Original article

Insights into the illegal ivory trade and status of elephants in Togo, West Africa

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Abstract

In Togo, the illegal trade of African elephant (*Loxodonta africana*) ivory is widespread despite efforts made by the government to curtail these activities. By using data gathered from CITES institutions and natural resource management authorities in the country we investigated the extent of ivory trafficking in Togo. We also conducted surveys in villages around protected areas, which still contain elephant populations to assess the species' current status in the country. Our surveys indirectly corroborated that there are probably no more than 150 elephants collectively within the country's protected areas, most of them in the Fazao-Malfakassa National Park. We also estimated that a minimum of 41.65 tons of ivory (elephant tusks and carved objects) was intercepted in Togo between 2008-2018. Despite the fact that presently illegal elephant hunting is unlikely in Togo, we show that this country is the entry point for ivory from Central Africa (Cameroon and Gabon). We maintain that Togo's position as an intermediary country in the illegal ivory trade is a tangible threat to elephants throughout their range countries, and is also likely to affect the dwindling population of these animals in the country if adequate enforcement is not implemented.

Keywords Ivory trade; elephant population size; protected areas; Togo; West Africa

1 | INTRODUCTION

West African populations of elephants (*Loxodonta (africana) africana* and *Loxodonta (africana) cyclotis*) declined during the 20th century as a result of poaching. During the late 1800s and early 1900s, significant populations of elephants still remained in some West African countries (Benin, Togo, Ghana, Nigeria, and Cameroon) (Mallon et al., 2015). Currently, wildlife populations in the West African region are restricted to isolated pockets that face massive habitat loss as well as illegal hunting (Henschel et al., 2014; Amori et al., 2016).

Across the region, the trade (both legal and illegal) in wild animals is noteworthy (Segniagbeto, 2009; Segniagbeto et al., 2011, 2015; Aulyia et al., 2016; Luiselli et al., 2016) making the region one of the most important in the world for the export of wildlife (Harwood, 2003; Auliya et al., 2016). Though a number of drivers are responsible for this trade, the development of air and sea transport over the past three decades has facilitated the movement of animals and their products out of their region of origin (Roe et al., 2002; Auliya et al., 2016). In particular, the deep-water container port in Lomé, one of the largest in volume in West Africa (MERF 2014; RBS EMEA, 2017), makes Togo an important transit country for wildlife (Eurostat, 2015; Luiselli et al., 2016; CITES, 2018). Whilst undoubtedly trade volumes are very high in southern Africa because these species are more abundant and trade is both legal and illegal, nonetheless, for the remaining West African (and central African) wildlife, trade routes through West Africa are a major concern (Mallon et al., 2015).

Available information on the illegal trade of animal products in West Africa shows this activity is widespread and largely uncontrolled (Merem et al. 2018). In particular, ivory trafficking in this region (and in other elephant range states) has increased so dramatically that Africa's overall elephant population has declined severely in the past ten years, mainly due to poaching (Thouless et al., 2016). As a result, many West African elephant populations were lost

68 during the 20th century (Roth and Douglas-Hamilton, 1991). Currently, elephant populations
69 have recently recovered in a few West African countries (for instance Burkina Faso; Hema et al.,
70 2010a, 2010b, 2018) while in others elephant numbers have declined sharply (Mallon et al.,
71 2015).. The largest West African elephant population (around 9000 individuals or about 80% of
72 the entire West African elephant population) is found in the "W"-Arli-Pendjari (WAP complex),
73 a transboundary Natural UNESCO World Heritage Site in Benin, Burkina Faso and Niger
74 (Thouless et al., 2016).

75 In Togo, elephants occur in scattered populations in which both taxa (*L. (africana)*
76 *africana* and *L. (africana) cyclotis*) are present (Amori et al., 2016). Since over 50 years ago, the
77 killing of elephants and trafficking of their ivory is illegal in the country under Togolese law
78 governing the conservation of biological resources and protection of threatened species
79 (Ordinance No. 4 of 16 January 1968). Under the provisions of Article 3 of this Ordinance, all
80 wildlife belongs to the State. Fully protected wild species (i.e. hunting forbidden without any
81 exception) are listed in Annex I Class A and partially protected species in Annex I Class B. The
82 African elephant is included in this list as a fully protected species listed in Annex I Class A.

83 Togo has a population of about 7.6 million people and has had a long history of political
84 instability. In recent times, the country's economic wealth (annual GDP growth has averaged
85 5.5% in the last 10 years, higher than most Sub-Saharan economies) and democracy have
86 dramatically improved (World Bank, 2017). Despite these positive trends, the country remains a
87 hub for ivory smuggling, essentially because Lomé is the largest port in the region and because
88 of its much-improved transportation networks. Additionally, the lack of effective policies allows
89 wildlife and wildlife products smuggling to continue unabated (MERF, 2014).

In this paper, we (i) quantify the volume of ivory seized in the country, (ii) review available information on the geographic origin of the ivory traded in, and in transit through, Togo, (iii) determine by interviews with local communities whether illegal hunting of elephants continues, and (iv) assess the current status of the elephant population in the country by using field surveys data and interviews with local hunters.

2 | METHODS

This study is based on: 1) information on ivory trafficking obtained from the main wildlife management institutions in the country (2012-2016), and from within communities bordering protected areas known to contain elephant populations (2017), and 2) opportunistic field surveys to assess the population status of elephants in protected areas where the species is known to occur (2015-2017).

Illicit ivory trafficking data

We obtained quantitative data on cases of illegal seizures of elephant ivory from: (i) the Togolese *Office Centrale de Répression du Trafic Illicite des Drogues et du Blanchissement* (OCRTIDB), (ii) from the Togolese police operating at the Lomé port and at the Lomé international airport (data also from MERF 2013), and (iii) from civil society organizations such as the ANCE Togo ONG and AGBO-ZEGUE ONG. All these datasets were collected by the Togo police during their investigations and included the following pieces of information: 1) date of the operation; 2) name of the alleged trafficker/s; 3) offense details; 4) profile of alleged trafficker/s; 5) nationality of alleged trafficker/s; 6) country of destination of confiscated products, and 7) weight or quantity of seized ivory. For security reasons, police authorities did

not release details of how these operations were carried out. Moreover, we could not exclude that the illegal ivory operations reported by the police were not biased towards the more easily detectable ones. Nonetheless, the competent authorities have not reported this information to us. By pooling the data from the different sources, shown above, we calculated the total volume of ivory resulting from all seizures to provide a current estimate of the minimum amounts moved through Togo during the research period.

Surveys within communities bordering protected areas

We carried out a number of structured interviews with local actors involved directly or indirectly in the management or use of natural resources in the Oti-Keran and Oti-Mandouri Complex (OKM), Fazao-Malfakassa National Park (FMNP), Djamdé Wildlife Reserve and Abdoulaye Wildlife Reserve (Figure 1). These areas were selected because they were the only four protected areas where wild elephants are presently known to occur within Togo (Amori et al., 2016). We interviewed a total of 410 persons in the 20 localities bordering the four protected areas in the country where elephants are known to be present (Table 1, Supplementary materials). We targeted individuals within traditional chiefdoms and local communities but also forest resource managers (checkpoint officers, prefectural and regional natural resources directors, national parks managers, ecoguards and trackers). In selected villages, we organised public consultation forums after receiving permission from the chief of each locality. These forums included hunters, farmers and other village members; no minors, younger than 21 years were involved. Prior to the start of each meeting, participants were informed of the aims of our discussions. Although names, age and occupation of all participants were recorded, we reassured them that their identities would not be revealed. We followed the ethical guidelines developed by the British

Sociological Association (British Sociological Association 2017). Acknowledging that information on illegal elephant killing obtained from the villagers can be biased because of fear of prosecution, we were careful how we introduced the topic. In any case, because the main aim of this study was broad, we did not concentrate on determining levels of poaching. In our study we did not attempt to establish the veracity of the answers given by interviewees. To uncover false information coming from some interviewees, we would have had to use a method such as unmatched count, or item count (Hinsley et al., 2019). This is a technique to improve, through anonymity, the number of true answers to possibly embarrassing or self-incriminating questions.

Our research was undertaken on behalf of, and approved by, the Government of Togo through its *Direction des Ressources Forestières, Ministère de l'Environnement et des Ressources Forestières* in Lomé. We also had the full cooperation of the Togo Police. During our forums we asked subjects about: 1) presence of elephants in the protected areas; 2) seasonal movements; 3) periodicity of observations; 4) number of individual elephants regularly observed, as well as 5) information on known illegal hunting events, if any. GPS coordinates were taken for each locality (Appendix 1).

Field surveys

During both the dry season (Nov. – Mar.) and the wet season (Apr. – Sep.) in 2015-2017, we made opportunistic observations of elephants during the course of our research on other vertebrates within Togolese protected areas (see Segniagbeto et al., 2015, 2017, 2018). These surveys included transects walked in forest and savannah habitats e.g. a total of 255.1 km in Togodo National Park (for details of these transects, see Segniagbeto et al., 2018). Specifically, the field team was composed of three people (G. H. Segniagbeto and two students), supported by

two trackers (local hunters, usually two hunters for each exit). The survey consisted of a vehicle moving at a speed of 1 or 2 km/h to reduce the potential noise disturbances to the animals. This traveling speed also made it possible to search for elephant dung. Field surveys started very early in the morning (04–11 h) and/or in the late afternoon (15–19 h. We decided upon morning and afternoon surveys to increase the probability of encountering elephants. Survey start and end times were recorded to calculate observation effort. When an elephant was encountered, the following information was noted: time, GPS location, group size (i.e. number of individuals) and structure (males, females, subadults), behaviour (feeding, moving, eating, etc.), and the type of habitat. Since surveys were repeated multiple times in the same protected area, with the potential of pseudoreplication of individual elephant observations, in this paper we only refer to group sizes (and not the total number of observed individuals) of elephants.

3 | RESULTS

Evidence of poaching of elephants in Togo

Data from OCRTIDB and other institutions involved in the fight against the illegal ivory trade (Appendix 2) in Togo were classified as large (>100kg), medium (10-100kg) or small (≤10 kg) seizures. Overall, ivory seizures were small (57.1%) 10.8% were medium, and 32.1% were large seizures (see Appendix 2). We estimated that around 15.4 tons of ivory were seized between January 2013 and August 2016 (Appendix 2). China was clearly the main destination country for the illegal ivory (Figure 2).

Medium-sized seizures were reported in only a few cases, with ivory destined for Ghana based on the shipping label. Given the often multi-country and complex routes involved in the

ivory trade, it is possible that Togo was only the intermediary destination. Perpertrators were Togolese, Burkinabè, Ivorian and Guinean nationals (Figure 3).

Small ivory seizures involved small traders who kept the product in their shops either in the raw form, but mostly as carved items (source: Togo police). Most traders claimed to be unaware of the illegal status of ivory items. In most cases, the police would release them after investigations were carried out to determine the severity of the crime (volume of ivory held) and their complicity in trafficking operations. We were not able to obtain any information on the destination of these products.

In addition, we obtained data on ivory objects originating from both Lomé port or airport (data from MERF 2013 and from Togolese police) amounting to: 1) 24 tonnes of ivory from 1,500 objects seized by the CITES management authorities on 11 December 2012 in Malaysia on a ship from Togo; 2) 70.5 kg of raw ivory, coming from Lomé and found on 12 September 2014 on board flight ET 608 at Hong Kong International Airport to Vietnam; and 3) 2,183.2 kg of ivory pieces confiscated at the same airport on 22 July 2013. The total of ivory resulting from all seizures was estimated at 41,651.5 kg of ivory during 2012-2016.

Although it is impossible to exclude the occurrence of other incidents, for all surveyed protected areas in this study we only found evidence of one recent elephant poaching event (Table 1). This was a solitary elephant that was illegally killed in 2014 in the Oti-Keran Park, (Figure 4(B)). There was only one other known case of elephant killing in which a "problem" animal (a very old individual no longer possessing tusks) was culled by the authorities, on 08 February 2017, in the village of Nangbani near Bassar (FMNP).

Presence and phenology of elephants in Togo

The presence of elephants was confirmed in the four protected areas by interviews and in three by field surveys. Group sizes of elephants directly observed in surveys were similar to that reported by interviewees within the same study areas (Table 1). However, in three parks (FMNP, Djamdé and Abdoulaye), interviewees reported group sizes of between 2 and 17 individuals. These numbers refer to individuals seen simultaneously by interviewees. Given that, in at least some protected areas, the number of elephants is much higher than 17. For instance, in Fazao Malfakassa National park, where during our surveys we encountered two individual elephants at the Bounako checkpoint (00 ° 53'37.7"E, 09 ° 09'49.8"N; Figure 4 (A)), up to at least 50 individuals are consistently reported by interviewees. Elephant observations in most surveyed localities were regular, occurring at least on a monthly basis, and, in some cases even on a daily basis (Table 1). During fieldwork, we were informed that the most recent elephant sightings (2-3 individuals, including an adult female, an adult male and a young adult or a female with her calf) at Osacré in the Oti-Keran National Park occurred in October and December 2016. Every year, at least a group of two or three individuals can be found for some weeks around the Naboulgou Barracks checkpoint in the Oti-Kéran National Park.

Interviews on poaching of elephants in Togo

All our interviewees (n = 410) in the twenty surveyed localities (Appendix 1) reported that poaching did not occur anymore in the surroundings of their villages, although often referring about recurrent cases of human-elephant conflict, especially in the buffer zones of FMNP (see details in Atsri et al., 2019). 322 interviewees reported that elephant poaching is not ongoing anymore because the tradition of using elephant parts has been totally lost in local medicine.

4 | DISCUSSION

Presence and recent history of elephants in Togo

Overall, about 9000 elephants are present in West Africa (Chase et al., 2016). According to the last census (1991), a total of 200 savanna elephants were estimated in Togo, remaining in the Fosse aux Lions, Oti-Keran and FMNP (MERF, 1996).

Based on interviewees from different villages, elephant poaching was currently perceived as a rare event in Togo, independently of the surveyed region or protected area. Indeed, because elephant population numbers are very low, poaching from outside the country is currently not viable (too difficult to find animals for an adequate economic return). Confirmed information on elephant illegal hunting dates back to the 1990s during the socio-political turmoil in Togo, particularly in Oti-Kéran, Oti-Mandouri, Fosse aux Lions, and the Doungh Reserve. After this period, there has been no confirmed elephant illegal hunting. In addition, despite the tradition of using elephant parts in medicine, there is consensus that these practices are not used anymore.

None of the 410 people interviewed in the targeted villages had any knowledge of the poaching of elephants. Nonetheless, in some local villages such as Takpapieni (Oti-Keran) and Mandouri (Oti-Mandouri), villagers acknowledged that in the past other elephant parts, such as bones and droppings, were used for traditional pharmacopoeia. These parts were used to treat diseases such as measles, serious wounds, etc.

Habitats in the Fosse aux Lions, Oti-Keran and FMNP, have been affected by excessive grazing, accentuated by the phenomenon of transhumance. This practice has accelerated the degradation of these ecosystems and of their wildlife potential (Okoumassou et al. 2004, Bouché

et al. 2004; PNUD, 2012; Atsri et al., 2019). Also, some migratory corridors have now disappeared (Fosse aux Lions and Doungh) due to human settlements and heavy deforestation, with the consequent reduction of elephant habitat.

The Fosse aux Lions, a park located at the entrance to the town of Dapaong, had the highest concentration of elephant despite its relative small size (1,650 hectares) in 1991 (MERF, 1996). However, elephants were systematically killed during the 1970s and 1980s, with a peak of at least 14 illegally killed elephants in the 1990s (data from the former Regional Director for the Environment and Forest Resources of the then Savannahs, the late Azote Hodabalo) and the near total dispersal of the remainder to Ghana and Burkina Faso, including migration of those of the Oti-Keran area to Burkina Faso (Hema et al., 2018).

The OKM, due to its strategic position, serves as a migration corridor for large mammals traveling annually between the national parks "W" (Niger), Arly (Burkina Faso) and Pendjari (Benin), and Ghana through the Fosse aux Lions and the Galangashie Reserve (Okoumassou et al., 1998, 2004; Segniagbeto et al., 2014; Amori et al., 2016) , as is typical for elephants elsewhere (Douglas-Hamilton et al., 2005).. This complex of Togolese protected areas no longer contains resident elephant populations, since these were extirpated due to intense illegal hunting in the 1990s.

Although the International Union for the Conservation of Nature (IUCN) actually only recognises one species (*Loxodonta africana*), on the ground two species or subspecies are widely recognized, thus we present data on the two taxa here. In the FMNP, there are still populations of the two recognized subspecies of African elephants: *L. a. africana* and *L. a. cyclotis* (Atsri et al., 2013; Amori et al., 2016). The coexistence of these taxa can be explained by the proximity of this park to Kyabobo in Ghana, with the Koué River serving as a migration corridor for most

large mammals, including forest elephant. According to local residents, elephant herds (comprised of 2-50 individuals) can be found along the buffer zone and even within the protected area. However, there is no history of seasonal movements in this park with only very limited local movements just to the outskirts of the park often in search of mangoes in the rainy season. According to Thouless et al. (2016), there were about 600 elephants in FMNP in 2002, so the population has dramatically declined in the last 15 years. However, the elephant-human conflicts increased remarkably within the FMNP buffer zones during the last ten years (Atsri et al., 2019).

In the Abdoulaye Wildlife Reserve, a protected area of about 30,000 ha, there is a small population of savannah elephants (4 individuals according to Thouless et al., 2016). During fieldwork, the local people reported the presence of 3-5 individuals in the protected area that mirrors Thouless et al.'s (2016) estimate. These animals were frequently seen by locals, even on a monthly basis (Table 1).

Djamdè Wildlife Reserve is the smallest among the four surveyed protected areas (8 000 ha), situated close to FMNP in its northern part. Populations of savanna elephants move seasonally in and outside the protected area. However, there is a group of three individuals who are permanent in the reserve. Local communities observed these three individuals daily.

Importance of Togo in the illicit ivory trafficking

Our results concur with Milliken's et al. (2016) findings that Togo, alongside Malawi, Malaysia and Singapore, are among the foremost countries involved in ivory trafficking i.e. where seized quantities of ivory were in excess of 1000 kg between 2012 and 2016. These amounts are likely to be underestimates. Nonetheless, our study confirms that Togo (and more specifically, the

international port of Lomé) is a clear exit point for ivory in West Africa, perhaps due to weak law enforcement.

Origin of ivory traded in Togo

The relatively small population of elephants remaining in Togo, coupled with the evidence that these animals are not, at least according to our surveys, subjected to intensive illegal hunting in the country, lead us to believe that most of the seized ivory is not derived from Togolese elephants. Under the authorization of the Togolese Government, a sample of 700.4 kg of tusk ivory (seized from 06 August 2013) was genetically analysed and the results indicated that it orginated from several Central African countries, especially Cameroon and Gabon, that are two of the countries hardest hit by the elephant poaching (Roca et al., 2015; Wasser et al., 2015). However, radioisotope method analyses performed by Lawrence Livermore National Laboratory in California (USA) on ivory from additional stocks showed that these included samples from a few elephants killed in Togo. These elephants were certainly taken after 1990, and possibly as recently as 2010. Thus, despite our field evidence, some illegal hunting may have been ongoing up until recently in the country.

The apparent low intensity of illegal hunting of elephants in Togo is likely to have resulted from the governmental political tools used to fight poaching, as well as the fact that elephant numbers are so low that poaching from outside the country is currently not viable. One of these tools is the control organized by the forestry services in collaboration with the security services and which made it possible to seize several ivory objects from the company "Rose ivoire" which specialized in the manufacture and sale of ivory art.

Conclusions

Our results suggest that the total population of elephants in Togo remains about 150 individuals. Thouless et al. (2016) estimated that in 2006 there were 61 animals in Togo, and in 2015 between 74-114.

Our data has highlighted that currently Togo is a conduit for illegal ivory from West and Central Africa to China as the main destination. The impact of the trade upon the Togo elephant population appears to be limited at present. Nonetheless, we highlight the fact that even a very limited offtake from the currently small population (especially if adults are targeted) can lead to the extinction of the species in the country (Woodroffe & Ginsberg, 1998). This will have considerable consequences on the functioning of the savannah habitats (Hema et al., 2017c) and in turn affect the human communities (Gandwa et al., 2013; Challander & MacMillan, 2014).

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Table 1: Results of field surveys (performed during 2015-2017) and interview surveys (performed during 2017) on the presence of elephants in Togo's protected areas. Number of individual elephants and groups that were recorded directly in surveys are given in parentheses. All other data were obtained from interviews. Annual = once per year.

Protected area	Area (ha)	No. persons interviewed	Elephant presence	Seasonal displacements	Observation period	No. Individuals/group	Poaching
Oti-Kéran & Oti-Mandouri	179 000	140	Yes	Yes	Annual	2-3 (2)	No
Fazao-Malfakassa	192 000	190	Yes	Yes	Monthly/daily	2- 17 (2)	No
Djamdé	8 000	48	Yes	Yes	Daily	3 (3)	No
Abdoulaye	30 000	32	Yes	Yes	1-2 months per year	3- 5	No

FIGURE LEGENDS

Figure 1. Distribution of study sites in relation to the main road network and to the protected areas in Togo.

Figure 2. Quantity of seized ivory in Togo, by country of destination, 2013-2016. Source of data: Togo police.

Figure 3. Nationality of traffickers in relation to the amount of seized ivory (years 2013-2016). Note that Togolese, or joint ventures between Togolese and other nationals (for instance, Chinese, Vietnamese, Beninese, etc), dominate in the illegal trafficking arena. Source of data: Togo police. Abbreviations: CI = Côte d'Ivoire; Gu = Guinea; Bu = Burkina Faso.

Figure 4: (A) elephant seen in the Fazao-Malfakassa National Park (Bounako, photo Agbodji); (B) elephant hunted in the Oti-Kéran National Park, year 2014 (photo Agbo-Zegue).