Assessment of Elephant Poaching in Rural Communities: Case Studies of Four Villages in the Okavango Delta Area, Northern Botswana

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Abstract

Botswana's 2005 Environmental Management Act plays an important role in facilitating the overall management and sustainable utilisation of the country's natural environment, including wildlife and the wilderness. Yet, wildlife conservation and poaching/illegal hunting is still a challenge in the country. Thus, the purpose of this study is to assess elephant poaching in four rural communities in the Okavango Delta region in Northern Botswana. A datasheet was designed and used to capture elephant poaching registered cases at the four wildlife (Department of wildlife and National parks) stations. Additionally, a semi-structured questionnaire with open and close-ended questions was used to solicit perceptions and thoughts on elephant poaching in the study area. The results indicate an increase in elephant poaching at the four study sites despite the newly introduced wildlife poaching deterrent strategy known as "shoot to kill". A large number of elephants were poached and firearms were used, with the .375 calibre rifle and its ammunition being popular. Generally, elephant poaching occurs during the winter time and poachers are mainly citizens. Overall, illegal hunting or poaching of trophy animal species remains a challenge in Northern Botswana. While illegal poachers have become sophisticated, the management and sustainability of such resources prove to be difficult, although there is a sign of decline. Hence, the government has to deal with wildlife resources (especially elephants) management almost immediately as it threatens the existence of the rich animal heritage resources of the Okavango region. Therefore, we recommend that the Botswana government intensifies anti-poaching patrols countrywide, especially in the Okavango region during the winter period when the demand appears to become too high. Stricter controls should be made on access to firearms. The government needs to liaise with neighbouring countries, including South Africa, Namibia, Zambia and others to curb the scourge and increase measures to sustain wildlife heritage resources in the region.

Keywords: *Elephants, illegal hunting, poaching, wildlife, conservation, sustainability.*

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Introduction

Elephant conservation, resource sustainability, and rural people's livelihood activities remain one of the greatest challenges in many African countries, including Botswana. As a point of reference, elephants (Loxodonta africana) have become a critical resource for conservation, a source of food, and an attraction for safari-based tourism in Botswana and other parts of the developing world. In fact, African elephants are known to be the largest and heaviest land mammals, and attracting both domestic and international holidaymakers (Blignaut et al., 2008). Subsequently, the value of tourist viewing of elephants roaming free in parks and reserves rather than being confined in zoos, has increased over the years in places such as Botswana (Mbaiwa, 2018; Moswete et al., 2017), South Africa (Blignaut et al., 2008; Deere, 2011), Namibia (Humavindu & Barnes, 2003), Cambodia (Gray et al., 2016) and India (Rohini et al., 2018).

Many wildlife enthusiasts frequent Southern and Eastern African protected areas to experience safari-related tourism activities (Mogende & Moswete, 2018, Novelli et al., 2006; Mbaiwa, 2018). They come to see charismatic wild animals such as elephants (*Loxodonta africana*), rhinoceros (*Ceratotherium simum simum*), buffalo (*Syncerus caffer*), and big cats such as lions (Panthera leo) and leopards (Panthera pardus). Many visitors to the country's northern protected areas (e.g., Moremi Game Reserve) state that a major reason for their visits is to see wildlife in less crowded parks (Magole & Gojamang, 2005; Mmopelwa et al., 2007) (Figures 2a and 2b). Notwithstanding the increasing importance of wildlife tourism, the issue of poaching or illegal hunting of elephants (Figures 2c and 2d) continues to occur in some parts of Botswana (Mbaiwa, 2018; Songhurst et al., 2015) and appears to be increasing each year (see Figure 1).

While elephant (*Loxodonta africana*) populations in some developing countries are increasing, literature shows a rapid increase in illegal hunting of wild animals in general (Pozo et al., 2017; Stiles, 2004). There has been a worrisome trend in some countries where elephants have become a target for poaching. Such countries include Cameroon (Latour & Stiles, 2011), Cambodia (Gray et al., 2016), Mozambique (Zafra-Calvo et al., 2018), India (Rohini et al., 2018), South Africa (Anderson & Jooste, 2014) and Botswana (Chase, 2011). The recent rapid increase in poaching appears to be the result of the availability of local and international markets for elephant trophies (e.g., tusks), curios and souvenirs (Challender, 2011; Latour & Stiles 2011). The growing purchasing power of the wealthy and affluent socio-economic classes in Far East Asia (Koboto & Macheng, 2013; Heltberg, 2001) has possibly led to the increase in elephant poaching and the escalating 'black market' prices paid to hunters and suppliers (Challender & MacMillan, 2014; Heltberg, 2001; Rohini et al., 2018).

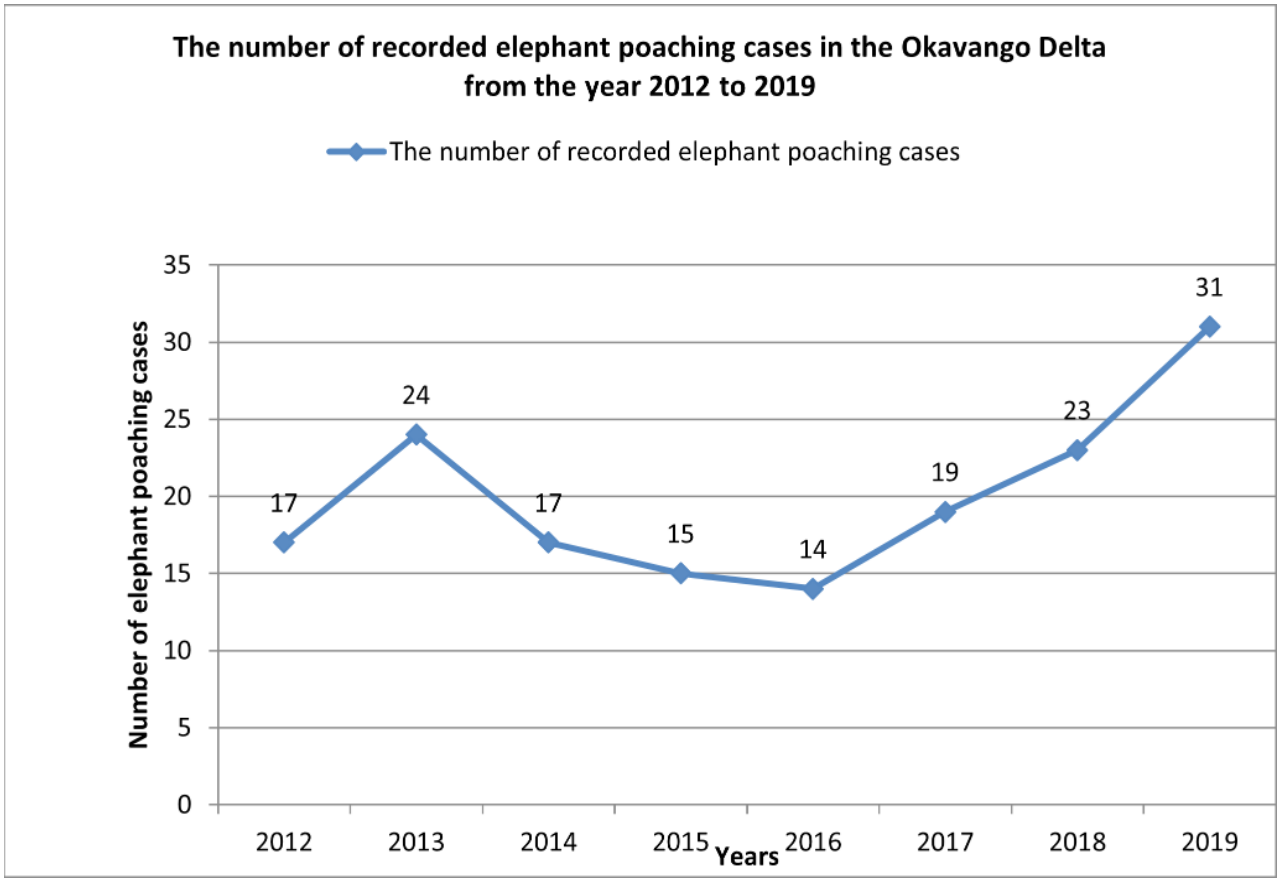

Figure 1. *The total number of elephant poaching cases per year*
(Source: Authors)

According to wildlife conservation studies, elephants are associated with the destruction of ecosystems, agricultural farms and other livelihoods (DeMotts & Hoon, 2012; Kideghesho, 2016; Zafra-Calvo et al., 2018). Although elephants have become a national resource, they need to be conserved and their habitats sensitively managed for the benefit of the environment, the local people and tourists alike (Figure 2b) (Novelli et al., 2006). Safari/wildlife-based tourism and elephants are intertwined; hence elephants have become an important attraction for nature enthusiastic travellers to Africa. Elephant tourism and conservation activities are heavily associated with the Okavango Delta region in the northwestern region of Botswana (DSM, 2001). The Delta covers about 22000 km2 of surface area (DSM, 2001). The Delta is home to big game, such as elephant and buffalo (Figure 2), reptiles (Motsholapheko et al., 2015), and a diversity of wild flora.

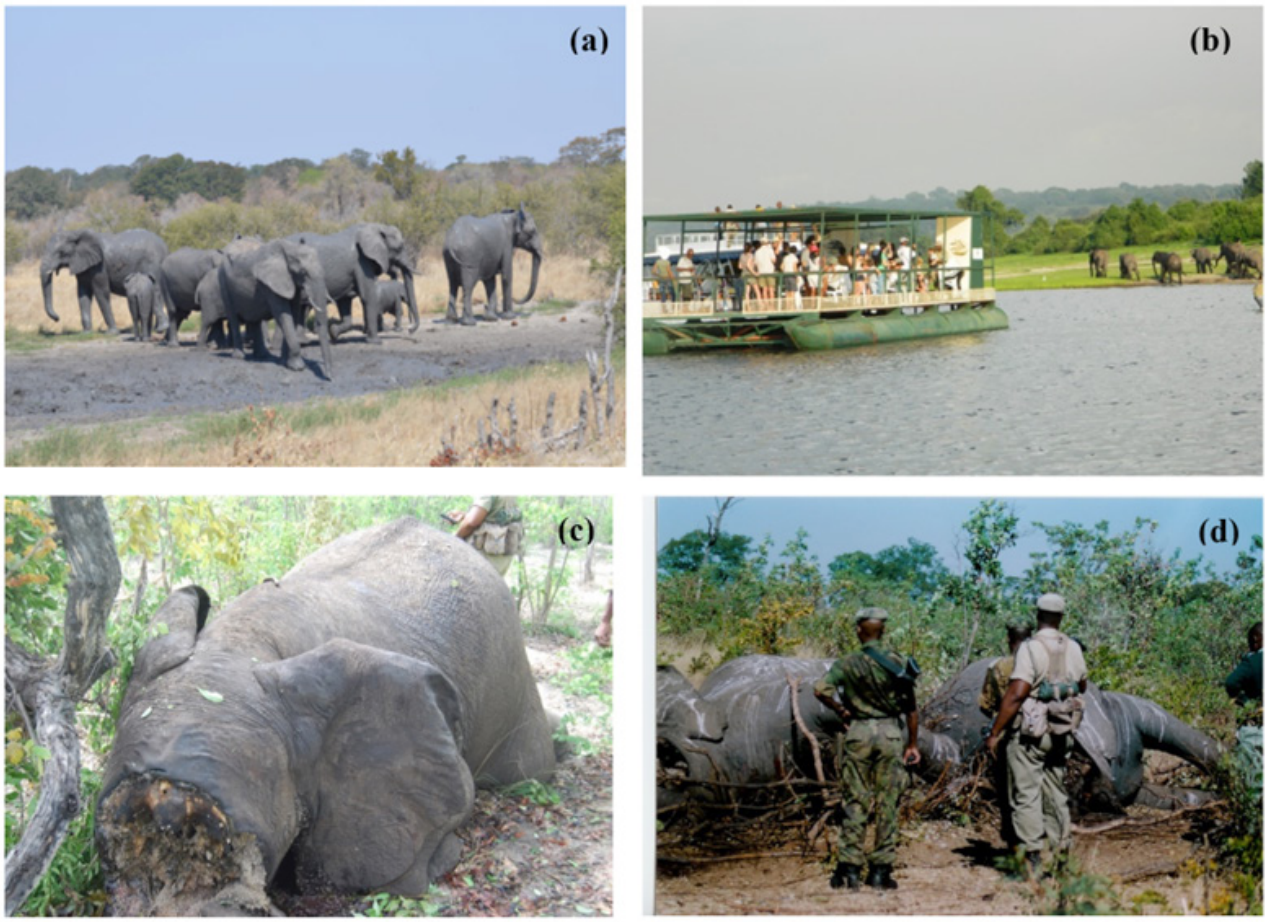

Figure 2. *(a) Elephants of the Okavango Delta (G. Tuelo); (b) Tourist boat cruise—watching elephants on the Chobe River in Botswana (N. Moswete); (c & d) Carcases of elephant bulls that were killed and tusks removed by poachers (T. Habala)*

The number and variety of wildlife together with the region's unique wilderness make the area the best destination for wildlife-elephant safaris, nature tourism, and wilderness and outdoor activities (DSM, 2001; Kgathi et. al., 2007; Moswete et al., 2017; Thakadu et al., 2006). However, Songhurst et al. (2015) revealed a decline in large herbivore species, and Mbaiwa's (2011) study discovered a link between illegal hunting (poaching) by some community members, human-wildlife conflict (HWC), and incidences of poverty (Mbaiwa, 2017). In addition, the rapid rise in elephant numbers has exacerbated HWC as elephants are found to damage crops and property as well as killing people and livestock (Metcalfe & Kepe, 2008; Songhurst et al., 2015). The most common HWC in some parts of Eastern Botswana and the Okavango revolves around elephants.

Competition for forage (Darkoh & Mbaiwa, 2009), expanding the human population (Songhurst et al., 2015; Pozo et al., 2017), and the demand for land for agriculture and human settlement (Songhurst et al., 2015; Pozo et al., 2017) cause human-elephant conflict. Consequently, crop-raiding, damage to property and human death caused by elephants prompted a rise in negative attitudes towards wildlife residents and poaching, particularly of elephants (Gressier, 2014; Pozo et al., 2017; Songhurst et al., 2015). Until

recently, the Okavango Delta has been challenged by an increase in the poaching of elephants (Majelantle, 2014). The Convention on the International Trade in Endangered Species (CITES, 1999) banned the international trade of Asian and African elephant species (Stiles, 2004). After the hunting ban, local communities were compelled to shift from wildlife hunting safaris to photographic tourism. Many community-based tourism enterprises that relied on hunting were negatively affected as some lost their jobs with safari operators. Consequently, reduced tourism benefits have led to residents' negative attitudes towards wildlife conservation and thereby sparking increased poaching within communities (Mbaiwa, 2018).

This study was prompted by the practical objectives of understanding the extent to which illegal hunting of elephants exists within the four villages in the Okavango Delta, and, in particular, to map out the extent to which poaching is taking place to assist the Botswana Department of Wildlife and National parks in their anti-poaching projects and conservation initiatives. The study aimed to explore the status of elephant poaching (illegal hunting) in the Okavango region, and the extent to which this may be compromising the government's conservation efforts and safari/wildlife tourism.

Specifically, the research objectives were to: (1) examine elephant poaching trends in the study area; (2) identify methods used in elephant poaching; (3) explore seasons during which poaching occurs; (4) examine the demography (age, sex, nationality) of those involved in illegal hunting; and (5) assess key informants' perceptions of elephant poaching within the study area.

Methods

Study Area

The study site is located in the Western Okavango Delta Panhandle of the Ngamiland District in Northern Botswana (Figure 3). According to the National Atlas (DSM, 2001), there are 27 (communities) in this region. The study was carried out in four villages , namely Gumare, Maun, Seronga, and Shakawe. As of 2011, the population of Maun was 60,263, with Gumare having 8,532, Shakawe having 6,693, and Seronga having 3,716 people (Statistics Botswana, 2011).

The people of the Okavango region are heavily dependent on agriculture (river bank farming) (Kgathi et. al., 2007). There is also high use of natural resources, including wildlife resources for nature tourism and veldt products for foods (Kgathi et al., 2006; Thakadu et al., 2006). Other livelihoods activities for the villagers include cultural-heritage tourism (Mbaiwa et. al., 2008). The sub-district is endowed with abundant wildlife resources (e.g., hippopotami), boasting with diverse species of fauna and flora. The study area is known to experience challenges that include but are not limited to an increase in the local human population and wildlife, thereby causing competition for veldt resources (Darkoh & Mbaiwa, 2009). Disease transmission, death of animals, habitat loss, and illegal hunting of elephants add to the existing problems of utilisation of

resources in the area (Kgathi et. al., 2006; Pozo et al., 2017).

So far, the Government of Botswana has introduced community-based natural resource management (CBNRM) through which local people are urged to form community-based trusts to manage natural resources. Many of the existing trusts in the country are wildlife based. Trusts or community-based organisations are entities formed by a community, groups of communities, or groups within communities that are involved in the management of natural and cultural heritage resources to represent the community's resource management-related interests and implement any management decisions taken (Government of Botswana, 2007).

Figure 3. *Location map of the study villages in the Okavango Delta*
(Source: Koorutwe, 2018)

Data Collection

To address the aims and objectives of the study, a mixed-method approach was used. Official secondary data on poaching-related issues were obtained from the Department of Wildlife and National Park's (DWNP) Investigation Unit in Maun. Data obtained from reports and police registration booklets from the three wildlife stations were collated and analysed. Preliminary data were collected through a semi-structured questionnaire with open- and closed-ended questions. Purposive sampling was used in which respondents were contacted and requested to participate in the study (Tashakkori & Teddlie, 1998). In addition, where some officers were not in at the time of data collection, a telephone interview was used. The sample comprised wildlife officers, police officers, and magistrate court officials from the four study villages. These four villages fall under the jurisdiction of the magisterial districts situated in Gumare, Maun and Shakawe. For the magistrate courts, data were collected from Shakawe and Gumare.

A different data sheet was used for conducting interviews with wildlife officers and police stations at the four sites of study. The information sheet captured data on trends of elephant poaching, types of weapons utilised, most preferred poaching season (illegally hunted), and a number of prosecuted elephant poachers. Thus, wildlife office and police records were used to supplement the questionnaire and interview data. The languages of the interviews were Setswana (a language spoken by all citizens of Botswana) and English. Each interview lasted for approximately one hour.

Data Analysis

Due to the exploratory nature of the study, quantitative data were analysed using Excel software and the Statistical Package for the Social Sciences (SPSS) to generate descriptive statistics. Pivot tables and charts were used in the presentation of results. Qualitative data were analysed by first cleaning the data and reorganising similar words and phrases as echoed by the interviewees. Then similar phrases were categorised and themes were identified as they emerged from the qualitative data. In the presence of some interviews, data pseudonyms were used to conceal the identity of the officials who were involved in this study.

Results

Profile of Respondents

For the key informants' interviews, the respondents comprised sixteen (16) wildlife officials, twelve (12) police officers and two (2) magistrate officials who participated in the interview. The participants comprised all-male, with ages ranging from 35–53 years. The nationalities of the respondents comprised all citizens of Botswana who were stationed and worked in Gumare, Maun, Seronga and Shakawe villages (see Figure 3). In terms of education, their level of education ranges from high school certificates to vocational and university degrees. The number of years a respondent was involved in a wildlife-poaching related job or work experience ranged from about one-and-a- half (1½) to 28 years.

The Situation of Illegal Hunting (Poaching) of Elephants

When asked if the poaching of elephants was increasing in their area, almost all the respondents agreed that there was a significant increase in the poaching of elephants (see Figure 1). In assessing poaching cases in each village, there were 50 elephants killed in Gumare, 57 in Shakawe, and only 5 in Seronga from 2012–2019. When interrogating all data from the Maun office further, it emerged that there were more elephants illegally hunted in and around Maun (225) than in the other the three villages combined (Table 1).

Table 1. *Elephant tusks collected from each case study village from 2012 –2019*

Years	Seronga	Shakawe	Gumare	Maun	Total
2012	1	4	16	25	46
2013	0	4	8	38	50
2014	0	2	0	30	32
2015	0	0	0	7	7
2016	0	9	0	42	51
2017	2	11	10	23	46
2018	0	11	6	23	40
2019	2	16	10	37	65
Grand total	**5**	**57**	**50**	**225**	**337**

(Source: Authors)

The Seasons Mostly Preferred by Elephant Poachers

Data obtained from the Department of Wildlife and National Park's Investigation Unit show that most of the poaching activities occurred during the winter season (Figure 4).

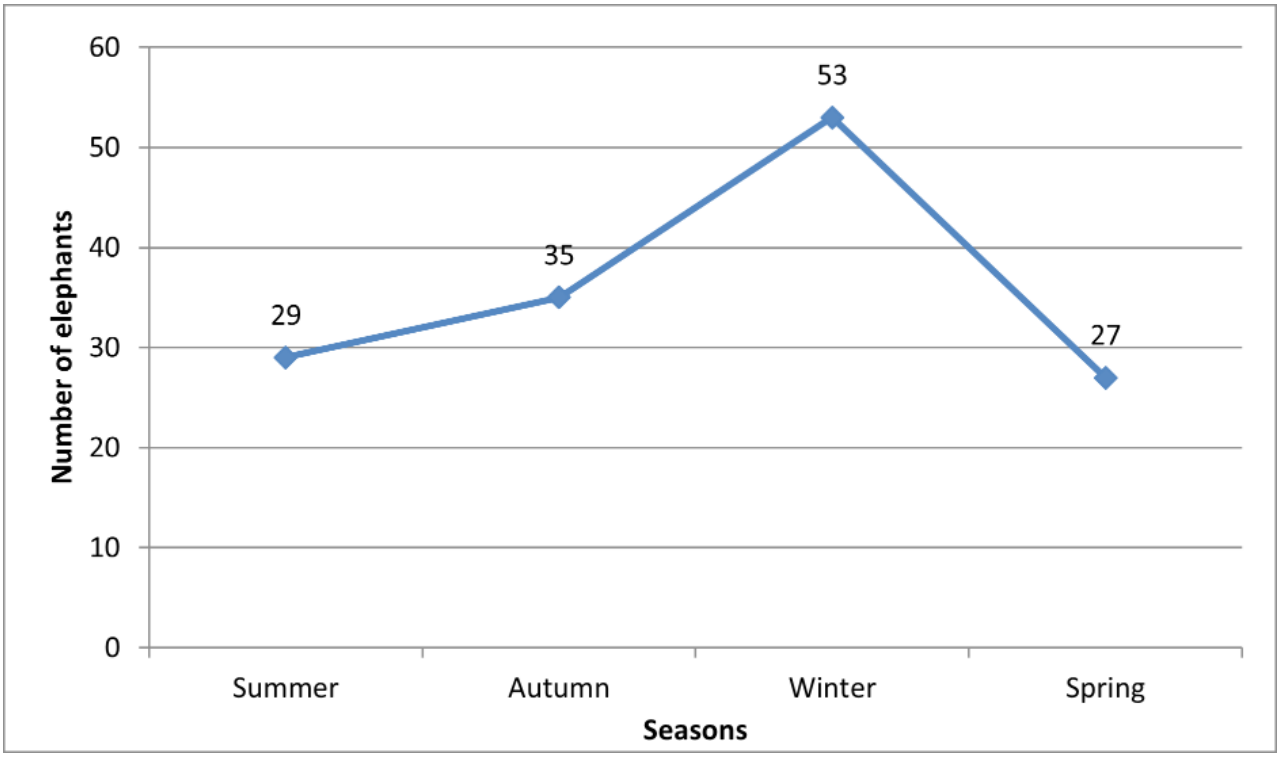

Figure 4. *Number of elephant poaching occurrences per season in the study area, 2012-2019*

(Source: Authors)

In addition, the respondents were asked in which of the four seasons poaching

occurred in the four villages in the Okavango region, and nearly all of them said the frequency and movement of poachers are the highest during the winter season.

Examining Methods and Weapons Mostly Used by Suspect/Poachers

The data reveal that five types of weaponry were used in elephant poaching (see Figure 5). The most popularly used weapon was a .375 rifle (Figure 5). When asked why the .375 was the most popular weapon used for elephant poaching, the respondents outlined some of the reasons, including that (i) the .375 rifle is of a strong calibre, (ii) a strong calibre rifle is able to kill an elephant, and (iii) ammunition use is low because it is a robust rifle. Among the types of weapons used was a shotgun. Although the shotgun was one of the weapons found by poachers, it is a small calibre type that cannot kill an elephant. It could be that the small calibre gun was used to shoot small animals for the pot during their poaching excursions. When asked about the accessibility of hunting weapons, they all observed that there are dealers in the Okavango area and that Maun has gun shops.

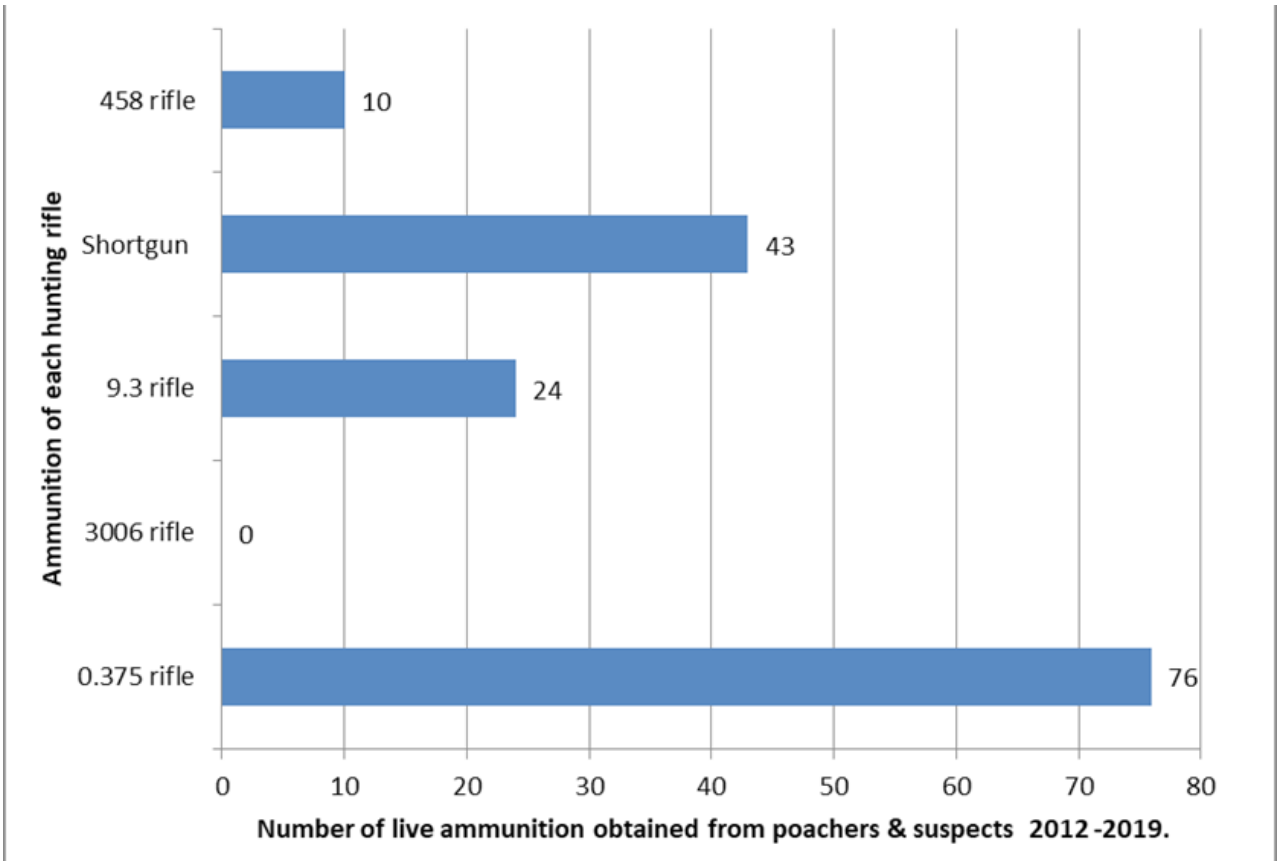

Figure 5. *Type of rifle and number of live ammunitions confiscated from poachers and suspects, study period 2012-2019*
(Source: Authors)

As shown in Figure 6, the highest number of elephant poachers/poaching suspects apprehended had in their possession a .375 rifle and/or ammunition (n=76), which was the highest of all the other types of rifles used in illegal hunting during the period 2012-2019.

Furthermore, the respondents were asked the demographic characteristics (sex, age and nationality) of those involved in poaching or the illegal hunting of elephants. Almost all the respondents observed that poachers were of mixed age from slightly younger than 20 years to about 48 years of age; mainly male persons who were foreigners. Contrary to this, most elephant poachers were Botswana citizens as shown by the analysis of raw data from the Department of Wildlife and National Park's Investigations Unit (Figure 6).

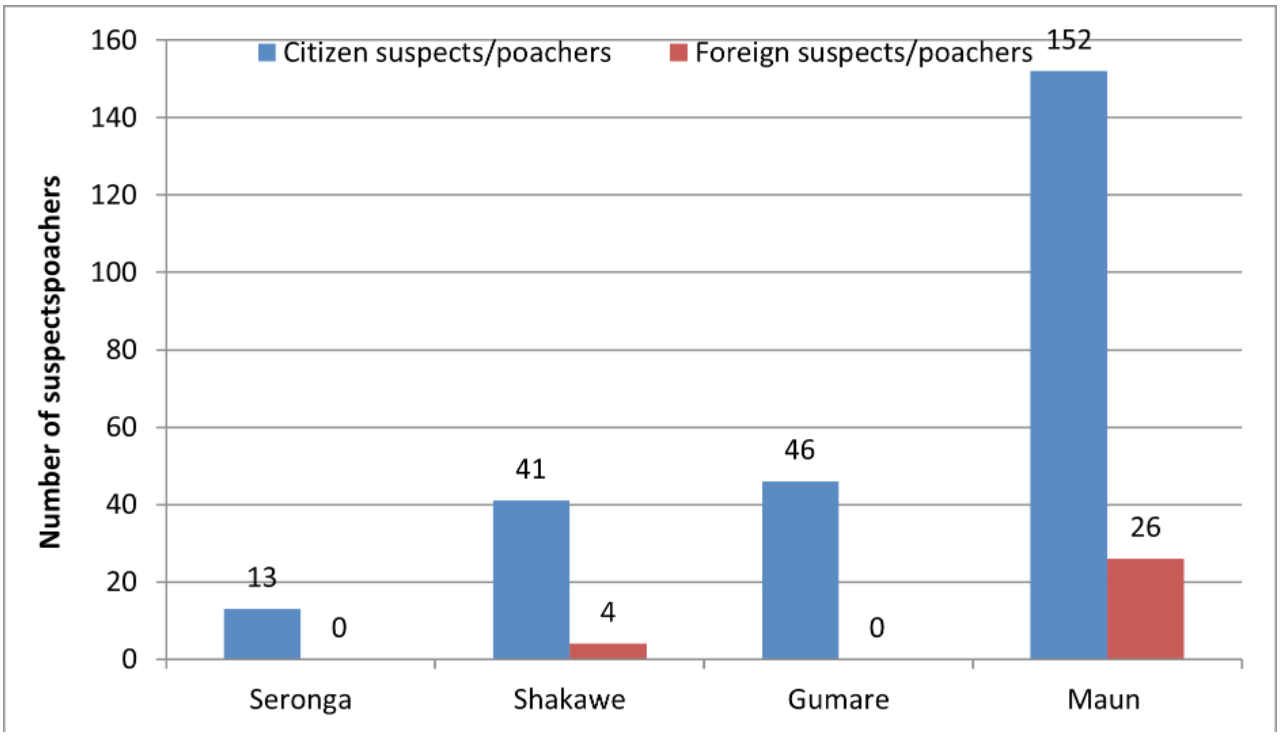

Figure 6. *Nationality of poachers/suspects per village 2012–2019*
(Source: Authors)

In terms of demographics, many of the poachers or illegal hunters in this case study were found to be male citizens, unemployed, and mainly from villages and settlements in the Okavango area, including, Gumare, Maun, Shakawe, Matlapaneng. Some poachers who were caught or interrupted in their poaching activities surprisingly came from other villages in Botswana, which are distant, over 800 miles away from the Okavango Delta region, for example Mmadinare, Makaleng, and Thamaga. The cross-border poachers were all male, hailed from neighbouring countries such as Zambia, Angola and Namibia, and stayed in tourist lodging facilities in Maun. Thus, poachers from the villages in the Okavango were not involved in poaching for subsistence purposes such as selling meat, but for tusks and ivory.

Reasons for Poaching of Elephants by Victims when Apprehended

The findings from the key informants reveal that when the suspects/poachers were apprehended or intercepted during their poaching expeditions and asked the reasons why they were involved in killing elephants without licenses, the respondents shared their observations. Some of the conversations from the poachers when stopped and

apprehended were:

Leroy: Male, aged 45, at Gumare
Elephants are poached or killed with the claim from poachers that they scare the elephants from destroying their crops.

They said they also are involved in illegal hunting activities in order to sell elephant products and earn quick money . . . from selling tusks.

Benjik: Male, aged 46 at Gumare
When we asked poachers as to why they are involved in the illegal killing of elephants even if they know it is wrong because they'd be chasing them from the field—so they poach with the pretext that the elephants are being chased away from the fields to stop them from destroying crops.

Sonjin: Male, age 29, at Shakawe
Elephants are poached for commercial purposes essentially for their ivory. They say they poach because of a close and readily available market for elephant tusks in Zambia and Angola.

Khakhi: Male, aged 41 at Maun
Most of the poachers care for those people who are poverty-stricken but some are farmers with cattle.

The less privileged/poor are used to hunting and killing elephants and are being given money in return [by those hiring them to hunt for them].

Khelwa: Male, Maun, 36
Poachers say they are involved in poaching because they are not working, so they choose to steal either by themselves or when engaged by their bosses who then give them money.

Perceptions of Illegal Hunting of Elephants

The key informants were also presented with 5-point Likert-type statements (Table 2) designed to assess perceptions of illegal hunting or poaching in the study area. Most respondents expressed varying perceptions and concerns about elephant poaching within their communities. Nearly all the respondents (wildlife and police officials) indicated that elephant poaching was a problem and that it is increasing.

Table 2: *Perceptions of elephant poaching*

Statements[a]	*SD*	*D*	*N*	*A*	*SA*
Elephant poaching is increasing in our area.	20.0	33.3	13.3	33.3	0.0
Elephant poaching has increased rapidly in the last ten years in our area.	6.7	13.3	20.0	**46.7**	13.3
Elephant poaching will continue to increase in the future in our area.	0.0	**40.0**	**26.7**	20.0	13.3
Elephant poaching affects Government conservation initiatives negatively.	6.7	6.7	0.0	**26.7**	**60.0**
People who are involved in poaching in your area do so because of poverty.	**20.0**	**26.7**	20.0	20.0	13.3

[a]*Items coded on a 5-pt scale; 1=Strongly Disagree (SD), 2=Disagree (D), 3=Neutral (N), 4=Agree (A), 5=Strongly Agree (SA)*

As shown in Table 2, about 60.0% observed said elephant poaching has increased rapidly in the last ten years in their area, whilst approximately 20% neither agreed nor disagreed with the same statement. The respondents were further asked if elephant poaching will increase in the future, and the study found that 40% disagreed with the statement, while 27% of them were neutral.

On the perception that elephant poaching affects government conservation initiatives negatively, the majority of the respondents (87%) observed that it was true. Interestingly, the study found that approximately 47% disagreed that people poach because of poverty (Table 2).

Further, the respondents were asked why they say poaching has increased in their area. Some of the common views are:

> **Respondent 2**: *In some instances, elephants were killed in large numbers of up to ten in one event. The number of tusks being recovered is in large quantities.*

> **Respondent 3:** *Elephant poaching incidents have escalated as it seems like there is demand for ivory in the Middle East and Asia. However, it has dropped recently even though it could be temporary.*

Additionally, since elephants tend to be one of the key attractions for wildlife-based tourism in Southern Africa and Botswana, the following open-ended question with “Yes”, “No” and “Don’t know” was posed to the respondents: “Does elephant poaching affect wildlife tourism in the Okavango Delta and why?” All the respondents chose “Yes” and indicated in general:

> *Elephants improve tourism, which attracts tourists from many countries, and*

tourism has employed a lot of people in my area. Loss of elephants might affect it [tourism industry].

Tourism is being affected since the sight of elephant killings being shown in the media [television, internet] might paint a bad picture with regard to conservation.

Respondent 11*: Elephants contribute a lot to the tourism sector, if poached, reduced revenue through foreign exchange will be experienced and the unemployment rate will also be experienced.*

The general awareness and opinions of the key informants are that elephants are important for Botswana and need to be protected and not overhunted. They observed that Botswana's tourism is built on wildlife resources and if the poaching increases and the numbers are affected, the wilderness will be less attractive to tourists and the business of tourism will decline.

Discussion

The findings of the study reveal that illegal hunting or poaching of elephants occurs in the four study villages in the western panhandle of the Okavango Delta. These findings are similar to those of DG Ecological Consulting (2003), Deere (2011) and Mbaiwa (2018), regardless of restrictive wildlife conservation policies and strategies in place in Botswana (Government of Botswana, 1986). The study demonstrates that elephant poaching has been gradually increasing from 2012–2019 in the four study villages, with relatively significant increases in the village of Maun. This finding was not expected, especially since the government has comprehensive and restrictive policies and strategies on elephants and all forms of hunting for protected species of animals and birds (DG Ecological Consulting, 2003). Furthermore, the government formulated a new conservation deterrent strategy with full involvement of the Botswana Defense Force troupes and anti-poaching police squad to work with the anti-poaching team of the Department of Wildlife and National Parks to man-elephant corridors and parks on a daily basis. Even with the engagement of the special military in anti-poaching, illegal hunting of elephants still occurs and the numbers are becoming worrisome in a country with very secure and healthy conservation programmes (Majelantle, 2014). Cumulatively, the death of elephants at the hands of poachers, especially in Maun village, poses a serious loss as many of the elephants are killed and tusks removed and smuggled, especially those of the big bulls. In other situations, elephant poaching in Southern Africa (Collins et al., 2017), such as in the Kruger National Park (Anderson & Jooste, 2014) and in Central Africa (Collins, et al., 2017), escalated to unsustainable levels from 2010–2012 (Gao & Clark, 2014; Hutchens, 2013; Ihwagi et. al., 2017; Rashidi et al., 2017).

In this study, poachers involved in the illegal hunting of elephants do it for tusks. According to Ihwagi et al. (2017) and Smith et al. (2003), elephant poachers mostly kill elephants for ivory and not meat. One can observe that illegal hunters and their poaching

activities deprive citizens of the elephant population and money derived from tourism and community-based natural resource management (CBNRM) projects (Mbaiwa, 2018). This study revealed that illegal hunters are more involved in poaching for trophies/tusks than for meat/proteins. This is evident from the overall perceptions that people who are involved in poaching in the study area poach because of poverty. Thus, the poaching of elephants because of poverty was minimal. In most cases, local people also become involved in illegal activities because they need cash. This is somewhat true in Botswana, because the government has poverty-related programmes in place and a Youth Fund for those without jobs. The disadvantaged and very poor villagers are registered under government welfare programmes, and some members are involved in village development programmes where they do, for example, maintenance of the inner roads and receive payment for this. Every citizen, regardless of their age, gender or where they live, is free to register to receive free seeds and crop fertilisers, and is thereby encouraged to become involved in arable agriculture.

The study finding that most elephant poachers/suspects use hunting rifles, especially the .375 rifle, is consistent with findings in other elephant poaching studies in Africa. The .375 and .458 rifles, for instance, are used by most elephant poachers in Cameroon (Latour & Stiles, 2011), the Republic of the Congo (Latour & Stiles, 2011), Kazungu National Park in Malawi (Bhima et al., 2003) and Kenya (Chege, 2015). Semi-automatic military rifles, such as the AK-47, however, are used occasionally to kill elephants (Bhima et al., 2003; Latour & Stiles, 2011). When these rifles are used in poaching expeditions, it is mostly for self-defence against anti-poaching units (Chege, 2015). Contrary to this, in South African parks, poachers from South Africa and Mozambique mostly use military rifles such as the AK-47, Heckler-Koch G-3, Moison-Nagants and Belgian FN-FAL rifles for killing both elephants and rhinos and then also use them for self-defence against wildlife rangers (Warchol & Johnson, 2011). Similarly, poachers operating in and around Parc National des Virunga in the Democratic Republic of Congo, where there have been wars and civil strife, elephants poachers use AK-47s they get from war lords and political ‘big wigs’ to kill elephants (Mubalama & Mushenzi, 2003). In general, it appears that poachers use the king of rifles available to them, depending on what is available to use in the poaching landscape.

As revealed in this study, most elephant poaching occurs in winter. It is an interesting find since Comley and Meyer (1994) found that in Botswana, the winter season is the best time to go on safari because it is dry and moderately cool. This finding, however, is different from what has been observed in other countries in Africa. In Cameroon, for instance, poaching takes place during the raining season from May to June, and again from September to December when mobility is high because elephants are looking for fruits and poachers’ footsteps are not easy to detect (Latour & Stiles, 2011). Elephant poaching activities occur during the dry season in the Tsavo Ecosystem in Kenya (Rashidi et al., 2017), because it has been found that elephants prefer certain types of land cover. Also, seasonal rivers become dry, which forces elephants to gather in selected places where there are surface water sources, for example, surface pools and small dams

(Rashidi et al., 2017). During the dry season, there is increased visibility and easy access in some areas due to low ground cover and undergrowth. In Cameroon, most elephant poaching takes place during the rainy season (May to June and September to December) (Latour & Stiles, 2011), when elephants are looking for ripe wild mango fruit in forests and poachers' steps are muffled (Latour & Stiles, 2011).

The case study shows an increase in the poaching of elephants from 2012 to 2019 in the case study areas of Gumare, Seronga, Shakawe and Maun. This increase is not unique to the study villages, as similar research on elephant poaching in other countries has been documented. In Mozambique, 20,000 elephants were illegally hunted and killed in 2013 alone (Salum et al., 2017). Poachers in rural areas kill elephants for individual commercial purposes. In most cases, elephants are poached for ivory. For example, elephant tusks or ivory would be sold illegally to generate funds for extra personal income to sustain their standard of living and for purchasing power and business needs. These findings match those of Tanzania (Latour & Stiles, 2011), Uganda and Kenya (Salum et al., 2017; Warchol & Johnson, 2009), and Cameroon (Obour et al., 2016).

The profile of poachers in this study as described by respondents is similar to poachers' profiles in South Africa, where the general characteristics of a poacher is a low-income, unemployed South African man in his 40s who possesses good bush hunting skills (Warchol & Johnson, 2011). Hitherto, elephants (and other animal species) are illegally hunted, and although the numbers are not significant, cumulative projections show a trend that is worrisome (Mbaiwa, 2018), hence the need to strategise and intensify anti-poaching patrols, especially during the winter period when poaching becomes relatively rampant in the Okavango Delta area.

Conclusion and Recommendations

In our attempt to assess the poaching or illegal hunting of elephants, we found an increase in elephant poaching 2012 to 2019 in the four case study villages in the Okavango Delta in Northern Botswana. Although the general perceptions of the respondents were that elephant poaching is done by foreign nationals, existing data revealed a different image where poaching is done by Botswana locals in the area. Furthermore, poachers (local and foreigners) have access to hunting weapons (rifles and live ammunition), which is a worrisome finding because it implies access to weapons. Overall, some observations and perceptions on the increased poaching of elephants affect government initiatives that were established for the conservation of elephants; hence we recommend that the Anti-Poaching Unit in the Department of Wildlife and National Parks intensify patrols and operations in the Okavango sub-district.

The Department of Wildlife and National Parks should furthermore ensure that ammunition for the most commonly used .375 rifle becomes more expensive and difficult to obtain. Stricter controls should be made on the acquisition of .375 rifle ammunition and handling. The Department of Wildlife and National Parks should train

more investigators and have wildlife prosecutors within the Department to speed up the prosecution of wildlife cases and ensure high conviction rates.

The result of this study may serve as a starting point for future researchers on elephant poaching in the Okavango sub-district. A larger study can be done on elephant poaching in more villages/regions than the current study covered. Researchers may also be interested in investigating where and how the local people obtain rifles, particularly the .375 rifle, and live ammunition in the study area.

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