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Dynamics of Social Ecology of Elephant Conservation in Botswana and Implications on Environmental Development

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Abstract

This study adopted a critical social theory to the understanding of current complex environmental and social issues affecting the contemporary elephant conservation in Botswana. The study underscores the fact that Botswana, a developing country, finds itself caught up in a conflicting position in which meeting the dictates of global community put it against the belief and wishes of its local populace (CITES, 2016a; Lindsay *et al.*, 2017:262). As we demonstrate such a position is an essential element of postcolonial periphery-centre dynamics within capitalist world-system (Braudel, 1984; Wallerstein, 2000). Natural resources conservation including wildlife conservation represent a social system or mosaic whose survival is dependent on a balance of both anthropogenic and ecological sound decision making. The study established that resources rich African countries need to focus both on the global goal of protecting environment and the local one of providing the means of existence to its own population as well as national development. Mitigation measures such as compensation for property damaged by wildlife were found to be unsustainable and extending the scheme to loss of human life requires a careful analysis of the long-term implications of such a strategy on the social and ecological implications. Collaboration between environmental disciplines such as ecology and human societal sciences such as rural sociology should therefore be encouraged so that issues affecting natural resources conservation and understanding of the society could be addressed expertly.

Key words: Social ecology, elephants, human wildlife conflict, hunting prohibition, post colonialism, world-system

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Introduction

Over the years, Botswana has gradually built its wildlife biomass into one of the few countries in the world that is currently home to some of the largest continentally threatened and endangered wildlife species, particularly large herbivores such as elephants (UNEP-WCMC. (2013); Wittemyer *et. al* 2014; CITES, 2016b). Botswana currently holds Africa's largest population of elephants translating to about a third (30.1%) of the entire continental elephant population (WWF, 2013; The Great Elephant Census, 2016). The population of Botswana's elephants (*Loxodonta Africana*) was estimated from the national Aerial Survey to be 207 545 individual elephants against an initial projected 2010 target of 60 000 individual elephants (Elephant Management Plan, 1991; DWNP, 2012). The elephant population has increased at the rate of 5% from 154 658 to 207 545 elephants between 2006 and 2012 (DWNP, 2012). The elephant population has increased at the rate of 5% from 154 658 to 207 545 elephants between 2006 and 2012 (DWNP, 2012). In Botswana, elephants occur mostly in the northern region with strong holds in Ngamiland District (61% of total elephant population) followed by Chobe District (34%) even though some relatively small elephant herds can be found in the Central District and in Northern Tuli Block (DWNP, 2012).

Consequently, these large numbers of elephants have resulted in the increased environmental and socio-economic challenges to the host communities as elephants encroach into human settlements. The interface between the elephants and host communities has resulted in negative socio-economic consequences ranging from destruction of property to loss of human life (Moss, 2001; IUCN, 2005; DWNP, 2012). Also, the coexistence challenges have resulted in environmental degradation with key wildlife species having been decimated by farmers in retaliation (Thirgood *et al.*, 2000b; Moss, 2001; Onishi, 2015). Elephants are not only blamed for destroying rural people's livelihood but are also responsible for destroying the habitat, particularly forage, which other small wildlife species such as lechwe (*letswere*) depend on for their survival. An over-abundance of elephants is likely to be detrimental to the rural livelihood and possibly result in the extinction of such small wildlife species (Chase, 2011). The current research seeks to understand the factors and causes of the escalating social and ecological elephant conservation issues in Botswana as guided by the theory of social ecology.

Critical Social Theory: The Social Ecology

Social ecology is based on the conviction that nearly all of our present ecological problems originate in deep-seated social problems. It follows, from this view, that these ecological problems cannot be understood, let alone solved, without a careful understanding of our existing society and the irrationalities that dominate it. To make this point more concrete: economic, ethnic, cultural, and gender conflicts, among many others, lie at the core of the most serious ecological dislocations we face today—apart, to be sure, from those that are produced by natural catastrophes, Murray Bookchin, 1993:354.

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As observed by Bookchin, social ecology re-focuses our attention on the prevailing social relations, economic and market forces which have permeated society as the main cause of the environmental problems we face instead of solely the product of natural calamity. The growth of capitalism has ushered in a society in which the natural environment is reduced by man to a resource that is exploited in the market place. That negative tendency has been reinforced by globalization that has extended the impact of market mechanisms on both geographical and social levels. Similarly to the foregoing argument by Bookchin, Lockie (2015:139) has also argued that the current environmental issues we face are ‘symbolic products of institutions and discourses’. Thus, even though human beings are products of the ecological changes, they also actively contribute to the ecosystem processes which result in environmental issues.

Polanyi (1944:73) described the market, as representing a social mechanism which appears to have ushered in a ‘*ravaging satanic mill*’, when describing the period of rapid increase in industrial manufacturing and urbanization as key drivers of modernization in countries such as Britain, France and Germany. In this case market has seemingly ceased to become facilitation for exchange of goods for basic needs but has successfully subverted even the moral and religious limits imposed on it, in the quest for profit maximization. The latter can be pursued in the most ruthless way in peripheric postcolonial countries that are exposed to material and political pressure to make their resources available for global extraction by transnational corporations and powerful individuals. In that respect contemporary arrangements of global economic and political order replicate what Davidson (1994), Wallerstein (2000) and Davis (2001) saw as the power relations inherited from the colonial period.

Wildlife hunting may not be the primary concern compared to other instances of environmental destruction, it however falls within the domain of problems linked with predatory and extractivist approach to natural environment that does not respect the basic rules of social ecology. This perspective ensures a thorough critique for the environmental dislocations since analysis focuses on the real problem - ‘social pathology’ instead of the symptoms of the ‘grim social pathology’ (Bookchin, 1993). In a sense, charismatic species and endangered wildlife species such as elephant’ threat of extinction has taken center-stage in the protracted discussion among conservationists (CITES, 2016a; Lindsay, et al., 2017).

To substantiate the above point, it is important to note that as the very concept of Anthropocene suggests (Davies, 2016; Ellis, 2018) modern day environmental issues facing our planet are mostly human induced. For example, the environmental challenges such as global warming, climate change, deforestation and loss of biodiversity are mostly due to the irrationality of human actions. The decision to prohibit wildlife hunting in Botswana is purportedly said to have been based on the ‘declining wildlife species’ as a consequent of anthropogenic factors. These factors include poaching and human-wildlife conflict, leading to decimating of animals as well as being a result of the natural causes such as habitat fragmentation (DWNP, 2012). Although the resultant decision to prohibit wildlife hunting could have some positive ecological impact such as species regeneration leading to improved species diversity, it threatens the human livelihoods and resultantly loss of the biodiversity as the masses retaliates.

The government of Botswana submitted a proposal to the ‘Convention on International Trade in Endangered Species of Wild Fauna and Flora’ (CITES) to have the African Elephant protection status upgraded from Appendix II to I during the CITES Conference of Parties (CoP17) held in 2016 in South Africa but was defeated (CITES, 2016a ; Lindsay *et al.*, 2017:262). At the COP17, Botswana had supported the majority view of the African Elephant Coalition (rangeland states) who sought to have all the elephant transferred

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from the list in Appendix II to Appendix I. Listing of wild animals and plants under Appendix II means that even though their populations are not necessarily endangered with extinction, their trade is closely monitored and controlled to avoid unsustainable utilization (CITES, 2016b). Species listed in Appendix I are those that are threatened with extinction and trade in their specimen is only allowed in exceptional circumstances. One of the key scientific requirement for ‘uniform’ or up listing from Appendix II to I is that the elephant population herd in question should have shown remarkable decrease of about 50 percent over a period of three generations (CITES, 2016a). Botswana’s elephant herd has rather increased (DWNP, 2012; WWF, 2013; The Great Elephant Census, 2016). Had the proposal by the government of Botswana at the CoP17 been endorsed, it would have meant that all forms of trade in elephant and its by-products regardless of scale, would have been limited to exceptional circumstances. The reality of this proposal is that even though Botswana is home to the largest elephant population in the world, its elephant stock would have not been available for utilization in any form, a decision that would have given impetus to the wildlife hunting prohibition moratorium effected in 2014.

The proposal to move elephants to Appendix I would have resulted in the country failing to sell its registered stockpile of ivory from elephants that either died as a result of problem animal control or natural causes. Also, support of local communities living in close proximity to elephant management areas especially those adjacent to national parks or in WMAs would have been lost. This is because the proposal sought to comprehensively restrict the people’s utilization aspects of the elephants and its by-products even though such usufructs are supported by the Wildlife Conservation and National Parks Act of 1992 Cap.38.

Botswana’s proposal to up-list the elephant conservation status from Appendix II to I was successfully opposed by countries such as USA, Canada, the EU as well as other southern Africa countries including South Africa as the host country for CITES 2017; as well as prominent NGOs. For countries that opposed up-listing of the elephant conservation status to Appendix I argued that allowing utilisation of the elephant through hunting ensures that communities continue to tolerate elephants. They argued that additional income to communities’ households derived out of wildlife utilisation ensures that communities that suffer socioeconomic losses as well as loss to human life caused by elephants develop positive perspectives towards the wildlife (Child, 2000; European Commission, 2016). Thus without collective effort to pursue radical democratic ideals, and trying to separate the ecological challenges from the social problems precludes the actual sources of environmental crisis and consequently undermines the rigor of solutions thereto (Eiglad & Bookchin, 2006). The dilemmas resulting from the propositions of Botswana government clearly show that in order to pursue the path of sustainable development, resources rich African countries need to focus both on the global goal of protecting environment and the local one of providing the means of existence to its own population. This double goal needs to be clearly and openly articulated politically to become the basis of careful evaluation when it comes to issuing hunting permits and setting priorities in environmental politics.

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Study areas

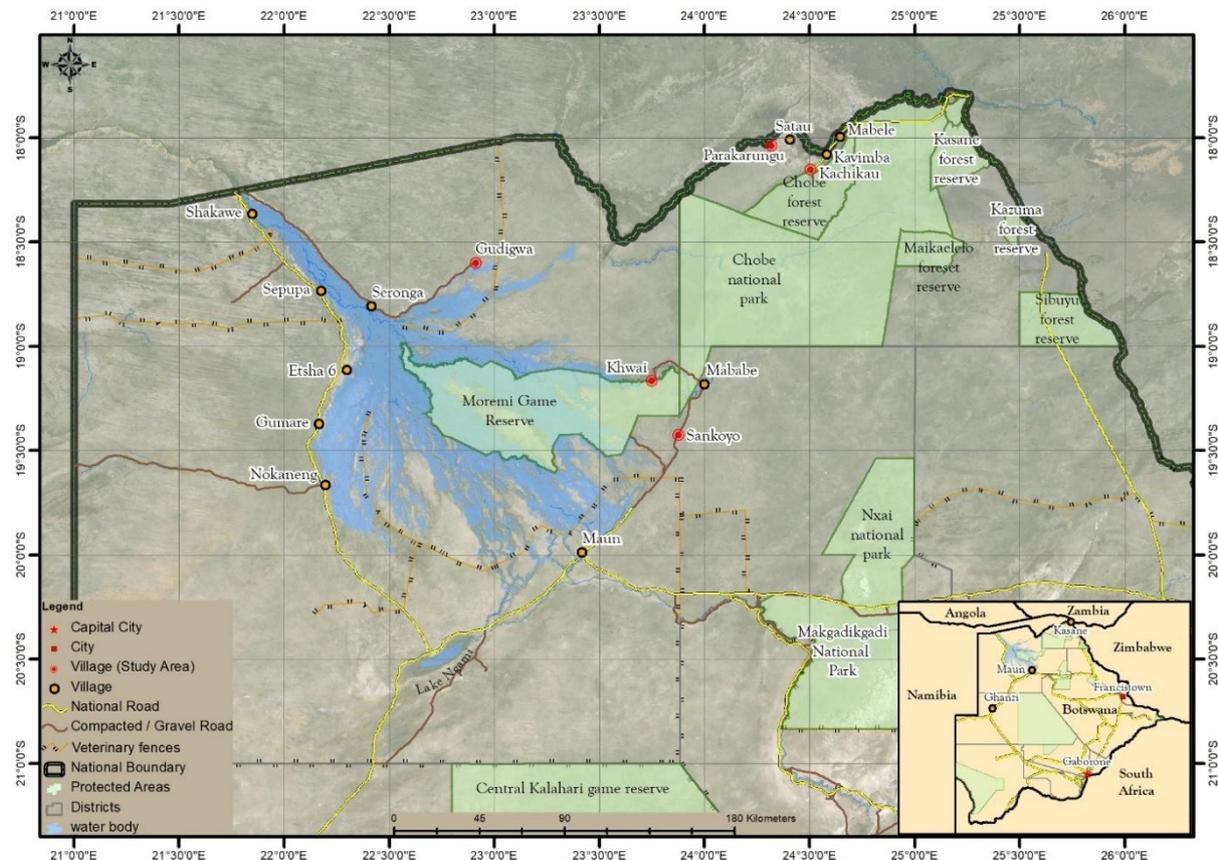


Figure 1: Map of Botswana showing study areas. (Source: Blackie)

The study was conducted in two districts being the Ngamiland and Chobe districts. Chobe and Ngamiland districts have the highest elephant population in Botswana (DWNP, 2012). The Ngamiland district areas included Gudigwa, Sankoyo and Khwai villages all located in the fringes and adjacent to the Okavango delta. The Okavango Delta is located in the North West District of Botswana. It is part of the African Rift Valley System made up of a large low gradient alluvial fan or ‘Inland Delta’ that includes permanent swamps which cover approximately 266, 165 ha along with up to 1, 106, 422 ha of seasonal flooding grassland. The Okavango Delta is said to provide an example of “complexity, inter-dependence and interplay of climatic, geo-morphological, hydrological, and biological processes (IUCN, 2014:6). It is one of the very large inland delta systems without an outlet to the sea, known as an endorheic delta. The water from the delta drains into the desert sands of the Kalahari Basin and is Africa’s third largest alluvial fan and the continent’s largest endorheic delta (UNESCO 2014).

The Okavango Delta World Heritage sustains robust populations of some of the world’s most endangered large mammals such as white and black Rhinoceros, and elephants. With Botswana having the largest population of elephants in the world, estimated at about 207 545 in 2012, the Okavango Delta is the second largest area after Chobe region, for these species’ survival in Botswana (DWNP, 2012). The three villages of Gudigwa, Sankuyo and Khwai were selected for this study because of their experience with the community based natural resources management (CBNRM) programme and are almost entirely made up of marginalised ethnic groups in the Ngamiland district.

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The second phase of the study was conducted in the Chobe district villages which are part of the Chobe Enclave Conservation Trust (CECT). These villages are located in low-density rural settlements along roads skirting the wetlands in the north-west side of Chobe district along the main road joining Chobe and Ngamiland district through the Chobe National Park as seen in the map (Figure 1). The Bambukushu, Basubiya and Batawana are the majority population in most of these villages. Wildlife abounds in these areas, moving to and from the wetlands.

The Chobe river system ensures the availability of a critical resource, water, in the area that would otherwise be a thirsty land of vast expanses of sand. The presence of water has also ensured the presence of a rich and diverse wildlife as a resource that has supported the livelihoods of local communities for many years. But the relationship between human and wildlife has become increasingly ambivalent because of human and wildlife population increases, competition for land and the critical settlement location decision resource water. Statistics Botswana (2011) estimated the population of CECT at about 3,985 people. Of these figures, the majority come from Kachikau (1356), Parakarungu (845), Mabele (635), Satau (605) and lastly Kavimba (549).

Even though traditional economic activities in the areas vary across ethnic groups, the majority of people depend on natural resources for their livelihoods. Other activities practiced are dry and molapo (wet) farming, subsistence fishing and harvesting of thatching grass and reeds for domestic use. According to Stone and Nyaupane (2013), CECT had an estimated cattle population of about 9,000. Veldt products are also used by some people for generating income through basket-making using palm tree leaves, mats from river reeds, as well as the harvesting of wild fruits, thatching grass, and wood carving.

Data Collection methods

A four pronged cross-sectional approach to data collection was used starting with heads of household questionnaire (101 indigenous citizens), focus group discussions (FGDs), and in-depth interviews with key stakeholders. Respondents were interviewed face to face at a single point in time (i.e. cross-sectional survey). Households were arranged into a linear scale starting from one through to the last household. The research team (corresponding author and one field assistant in each village) then began by counting the first (k) household and proceeded to interview respondents in every second household. The process was repeated in each village until the requisite (101 respondents) sample size was achieved. For the structured household questionnaire, the head or most senior member of each household who was found to be present at the time of interview was interviewed in the five villages included in study sites (Gudigwa, Sankuyo, Khwai, Kachikau and Parakarungu). The interview covered issues of elephant conservation and the emergent implications of human wildlife coexistence. Five Focused Group Discussions (FGDs) were conducted at the end of the interviews in each village as a way of closing discussions and also acting as quality assurance on the data collected since emergent issues in the field were threshed-out during FGDs. The online survey was conducted after fieldwork for all the study areas as well as after completion of data entry. The online survey targeted wildlife managers, members of Technical Advisory Councils (TACs), NGOs or independent experts in the field of CBNRM who were considered for their insights on legislation affecting natural resources conservation in Botswana.

Findings and Discussion

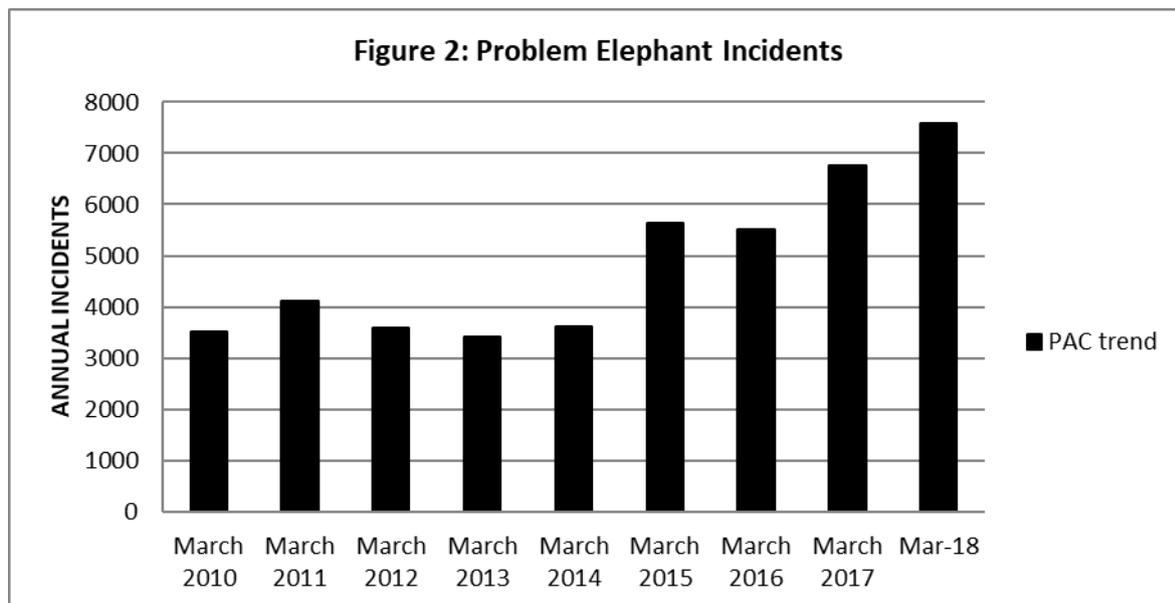
The study has established that the environmental and socio-economic challenges arising from failure by human beings to rationalize the ecological and social needs of the elephants and

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human beings, respectively, include mainly excessive elephant population growth. This excessive elephant population growth has further caused the following challenges currently facing both the government and local communities: increase in human wildlife conflict; increase in payment costs for compensation to wildlife damage and escalation in poaching incidents.

Increase in Human Wildlife Conflict

Human wildlife conflict is defined as an interface conflict between wildlife and human beings as a consequent of wildlife requirements encroaching into those of human population and often resulting in associated costs to both the wildlife and constituent (s) communities (IUCN, 2005). Figure 2 shows an upsurge in the number of problem animal incidents that attract compensation from the Department of Wildlife and National Parks (DWNP) to farmers as payment for damage they cause. Most rural communities practice a mixed economy such as rearing of livestock and arable farming as well as supplementary seasonal sale of veldt products which include thatching grass, reeds, berries and firewood for their livelihood (DWNP, 2005; Arntzen *et al*, 2007). It is worth noting that Botswana’s livestock number is estimated to be higher than that of wildlife. For example, the 2012 Dry Season Aerial wildlife count found that there were 3, 137 477 cattle in the country; which is more than all the large (mammals) wildlife numbers combined (DWNP, 2012). As such competition for wildlife forage, migratory routes and human livelihood conflicts are inevitable.



Source: DWNP (2018).

As shown in figure 2, the problem elephant incidents recorded have more than doubled between the years 2010 and 2018 i.e. problem elephant incidents increased from 3,514 incidents in 2010 to 7,595 incidents by March 2018. Currently, DWNP receives an average of 120 elephant damage related cases per month. All the recorded incidents have always far surpassed the 10% annual decrease target set by the DWNP (DWNP, 2018). Often farmers kill the wildlife (including key species of concern) in defence and in retaliation to protect themselves, their livestock and property as provided for in the Wildlife Conservation and National Parks Act of 1992 (WCNPA) Cap.38 Ss. 80. The WCNPA Act (1992) empowers

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indigenous citizens to report any wildlife conflict incident to the DWNP for assessment of damage so that all the qualifying incidents are compensated accordingly.

Wildlife hunting seems to have been an effective problem animal (especially elephants) control measure since wild animals move away from areas prone to gun fire (Chase, 2014), an elephant ecologist, who also conducted the Great Elephant Census (GEC) survey (2016) noted that most elephants in the northern Botswana have migrated into the country from neighbouring countries especially Angola during its intermittent 27- years civil war (Sunday Standard newspaper, 2014). The recent press release from the Ministry of Environment, Natural Resources Conservation and Tourism (MENT) also seems to attest to the fact that indeed elephants fear guns since the DWNP was involved in an immense exercise of driving elephants back to their range areas especially the protected areas by utilizing heavy firearms amongst other control measures (REF: EWT 1/6/4 X (10) of 2017). Nonetheless the human wildlife conflicts are common on the African continent even though the nature of mitigation strategies adopted by individual countries differ significantly (Lahm, 1996). Thouless (1994) has long established that elephants are surprisingly intelligent to a point where they can quickly know when their previously dangerous areas become safe and will quickly recolonize it again. Now that elephants have been accustomed to not being hunted, they have expanded their forage range to include areas they have never inhabited even before and in the process cause havoc to human livelihood.

The Human Wildlife Conflict (HWC) has become a major long term threat to elephant conservation and wellbeing of local people living around wildlife management areas and national reserves and hence government's promotion of CBNRM programme as a panacea to such problems (Arntzen *et al*, 2007). It is at these borders between habitats and human settlements that conflicts emerge (Newmark *et al*. 1994, Kinyua *et al*. 2000). Findings in this study on human wildlife incidents showed an exponential increase in human wildlife conflicts. It remains a major challenge to strike a balance such that humans can coexist alongside wildlife while developing sustainable livelihoods without leading to HWC. These HWCs often result in off-setting the already threatened and or endangered species populations as they are often killed by retaliating farmers and thus affecting the biodiversity balance. Centralised or fortress conservation policies limited adoption of traditional problem animal mitigation measures.

Many African countries found out that they had alienated their communities during the time when protected areas for wildlife conservation and management were established (Murphree, 1996). This erroneous perception about local communities not having the requisite knowledge, the will and training to sustainably manage the wildlife has created a hostile atmosphere between the local communities and wildlife as well as with the authorities responsible for wildlife management (Bell, S. & Morse, S., 2001; Songorwa, *et al.*, 2000). The study has also established that when local communities were denied access to the wildlife as a resource for utilisation, they also no longer associated themselves with wildlife especially the elephant which causes severe damages to their livelihood. They consider the animals to be a property of the state and as a result any costs that arise out of elephant destruction are attributed to the Government. CBNRM is among the programmes that were introduced in an effort to promote development based conservation since the programme empowers local communities to take charge of the naturally occurring resources in their locality to enhance their livelihoods (Hyndman, 1994). This attempt at democratization of control over environment falls in line with the basic assumptions of political theory developed by Murray Bookchin, who believed that the ability to directly shape one's own world, including the place

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where one lives, is crucial for any community to function in efficient and rational way (Bookchin, 1999).

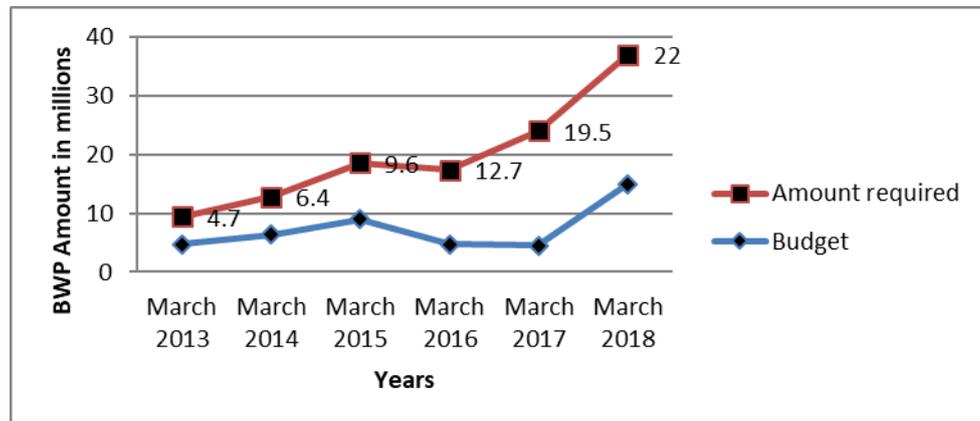
Schemes of Compensation for Wildlife Damage

Following increases in the number of wildlife incidents which often lead to loss of livestock through predation, and damage to crops and property, government has come up with some sort of compensation to those suffering loss. It is important to note that both the Fauna Conservation (1961) and the Wildlife Conservation and National Parks Act (1992) gave the owners or occupiers of land, or any agent of such owner or occupier, the right to kill any animal that caused damage or was threatening to cause damage to any livestock, crop, water installation or fence except in National Parks or Game Reserves. Thus the former Act allowed any person who suffered damage to keep the trophy of the animal causing damage if s/he had killed it, as compensation to the damaged property. The only exception was in case of damage caused by elephant or rhino where the trophies were deemed to belong to the Government. Trophy refers to “any horn ...or other durable portion of any animal whether processed or not, which is recognizable as a durable portion of such animal parts”, (Wildlife Conservation and National Parks Act, 1992:5, Cap38:01). As could be expected, this practice was found not to conform to contemporary conservation measures since it was subject to abuse and was therefore replaced.

Subsequently, the government of Botswana introduced monetary compensation for damages to property caused by wildlife through the amendment of Section 46 of the Wildlife Conservation and National Parks Act of 1992 through Presidential Directive CAB 35/93 in December 2003. If people did not make any effort to kill the animal they could not be compensated. Initially, when government introduced payment of compensation for damages caused by wildlife, it did not impose any limit on the species for which such compensation would be payable. However, it quickly became apparent that this unlimited payment of compensation was too unwieldy and required an excessive amount of manpower for its implementation and was also expensive. For this reason, Cabinet decided, in 1996, through Presidential Directive CAB 17/96, to limit the payment of compensation to those animals listed as dangerous animals in Schedule 9 of the Wildlife Conservation and National Parks Act of 1992. These animals are lion, leopard, hippo, rhinoceros, elephant, buffalo and crocodile. The primary reason to limit compensation to dangerous animals was that it is difficult for people to defend themselves against such animals and also to ensure that farmers do not end up killing such animals as they face danger of extinction from retaliatory killings. Figure 3 shows annual DWNP budget provision against actual amount required to pay compensation to affected individuals for damage caused by wild animals.

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Figure 3: Trends in Payment of Monetary Compensation: 2013 - 2018



Source: DWNP (2018)

The government was able to provide financial resources to compensate affected individuals until 2014 when the situation became unmanageable as government struggled to find commensurate funds to match the ever escalating human-wildlife damage incidents as shown on the Figure 3. The graph shows that from 2015 to 2018 government has been operating with a deficit budget. Interviews with wildlife officers charged with problem animal control have revealed that the financial challenges to government has not been helped by the government's introduction of the 100% payment for elephant and lion species in 2015. Wildlife officials point to this policy direction which seem to have led to more farmers reporting such elephant incidents than before. Whether these claims by farmers are true or not remains to be established.

In a similar attempt to compensate farmers in Zimbabwe a compensation scheme was tried by one district but soon abandoned when the number of claims quadrupled in the second year of operation (Taylor, 1993). The same compensation scheme has also been abandoned in Kenya following widespread cheating on claims, high administration costs and lack of disburseable funds (Thouless, 1993). Apart from vastly exceeding the expenditure budgeted for payments, the increase suggested that either bogus claims were being submitted or that farmers had reduced efforts to defend their crops. So far, Botswana is the only country that pays monetary compensation for damages caused by wildlife and this initiative has come at cost both to government and local communities living adjacent to and or in close proximity to the wildlife range. Despite elephants projecting a marvellous and beautiful scenic experience to tourists, they remain the most resented, feared and destructive wildlife species among rural communities coexisting with these gigantic and magnificent wildlife species especially in agricultural fields. The quotation below is an expression of fear and hatred towards the elephants:

Ditlou di tsile go lala di re feditse ka di re ntshitse fela re iphutlhere ko masimong jaanong go setse gore di re tsenelele mo malwapeng.

(Elephants will wipe us out of the surface of the earth as they have already cleared our fields and we fear that they might as well chase us away from our homesteads), middle aged female resident of Kachikau village, female headed household.

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The above quotation by a women from Kachikau village is a metaphor to reflect the continued contestations for survival between residents and elephants. Currently, DWNP commits approximately 15millions of Botswana pula currency, equivalent to US\$1, 4 million of its annual recurrent budget and up to 60% of the time of district staff is spent on HWC issues (Bowie, 2008; DWNP, 2018). With the increase in problem animal control (PAC) cases, the DWNP is redirecting most of its resources as well as time to PAC at the expense of other mandatory duties. The introduction of the compensation scheme also seems to have encouraged complacent attitudes towards husbandry practises by farmers. Even so, Botswana like any other developing country does not have capacities to provide sufficient safe space to sustain the extensive mobility of endangered large mammals like elephants. This inadequate carrying capacity has led to an escalation in competition among the wildlife and humans for scarce resources causing damage to crops, property, injury, and often resulting in deaths (Akama & Kieti, 2003; Georgiadis *et al.* 2003; AWF 2005). Without the full adoption of the CBNRM programme, the impact of elephants on the livelihoods of people living within the elephant range can be severe. The mitigation of this conflict is most critical especially in multiple land-use areas where elephant ecological needs and local people's socio economic livelihoods needs overlap (AWF 2005). Despite Botswana having attempted to come up with several measures to guide how human-elephant conflict can be managed to promote coexistence between humans and elephants, the country is currently facing a "tragedy of the commons" in that it does not have total ownership and control of these trans-boundary resources as depicted on the following remarks by the Minister:

There are 600 000 elephants in Africa and 200 000 in Botswana. We are saying that the elephants in Botswana are Africa's elephants and Botswana is the protector of the continent's elephants. I think in years to come this will be appreciated. If I want to cull today, I don't know whose elephants I will be culling. Many belong to neighbouring countries. When you look at the trend in other countries where they are losing thousands of elephants, and the fact that Africa's poaching is done by Africans, we need to begin at the starting point, to tackle the problem. We need to have a holistic vision. Tshekedi Khama Minister of Environment Wildlife and Tourism at Botswana Travel and Tourism Expo in Kasane 2015.

Given that the hunting moratorium on wildlife species is currently on, it therefore remains to be seen if the much treasured ecotourism will make Botswana a tourist destination of choice, with flourishing and healthy wildlife. Already, the impact of hunting prohibition on illegal off take (poaching) incidents, human-wildlife conflict primarily from human-elephant conflict, buffalo (foot and mouth outbreak) and lion predation is being felt.

The African Elephant Specialist Group also concluded that the monetary compensation schemes for damage caused by elephants do not sustainably address the root cause of conflicts (Thouless *et al.*, 2016). They view compensation as being unable to decrease the level of the problem since it fails to address the cause of the problem. An interview in Sankuyo village revealed the following regarding a solution to the problem of escalating human wildlife conflicts:

Ke kopa goromente a ko a re neele tita ya gore re e tsamaisetse lenaneo la go duela ba ba senyeditsweng ke diphologolo o tlaa bona dipalo di fokotsega. Batho ga ba thole ba agelela masimo a bone le go disa diruiwa tsa bone ka

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gore ba itse gore goromente o ya go ba duela, mme rona fa re lemoga fa o sa dira golekanye gare kake ra go duela.

(I request that government should allow us to administer the payment of compensation at community level and you will immediately see these high compensation figures dropping low. People no longer fence their ploughing fields and even herd their cattle since they know government is going to pay them compensation for damage incurred from the wildlife. With us, we will not pay any villager if we realised that they did not do enough to protect their fields and property), 54 years old man in Sankuyo village.

Even though Cabinet had previously approved that a Compensation Trust Fund should be established to deal with increasing numbers of human wildlife conflict incidents, such fund currently does not exist. Perhaps creation of such fund which could be funded by the many wildlife related enterprises or taking over annual compensation funds already approved by government could assist in bringing down such conflict incidents. Besides enlisting community support in administering this fund, staff time spent on dealing with issues of law enforcement could be reasonably reduced. Each community could in-turn employ more community members under this dispensation, and thereby uplifting the rural livelihood of members. This initiative could have some increased value chain as indigenous citizens get employment and hence likely to positively influence their attitudes, values, perceptions and tolerance towards the wildlife.

The emphasis on compensation reduces the incentive for self-defence by farmers and is most likely to exacerbate the problem. They also noted that compensation cannot adequately address the unquantifiable social 'opportunity costs' borne by people who are affected by the threat of problem elephants (Naughton *et al.*, 1999; Hoare, 2000). In effect, though payment of compensation is a progressive developmental initiative, it does not comprehensively account for the normative value system of rural settings and has the potential to disrupt lifestyle patterns which may in turn lead to emergence of social problems. For example, even though the government may provide compensation to farmers whose fields have been devastated by elephants, these farmers all of a sudden find that they have plenty of unbudgeted time. Ploughing and harvesting periods usually last half the year i.e. from October/November to April/May). This newly found profuse time may be utilized either positively or negatively. The latter often results in such social ills as binge drinking (something seemingly on the rise in areas such as Gudigwa where most former escort hunting guides have resorted to spending most of their time under tree shades drinking alcohol).

Escalation in Elephant Poaching Incidents

As mentioned before, elephants are currently listed on Appendix II of CITES and also considered vulnerable to show that indeed the elephant species is facing danger of extinction mainly from poaching and other anthropogenic causes such as killings as a consequence of human-elephant conflict as well as habitat loss (IUCN, 2008; CITES, 2016). CITES (2016) noted that the current surge in elephant poaching for its ivory is the worst ever in Africa since the 1970s and 1980s. A total of 9, 553 African elephants in Botswana were decimated between 2003 and 2012. Out of this figure, a total of 1, 487(45%) elephants were killed by United States of America based sport tourists (Kalinina *et al*, 2015). Over the years, classification of hunting in Africa has taken centre stage particularly categorization in which subsistence hunting often associated with consumptive utilisation is labelled 'poaching' and is

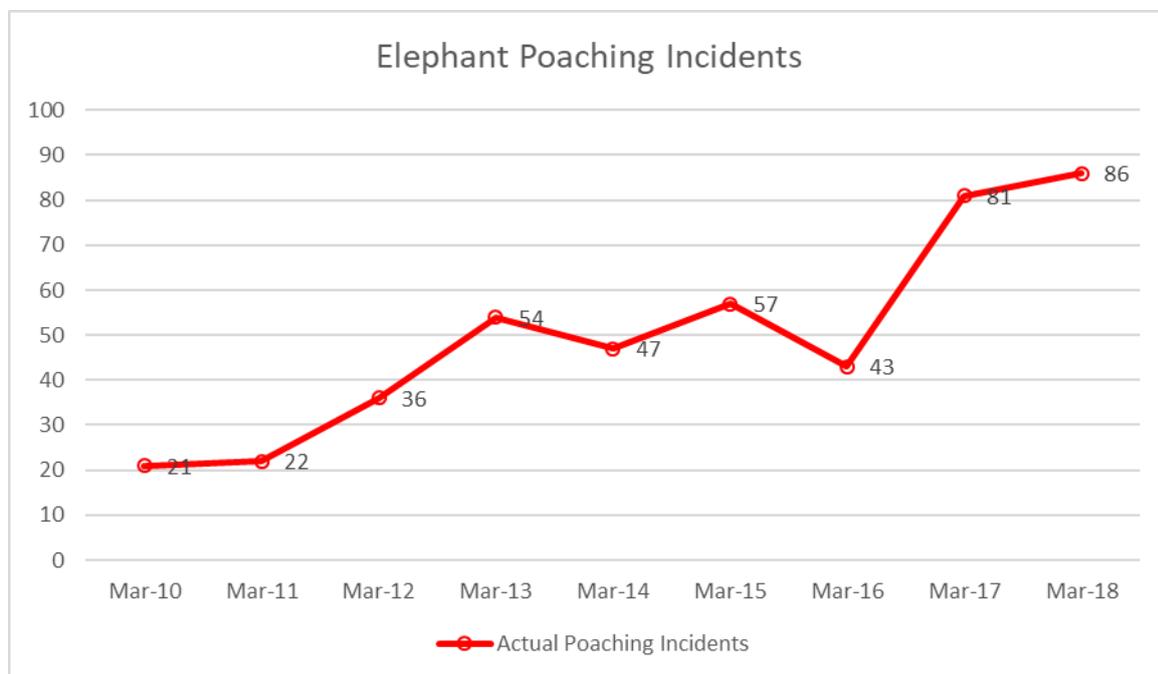
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therefore forbidden, while the colonially endorsed ‘sport hunting’ is viewed as acceptable (Duffy, 2014). Duffy (2014) noted as follows:

European sport hunters were also portrayed as caring about conservation and reducing the suffering of individual animals; in contrast, African hunting methods that relied on traps and snares were redefined as cruel and unsporting. The characterization of hunters versus poachers also linked into racial stereotypes of the day. Representation of African men as cruel poachers neatly intersected with European/ imperial fears of Africans as savage, uncivilized and barbaric, Duffy (2014:829).

This kind of asymmetry is typical when it comes to relation between the centre and the periphery of the capitalist world system. French historian Fernand Braudel argued that a good way to recognise a relative position of a given country in the system of exchange is to look at the negotiating position of foreign merchants in the given country. If they enjoy more privileges than the local ones, we are clearly dealing in the situation of subordination and domination of a given country by more powerful external agents (Braudel 1984). The same may be said about hunting: the fact that hunters coming from the global North – i.e. the centre of contemporary capitalism – are so numerous and they enjoy a symbolic and legal advantage over local population illustrates to what extent we are still imbedded in the logic of colonial domination and privilege.

Figure 4: Elephant Poaching Trend in Botswana: 2010 - 2018



Source: DWNP 2018

Figure 4 shows that elephant poaching incidents have been a persistent agony to the government of Botswana

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As shown in figure 5.5, poaching incidents have been on a constant rise since 2010. By the end of March 2018, the number of elephants poached had reached eighty-six individual elephants poached per annum i.e. from April 2017 to March 2018. This therefore shows that government needs to strengthen its law enforcement initiatives in order to arrest the poaching of elephants before it gets out of control like in other African countries such countries as Kenya. For example, poachers reduced elephant population by 40% during Kenya's forty years of implementing wildlife hunting prohibition and even increased seven times between 2007 and 2010 (Jason, Casey, & Foreman, 2010). It emerged from a focused group discussion in Sankuyo village that in the absence of revenue from community controlled hunting, the communities do not have enough resources to combat poaching that is taking place in their communities. The statement below serves to reinforce this lack of resources as follows;

Ntleng ga letsomo, rona ga re na madi a go duela diescourt guides ka gore ga re sa tlhole re tsumisa gore re bone sengwenayana. Kana mafelo a rona jaaka bo NG 34 a matona mme ga o kake wa a paterola ka dinao sentle. Re tshwanetse ra salamorago di researchera ka ba collorile diphologolo tse di ntsi mme e bile re belaela gore se, se ka tswa se nale kgolaganyo le bogodu jwa diphologolo.

(We no longer afford to pay community escort guides since hunting has been prohibited which used to give us something. Our community user zones such as NG 34 are vast (about 800km²), and cannot be effectively patrolled by foot. We need to constantly keep the private researchers in check since they have collared a lot of animals and we suspect this activity could lead to poaching if not kept on check.) FGD in Sankuyo.

The preceding quote from FGD respondent in Sankuyo village reflects challenges associated with lost financial resources and incapacitation on the community to play a pivotal role in conservation of the natural resources. Communities used to get such financial returns from auctioning their quota to support conservation initiatives and improvement of their livelihood. Some of the concerns raised during a FGD in Sankuyo that too many animals being fitted with tracking devices such as collars was later [6 months after my initial fieldwork] confirmed by a public press release of ref: EWT 1/6/4 IX (181) issued on the 31st January 2017 by the government through Ministry of Environment Natural Resources Conservation and Tourism as follows:

[T]here is lack of adherence to proper animal care and welfare protocols in particular concerning the fitting of tracking devices like collars. MENT January 2017.

Concerning the challenges posed by increasing elephant population, field reports and published evidence suggest that elephants tend to move away from places where a member of their herd has been killed. Such views from the field-work are supported by findings by Chase (2014) who opined that most of the elephants in Botswana are refugee elephants. As mentioned before, these refugee elephants migrated from neighbouring countries in fear of noise from guns. In response to the question of whether implementation of wildlife hunting prohibition has had any wildlife conservation significance, Chase (2014) noted as follows:

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Botswana is bearing the brunt of poaching in Africa. [Forty percent] (40%) of our elephants, about 80 000 are political refugees. Dr. Mike Chase, elephant ecologist, 19th January 2014, Sunday Standard newspaper.

Somerville (2016) noted that unemployment seems to have compelled some locals into partaking in poaching activities as a means of survival especially by those previously employed as hunting escort guides and or trackers. As former escort guides and trackers, this dexterous group is clearly an emerging sophisticated cohort for law enforcement officers to deal with as the former subtly know the terrain than even the most trained anti-poaching platoons the DWNP has ever had. Nonetheless, Botswana has put in place a set of measures such as drilling of water points for wildlife so that they do not stray outside protected areas; introduction of K9 Unit in the DWNP to assist in operations and investigations of elephant poaching.

Introduction of ex-gratia payment

In July 2015, the government introduced ex-gratia payment for loss of human life and injury due to attack by dangerous wild animals which are listed under the Schedule 9 of Wildlife Conservation and National Parks Act (CAP 38:01) of 1992 (GoB, 1992). Through the ex-gratia initiative, government pays a total fee of BWP70 000 (US\$6, 7) (i.e. BWP20 000 as funeral expenses and BWP50 000 as ex-gratia or token of sympathy to the bereaved family). Despite the initiative having been conceived when government's fiscal coffers were low; it has the possibility of abating fears and complaints from the general public since the latter perceives government as only valuing the wildlife animals rather than human life. For example, locals expressed reservations that there had been incidents in which elephants that killed human beings were not immediately killed also.

Killing of a wildlife animal that has caused human loss is supported by the Wildlife Conservation Act (Cap.38:01) of 1992 subsection 80(b) that empowers every wildlife officer to immediately kill any animal that is or is likely to be dangerous to human life (GoB, 1992). Locals complain that the DWNP officers always allude to shortage of transport as one impediment to facilitate timely attendance of such eventualities. Because of this shortage of transport wildlife officers often arrive at the scene when such animals have either left the place where loss of human life occurred or it is difficult to identify the actual animal that caused the loss of human life.

Locals expressed that it is comforting when an animal that caused loss of human life is also killed. Locals believe that such an intervention could act as a deterrent measure to the entire elephant herd hence the herd would not easily cause another loss of human life. Below are some excerpts from FGDs in Chobe district areas regarding introduction of the ex-gratia payment:

Re amogela moono le fa re itse sente gore Botshelo jwa motho ga bona tlhwalhwa ya tlheko, jaaka motho yo o jetsweng ko masimong a kgona go duelwa madi a tshinyo, mme a tloge a leme gape ngwaga yo o latelang, mme motho ene fa a sule go ile fela jalo; mo gongwe o tlogela le one masiela tota, madi a tuelo ya motho one a dirisiwa ga ngwefela.

(We welcome the initiative even though we know very well that human life is not equivalent to the compensation paid to farmers when their crops are raided

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by elephants; unlike loss of human life, farmers could still use compensation funds for ploughing their fields the following year yet human life cannot be recovered once lost and often children are turned into orphans at an early age something that exacerbates social problems in the society.), Chief of Parakarungu.

Boloi bo ya go oketsega gore batho ba bone madi a ex-gracia.

(The practice of witchcraft is going to increase so that people can claim the ex-gratia payment.), 47 years old female, resident of Parakarungu.

It appears citizens appreciate government interventions to improve human wildlife coexistence challenges such as introduction of ex-gratia. Ex-gratia is a compensation payment made by government to surviving family members of individuals who lost their lives through wildlife attacks to ameliorate the situation. Respondents seem to be worried that the noble initiatives could result in unintended consequences, just like any other policy intervention. However, citizens such as the one quoted above were afraid that the introduction of ex-gratia payment is likely to lead to pre-meditated and human induced human loss through witchcraft so that relatives or guardians could claim such payment.

It should be noted that in line with the social ecology, prudent natural resources conservation and sustainable utilisation is not a preserve of a single discipline such as ecology. Natural resources represent a social system or mosaic whose survival is dependent on a balance of both anthropogenic and ecological sound decision making to offset both illegal off-take and reclaiming the fragmented habitat. Collaboration between professional ecologists and rural sociologists should therefore be encouraged so that issues affecting natural resources conservation and utilization could be addressed in a balanced manner. It is clear that compensation for property damaged by wildlife is not sustainable. Extending the scheme to loss of human life requires a careful analysis of the long-term implications of such a strategy on conservation of Botswana's wildlife resources as well as its impact on the already insufficient fiscal resources.

Perhaps, the situation calls for the interdisciplinary research if contemporary studies are to inform policy formulations and guide adaptive management strategies. This is in realisation that the persistent human wildlife conflict has existed for as long as human beings have shared the natural environment with wildlife (Berger, 2006); or as early as agricultural practice has existed in Africa (Treves and Naughton-Treves, 1999). A thorough understanding of the nexus between the social system and ecological system as it relates to wildlife conservation and sustainable human livelihood requirements remains the key factor (Liu *et al.* 2007; Ostrom, 2009). Contemporary researchers, particularly those interested in unravelling the causes of environmental issues in the modern capitalist society need to understand the relationship between the social and ecological dynamics between human beings livelihood and elephant ecological requirements.

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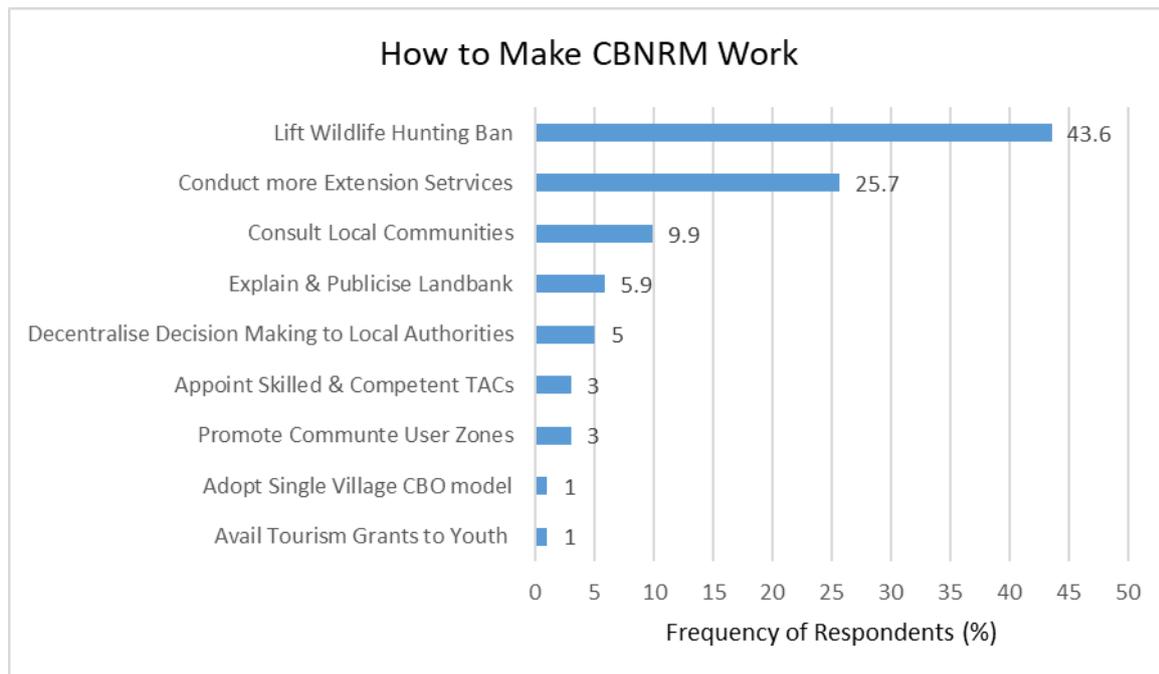


Figure 5: Strategies to Improve Wildlife Conservation in Botswana

Figure 5 illustrates participants' responses to the question concerning a list of strategies that could improve conservation of the wildlife in Botswana as well as improve sustainable utilisation of the natural resources to reduce rural poverty. About half (43.6%) of the respondents would like to see the wildlife hunting prohibition imposed by government in all public wildlife management areas being lifted to allow local communities to utilize the wildlife resources through hunting or consumptive utilisation. It should be noted that the wildlife prohibition did not void existing leases such as leases for hotels and lodges or other natural resource use such as gathering veldt products. Yet an overwhelming majority (43.6%) still want to see hunting prohibition being lifted. Perhaps this is because the implementation of the CBNRM programme was mainly focused on consumptive utilisation of wildlife resources in its initial stages, mainly because the wildlife hunting generated revenues quickly and easily to local communities. A quarter (25.7%) of respondents wants to see more work on extension services being carried out to inform them of government policies, programmes and projects. As seen in Figure 5, other recommendations for improving conservation of the wildlife and sustainable utilisation of the wildlife resources includes consultation with local communities (9.9%), publicizing the newly introduced tourism land bank (5.9%), adequately devolving management decisions (5%), appointing skilled and competent Technical Advisory Committees (TACs) and promoting community user zones (3% each) as well as adopting single village model and availing grants to youth wanting to venture into tourism enterprises (1% each).

Before condemning local population for its ambition to hunt more, one needs to remember that in most cases hunting is not a sport in Africa, but a way to survive. The citizens of rich countries preoccupied with issues of wildlife conservation and animal well-being need to take that into consideration when thinking about possible remedies and desired strategies. It does not mean that endangered species – or even all animals – do not require care, but rather that African population has to gain other means of subsistence to be able to

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distance itself from hunting (as well as poaching). Thus protectionist and developmental policies should go hand in hand, complementing one another.

Conclusion

The study has established that, indeed, most of the current environmental issues as discussed in this article are, in many ways, the symbolic products of man's irrationalities rather than natural catastrophe and or deficiency in the nature's ability to provide sustenance to human kind. The presence of natural and socioeconomic issues reflects a continual 'domination of man by man which has seemingly pitted man against the counteroffensive force of the natural environment' (Bookchin, 2004). Environmental issues are complex and require a multi-disciplinary focus to uncover a range of complex relationship between nature and the social environment. Ecological research alone may not adequately offer a comprehensive account of the social issues particularly the collaborative community based participatory research orientation including economic and market factors which could be profoundly substantiated by collaborating with social researchers. There is an urgent need for collaborative studies between social and ecological researchers if their research recommendations are to be impactful and remain relevant to policy crafting. Perhaps, it is time that government and conservationists retraced back again their footsteps as noted by Songorwa *et al.*, (2000):

The search for a "lasting solution" involved more soul-searching: the conservationists retraced their footsteps further and went back to their perceived "enemies," asked for forgiveness, and proposed cooperation, partnership, and the equitable sharing of the costs and benefits of wildlife (Songorwa *et al.*, 2000:606).

The study has also established that the unilateral and ecologically imbued decision making such as introduction of hunting prohibition has led to a myriad of ecological and social issues needing comprehensive and urgent mitigation measures. The prohibition in wildlife hunting has led to a reduction in the rural community livelihoods. These rural livelihoods include loss of employment, loss of revenue to CBOs and loss of game meat. The hunting prohibition has also led to local communities disbanding provision of community benefits such as old age allowance; orphans allowance; disability allowance; students' scholarships as well as community empowerment schemes. Funding for these community infrastructure and social benefits was mainly derived from revenue generated through sale of community hunting quotas including sale of wildlife by products from hunted animals. In order to eliminate hunting altogether, one needs to provide alternative sources of income through complex developmental policies.

The study has demonstrated that the human wildlife conflict has been on an exponential increase since introduction of wildlife hunting prohibition. The increase in human wildlife conflicts has been noted for negatively impacting the conservation of wildlife as well as reducing rural livelihood as the wildlife destroy people's fields and in some instances resulted in loss of human life. At this point, the state is likely to be reduced to a social welfare state, and having to introduce social safety nets in the form of social grants to care for the poor or compensate those citizens who either have their property or life destroyed by wildlife.

The prevailing global norms as they affect national conservation policies continue to shape citizens and state relations particularly those residing in northern districts where the livelihood needs of human beings and wildlife habitat and forage particularly elephant overlap. Perhaps government should consider introducing community compensation scheme

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for effective management of the spiralling increase in compensation figures. Local communities are likely to administer the scheme efficiently as their presence on the ground could ensure rapid and thorough assessment of alleged problem animal conflict cases. This approach could save government from incurring loss of funds from payment of damages particularly fraudulent cases and actual staff time spent on dealing with problem animal cases.

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References

- Akama, J. S. & Kieti, D. M. (2003). Measuring Tourist Satisfaction with Kenya's Wildlife Safari: a case study of Tsavo West National Park. *Journal of Tourism Management*, 24: 73-81.
- Arntzen, J., Buzwani, B., Setlhogile, T., Kgathi, D.L. & Motsolapheko, M.K. (2007). Community-Based Natural Resource Management, Rural Livelihoods and Environmental Sustainability. *Centre for Applied Research*, Gaborone
- AWF (2005). "Four Corners" Transboundary Natural Resources Management Area Initiative for The Okavango/Hwange/Chobe/Caprivi/Mosi-Oa-Tunya and Kafue Area. *The Final Technical Program Report for 2001-2004*. African Wildlife Foundation.
- Bell, S. & Morse, S. (2001). Breaking through the Glass Ceiling: who really cares about sustainability indicators? *Local Environment*, 6:291– 309.
- Berger, L.R. (2006). Predatory Bird Damage to the Taung Type-skull of Australopithecus Africanus Dart 1925. *American Journal of Physical Anthropology*, 131: 166–168.
- Bookchin, M. (1993). What is Social Ecology? Institute for Social Ecology.
- Bookchin, M. (1999). *An Ecological Society*, in: Biehl, J. (ed.), *The Murray Bookchin Reader*, Montreal/New York London: Black Rose Books.
- Bookchin, M. (1999). Murry Bookchin and the Dominance of Nature. *Journal of Critical Review Social and Political Philosophy*, 2 (2): 59-94.
- Bowie, H.G., (2008). Economic and Financial Analysis – Community Investments Study. HWC project, GEF & DWNP.
- Braudel, F. (1984). *Civilization and Capitalism, 15th-18th Century*, vol III: *The Perspective of the World*. HarperCollins.
- Chase, M. (2011). Dry season fixed wing aerial survey of elephants and wildlife in northern Botswana: Elephant Without Borders
- Chase, M.J., Schlossberg, S., Griffin, C.R., Bouché, P.J.C., Djene, S.W., Elkan, P.W., Ferreira, S., Grossman, F., Kohi, E.M., Landen, K., Omondi, P., Peltier, A., Selier, S.A.J., Sutcliffe, R. (2016). Continent-Wide Survey Reveals Massive Decline in African Savannah Elephants.
- Child, B. (2000). Making Wildlife Pay: Converting Wildlife's Comparative Advantage into Real Incentives for Having Wildlife in African Savannas, Case Studies from Zimbabwe and Zambia. Prins, H.H.T., Grootenhuys, J.G., Dolan, T.T. (Eds.), *Wildlife Conservation by Sustainable Use*, Conservation Biology Series, Springer, Netherlands (2000), 12:335-387.
- CITES. (2014). Document 42. Elephant Conservation, Illegal Killing and Ivory Trade. Report to the Standing Committee of CITES. Geneva: CITES Secretariat.
- CITES. (2016a). CITES CoP17 Proposal 16: Consideration of Proposals for Amendment of Appendices I and II - The Inclusion of All Populations of *Loxodonta africana* (African elephant) in Appendix I through the transfer from Appendix II to Appendix I of the Populations of Botswana, Namibia, South Africa and Zimbabwe. Seventeenth Meeting of the Conference of the Parties.
- CITES. (2016b). Criteria for Amendment of Appendices and II. (Resolution Conf.9.24 Rev Cop17).
- Davidson, B. (1994). *Modern Africa. A Social and Political History*. London: Longman.
- Davies, J. (2016). *The Birth of the Anthropocene*. Oakland: University of California Press.
- Davis, M. (2001). *Late Victorian Holocausts. El Nino Famines and the Making of the Third World*, London: Verso.

Citation: Blackie, I. R & Sowa, J. (2019). Dynamics of Social Ecology of Elephant Conservation in Botswana and Implications on Environmental Development. *Journal of African Interdisciplinary Studies*. 3(2), 4 – 25.

- Department of Wildlife and National Parks. (2012). Aerial Census of Animals in Botswana: 2012 Dry Season. Gaborone. Botswana.
- Duffy, R. (2014). Waging a War to Save Biodiversity: the Rise of Militarized Conservation. *The Royal Institute of International Affairs*. 90(4): 819-834.
- DWNP. (2018). Department of Wildlife and National Parks, Annual Strategic Plan, 2018-19. Ministry of Environment Natural Resources Conservation and Tourism.
- Eiglad, E & Bookchin, M. (2006). *Social Ecology and Communalism*. Oakland: Library of Congress.
- Ellis, E. (2018). *Anthropocene: A Very Short Introduction*. Oxford University Press.
- European Commission. (2016). Larger than Elephants. Inputs for an EU Strategic Approach to Wildlife Conservation in Africa – Regional Analysis. Directorate-General for International Cooperation and Development, European Commission, Brussels.
- Georgiadis, N.J., Hack, M., Turpin, K. (2003). The Influence of Rainfall on Zebra Population Dynamics: Implications for Management. *Journal of Applied Ecology* 40: 125–136.
- Government of Botswana. (1992). *Wildlife Conservation and National Parks Act No. 2 of 1992: Cap.38*. Government Printer, Gaborone.
- Hoare, R.R. (1999). Determinants of Human-Elephant Conflict in a Land use Mosaic. *Journal of Applied Ecology*. 36: 689-700.
- Hyndman D. (1994). *Ancestral Rain Forests and the Mountain of Gold: Indigenous Peoples and Mining in New Guinea*. Boulder, CO: Westview Press.
- IUCN. (2005). *Benefits Beyond Boundaries*. Proceedings of the Vth IUCN World Parks Congress. IUCN, Gland, Switzerland and Cambridge.
- IUCN. (2008). *Mammal on the IUCN Red List*.
- IUCN. (2014). *World Heritage Nomination- IUCN Technical Evaluation, Okavango Delta (Botswana) – ID No. 1432*.
- Jason, S., Casey, M., & Foreman, W. (2010). Poachers Reduced Elephant Population by 40% during Kenya’s Forty Years of Implementing Wildlife Hunting Prohibition and Even Increased Seven Times Between 2007 and 2010.
- Kinyua, I. D., van Kooten, C. G. & Bulte, E. H. (2000). African Wildlife Policy: Protecting Wildlife Herbivores on Private Game Ranches. *European Review of Agricultural Economics*, 27(2):227-244.
- Lahm, S.A. (1996). A nationwide survey of crop-raiding by elephants and other species in Gabon. *Pachyderm*, 21: 69–77.
- Lindsay, K., Chase, M., Landen, K., Nowak, K. (2017). The Shared Nature of African Elephants. *Biological Conservation* 215: 260-267.
- Liu, J., T. Dietz, S. R. Carpenter, M. Alberti, C. Folke, M. Alberti, C. L. Redman, S. H. Schneider, E. Ostrom, A. N. Pell, J. Lubchenco, W. W. Taylor, Z. Ouyang, P. Deadman, T. Kratz, T., & Provencher, W. (2007). Coupled Human and Natural Systems. *Ambio*. 36(8):639-649.
- Lockie, S. (2015). Why Environmental Sociology? *Journal of Environmental Sociology*, 1(1):1-3.
- Moss, C. J. (2001). The Demography of an African Elephant (*Loxodonta africana*) Population in Amboseli, Kenya. *Journal of Zoology*, 255:145-156.
- Murphree, M. W. (1996). “Wildlife in Sustainable Development: Approaches to Community Participation,” in: *African Wildlife Policy Consultation*. London: ODA, 155-188.
- Naughton-Treves, L., Rose, R. & Treves, A. (1999). The Social Dimensions of Human-Elephant Conflict in Africa: A Literature Review and Case Studies from Uganda and Cameroon. *IUCN African Elephant Specialist Group Report*: 82.

Citation: Blackie, I. R & Sowa, J. (2019). Dynamics of Social Ecology of Elephant Conservation in Botswana and Implications on Environmental Development. *Journal of African Interdisciplinary Studies*. 3(2), 4 – 25.

- Newmark, W. D., Mayanza, D. N., Gamassa, D. M., & Sariko, H. I. (1994). The Conflict Between Wildlife and Local People Living Adjacent to Protected Areas in Tanzania: Human Density as a Predictor. *Conservation Biology*, 8:249-255.
- Onishi, N. (2015, September 12). A hunting ban saps a village's livelihood. *The New York Times*.
- Ostrom, E. (2009). A General Framework for Analysing Sustainability of Social-Ecological Systems. *Science* 325:419-422.
- Polanyi, K. (1944). *The Great Transformation: The Political and Economic Origins of our Time*. Boston, Massachusetts.
- Songorwa, A.N., Buhrs, T., Hughey, K.F.D. (2000). Community-Based Wildlife Management in Africa: A Critical Assessment of the Literature. *Natural Resources Journal*, 40(3):603-643.
- Statistics Botswana. (2011). Population and Housing Census 2011: National Statistical Tables. *Statistics Botswana*.
- Stone, M., & Nyaupane, G. (2013). Re-Thinking Community in Community Based Natural Resources Management. *Journal of Community Development Society*, 45(1): 17-31.
- Taylor, R.D. (1993). Wildlife Management and Utilization in a Zimbabwean Communal Land: a Preliminary Evaluation in NyamiNyami District, Kariba. *WWF MAPS Project Paper No. 32*. Harare, Zimbabwe, WWF Southern Africa Regional Office.
- Thirgood, S., S. Redpath, I. Newton, and P. Hudson. (2000). Raptors and Red Grouse: Conservation Conflicts and Management Solutions. *Conservation Biology*. 14:95-104.
- Thouless C.R. (1993). The Laikipia Elephant Project. Final report. Nairobi, Kenya, Kenya Wildlife Service and World Wide Fund for Nature Eastern Africa Regional Office.
- Thouless, C.R. (1994). Conflict between humans and elephants in Sri Lanka. Report for the Global Environment Facility (GEF). Oxford, UK (Unpublished).
- Thouless, C.R., Dublin, H.T., Blanc, J.J., Skinner, D.P., Daniel, T.E., Taylor, R.D., Maisels F., Frederick, H.L., Bouché, P. (2016). African Elephant Status Report: An Update from the African Elephant Database. *Occasional Paper Series of the IUCN Species Survival Commission*, No. 60 IUCN/SSC African Elephant Specialist Group. IUCN, Gland, Switzerland.
- Treves, A. & Naughton-Treves, L. (1999). Risk and Opportunity for Humans Coexisting with Large Carnivores. *Journal of Human Evolution*, 36: 275–282.
- UNEP-WCMC. (2013). CITES Trade Database.
- UNESCO. (2014). United Nations Educational, Scientific and Cultural Organization. World Heritage List.
- Wallerstein, I. (2000). *Africa in a Capitalist World*, "Issue", Ill, 3, Fall 1973, in: Wallerstein, I. *The Essential Wallerstein*, New York: The New Press.
- Wittemyer, G., Northrup, J.M., Blanc, J., Douglas, H.I., Omondi, P., Burnham, K.P. (2014). Illegal killing for Ivory Drives Global Decline in African Elephants. *Proceedings of the National Academy of Sciences of the United States of America*. 111(36):13117–13121.