progressively declining to 150 mm in the extreme north. The region experiences a single rainy season with the majority of precipitation between late June and late August followed by a dry season lasting 8–9 months.

In 1959 a protected area designated for the elephants was created – La Reserve Partielle des Elephants – but hunting protected species is the only prohibited activity in the statutes (Article 2 of Loi No. 59-53/AL/RS Portant classement en reserve partielle de faune d'une zone dite ‘Reserve des Elephants’ situee dans le Cercle de Douentza), the staff are few and they lack transport. Therefore, no real protection for the elephants is afforded within this Reserve.



**Plate 1.** The Gourma elephants *Loxodonta africana* of Mali. Carlton Ward Jr.



**Fig. 1.** Map showing Mali (grey), with the River Niger (black line left to right). The elephant migration route, as identified by GPS collars, is shown by the cluster of lines ranging within the bend of the River Niger southward to the border region with Burkina Faso.

### Human habitation in the Gourma region

The Gourma is inhabited by multiple human ethnicities each with their own social–ecological system (Maiga, 1996; Ganamé, unpubl.).

- The pastoral system of the Tuareg.
- The agropastoral system of the Peulh, Sonrhai, Bellah and Dogon, in which animals are kept around the villages during the dry season but moved away in the wet season.

Fields are also cultivated in small parcels around villages and from cleared bush often situated in bottomlands.

- The Dogons, Sonrhai and Peulhs Rimaibes for whom agriculture is their principal activity with the cultivation of large fields of grain.
- Gardening around waterholes, practised by sedentary populations (mainly Bellah and Sonrhai), is a recent activity that has only become significant since the mid-1980s. However, these activities impede the access elephants have to water and increase the potential for crop destruction and pressure on the water resource.
- The Peulh of the Inner Delta have traditionally used the Gourma area as wet-season pasture.

## THE MALI ELEPHANT PROJECT

In 2003 a consortium of WILD Foundation (Boulder, CO, USA), Save the Elephants (Nairobi, Kenya) and the Environment and Development Group (Oxford, UK) was launched with the aim of discovering more about the population, understanding elephant migration in the region and identifying how this population had survived when others at comparable latitude had disappeared.

The estimates of the numbers of elephants in the Gourma have varied from 300 to 900, reflecting the difficulties of counting elephants that are shy and range widely, and yet whose distribution is highly clumped in dispersed patches of thicket forest (Barnes *et al.*, unpubl.).

In 2004–2006 a field team conducted studies to estimate population size and structure using photographic mark–recapture techniques (Canney *et al.*, 2007). Photo-IDs were compiled by photographing the elephants' heads from each side profile and head on, although it was not always possible to obtain photographs of both ears nor to see the full body of the animal. Somewhere between 383 and 710 elephants were detected, the variation depending on whether unmatched photographs represented different

animals or different sides of the same animal. Therefore, the estimates range from a minimum (i.e. all left- and right-ear photographs matching) to a maximum (i.e. with none of the photographs matching). Despite a healthy reproductive rate, over 50% of the population consisted of adults, probably resulting from high rates of juvenile mortality owing to the harshness of the long dry season (Canney *et al.*, 2007).

Save the Elephants fitted GPS collars on three elephants in 2000–2001. These registered the positions of the elephants every 2 hours over a period of 18 months and made it possible to track their route precisely. It became clear that the maximum range size (Minimum Convex Polygon) was the largest in areal extent ever recorded for elephants (Blake *et al.*, 2003; Wall *et al.*, 2013). The migration was divided into distinct concentration areas, where elephants spent over 95% of their time, linked by corridors through which they moved very quickly and often at night (Douglas-Hamilton *et al.*, 2005).

GPS-collar data were used in conjunction with satellite imagery, geo-referenced with data on the climate, rainfall, landforms, water availability, soil, vegetation, land cover and human infrastructure, a variety of other information gleaned from reports, personal accounts and field work, to piece together an understanding of the migration route (Canney *et al.*, 2007). The conclusions of the results from the first three collars were reinforced by subsequent data from another nine collars (Wall *et al.*, 2013).

Following the findings of Douglas-Hamilton *et al.* (2005) these studies assumed that concentration areas were likely to possess resources of interest to elephants while corridors represented areas where elephants did not want to linger, either because there was nothing of interest or because they felt harassed or threatened. By examining and comparing concentration and corridor areas, it was possible to identify these significant resources and at what time of year they were important. Based on this knowledge, priority areas for action were identifiable.

Results showed that the elephants spend the dry season in the north of the range moving between lakes. These lakes are surrounded by forest where the elephants find food, water, refuge and shade, and spend the majority of their time. As one lake dries up, they move to another until the end of the dry season when they all collect around the only lake that generally never dries – Lake Banzena, which was a top priority for action (Blake *et al.*, 2003). When the rains begin, the elephants move south where they find more abundant, better-quality food, but can only stay in that area while it rains because there is limited available surface water. However, elephant distribution in the south is highly clumped in distinct areas. One of these areas was controlled by a powerful local pastoralist chief who had been able to prevent people from clearing land to cultivate, and so this area provided a haven for the elephants (Canney *et al.*, 2007). From there, the elephants move quickly over a large, grassed sand-dune formation without any water or cover, which is energetically costly for elephants to navigate (Wall *et al.*, 2006). They proceed through an area of large fields and over the border into Burkina Faso, where they find sanctuary in a protected area designated after a border war between the two countries in the 1980s. The elephants move north-east through this border area and as the surface water begins to dry they move north to regain their dry-season range (Fig. 1).

Studies of land-use suggested that the area was suffering from resource over-exploitation and its resultant land-use and land-cover change (Raynaut, 2001; Ganamé *et al.*, 2009). People were clearing bush land to cultivate, only to abandon it after a couple of years leaving the soil to erode. Increasingly large herds of cattle were making it difficult for elephants to access water as well as drinking the lakes dry and trampling the soil. Forests around the lakes were cut for fodder and cleared to make gardens, thus blocking the elephant routes to water. Much of the elephant range was burned every year, often because agriculturalists in

the south set fires to prevent herders bringing their livestock to graze. Previously there had been a symbiosis whereby the herds fertilized fallow fields but as agriculture has pushed north and livestock numbers have mushroomed, conflicts between herders and agriculturalists have increased.

In the 1970s, the elephants used all the passes through the hills separating their wet- and dry-season ranges, but by 2003, they were using just one pass without a settlement – Porte des Elephants – representing a squeeze-point in their route. It was vital for the elephants to keep this pass free of human settlement and agriculture.

Putting the findings of the population studies together with those of the migration studies suggested that the population is vulnerable to any disturbance of its dry-season foraging resources, and very dependent on adequate nutrition during wet-season migrations. In addition, consideration of the elephant range as a whole revealed how changes in one area produced knock-on impacts elsewhere. Incremental change throughout the elephant range meant that the elephants were relying more and more on Lake Banzena. At the same time human settlement and use of the lake also increased (Canney *et al.*, 2007).

The impact of small, incremental increases in stress is difficult to detect but reduces the ability of the elephant population to recover from a more acute pressure, such as a succession of drought years or the blockage of a key elephant corridor. Studies in other parts of Africa indicate that an incremental expansion of human impact reaches a threshold, at which point elephants move away (Hoare & Du Toit, 1999). In the Gourma, any such move would bring the elephants into close proximity with people and, inevitably, the possibility for conflicts would increase.

### **Community engagement/creating a shared vision**

By 2007, the major threats were understood, and a strategy was required for

action. However, with few resources and little political motivation, conventional conservation approaches were inappropriate because the elephants inhabited a vast, unprotected and highly populated area.

A conversation with a local villager revealed the germ of an idea. This was not part of an official meeting or structured event but occurred incidentally with a passer-by while waiting for a meeting with a village chief. When asked whether he would mind if elephants disappeared, the villager said that he would mind because 'if elephants disappear it means the environment is no longer good for us'. The answer was striking, because this attitude is the goal of many northern conservation interventions, which aim to promote a sense of connection between humans and wildlife. This local person spontaneously expressed the very goal of conservation as understood in the developed world. The comment begged the question of how widespread this sentiment was among the local community and what more could be uncovered about their perceptions and world view. An attitude survey was conducted whereby a team of trained surveyors first conducted a pilot study of 50 people (to test the questions and the approach) followed by a full survey of 351 participants from across the elephant range, chosen to be representative in terms of ethnicity and occupation, and as far as possible in terms of age and gender (although the latter turned out to be impossible because women frequently declined to participate).

From the responses obtained, 78% ( $n = 274$  of 351 respondents) would mind if the elephants disappeared, 18% ( $n = 63$ ) would not mind and 4% ( $n = 14$ ) did not know. These findings were confirmed in subsequent meetings and workshops in which the locals were asked what they thought about these results, about elephants in general and what could be done to resolve conflict situations. Negative attitudes were mostly related to constraints on activities, such as entering forests (13%), crop raiding (2%), fear (1%) and no

particular reason (2%). Of those asked, 43% mentioned ecosystem services with 60% of them citing the link between elephant loss and environmental degradation, and 30% citing the link with wildlife and biodiversity. Intrinsic values were common as well, with 18% associating elephants with luck or 'baraka', explained as being the particular benefit that each species brings to the ecosystem, and that once lost cannot be replaced by another. People also mentioned heritage (12%), curiosity and rarity (4%), and only 1% the direct economic value from tourism (Canney, 2014). Further discussion, however, suggested that not only were these values closely inter-linked but also, in many cases, were aspects of a greater value, a sense of identity from feeling deeply embedded within the wider environment (Canney, 2015).

Despite minimal capacities and resources, the government professed to be committed to elephant conservation and so an outreach programme was launched to build a shared vision within the country for elephant conservation among stakeholders (i.e. the government, conservation programmes and projects, tourists, local people). This vision declared that the elephants must be conserved, and that human activities, plans and programmes must take the elephants into account. Stakeholder workshops and meetings, and attitude and household surveys helped to understand local perspectives, develop effective tools for action and draft appropriate messages for outreach. The process was interactive with the results of meetings feeding back into the messages encapsulated into outreach materials and activities. At the initial workshops for local leaders, communities, non-governmental agencies (NGOs) and local government, the results of the migration studies were presented and participants were asked whether they thought these were accurate according to their experience. Moreover, they were encouraged to provide additional information and share their experiences.

Subsequent workshops focused on particular stakeholder groups, such as government,

the tourism industry as well as structure and development-planning groups to understand their perception of elephants. Subsequently this information was used to tailor outreach materials, such as a tourist code of conduct, information leaflets for urban populations and posters for local people. Some of the stories recounted by people during the attitude survey and workshops were used in local outreach materials to give them added relevance. A programme was developed for the schools in the elephant range to spread information about elephants more widely and show the benefits of these animals and how to live peaceably with them.

### **Crisis at Banzena**

In 2009, Lake Banzena dried completely before the rains came, making urgent action a necessity. The elephants were able to survive on small surface puddles to the south until the rains came. As the lake dried, conflict over access to water became acute between elephants and livestock, while local people reported elephants succumbing to diseases (including foot-and-mouth disease) potentially transmitted by the large herds of livestock.

Although the problem seemed to be linked to increasing settlement around the lake, it was unclear what action to take. The strategy was to understand the situation and target actions at the underlying drivers of the problem.

To understand the situation better, a household survey of everyone living and working around the lake was conducted. A preparatory phase involved a series of scoping meetings to introduce the study, raise awareness as to its aims, and to listen to the main concerns and perceptions raised by the different parties. This enabled the identification of target groups and the survey methodology of the study. The principle groups involved were representatives of local government, mayors, traditional leaders, and the local communities surrounding the lake and living in adjacent areas as well as local NGOs and experts.

The researchers undertook the survey of the local community using a combination of formal and informal interviews to ensure that every clan chief and every head of household was interviewed. All inhabitants in the area were invited to give their opinion, both individually and collectively.

At the end of each interview the team met to evaluate the results of collective interviews to distinguish the degree to which the opinions expressed were indeed those of the individual, reflecting the truth of the situation, or were those required by the social context; and, therefore, to determine whether more investigation was required for clarification. Triangulation of multiple perspectives was also used to gain a deeper understanding of the issues, while those who either spoke little or monopolized the discourse were noted and visited informally by the surveyors to understand their attitude better. Gestures were also noted to help discern the real views of the speaker.

In December 2009, the locals using the lake could be divided into 'residents' ( $n = 730$ ) and transhumants (migratory herders) ( $n = 95$ ). The transhumants came from three regions of Mali (Mopti, Segou, Timbuktu), and from two neighbouring countries (Niger and Burkina Faso). The resident population comprises three social groups and 11 clans, of which two are situated 9–10 km from Banzena, and the rest between 300 m and 6 km away, each representing different ways of using the resources of the lake. The 11 clans form three social groupings: the Tamasheq (or Tuareg), Tamasheq Bella, and the Peulh and Songhai, and each has their own perception as to land-use rights and access to resources. The Tamasheq groups settled at Banzena and consider all the land around the lake and their camps as their domain. The Tamasheq have sociopolitical and religious standing, and consider the Tamasheq Bella as being marginal and of low status. The Tamasheq Bella, however, tend to practise agro-pastoralism and, consequently, their perception of land rights is closer to

that of agricultural people, claiming that they were the first to settle at the lake and therefore possess the rights over its resources. The Peulh and Songhai, the minority group and most recent arrivals (since 2003), act as 'landlords' for the migratory herders, fishermen, woodcutters, charcoal burners, hunters and livestock traders, facilitating these activities for payment.

Overall the population lives in demountable tents that are dispersed around the lake, each one settling down where they wish. It is a mobile semi-sedentary population especially with regard to the Tamasheq Bella.

Formerly, the transhumant herders from neighbouring areas used the resources of Banzena in a complementary fashion, moving into the area during the wet season to use the salt pans when the elephants had moved to the south. However, because of the increased degradation and occupation of space by people and livestock, they now arrive at the same time as the elephants. Once it rains the elephants leave for the food resources of the south, while the transhumants may stay if conditions at their place of origin are unfavourable (e.g. resource degradation, agricultural encroachment, devastation of pasture by bush fires). Conversely, if conditions at Banzena deteriorate, they will immediately move on to go elsewhere (Ganamé *et al.*, 2009).

The results demonstrated an intensified pressure of humans and their livestock caused by population growth coupled with a reduction in available resources. No management or regulation was in place. The study recorded an alarming expansion in existing human activities and the development of new ones, such as commercial wood extraction. At the time of writing, activities include herding, subsistence agriculture, the gathering of non-timber forest products (NTFPs) (some of which involve the complete denudation of the herbaceous layer resulting in dune mobilization and the loss of topsoil), cutting branches to facilitate the gathering of fruits and feeding of

goats, commercial firewood extraction and the construction of infrastructure (Ganamé *et al.*, 2009).

Based on our findings, the underlying causes of the problem appeared to be the lack of any management of the natural resources of the lake (i.e. water, grass, browse, salt licks, firewood, NTFPs, game) in an area where access was available to all. This unregulated exploitation has led to progressive and accelerating degradation over the last few decades. In addition, this process has been much exacerbated by the droughts in 1973, 1984 and 1986.

Some results were not as expected. Over 96% of the cattle using the lake did not belong to the local population but to cattle barons living in distant urban centres who employ migratory herders to find water and forage for their herds. The impact of distant urban centres with uncontrolled commercial exploitation of wood, charcoal, fish and NTFPs was a more recent but rapidly growing phenomenon (Ganamé *et al.*, 2009).

In addition, over 50% of the human population suffered from chronic water-borne disease because of the contaminated lake water shared with large quantities of livestock. The heavy use of the lake by people, livestock and elephants has resulted in endemic bilharzia, stomach problems, vomiting and miscarriages. Most affected by these diseases were children and women. Of 311 children, 67% were infected with bilharzia, and 42% suffered from stomach aches and vomiting. Of the 227 women, 54% were suffering from stomach pains and vomiting, and 37% had suffered miscarriages in the past 2 years. According to health workers, all these diseases are linked to consumption of contaminated water from the lake (Ganamé *et al.*, 2009).

The next step was to bring the people living around the lake together to discuss the findings of the survey in the context of their lives and the problems they face. This served to unify the different clans and ethnicities as they developed a shared perception of the issues and developed a collaborative plan. The local people were



willing to move and leave the lake for elephant use but said that it would be difficult without an alternative area outside the elephant range with good pasture and clean water. Hence, the Project worked with them to find a suitable area and raised money to sink solar-powered boreholes to provide water. Although hydrological studies revealed that one borehole would be adequate, it was deemed necessary to provide one for each social group.

As a result of the discussions, resource-management systems that could be respected by all were needed. While each ethnicity had its own systems, they recognized that resource over-exploitation and degradation occurred because they were reluctant to respect each other's systems. Crucially, this was facilitated by Mali's decentralized legislation, which places natural resources under the control of local communities. However, most are illiterate and unable to produce the 'conventions' required for their regulations to enter law. Nevertheless, the Mali Elephant Project was able to facilitate this process.

Following traditional governance systems, a representative management committee was elected to establish rules of

resource use that included protection of elephant habitat and migration route. Teams of young men, called 'eco-guardians', were formed to patrol and detect infringements, and support government foresters. One of the committee's first decisions was to set aside 40 000 ha of reserve pasture. This was immediately added to by adjacent communities to make a total of 92 380 ha and the eco-guardians were tasked with protecting this area with firebreaks (Plate 2). Subsequently, this reserve survived a large bush fire providing a graphic demonstration of the benefits of collective action. Other communities from all over the elephant range then asked for help to take similar actions by adapting the Banzena model to fit their specific circumstances.

The benefits were multiple. These communities had pasture all year round and did not have to buy it at the end of the dry season when prices were high. In addition, they were able to sell hay as well as charge the large, migratory cattle herds for access to pasture and water. Revenues were shared between the management committee, the eco-guardians and women. Studies suggested that their livestock were worth 50% more at market, were healthier and

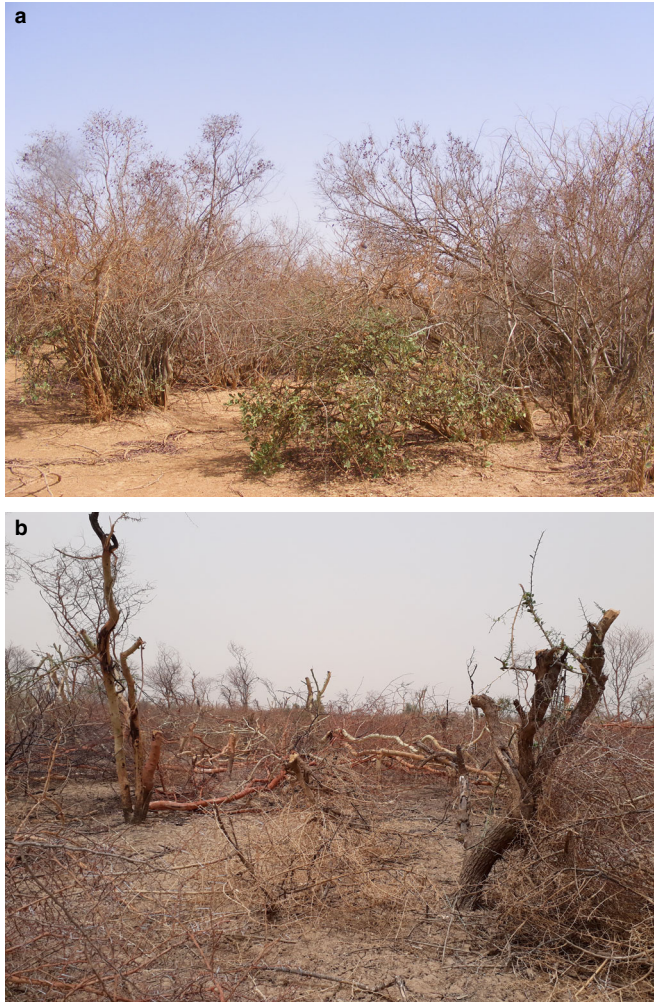


**Plate 2.** Eco-guardians constructing firebreaks by dragging an Acacia branch along the ground to mark the guide line while a team clears the vegetation from the firebreak with rakes. *WILD Foundation.*

produced more milk (N. Ganamé, unpubl. data). Forests were protected from abusive cutting and exploitation by commercial interests from urban centres (Plate 3). There was also a steep reduction in water-borne disease prevalence and, most importantly, an occupation was provided for the youth.

To provide additional incentives the Project has worked with women's associations

to develop alternative livelihoods that profit from good resource management. Meetings were held in villages to identify the individuals who were keen to participate, discuss their ideas for potential activities and establish a plan of action. Training was provided in financial management and bookkeeping, as well as technical aspects if necessary. These training sessions became enormously



**Plate 3.** The impact of community-based natural-resource management (CBNRM) systems on two forests in adjacent comparable zones: a, this forest has CBNRM systems in place, preventing clearance and abusive tree-cutting practices, and tightly regulating the use of its resources; b, this forest has no resource management in place and high levels of tree-cutting are evident. *WILD Foundation.*

popular. Examples include the marketing of NTFPs, such as gum arabic and medicinal plants; restoring useful plant species that have been lost, such as *Vetiver* (a dense, clumping perennial grass with thick aromatic roots, which is used for basket making and drinking-water 'purification'); collecting forage for the fattening and sale of one to three heads of livestock (instead of keeping large numbers that forage freely but do not fatten as much). The first data available from the livestock-fattening trials showed an average increase of over 400% in household cash over a year.

### Conflict strikes

The collective-action model was spreading rapidly when conflict struck. In 2011, Libya collapsed as Arab Spring protests led to civil war, Western intervention and the death of Colonel Muammar Gaddafi. Heavily armed Tuareg mercenaries who had been fighting for Gaddafi returned to Mali reigniting the separatist rebellion that demanded independence for northern Mali. In 2012, the rebels formed a coalition with al-Qaeda-backed Islamists against the army and declared an independent state of 'Azawad' (Davies & Leithhead, 2018). Angry soldiers staged a military coup in the capital and the lack of response allowed the uprising to spread across the north. The government fled, the elephant range became lawless and poaching occurred for the first time in 2012.

The situation seemed hopeless but to ensure a better understanding of the local impact, a 4 day community meeting was convened to bring people together and share perceptions. The main preoccupations of the community were that they were not able to procure cereals because, like all vehicles, the supply lorries were hijacked. The community was also concerned about their young men joining armed groups because jihadists were offering them \$30–\$50 per day. When the discussion turned to the plight of the elephants, the community leaders pledged to issue edicts (including to

leaders of the armed groups) branding poachers as thieves because they stole for themselves what rightly belonged to the whole community, something that conveyed great dishonour. The Project pledged to organize donkey carts to distribute food, and recruited 520 young men incentivized with small payments to act as vigilance networks. The latter watched over elephants reporting their movements and any poaching incidents, as well as conducting resource-protection activities, such as fire-break construction, and preventing irresponsible tree cutting. The local prestige of this occupation made it preferable to joining the armed groups, despite the higher financial rewards offered by the latter (Canney & Ganamé, 2014). These community systems limited the poaching rate to 20 animals over 3 years.

Despite the French air strikes of 2013, which drove the extremists into the desert, government never really returned. A sudden decrease in security in 2015 associated with a regrouping of jihadists and extremist groups trying to derail the peace process, together with the aggressive targeting of the elephant range by international trafficking networks, led to a rapid escalation in poaching. The elephant range was crossed by trafficking routes and exposed through its vicinity to the open border area between Mali, Burkina Faso and Niger. Eighty-three elephants were lost in 2015 as the Mali Elephant Project struggled to galvanize government into action and find partners to raise the considerable funds required for developing anti-poaching strategies in a war zone. In January 2017, it was estimated that if poaching continued at the same rate (51 elephants were lost in 2016), this internationally important elephant population would disappear by 2021.

Thanks to the support of a variety of partners (<https://www.wild.org/mali-elephants/partners>) – most notably the Canadian and British Embassies through the United Nations Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) – awareness was raised, political pressure

brought to bear, and resources were found to accelerate the creating, equipping and training of Mali's first anti-poaching unit. Two long years after the escalation, during which the insurgency shifted its focus to central Mali (and the elephant range) the anti-poaching unit became fully functional in February 2017.

At this time this unit was the only enforcement body present on the ground and able to operate throughout the elephant range, often in areas that had not seen any government presence for many years. Key to this ability was the unwavering, highly professional commitment of Chengeta Wildlife's trainers (<https://chengetawildlife.org>), partners in the fight against poaching, who conducted the training in the elephant range despite the high risk of kidnap and/or attack. The doctrine of Chengeta Wildlife, which is adapted to the conditions of insecurity, contains two key features. First, it builds on and complements the work already undertaken by the Mali Elephant Project in mobilizing and empowering local communities to protect elephants through finding solutions that benefit both people and elephants. In the villages, camps and hamlets visited by the anti-poaching unit, they were called the 'armée gentille' (kind army) because of their community-friendly approach and the medical assistance administered to the most deprived: the women, children and elderly. Second, Chengeta Wildlife and the anti-poaching unit take an intelligent, ethical and pragmatic approach to wildlife protection and poaching prevention. By recognizing the role of community work in the battle against poaching, the source of the information required to truly understand the local poaching and trafficking context is nurtured. This makes it possible to utilize intelligence-driven arrest and deterrence operations in a way that maximizes the use of existing skills and resources while minimizing negative impact and cost (Canney, 2017; see also M. Rivett-Carnac, 'Mali's desert elephants, on edge of annihilation, get a fighting chance', *New York Times*, 29 October 2017,

<https://www.nytimes.com/2017/10/29/world/africa/mali-elephants-gourma.html>).

For 13 months (from February 2017 to March 2018), no elephant deaths from poaching were recorded, which is a phenomenal result given the level of violence associated with the insurgency. The MINUSMA is the UN's deadliest ongoing peace operation (K. Sieff, 'The world's most dangerous U.N. mission', *Washington Post*, 17 February 2017, [https://www.washingtonpost.com/sf/world/2017/02/17/the-worlds-deadliest-u-n-peacekeeping-mission/?utm\\_term=.03a171e8fb70](https://www.washingtonpost.com/sf/world/2017/02/17/the-worlds-deadliest-u-n-peacekeeping-mission/?utm_term=.03a171e8fb70)).

In March 2018, the majority of the anti-poaching unit were rotated out as per government policy for those working in zones of high insecurity and a much-less experienced unit took their place. As a result, 12 poaching incidents were recorded between March and October 2018. Although the original unit will eventually be rotated back to the Gourma, it is vital to continue the training and mentoring programme with the highest possible intensity.

The experiences described have demonstrated the potential effectiveness of a two-pronged approach to deal with poaching, whereby government enforcement operates according to an 'intelligent' doctrine that uses local information to cope with insecurity. The community-empowerment work already undertaken by the Mali Elephant Project was key to the success of the newly created anti-poaching unit. By engaging local people in the conservation effort and improving their lives as a result, it was possible to ensure local endorsement.

This dual approach also has relevance for stabilization efforts, especially balancing investment in appropriate and well-targeted security-focused responses, with addressing the core drivers of conflict. In doing so, peace-building and development approaches are implemented at the local level.

## WAY FORWARD AND PERSPECTIVE

The community work in Mali is founded on basic principles and is continually

evolving in accordance with the ever-changing situation. The long-term engagement and continuous operation throughout the conflict led to a reliable relationship with the locals. Thanks to this, trusted collaborators were identified across the elephant range to support the community work. Eco-guardian numbers have grown to over 670 individuals of varying ability, and are crucial for identifying elephant locations and detecting poaching incidents. These successes were recognized when the Mali Elephant Project was awarded the 2017 United Nations Development Programme's Equator Prize (Hill, 2017). This Prize is 'awarded biennially to recognize outstanding community efforts to reduce poverty through the conservation and sustainable use of biodiversity' (<https://www.equatorinitiative.org/equator-prize>). Partner engagement continues to develop the capacity of the anti-poaching unit, an urgent requirement if the decline of Mali's elephant population is to be stopped.

The long-term vision is to accompany local communities in implementing sustainable resource-management systems (under decentralization legislation) that protect elephants, and their habitat and migration routes, until the communities feel the benefits and the practices become a habitual part of their daily lives.

At the same time, the Mali Elephant Project is working with the government to redraft the legislation and boundaries of the reserve to include the whole elephant range. The new reserve will be based on the biosphere reserve model, whereby strictly protected core areas (such as around Banzena) will be embedded in a matrix governed by local conventions protecting elephant habitats and migration routes by regulating resource use at sustainable levels. This added protection under forestry law will serve to strengthen local community conventions further and give foresters the legal right to support communities in their enforcement, and the control of exploitative practices will allow the reintroduction of Sahelian species and the restoration of the

ecosystem, something that could benefit from the support and expertise of zoos.

### Perspective

Probably the most effective aspect of our approach was the situation of not knowing what to do when crises struck, and assumptions and paradigms had to be challenged to find a way forward. This action, as it turns out, is second on Meadows' list of the most effective places to intervene in a system. Many conservation strategies focus on metrics, such as percentage of area protected (twelfth on the list), but these do not change behaviour nor address the underlying causes of the problem (Meadows, 1999). Elephants were not threatened because the local people did not understand their importance nor value them. Much more relevant was a suite of economic and social factors encouraging human behaviour that resulted in a resource free-for-all situation. This led to degradation and increased competition for diminishing resources between humans as well as between humans and elephants. In line with the findings of Ostrom (1990), which showed that when people have trust, others are going to reciprocate and be trustworthy, the Project's approach focused on creating a situation whereby local communities had a long-term interest to invest in managing resource use and building reliable relationships.

Although the Mali Elephant Project has led the initiative, the successes would not have been possible without the engagement of collaborators. Working with partners has demonstrated the power of collaboration, including weaving together the contribution of allies with supportive aspects of the context (such as the existence of decentralization legislation). The hope is that the benefits are reciprocal, in that the Project provides results of interest and utility that demonstrate how conservation is not a luxury human activity, to be indulged in when funds allow. The Mali Elephant Project considers conservation an integral and essential part of human well-being, with

fundamental relevance for multiple aspects of human society and its environment.

#### ACKNOWLEDGEMENTS

I would like to thank all the different agencies, institutions and individuals who have supported the Project over the years since 2003, particularly during times of extreme challenge when the situation appeared hopeless. WILD Foundation (Boulder, CO, USA: <https://www.wild.org>) launched the Project; however, when the International Conservation Fund of Canada (Chester, NS, Canada: <https://icfcanada.org>) joined in 2010 as co-partner to support core funding, the capacity to raise more funds meant the work in the field was able to develop rapidly and successfully. I would also like to thank the outstanding Nomba Ganamé and his field team for their dedication and courage in working at the sharp end; and the UK team – Louis Phipps, Sophia Leroy and Christelle Chamberlan – for their sterling support.

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Manuscript submitted 25 October 2018;  
revised 14 June 2019; accepted 2 July 2019