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Original Research Article

Local attitudes toward the cultural seasonal hunting bans in Ghana's Bomfobiri Wildlife Sanctuary: Implications for sustainable wildlife management and tourism

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ABSTRACT

This study investigated the attitudes of the people living in three adjacent communities close to the Bomfobiri wildlife sanctuary in Ghana concerning the observation of the cultural, seasonal closures of hunting. The cognitive and motivational approaches to attitude theory in wildlife management guided, under the phenomenology method, the collection of qualitative data on the importance of the seasonal closure of hunting and its implementation challenges. This inquiry was deemed crucial to improving the disjointed relationship between park management and local communities that often make wildlife conservation and tourism difficult at the Bomfobiri Wildlife Sanctuary. Forty-five key wildlife stakeholders, including park officers, traditional authorities, elderly residents, and bushmeat traders, were purposively selected with some interviewed personally and others engaged in focus group discussions. Despite a more significant number of stakeholders admitting the importance of the seasonal closure of hunting, some challenges impeded its implementation. These included the absence of alternative arrangements to support hunters during the period for the annual closure of hunting; lack of proper sensitisation and education on the hunting ban; absence of transparency in the equitable sharing of proceeds from wildlife tourism at the Bomfobiri Wildlife Sanctuary among park officers (Government) and the traditional authorities; the booming bushmeat business and the fear of losing customers after the fallow period; and purported corruption on the part of park officers, threatening the observation of the seasonal closure of hunting. The study has offered proactive suggestions to the Wildlife Division of the Forestry Commission and mainly to park management at the Bomfobiri Wildlife Sanctuary on how to address these challenges and improve wildlife management and sustainable wildlife tourism potentials in Ghana. Paramount among them is the tactful provision of alternative sources of livelihood and the establishment of enterprises in non-timber forest products as sources of income for hunters during the seasonal hunting ban.
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1. Introduction

Forests offer many goods and services that serve both individual and community needs. Aside from timber, there are many other non-timber forest products (NTFPs) that are equally important and contribute immensely to the economy and livelihood of many households, especially those in developing countries. Rural households, particularly those on the borders of the forest, depend on these resources for food, energy, and other aspects of their welfare (Obasi and Vivan, 2016; Gatiso, 2019; Blackie and Casadevall, 2019). In most parts of Africa, one important NTFP whose extraction has moved from traditional subsistence to commercial trade and has become a means of support for both urban and rural residents is bushmeat (Gils, 2016; Martins and Shackleton, 2019). Traditionally, bushmeat (the meat of wild animals) has been a natural source of protein and hunting for bushmeat is a major constituent of rural livelihood strategies in tropical forest zones for most people in Africa, particularly West and Central Africa (Petrozzi et al., 2016; Lescuyer and Nasi, 2016). People can acquire a license from the Wildlife Division and hunt grasscutters and other wild animals outside parks and reserves as bushmeat (Acquah, 2013).

Although bushmeat is one of the major sources of protein for rural communities, the unsustainable hunting and trade of bushmeat have become a widespread commercial activity, representing a significant extinction threat to wild animal populations (Ripple et al., 2016; Wilkie et al., 2019). While many tribes in rural communities have hunted wild animals for subsistence over millennia, the unsustainable nature of this practice has accelerated with severe negative consequences on wild animal populations (Smith et al., 2016). The illicit methods of hunting, such as snaring, trapping, poisoning, night hunting, and flushing game with fire, have ramifications for both wildlife and the environment (Alexander, 2011; Wiafe, 2018). The present rate of exploitation is not only unsustainable but also indiscriminate and poses a serious threat to biological diversity and ecological processes and also creates a growing problem for wildlife tourism development in Ghana as it pertains to other countries in the sub-region (Obour et al., 2016; Gray et al., 2017). The overexploitation of resources from the forest has led to the establishment of various forest and wildlife management and control programs in most forest regions (Adom et al., 2019). One of these programs is encouraging wildlife tourism in the protected areas (World Bank, 2018), which has the potential to generate financial resources for local communities and conserve species and habitats (Balmford et al., 2009; Mutanga et al., 2017).

Moreover, wildlife tourism can accumulate educational and socio-developmental benefits as infrastructure builds around tourism activities (Macfie and Williamson, 2010). The Ghana wildlife tourism industry, for instance, contributes close to two billion dollars annually to the nation's economy (Ghana News Agency, 2014). In an attempt to control the wanton hunting of wildlife, various countries have instituted hunting bans (Blackie and Casadevall, 2019). In Ghana, observing closed hunting seasons is crucial to maintaining the sustainability base of fauna diversities. The closed hunting season has been culturally planned by the early forebears in the Ghanaian communities with various myths and taboos associated with it (Adom, 2018). The annual closed hunting season is observed from August 1 to December 1. During this period, no person can hunt or capture any wildlife species except certain specified species such as grasscutters. This ban is a measure adopted to allow animals to breed and produce more, as well as to protect indigenous wildlife species (IUCN, 2010). In this regard, the Wildlife Division of the Forestry Commission (WD-FC) in line with the Wildlife Convention Regulations Legislature Instrument (LI) 685 of 1971 has brought in measures to enforce the ban on hunting during closed seasons in Ghana. However, there have been challenges in the implementation of the hunting season bans in various communities in Ghana. This study investigated the attitudes of stakeholders toward the seasonal hunting ban in three adjacent communities around the Bomfobiri wildlife sanctuary in the Ashanti Region of Ghana: Kumawu, Bodomase, and Anananya. The research focused on the following questions:

1. Why is the cultural seasonal hunting ban important in wildlife management and tourism?
2. What are the challenges in observing the cultural seasonal hunting ban in the adjacent communities around the Bomfobiri Wildlife Sanctuary in the Ashanti Region of Ghana?
3. How can the challenges be remedied to promote the cultural seasonal hunting ban at the Bomfobiri wildlife sanctuary to improve wildlife management and tourism?

1.1. Local cultures and local People's attitudes toward wildlife conservation

Local people's ecological knowledge and culture and their role in wildlife conservation are increasingly gaining awareness. Studies of local cultures and local people's role in wildlife conservation support the contention that local people's attitudes toward wildlife conservation can affect the success of conservation schemes and programs (Mir et al., 2015). Thus, understanding the attitudes of local people is crucial for the success of conservation plans for wildlife species of high conservation value (Bowen-Jones, 2012; Gemeda and Meles, 2018). Moreover, understanding the factors influencing these attitudes is important for devising strategies to alleviate human-wildlife conflicts (Adom et al., 2020). Even though this conflict is an age-old phenomenon, its frequency has increased in recent years as a result of growth in the human population and the resulting expansion of human activities such as land modification for agricultural purposes (Nyhus, 2016). In Ghana, human-wildlife conflicts in the form of crop-raiding, livestock predation, and killing of people caused by agricultural expansions and other land-use changes have been reported in the Bia Conservation Area (Harich et al., 2013) and the Mole National Park (Wiafe, 2019). This has led to increasing resource use by humans at the human-wildlife interface, resulting in an intensification of

human-wildlife conflict (Inskip and Zimmerman, 2009; Ladan, 2014). A wide range of human dimensions, including the perception of local people regarding the value of wildlife, how wildlife should be managed, and how they affect or are affected by wildlife, influence wildlife management decisions (Lewa et al., 2017; Adom, 2019). Many studies have acknowledged the importance of integrating these interacting, human-related factors into management plans (Anand and Redhakrishna, 2017). To ensure wildlife management strategies are efficient and sensitive to local conditions, it is prudent to recognise anthropological factors, such as the attitudes of local people, which give insight into the cultural and sociopolitical perspectives of human-wildlife conflicts (Mudimba and Tichaawa, 2019). This can offer insight into how they will behave—for example, their response to economic losses caused by wildlife, how they will observe wildlife protection regulations, and the extent to which they are willing to coexist with wildlife (Dickman, 2010). Attitude surveys may make it feasible to envisage how people's attitudes will influence conservation programs and policies and vice versa, permitting more effective management and planning (Adom, 2016).

1.2. Sustainable wildlife tourism

Over the years, the concept of sustainable tourism development has become almost generally accepted as a desirable and politically appropriate methodology for tourism development (Fabic and Jurdana, 2018). Much attention has been focused on sustainable tourism development in many scientific studies, particularly in tourism studies. The term "sustainable tourism" was first used almost two decades ago (Buckley, 2012), and emerged in part as a negative and reactive concept in response to the many tourism issues, including environmental damage and serious impacts on society and traditional cultures (Bramwell and Lane, 2012). Increasingly, tourism development has been viewed as a solution capable of making positive changes via the ideals of sustainable tourism (Zolfani et al., 2015). According to Bramwell and Lane (2012), sustainable tourism has played a significant role in realising ways to secure positive benefits, as well as the established approaches of regulation and development control (Branwell and Lane, 2012).

The positive impacts of wildlife-based ecotourism on the conservation of wildlife species have been examined extensively and inherently attached to the discussion of links to conservation development. Sustainable tourism is an integrated and holistic plan adopted as the replacement for conventional mass tourism (Akbarian and Rezvani, 2015). Thus, it ought to ensure that environmental resources are put to optimal use and that utmost respect is granted to the socio-cultural authenticity of the locals (Day and Cai, 2012). Existing literature recognises challenges affecting the implementation of sustainable tourism policies. For instance, the term "sustainability" presented a difficulty that impeded sustainable tourism implementation since its meaning had been contested by the different schools of thought (Muangasame and McKercher, 2015). Nevertheless, studies suggest that the implementation of sustainable tourism failed based on the assumption that dominant economic powers direct tourism development (Dabphet et al., 2012). Additionally, factors such as political misdirection and conflict and volatility have been cited as inhibiting sustainable tourism implementation (Ruhanen, 2013).

1.3. Cognitive and motivational drivers to the attitude theory in wildlife management

Attitudes are people's evaluation of what is favourable or unfavourable of a person, object, or concept (Decker et al., 2001). Social psychologists posit that attitudes are used in predicting human social behaviour (Brooks and Warren, 2018). However, attitudes are dictated by both cognitive and motivational drivers. The cognitive drivers suggest that the values and value orientation of a person, which are the mental constructs that they use in perceiving, remembering, and thinking, dictate their behaviour (Albarracin et al., 2018). These mental constructs are from the basic beliefs formed as a result of direct experiences and social norms that are culturally constructed (Nordlund, 2009). Values are often the first thoughts of a person which they believe is true though they are not necessarily objective facts (Decker et al., 2001; Lockton, 2012). These values are often difficult to change once they are well established; yet, with persuasion based on a high level of knowledge (Milfont et al., 2010) and socioeconomic and situational factors as well as individual differences, a person's values can change and this can influence the attitude-behaviour consistency (Brooks and Warren, 2018).

On the other hand, motivational drivers assist in explaining or finding reasons for the demonstration of a specific human social behaviour (Garcia et al., 2019). They offer sufficient information on why we do what we do (Decker et al., 2001), which often stems from the cognitive forces that drive people to pursue particular goals or lines of action, based on the Need Classification theories as proposed by Abraham Maslow (Decker et al., 2001). The Need Classification theories propose that basic needs must always be met before the higher level of survival needs. Knowing the motivational drivers of the actions of a person, especially in wildlife issues, assists in understanding why some activities are engaged in by hunters, as well as the causes of conflicts among stakeholders (Brooks and Warren, 2018). It helps wildlife managers to identify substitute activities that can satisfy the same motivations that drive hunters and other wildlife stakeholders. The cognitive approach examines the process from thoughts to actions and the motivational approach delves into what drives such actions to attitude theory; together they offer an understanding of the public's relationship with wildlife. Knowing what influences attitudes and behaviours of hunters and other stakeholders in wildlife use and management in the communities closer to the Bomfobiri wildlife sanctuary in Ghana would improve the responsiveness of wildlife management. This would also positively impact on wildlife conservation and tourism in the area to boost economic development.

2. Materials and methods

2.1. Study areas

This study was rooted in the fields of social and cultural anthropology in three neighbouring communities in the Sekyere-Kumawu District in the Ashanti Region of Ghana: Kumawu, Bodomase, and Anananya (Fig. 1) out of the twenty-six fringed communities around the Bomfobiri Wildlife Sanctuary. These communities were selected because they are very close to the Bomfobiri Wildlife Sanctuary with the highest population of hunters in the Sekyere-Kumawu District (Office of the Bomfobiri Wildlife Sanctuary, 2018). The study was conducted within fourteen months from June 2018 to August 2019. The population census conducted in the areas showed that Kumawu had 65,402 residents, Bodomase had 14,391 and Anananya had 9101 (Ghana Statistical Service, 2017). The main occupations were hunting, farming, and fishing (Ghana Statistical Service, 2017). However, less than ten percent of the residents engaged in artisanal professions such as masonry, building and construction, tailoring, hairdressing, carpentry, and metal works (Sekyere Kumawu District Assembly, 2014). The crops grown in the areas included yam, maize, plantain, and rice. Chickens, goats, turkeys, pigs, and sheep were reared in domestic homes. The district experience the wet Semi-Equatorial climate. The mean temperature of the district is 24 °C, though some areas had temperatures as low as 20 °C (Sekyere Kumawu District Assembly, 2014). The major rainfall season is March to July with minor rainfall from mid-September to November. The area had a semi-deciduous forest containing areas of more open savannah with sandstone outcrops (Adom, 2018) with trees such as Wawa, Sapele, Odum, and Mahogany. The savannah zone covered almost 70 percent of the district with the remaining 30 percent being forest zone (Sekyere Kumawu District, 2014).

The Kumawu town is the home of one of the famous wildlife sanctuaries—Bomfobiri Wildlife Sanctuary (Fig. 1), established in 1975 and covering a total area of 53 km^2. It is positioned between 6° 54′ to 6° 61′ N latitude and 1° 07′ to 1° 13' W longitude (Sekyere Kumawu District Assembly, 2014). The sanctuary has waterfalls with a diversity of flora and fauna and outstanding hills. The fauna recorded to be present in the sanctuary include species of mammals (*Mammalia*), hornbills (*Bucerotidae*), crocodiles (*Crocodilus cataphractus*), birds (*Aves*), green monkeys (*Chlorocebus*) and mona monkeys, (*Cercopithecus mona*), buffalo (*Bubalus bubalis*), Red River hog *(Potamochoerus porcus*), duikers (*Cephalophinae*) and bush bucks (*Tragelaphus sylvaticus*) (Adom, 2018).

2.2. Research design

The study aimed to investigate the challenges associated with the observation of the seasonal hunting closure and how they could be remedied using the active participation and cultures of the local people. Relying mostly on verbal data from respondents, who used textual and visual descriptions to express their views, the study was rooted in qualitative research design (Fraenkel et al., 2012; Leedy and Ormrod, 2010).

2.3. Research method and sampling procedures

This study aimed at deepening the understanding of the challenges faced by park officers in the Bomfobiri Wildlife Sanctuary (Fig. 1) in the implementation of the four-month seasonal ban on hunting in the communities around the wildlife

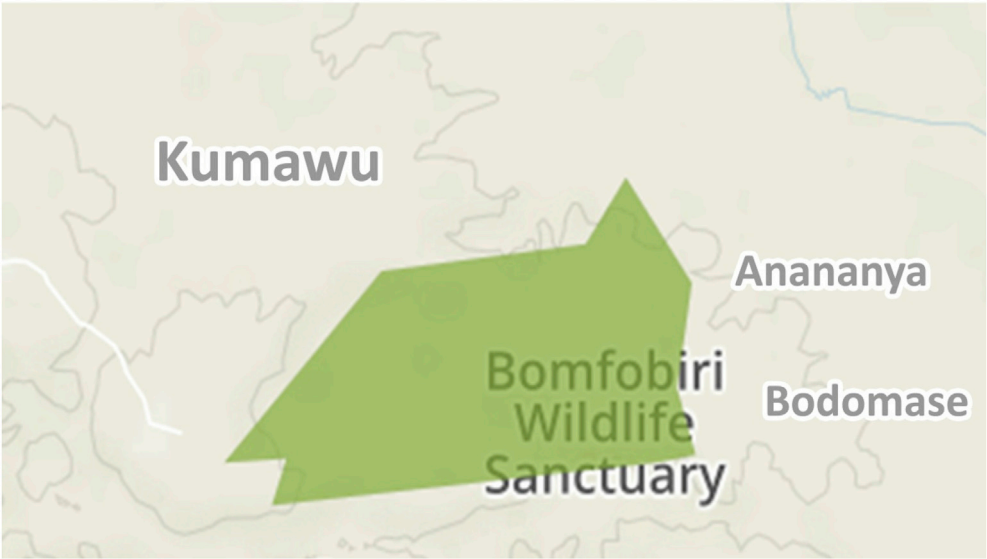

Fig. 1. Map of Bomfobiri wildlife sanctuary and the study areas (Kumawu, Bodomase, and Anananya)
Source: Sekyere Kumawu district Assembly Office, Kumawu, Ashanti region of Ghana.

reserve. Thus, the researchers explored the perspectives of hunters, park officers, traditional authorities, and bushmeat sellers who were directly affected by its implementation by engaging in lengthy interviews (Leedy and Ormrod, 2010) and thus adopting the phenomenology research method. The researchers wanted to understand the lived experiences (Maypole and Davies, 2001) of the seasonal hunting ban of the stakeholders in the hunting profession. Rich descriptions of the challenges faced by both hunters, park officers, bushmeat sellers, and the traditional authorities aided in the comprehension of the challenges fully and proposals for proactive solutions. These study participants were selected purposively (Fraenkel et al., 2012; Leedy and Ormrod, 2010) because they had experiences related to the phenomenon being researched. Phenomenology often requires that researchers spend considerable time with the respondents through lengthy interviews (Creswell, 2009). A total of forty-five (45) respondents were involved in the study (Table 1), an appropriate sample size as up to ten participants are sufficient to reach data saturation (Boyd, 2001). Actually, data saturation was reached as the views of each category of respondents had the same focus as those expressed in the personal interviews and focus group discussions. The seven park officers were selected from the Bomfobiri Wildlife Sanctuary because they worked in all three study areas. However, the hunters, traditional authorities, elderly residents, and bushmeat sellers were chosen from across the three study areas. To ensure ethical research, all study participants signed an informed consent form that outlined the rationale for the research, its procedures, risks and benefits, voluntary participation nature, the participants' rights to stop the research at any time, and procedures to protect the confidentiality of participants' identity and views (Bailey, 1996). The researchers read out the contents of the form to participants who could not read and write so they could provide oral consent. They were assured of anonymity and that their comments would be used solely for research purposes.

2.4. Data collection tools and procedure

Two data collection instruments in the field of social and cultural anthropology were used for collecting data: Personal Interviews and Focus Group Discussion. The interviews assisted the researchers in gaining detailed descriptions and information (Fraenkel et al., 2012) of the challenges associated with the observation of the seasonal closure of hunting in the study areas. Moreover, the firsthand information offered by park officers and local authorities provided useful insight into management challenges in protected areas (Struhsaker et al., 2005). Different semi-structured interview guides were carefully designed for each of the different categories of the study participants namely the park officers, traditional authorities, hunters, elderly residents, and bushmeat traders based on the study's research questions were used in conducting a total of ten in-depth personal interviews and nine focus group discussions in the three study areas. These guides were pre-tested on a pilot section of the sample and were also reviewed by two skilled phenomenology researchers whose suggestions and corrections were incorporated in the final versions.

2.5. Data analysis plan

The Interpretative Phenomenological Analysis (Smith and Osborn, 2008) was used in analyzing the ten audio-recorded personal interviews with the park officers and traditional authorities as well as in the interpretation of the nine video-recorded focus group discussions with the hunters, bushmeat sellers, and the elderly residents. The first stage in the analytical procedure involved transcribing the views of all the participants, referred to as the emic perspective by Smith and Osborn (2008). The researchers carefully listened to the interviews to grasp the exact words and phrases of interviewees to develop a holistic sense—the gestalt (Hycner, 1999)—to be able to represent their voices by thickly quoting them. All the personal views and biases of the researchers were bracketed. Member checking with key participants was carried out after the data were transcribed to ensure the validity and accuracy of garnered data (Leedy and Ormrod, 2010). Statements that responded to the research questions for the study were carefully weighed and extracted to offer interpretations (Hycner, 1999). The number of counts of a particular view expressed was deemed as of great significance in relation to the research questions and were judged as very relevant in furnishing tentative answers to the research questions. This stage is referred to as the etic perspective (Smith and Osborn, 2008). The units of meanings from the views were discussed in relation to accepted theories and views in scientific manuscripts published in trusted academic sources. A final summary of new knowledge on the challenges associated with the cultural seasonal hunting ban and how to reinforce their implementation using the active involvement of local communities and their cultures was written.

Table 1
This study explored local attitudes (n = 45) toward seasonal hunting bans in Ghana's Bomfobiri Wildlife Santuary (June 2018–August 2019). Three villages comprised the study sample, with approximate equal parity between villages.

Study Areas	Hunters	Park Officers	Elderly Residents (Above age 45)	Traditional Authorities	Bushmeat Traders	Sub-Total
Kumawu	5	7	5	1	4	22
Bodomase	5	–	3	1	2	11
Anananya	5	–	3	1	3	12
Total Sample Size	**45**					

3. Results and discussion

3.1. Research question 1: why is cultural seasonal hunting ban important in wildlife management and tourism?

All of the forty-five study participants unanimously admitted that the closed hunting seasons were very helpful and advantageous. The park officers interviewed told the researchers that the seasonal closure from August 1 to December 1 was the time when the fauna species got pregnant and/or tended their young, and that the hunting ban ensured the sustainability base of the wildlife so that wildlife tourism could be possible. In a personal interview, a park officers disclosed:

> *The four months period for the seasonal closure on hunting from August to December is the time that many of the fauna species engage in activities that lead to the increase in their stock. These activities include mating and getting pregnant as well as nursing their young ones. Therefore, the seasonal closure on hunting affords the fauna species considerable time to procreate and take care of their young ones for them to get matured. This invariably leads to the multiplication of their numbers, ensuring their sustainability base* (Park/Bomfobiri-3, Personal Communication, August 11, 2018).

This means that when the mating and nursing cycles of the fauna species are disrupted through unregulated hunting activities during the closed hunting season, the populations of the animals in the region, and especially in the Bomfobiri Wildlife Sanctuary, are significantly reduced and/or become extinct, making the place less likely to attract tourists.

The hunters as well as the bushmeat sellers in the focus group discussions surmised that the seasonal closure of hunting was '*a blessing in disguise for hunters*' (Hunters/Bodomase, Personal Communication, August 15, 2018) because when the stock of the fauna species in the region was sustained, it impacted positively on their hunting as there would be a constant supply of bushmeat for their customers. Some of the hunters confirmed the results of the empirical research, noting that when they hunted during the seasonal closure, they mistakenly killed some pregnant animals. This experience convinced other hunters of the need not to kill pregnant animals, an unforgivable sin punishable by their ancestors and deities. A discussion of this cultural belief became a cognitive driver that impacted favourably on the attitudes of the hunters who resolved to observe the seasonal hunting ban.

The elderly residents as well as the traditional authorities supported the seasonal closure. One of the chiefs quoted an Akan proverb, saying '*Adidi daa ye sen adidi preko*' (It is better to eat daily than to eat all you have at once) to show solidarity with the hunting ban. Like many of his contemporaries, he explained that the hunting ban sustained and increased the numbers of the fauna species so that they could be consumed all the time rather than killing the sustainability base. The expression, '*We will run at extinction if we don't observe the seasonal closure on hunting*' was a popular phrase from the elderly respondents, supporting the seasonal closure of hunting and based on the Ghanaian cultural value that the decisions made today must accommodate for the future. They believed in a cyclical life pattern; they must sustainably use wildlife resources so that the unborn generation would equally benefit.

The findings clearly show that the cognitive drivers of the people based on their cultural beliefs (Adom, 2018, 2019) made them realise the importance of supporting the seasonal ban on hunting to allow wildlife enough time to procreate and maximise their populations, as per Dickson et al., 2009, Morgera and Wingard (2009), Forestry Commission (2018), and Masaeli et al. (2019) who theorise that seasonal closures make procreation among animals possible while keeping wildlife species at sustainable and desirable levels for posterity purposes. This means that promoting education on seasonal hunting closures in fringe communities closer to wildlife reserves would make wildlife tourism possible as many tourists want to visit reserves with high diversities of fauna species. The findings offer a new strategy to park officers and wildlife managers to capitalise on the cultural beliefs and values that often form the cognitive drivers of rural people living around wildlife reserves in their sensitisation campaigns to promote the sustainable use of wildlife such as closed hunting seasons. This could be a potential conservation and/or sustainability strategy in rural regions where cultural beliefs favour the conservation of wildlife resources.

3.2. Research question 2: what are the challenges in observing the cultural seasonal hunting ban in the adjacent communities around the Bomfobiri Wildlife Sanctuary in the Ashanti Region of Ghana?

Despite admitting the importance of the seasonal closure of hunting, all categories of the study participants remarked that the observation of the closure faced many challenges, and eighty-five percent thought the challenges were dire and threatened the smooth observation of the seasonal closure. The challenges expressed included:

1. Absence of sustainable alternative arrangements to support hunters during the period for the seasonal closure of hunting
2. Lack of proper sensitisation and education on the hunting closure
3. Absence of equitable sharing of proceeds from wildlife tourism at the Bomfobiri Wildlife Sanctuary among park officers (Government) and the traditional authorities
4. The booming bushmeat business and the fear of losing customers after the fallow period
5. Corruption on the part of park officers, threatening the observation of the seasonal closure of hunting

3.2.1. Absence of sustainable alternative arrangements to support hunters during the period for the cultural seasonal hunting ban

Hunting provides the livelihood needs of the hunters and bushmeat traders. Therefore, it becomes especially difficult for hunters to support themselves and their families during the seasonal closure. Some of the hunters also engage in farming activities. As such, they rely on their farming produce for life sustenance during the closed hunting ban. On the other hand, many of the hunters who do not own farms had to find alternative sources of livelihood. Some of these hunters were able to find work in building construction, electrical wiring, and carpentry. However, because they didn't possess any skills in these specialised fields of work, they were made to serve as labourers and as a result, the salaries given them are very low. As well, the jobs were not sustainable as they depended on the mercy of contractors and the number of contracts they won. This often left hunters impoverished during the seasonal closure of hunting. The view of one hunter in a focus group discussion revealed this ordeal:

> *I do not have any skills apart from hunting which I learned from my father. As such, the four months seasonal closure on hunting leaves many of us impoverished. Most times, I have to follow some friends and relatives who are masons to engage in building projects. Yet, when they also have fallow periods without any project, I almost go hungry with my family. As such, I am tempted to engage in full-scale hunting [hunting other animals apart from grasscutters]* (Hunter1-Anananya, Focus Group Discussion, July 18, 2019).

The elderly residents as well as the traditional authorities all sympathised with the hardship the hunters went through during the four-month fallow period. They admitted that this often pushed some of the hunters to breach the observation of the seasonal hunting closure. A traditional authority in Kumawu quoted an Akan proverb,'The snake bites when it is angered' (Traditional Authority-K3, Personal Communication, June 10, 2019). This means that the hunters failed to observe the seasonal hunting ban when they and their families had no chance for survival during the fallow period. Thus, the challenge to support themselves and their families was the hunters' motivational driver to defy the seasonal hunting closure. According to the Needs Classification theories, every individual would ideally be motivated to pursue the goal of satisfying their basic needs, especially those of their families. Thus, the situational factors and socio-economic needs were gradually changing their value orientation. These motivational factors were unfavourably impacting the hunters' attitude-behaviour consistency which was favourable toward the observation of the seasonal closure of hunting.

3.2.2. Lack of proper sensitisation and education on the cultural seasonal hunting ban

The park officers said that they started the education on the hunting ban barely a month before the period began. Every July, they visited the various hunting communities to talk to them about the impending seasonal closure of hunting. They claimed they liaised with the traditional authorities in these communities to create awareness. Yet, many of the hunters fail to attend. They also mentioned that they used the Information Centres to inform the communities that the seasonal closure for hunting was about to commence. This is often done after the national official press release by the Wildlife Division. However, the hunters, elderly residents, and traditional authorities revealed that all the park officers did to sensitise them of the seasonal closure of hunting was just issuing threats and warnings on breaching the ban via their Information Centres. The hunters told the researchers that the park officers had not convened any meetings to educate them and that the Wildlife Division only convened such meetings when the droughts began to warn them about wildfires and ways to avoid them. However, meetings regarding the seasonal closure of hunting were never held in any of the hunting communities. In a focus group discussion in Kumawu, the hunters opined:

> *The game officers [referring to the park officers] have not engaged any of us to educate us on the need to observe the seasonal closure, highlighting the importance and what we need to do to take care of ourselves financially during the period. All we hear are the issuing of threats and warnings from the Information Centres on the penalties for breaching the hunting ban. It sometimes takes us by surprise. The reminders and education should have come earlier and also through community meetings for it to be interactive. Many of us feel that the Wildlife Division is insensitive to our plight as hunters. They just use coercion to implement the hunting ban without any proper consultations* (Hunters-Kumawu, Focus Group Discussion, November 14, 2019).

The traditional authorities admitted that the park officers had convened such meetings but almost twelve years ago. After the establishment of the Information Centres, they didn't organise community gatherings on the hunting ban and its relevance. It was no surprise to find the new hunters breaching the observation.

3.2.3. Absence of transparent, well-documented, fair and equitable sharing of proceeds from wildlife tourism revenue at the Bomfobiri Wildlife Sanctuary

The traditional authorities mentioned that the Wildlife Commission gave the Kumawu Traditional Council some of the revenue of the Bomfobiri Wildlife Sanctuary. However, they were not given fair and transparent accountability of the wildlife proceeds. They said:

> *We are not given proper accounting of the revenue gotten from the sanctuary. We feel embittered because we are cheated by the park officers* (TA-KU-FGD1, Personal Communication, June 20, 2019).

According to the Kumawu Traditional Council, this sometimes made them unmotivated to support the seasonal ban on hunting aimed at improving wildlife tourism in the sanctuary. When the Bomfobiri park officers were questioned on this, they admitted that there was no fixed arrangement for sharing wildlife tourism revenue with the local communities. However,

they had fixed arrangement for sharing the revenue from the bushmeat lincense issued to hunters. The District Assemblies are entitled to 80% of the bushmeat lincense revenue. They mentioned that the District Assemblies were supposed to liaise with the traditional communities on how best to use the funds in addressing the local needs of the fringe communities. The park manager disclosed that their recent checks revealed that the local communities were not aware of such arrangement because the District Assemblies do not inform them anytime such finds are released.

As purported by the attitude theory, wildlife managers must always find ways to positively influence the attitudes of all the stakeholders in wildlife management, especially addressing issues that can create fertile grounds for conflict. Therefore, in terms of the sharing of wildlife tourism revenue, a robust, transparent and well-documented structure that ensures fairness and equity must be agreed upon and put into force by all the concerned stakeholders, including the local authorities.

3.2.4. The booming bushmeat business and the fear of losing customers as a result of the cultural seasonal hunting ban

The bushmeat sellers told the researchers that, though they admitted that the seasonal closure of hunting was helpful, they feared they would not maintain their clients after the fallow period. During the fallow period, they sustained their markets using grasscutters, yet, the taste of their clients varied and this made it difficult to sustain their businesses. In a focus group discussion they said:

> *During the period for the hunting ban, many of our clients are lost and this affects our revenue generation. It is not every client who likes grasscutters. Thus, we are lured into buying other kinds of bushmeat from hunters who can get us some, although illegal. We have to maintain our clients at all costs. They give us our daily bread* (Bushmeat Seller-Bodomase, Focus Group Discussion, March 14, 2019).

This means that the bushmeat sellers prioritised the bushmeat demands of their clients, thereby buying bushmeat from hunters who engaged in full-scale hunting during the closed hunting season. This implies that the hunters were motivated to breach the hunting ban because they were optimistic that their bushmeat would be bought by the bushmeat sellers. Thus, the thriving market of bushmeat among clients as well as the patronage by bushmeat sellers may be one of the motivating drivers why hunters fail to observe the ban on hunting, as has been reported in previous studies (Brashares et al., 2004; Aalangdon, 2005; van Vliet et al., 2016).

3.2.5. Observation of the cultural seasonal hunting ban threatened by the alleged corrupt activities of some park officers at the Bomfobiri Wildlife Sanctuary

The traditional authorities registered their displeasure with corrupt park officers who liaised with some hunters to engage in full-scale hunting during the seasonal closure. These corrupt officials gave information to some hunters on their patrol operations, making it difficult to arrest those who hunted during the seasonal closure. These actions infuriated many of the innocent hunters and propelled them to breach the observation of the seasonal closure. The traditional authorities in a focus group discussion at Kumawu told the researchers:

> *There are corrupt officers in the Wildlife Division. These corrupt game officers arrange with hunters to engage in full-scale hunting so that they share the gains. Because of their selfish interests, they inform the hunters of areas they would patrol and where they would set their camps. This prior knowledge assists their accomplice hunters to use alternative pathways while engaging in full-scale hunting during the fallow period* (TA-KU-FGD2, Personal Communication, June 22, 2019).

Corruption has been tagged as one of the setbacks to efficient wildlife management (TRAFFIC, 2013). Some of the corrupt Bomfobiri park officers were alleged to charge huge fees to set free hunters who were caught killing or capturing protected species during the seasonal closure. The hunters and the elderly residents insisted that if these corrupt officials were not prosecuted, the smooth observation of the seasonal hunting closure would be difficult. The goal interference models in attitude theory suggest that conflicts in wildlife management often occur when the behaviours of one group are perceived to inhibit motivation fulfillment by another group (Decker et al., 2001). Thus, the hunters did not want to observe the hunting ban because they claimed corrupt park officers offered assistance to some hunters to breach the ban. However, they were reluctant to report such corrupt officers, claiming that nothing would be done to them. When the researchers questioned the park management of the purported corruption allegations, they admitted that they were true. The park manager cited some of their colleagues who have been dismissed and prosecuted for conniving with hunters in breaching the hunting ban regulation. He told the researchers that he had trusted informants in each of the hunting communities who reported such officers. Immediate queries are issued and an investigation committee is set up to commence immediate investigations into the corruption allegations. He assured that after their investigations proved such officers guilty, he prepares his report and recommends for their dismissal.

3.3. Research question 3: how can the challenges Be remedied to promote the cultural seasonal hunting ban at the Bomfobiri Wildlife Sanctuary to improve wildlife management and tourism?

3.3.1. Provision of sustainable alternative arrangements to support hunters during the period of the cultural seasonal hunting ban

The findings of the study have revealed that one of the main reasons why some hunters failed to observe the closed hunting season was because of the absence of an alternative source of livelihood to support themselves and their families. Similar findings were noted among residents in the Western Serengeti, Tanzania (Kideghesho et al., 2016), in the forest-

fringed communities closer to the Chiquibul National Park in Belize, Central America (Groff and Axelrod, 2013), and among the rural dwellers around the Mole National Park in Ghana and the Tarangire National Park in Tanzania (Abukari and Mwalyosi, 2018). The park officers at the Bomfobiri Wildlife Sanctuary admitted that the hunters had to be supported with alternative sources of livelihood provided by the government and other benevolent NGOs which would help prevent them from engaging in full-scale hunting during the closed season. This ties in with the attitude theory that postulates that substitute activities must always be used as a form of motivation for demonstrating favourable attitude-behaviour consistency toward sustainable wildlife management (Decker et al., 2001). Wildlife trades in NTFPs, such as mushroom cultivation, beekeeping, and honey production, can serve as a supplementary income source for hunters during the closed season (Marshall et al., 2006; Cooney et al., 2015). The government through the District Assemblies and with the assistance of other private organisations can enrol hunters in programs to learn skills for alternative enterprises. Also, the Bomfobiri park management could enrol hunters in training courses in carpentry work, metal welding, bead-making, building construction, and agricultural production. These supplementary income-generating ventures would help the hunters meet their financial needs during the closed season for hunting (Roe, 2008; Ros-Tonen and Wiersum, 2008). Broad consultations with the hunters and park officers must be carried out to be able to find suitable alternative sources of livelihood that are locally viable, so that sustainability of the small-scale enterprises would be established.

3.3.2. Embarking on early and proper sensitisation and intensive education on the cultural seasonal hunting ban

The findings of the study revealed that the lack of sensitisation and proper education of the local people living in the fringe communities around the Bomfobiri Wildlife Sanctuary often resulted in hunters not observing the hunting ban. The hunters complained that the park officers had not been engaging them before the period of the hunting ban began. Some admitted that they just heard public announcements via local information centres, only one week before the commencement of the ban. The park officers admitted that they needed to do more in terms of sensitisation and education. Instead of relying on only the information centres to inform the residents in the forest-fringe communities about the hunting ban, the Wildlife Division must increase their communication outlets. The Wildlife Division of the Forestry Commission in Ghana must skilfully synergize the traditional modes of education such as folklore and communal discussions with modern communication media such as audio-visual, video, print media, and internet-based communication (Adom, 2016). This is important as the majority of rural communities do not have access to these modern communication technologies. The Wildlife Division must liaise with the traditional leaders and village/family heads who can best convince their people to support the hunting ban arrangement.

Attitude theory contends that the level of knowledge or education impacts on an individual's attitude and behaviour (Brooks and Warren, 2018). When the level of knowledge is low, especially regarding wildlife management such as hunting closures, the public acts unfavourably toward it (Ridpath and Passler, 2016). This underscores why the Wildlife Division of the Forestry Commission through the park management must prioritise education on the hunting ban in all the fringe communities around the Bomfobiri Wildlife Sanctuary. Such educative engagements with the local communities will ensure good cooperation between park management and local communities (Abukari and Mwalyosi, 2018) and help local people to support conservation initiatives (Tranquilli et al., 2014; Synman, 2014; Noe and Kangalawe, 2015). The absence of this communication often results in tension between local people and park officers. As well, education on the hunting ban must be early and continual to ease implementation, thus reducing the high costs of deploying enforcement patrols for the hunting ban (Balangtaa, 2011).

3.3.3. Ensuring accountability and the transparent, well-documented, fair and equitable sharing of proceeds from wildlife tourism at the Bomfobiri Wildlife Sanctuary

The effective management of protected areas, such as the Bomfobiri Wildlife Sanctuary, has the support of the traditional authorities in the fringe local communities, but this depends on the accountability of the park management team. The findings revealed that the park management did not have a transparent system of sharing the wildlife revenue which was given to the District Assemblies with the local authorities having no knowledge about it. The lack of a transparent, equitable, and fair sharing of the proceeds led to the traditional authorities' unwillingness to support wildlife management and control programs such as the hunting ban. Previous studies (Campese, 2012; Cirelli and Morgera, 2009; Adom et al., 2019) have reiterated that the transparent, well-documented, equitable sharing of wildlife tourism revenue with local communities improved their attitudes toward conservation and control programs. Therefore, the park management at the Bomfobiri Wildlife Sanctuary must put in place a robust and well-documented structure for the equitable sharing of the proceeds from wildlife tourism, prepared in consultation with all of the traditional representatives of the forest fringe communities. Also, the local communities must be held accountable forthe revenue given to them. This would ensure that the revenue is used for the good of their communities.

Also, open forum discussion with all society members must be carried out to determine whether monetary or non-monetary benefits would be given and the parameters for sharing them (Munkanjari et al., 2012). This should be highly transparent and a consensus must be reached to ensure a friendlier relationship between the park management and the rural communities as Twinamatsiko et al. (2014) noted in communities around the Bwindi National Park in Uganda. When an agreement is reached, some of the revenue could be channelled toward construction projects such as the building of schools and market squares. When monies are given to the local authorities, all society members must know. This can be done through community meetings when the funds are officially presented, thus improving transparency in revenue distribution to the local communities while making the traditional leaders accountable to the people on how the released funds are used.

3.3.4. Embarking on sensitisation education on domestic meat and plant-based protein derivatives as alternatives to bushmeat and clamping down bushmeat sellers of at-risk fauna species

The findings of the study revealed that the hunters and bushmeat sellers often failed to observe the cultural seasonal hunting ban because they did not want to lose their clients who they claimed demanded bushmeat during the period of the hunting ban. The traditional authorities and elders in the study areas suggested that alternative sources of meat or protein derivatives must be advertised to bushmeat consumers and that the Forestry Commission must liaise with appropriate agencies such as the Food and Drug Authority as well as food dieticians and nutritionists to embark on sensitisation campaigns on the consumption of domestic meat as well as vegetarian diets, and others plant-based protein derivatives as viable protein alternatives during the closed hunting season. Wilkie et al. (2016) support this initiative, suggesting that chicken was a readily available, alternative source of animal protein and could serve as a substitute for bushmeat. The concept of substitutability in attitude theory indicates that substitutes must be able to fulfill the same motivations for a particular action (Decker et al., 2001). Therefore, the government, through the Wildlife Division and NGOs interested in supporting conservation initiatives at the Bomfobiri Wildlife Sanctuary, can provide aid for alternative sources of livelihood in poultry production while highlighting the nutritional value and taste of poultry products as viable substitutes to bushmeat. This has a bifold benefit of orienting bushmeat consumers toward the consumption of poultry and vegetarian substitutes during the closed season while serving as a source of alternative livelihood for hunters and bushmeat sellers. Also, as a long-term measure to control and prevent the unsustainable consumption of bushmeat, park management must partner with public health staff to highlight health risks such as the Zoonotic diseases like Anthrax, Ebola, Hendra, and Severe Acute Respiratory Syndrome (SARS) associated with the hunting and eating of bushmeat (Kuukyi et al., 2014).

Another strategy in preventing full-scale hunting during the closed hunting season is arresting the sellers of bushmeat of endangered and at-risk species. The Bomfobiri park patrol team must partner with the police in clamping down on such bushmeat sellers through random and frequent visits to bushmeat market centres, especially during the closed hunting seasons, and confiscation ofthe bushmeat of at-risk species. This would deter people from buying the bushmeat of endangered species whose hunting is banned (Wilkie et al., 2016). Also, it would lead to the arrest of the deviant hunters.

3.3.5. Institution of reward mechanisms for persons who report corrupt park officers as well as honouring non-corrupt park officers as measures in fighting against corruption among park officers

The findings from the study revealed that there were corruption allegations levelled against some of the park officers at the Bomfobiri Wildlife Sanctuary. The study participants who made these remarks were reluctant to report such park officers believing they would not be prosecuted, that they would be shielded. Therefore, the park manager, as part of the education and sensitisation programs of the wildlife sanctuary, must educate the local people to dispel this perception. Reward mechanisms must be put in place to reward persons who report corrupt officials who are indeed found guilty, thus motivating hunters and others in the communities to report. To cushion park officers against any potential act of corruption, the government must ensure that they are well remunerated. Also, arrangements must be made to offer special incentive packages to all non-corrupt park officers to encourage others not to engage in corrupt deeds (Sundstrom, 2014), such as honouring them at the annual national celebration of World Wildlife Day.

5. Conclusion

The study investigated the attitudes of stakeholders in wildlife management toward the seasonal hunting ban in three hunting communities around the Bomfobiri Wildlife Sanctuary in the Ashanti Region of Ghana. The conclusions presented here are based solely on the views expressed by the study participants. Therefore, these conclusions cannot be interpreted beyond the sample or generalized in its context. The study's findings showed that hunters, bushmeat traders, traditional authorities, elderly residents, and park officers who are the main stakeholders in wildlife management in the study areas showed favourable attitude-behaviour consistency toward the cultural seasonal hunting ban. This was due to their strong value orientation rooted in the traditional Ghanaian cosmology. As such, the cognitive drivers of the attitudes of the wildlife stakeholders supported the idea of wildlife sustainability because of their basic belief in involving the future generations in all life decisions including the use of wildlife. However, due to socio-economic and situational factors of meeting the basic needs of their families, many of the hunters and bushmeat traders were tempted not to observe the hunting closure. Thus, the absence of alternative sources of livelihood during the period of hunting closure has been the motivating factor for engaging in full-scale hunting and trading in protected fauna species as bushmeat. Therefore, addressing substitutive sources of income from NTFP enterprises and pastoral agricultural production is seen as a strong motivation driver for exhibiting favourable attitude-behaviour consistency toward the observation of the cultural seasonal closure of hunting in the study areas. This could serve as a strong motivational driver to minimise or completely halt the high demand for bushmeat which negatively propels hunters and bushmeat traders to not observe the seasonal hunting ban. The study has also revealed that corruption of park officers was a great obstacle as this influenced other wildlife stakeholders in the study area not to observe the hunting ban. To achieve sustainable wildlife management and tourism in the study areas, the Wildlife Division of the Forestry Commission in Ghana must put up transparent structures to report and prosecute all corrupt park officers who engage in all forms of corrupt activities that derail efforts toward the observation of the cultural seasonal hunting ban.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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