

Human Use-Pressure and Sustainable Wildlife Management in Burkina Faso: A Case Study of Bushmeat Hunting in Bobo-Dioulasso

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Abstract

Hunting is an important activity for the survival of local communities. However, unregulated hunting threatens the sustainability of wildlife and subsequently affects the same populations. This study investigated bushmeat hunting practices and their implications in wildlife sustainable management in Bobo-Dioulasso (Burkina-Faso). A total of 226 hunters were interviewed, using a random sampling technique and a semi-structured questionnaire. It revealed four groups of hunters. Group 1 (32.57% of the sample) was young and commercial hunters from Bobo ethnic group with 42.15 ± 6.01 as average age. Hunting is their main activity and they hunt all year round in groups using direct catch and hunting dogs. Group 2 (19.76%) prefers to hunt in the daytime and their products serve for diseases treatments through traditional medicine. Group 3 (29.06%) consists of the Mossi ethnic group with an average age of 58.92 ± 3.69 . They belong to the confederation of hunters called "Dozo". They are farmers with hunting as the secondary activity. They hunt at night with headlamps. Group 4 (18.60%), mainly Mossi with an average age of 63.06 ± 7.19 , hunts occasionally and respects the accredited hunting periods. The animals at the risk and most commonly used as bushmeat are Francolin, Porcupine, Cape hare, Buffalo, Nile monitor, Python, and Parrot. The locally threatened animals are respectively Ostrich, Roan antelope, Bat, Crocodile, and Striped hyena. Other animals are endangered and becoming increasingly rare (Lion, Elephant, Hippopotamus, and Warthog). Actions need to be taken by decision-makers and involve local communities for the sustainable management of wildlife in Bobo-Dioulasso.

Keywords: conservation, hunting, sustainability, typology, wild animals

1. Introduction

The harvest of wildlife is the primary source of meat and income for hundreds of millions of people in developing countries (Barrett, 2010; Brashares, Golden, Weinbaum, Barrett, & Okello, 2011). The harvest, sale, and consumption of wild animals comprise a trade valued at several billion dollars annually (Godoy, 2010). It is not surprising that the bushmeat trade is viewed by many as among the greatest threats to biodiversity, particularly in the tropic. Today, direct harvesting of wildlife by humans is deemed one of the greatest threats to the survival of species unique to tropical forest habitats, and a direct threat to global biodiversity (Wilkie et al., 2005; Bhupathy, Kumar, Thirumalainathan, Paramanandham, & Lemba, 2013). It is generally believed that unsustainable harvest can have catastrophic consequences for ecosystems and the services and livelihoods that they provide (Gandiwa, 2011; Decker et al., 2014). Even if the exact scale of illegal trade is uncertain, its impact

is increasingly evident with the eradication of wildlife happening faster than habitat degradation (World Bank, 2005). Overhunting has been identified as one of the major threats to wildlife in many parts of the world (Aiyadurai, 2011; Harrison, 2011; Bhupathy et al., 2013), thus regulating hunting would be important for the conservation of wildlife and biodiversity.

A significant proportion of wildlife trade is illegal and contributes directly to the depletion of valuable natural resources through overexploitation and the introduction of commercially-valuable species beyond their natural ranges (Broad, Mulliken, Roe, & Oldfield, 2003). While it is impossible to estimate the value and the volume of the illegal trade in wild animals, the global estimate includes USD 15 billion (Broad et al., 2003) and USD 20 billion. To evolve sustainable hunting regulations, it is important to have baseline data on relevant socio-economic drivers and cultural practices, and on the species hunted, their population structures and harvest levels. The long-term is not relevant for the species that are most threatened by hunting, for which extinction within a decade is a real possibility (Nelleman & Newton, 2002). Therefore, strong intervention is required, where there is a need to reduce hunting levels. It is essential to understand not only the impact of hunting on wild populations but also the reason why certain species are hunted (Kaul, Hilaluddin, Jandrotia, & McGowan, 2004). In Burkina-Faso, hunting is still practiced by local communities without any control. It is necessary to assess the effect of these practices on wildlife sustainability. However, there are few studies, attempted to explain these questions and their effects on wildlife sustainability in Burkina-Faso. This study aims to investigate the hunter pressure and use of bushmeat and its implication on wildlife management, a case study of Bobo-Dioulasso.

2. Material and Methods

This study was carried out in six forests across the Bobo-Dioulasso municipality. They are Dinderesso, Kua, Bougouriba, Mangodara, Sara-Békuy, and Tuy Forest. A multi-stage sampling technique was used for the study. A total of 226 hunters were interviewed between August 2018 and March 2019. The hunters surveyed are the ones sampled and identified together with the staff of Environment and Wildlife Conservation Agency and the hunter's associations of Bobo-Dioulasso. However, in case of the absence of identified hunters in the concerned zone, the survey uses the Snowball sampling method by asking about other hunters around. An interview guide and a semi-structured questionnaire were used for data collection. The questions concerned the hunter's socio-cultural characteristics (nationality, ethnic group, principal activity, age of hunter, the proximity of hunting place, member of hunters association), the hunting methods and tools used, the form of hunting, wild animals hunted and final use of game species hunted. Apart from the animals listed by the hunters, some additional list of potentially threatened animals according to the literature was submitted to hunters as field guides during the interview.

The legal permissions were obtained from the national government representative office and local authorities. The fieldwork was conducted with the effective presence of the leader of hunters' confederation called "Dozo" as guidance. This research has been approved by the ethics committee of the Institute of Rural Development, Nazi Boni University, and also following Burkina's ethic policy. To get their voluntary participation, all hunter surveyed were informed about the aims of the study and how data would be used.

Added to descriptive statistics, a Multiple Factor Analysis (MFA) was used to represent the hunters in the form of projections on the planes defined by the first factorial axes. An Ascending Hierarchical Classification (AHC) method (from the holdings of the coordinates on the main factor axes) was used to group hunters according to their proximity to each other. Different typology groups correspond to the main "branches" of the tree. The data analysis was performed using R.2.15.2 software.

3. Results

3.1 Socio-Demographic Characteristics of Respondents and Determining Factors of Wildlife Exploitation

Table 1 presents the characteristics of hunting activity in the study area. It shows that 82.47% of hunters do not respect the period dedicated to hunting in Bobo-Dioulasso (i.e. November-March), but hunt all-year-round. That increases the pressure on wildlife over the year. Hunting is the main activity for 57.88% of them, 28.12% as a secondary activity and 14% are just occasional hunters. Different methods are being employed for hunting, including trapping, which dominates with 38.82%, followed, respectively by the use of poison, fire, and chili (23.47%), and direct catch (18.47%). Only 10.59% of the respondents employed the use of hunting dogs. Non-gunpowder-based and gunpowder-based are used very rarely by 6.29% and 2.35% of the hunters, respectively. Concerning the destination of the products, 60.71% of the games hunted are sold to restaurants as bushmeat, 31.53% to traditional medicine practitioners for useful purposes. Only 7.76% of the games hunted are consumed by the hunters, implying that hunting is the main income activity of the hunters and cannot decrease without appropriate measures being taken, or by providing alternative means of livelihood for the affected

people. Several forms of hunting have been identified, including day hunting, night hunting, group hunting, modern hunting, sport hunting (Table 1).

Table 1. Determining factors of wildlife exploitation

Variables	%	P-value
Ethnic groups		
Mossi	52.88	< 0.001
Dioula	8.24	
Bobo	33.82	
Autres	5.06	
Form of hunts		
Day hunting	29.41	< 0.001
Group hunting	20	
Modern hunting	8.24	
Night hunting	32.94	
Sport hunting	9.41	
Hunting activity		
Principal activity	57.88	0.01381
Secondary activity	28.12	
Occasionally activity	14	
Hunting methods		
Trap	38.82	< 0.001
Direct catch	18.47	
Non-gunpowder-based	6.29	
Poison, Fire, chili	23.47	
Dogs	10.59	
Gunpowder based	2.35	
Hunting period		
All period	82.47	< 0.001
(November-April) accredited	15.18	
June-September	2.35	
Products destination		
Own consumption	7.76	< 0.001
Sale for bushmeat	60.71	
Use as a traditional medicine	31.53	

3.2 Typology of Hunters

Correlations between the variables allowed to retain a set of 16 active variables giving 48 terms. The cumulative contribution to the total inertia of the first three factorial axes retained was 65.30 %. The analysis allowed to distinguish four types of hunters in the municipality of Bobo-Dioulasso. The best graphical representation was provided by a projection in a plane defined by the factorial axes 1 and 2. Analysis of the distribution of hunter's types on the MFA and AHC charts revealed the characteristics of each type of hunter. Figure 1 shows the different groups of hunters.

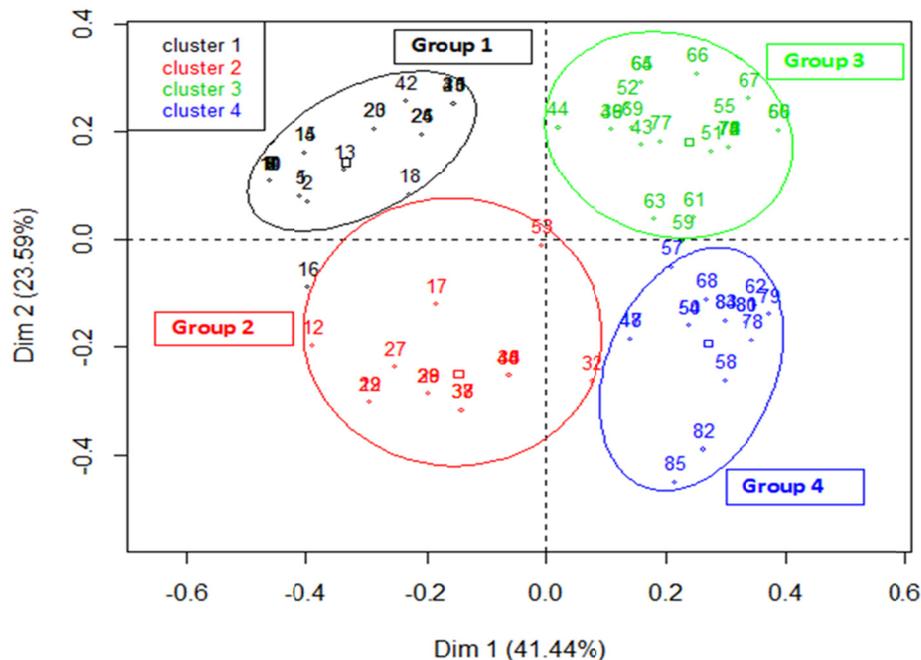


Figure 1. Projection of hunters surveyed on the factorial axis 1 and 2

Four groups of hunters were identified:

(i) Group 1 called Commercial Hunters: (65 hunters or 32.57% of the sample): the hunters in this group are young people with an average age of 42.15 ± 6.01 . They are from Bobo ethnic group. Hunting is their main activity and they hunt all over the year. They prefer to hunt in groups. As hunting tools, they use direct catch (Beaten stick) and Dogs. Their Hunters have a strong knowledge of the geographical position of restaurants specializing in bushmeat meals. Hunted game is sold to restaurants as bushmeat. The animals regularly hunted by the hunters in this group are Cape hare, Nile monitor, Warthog, African golden cat, Roan Antelope, Porcupine, Buffalo, bat, python, Parrot, Francolin.

(ii) Group 2 named Healer Hunters: (50 hunters or 19.76% of the sample): the hunters in this group have an average age of 49.71 ± 2.57 . Hunting is their main activity but they do not respect the national hunting season (December-April) by hunting every time. They prefer to hunt by day with arms such as "Poison, Fire, Chili". The final hunting products are intended for traditional medicine for several human diseases treatment. Hunters in this group regularly hunt animals such as francolin, porcupine, python, bat, buffalo, Striped hyena, and parrot.

(iii) Group 3 called Night Hunters: (60 hunters or 29.06% of the sample): the hunters in this group are from the Mossi ethnic group with an average age of 58.92 ± 3.69 . They belong to the confederation of hunters called "Dozo". They are farmers and hunt as a secondary activity. They hunt at night in animal grottoes with headlamps. As hunting methods, they use traps and non-gunpowder-based. They use the hunted game for the supply of bushmeat to the family and also for uses related to traditional medicine. They regularly hunt Francolin, porcupine, Buffalo, Crocodile, Ostrich. They also sometimes hunt Hippopotamus, Elephant and the lion.

(iv) Group 4 Modern Hunters: (51 hunters or 18.60% of the sample): the hunters in this group are mainly Mossi ethnic group and some Dioula with an average age of 63.06 ± 7.19 . They respect the accredited hunting periods. They belong mainly to the "dozo" hunter confederation. They do not hunt as their main or secondary activity but hunt occasionally. They practice modern hunting with hunting cars to track down. As hunting weapons, they use the gunpowder based. The parts of the animals hunted are intended for uses such as "ornament, prestige, and power". The hunted animals are also used for potions' magic use. The hunters in this group hunt more pale fox, buffalo, francolin, and porcupine. They also often hunt ostrich, crocodile, and python. They rarely hunt Hippopotamus, Elephant and the lion.

3.3 Human-Use Pressure on Wildlife

The frequencies of the different terms of the variables related to the four types of hunters identified were given in

Table 2.

Table 2. Distribution of hunted animals per week by identified hunter groups

Game species	Scientific names	Groups			
		G1	G2	G3	G4
Cape hare	<i>Lepus capensis</i>	121.04±8.62	23.88±2.15	0.00±0.00	0.00±0.00
Nile monitor	<i>Varanus</i>	100.19±1.63	20.47±1.12	0.00±0.00	0.00±0.00
Warthog	<i>exanthematicus</i>				
	<i>Phacochoerus africanus</i>	9.59±0.82	1.29±0.0028	0.00±0.00	0.00±0.00
Striped hyena	<i>Crocuta crocuta</i>	37.37±1.17	10.59±0.69	0.00±0.00	0.00±0.00
African golden cat	<i>Caracal aurata</i>	68.52±5.83	13.06±0.04	0.00±0.00	0.00±0.00
Roan Antelope	<i>Hippotragus</i>	25.96±1.74	7.71±0.60	0.00±0.00	0.00±0.00
	<i>equinus</i>				
Crested porcupine	<i>Hystrix cristata</i>	37.15±4.03	84.18±1.04	45.68±1.51	41.81±1.04
Buffalo	<i>Syncerus caffer</i>	32.44±8.45	65.24±2.08	37.88±0.40	37.00±0.63
	<i>brachyceros</i>				
Bat	<i>Chiroptera</i>	9.44±0.19	68.06±0.88	10.16±1.57	9.38±0.055
	<i>thyroptera</i>				
Python	<i>Python regius</i>	25.52±0.24	75.65±1.30	30.52±1.74	26.63±0.95
Parrot	<i>Psittacus erithacus</i>	21.04±2.93	47.59±1.00	26.36±2.41	22.63±2.45
Francolin	<i>Pternistis</i>	43.41±1.45	101.41±1.55	54.84±2.03	48.69±2.77
	<i>bicalcaratus</i>				
Elephant	<i>Loxodonta africana</i>	0.00±0.00	0.00±0.00	1.00±0.0012	0.75±0.0075
West African crocodile	<i>Crocodylus suchus</i>	0.00±0.00	0.00±0.00	21.28±1.43	24.81±1.71
Ostrich	<i>Struthio camelus</i>	0.00±0.00	0.00±0.00	12.68±0.17	14.56±1.74
Lion	<i>Panthera leo</i>	0.00±0.00	0.00±0.00	0.12±0.0002	0.13±0.0002
Common hippopotamus	<i>Hippopotamus</i>	0.00±0.00	0.00±0.00	4.60±0.054	8.31±0.10
	<i>amphibius</i>				
Pale fox	<i>Vulpes pallida</i>	0.00±0.00	0.00±0.00	40.20±3.59	46.69±2.85

Each value represents Mean±Std. Dev.

This typology of hunter allows to understand the pressure exerted on wildlife according to the socio-cultural group of hunters, the hunting methods and tools, the game species regularly hunted, as well as the final use of the hunting products. Figure 2 shows the frequency of animals killed by hunters per week.

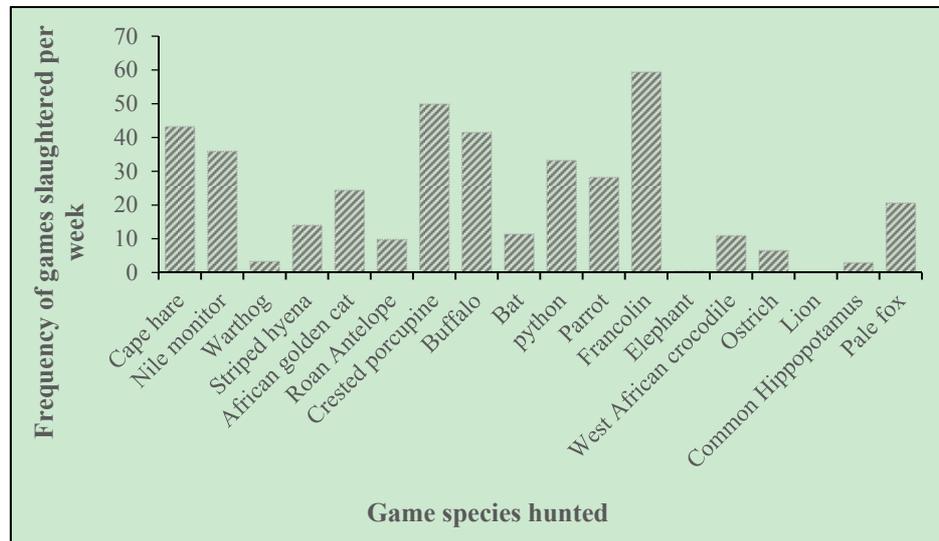


Figure 2. Frequency of games species hunted per week

The animals tamed by the hunters surveyed are Cape hare, Varan, Warthog, African golden cat, Striped hyena, Roan antelope, Porcupine, Buffalo, Bat, Python, Parrot, Francolin, Elephant, Crocodile, Ostrich, Lion, Hippopotamus, and Pale fox. The figure shows that the animals under high hunters' activity pressure are respectively Francolin (59.4%), Porcupine (49.9%), Cape hare (43.2%), Buffalo (41.5%), Varan (35.9%), Python (33.2%), Parrot (28.2%), African golden cat (24.4%) and Pale fox (20.6%). The locally threatened animals are respectively Ostrich, Roan antelope, Bat, Crocodile, and Striped hyena. Animals that are becoming increasingly rare or disappearing are, in order of scarcity, Lion, Elephant, Hippopotamus, and Warthog. This result illustrates the most important classes of animals under threat and can be used to prohibit the hunting of some species in these forests.

Figure 3 shows that the number of animals hunted decreases when the hunter becomes old. Hunters between [30-46] years of age hunt a large number of animals and the majority of the animal species hunted by these young hunters are identified as animal species under human activity pressure: the Cape hare, Varan, African golden cat. These animals are much more commonly used as bushmeat. Hunters between [46-60] are interested in animals such as Francolin, Porcupine, Buffalo, Python, Parrot, Bat. These different animal species are used not only as bushmeat but also in traditional medicine. About hunters between [60-75], they hunt animal species such as Pale fox, Striped hyena, Crocodile, and ostrich. These old hunters also watch for rare or even endangered animal species such as Hippopotamus, elephant, and lion.

It can be noted that the young hunters are the most people to be included in negotiation for wildlife management because of their high pressure than other categories of age. The traditional knowledge and the use of animal hunted as medicine products are summarized in the appendix.

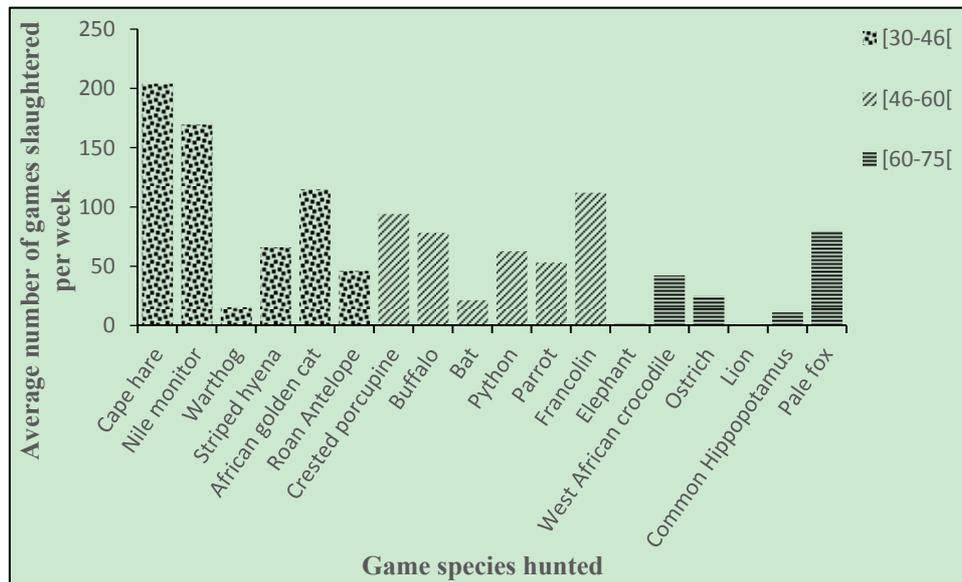


Figure 3. The average number of animal species hunted by age group

4. Discussion

The hunting activity in Bobo-Dioulasso as shown in this study is characterized by four groups of hunters using different tools and methods. It is different compared to the study of Salosa et al. (2014) who identified two types of hunting based on the tools and methods used: active hunting, which is a hunting technique using dogs and traditional weapons such as bow and arrow; and passive hunting is a hunting technique using traps or snares to catch the prey. Also, 60.71% of the game hunted is sold to restaurants as bushmeat. It is because people across the tropics rely on wildlife for food and income. However overhunting to satisfy this demand is causing the decline of many species; an issue is known as the wild meat crisis (Brashares et al., 2011). Several studies conclude that the increasing of bushmeat demands is due to consumers’ preference such as taste preference (Smith, 2011), their price (Wilkie et al., 2005), availability of wild meat and substitutes (van Vliet, Nebesse, & Nasi, 2014), wealth (Godoy, 2010), income (Parry, Barlow, & Pereira, 2014), and market access (Chaves, Wilkied, Monroe, & Sieving, 2017). A total of 18 species of animals are commonly used by the people of the study area as bushmeat and also for traditional purposes. This number appears lower in comparison to other countries and shows the poor diversity of wildlife for hunting in the area. For example, Sutarno, Qayim, Muhadiono, Purwanto, & Zuhud, (2017) identified at least 55 species of animals commonly used by the Hatam people. In Burkina Faso, a significant part of wildlife harvest is used for traditional medicine purposes. Like plants, animal and their products also keep medicinal properties (Jaroli et al., 2010). It illustrates a common dilemma facing all fauna species through the soaring demand for their body parts for use in medicinal practices (Soewu & Ayodele, 2009). Different types of traditional use are found. According to Soewu (2006), preparation of fauna-based traditional medicines could be processed in different forms: a single, specific part of an animal; various combinations of different parts of the same animal species; and combinations of different parts of several animals, plants, minerals and other natural resources (Soewu, 2006). This situation of hunting products used as traditional medicine will remain for a long time because of poverty and the lack of hospitals in some rural areas. That will subsequently affect the wildlife populations if any actions were taken.

Our results are similar to those obtained by Watkins, Poudyal, Caplenor, Buehler, & Applegate, (2018) in eastern wild turkey hunters revealing three types of hunters in terms of their hunting motivations: social harvesters, experiential harvesters, and social outdoor enthusiasts (Watkins et al., 2018). Moreover, the typology of hunters is very important for wildlife management as showed the study on grouse hunting regulations and hunter typologies in Norway who conclude that knowledge of typologies is valuable for tailoring local hunting regulations provided their actual distribution is identified at the appropriate scale (Hilde, Oddgeir, & Hans, 2013).

Some factors determine the continuous hunting activities by people. As found in this study, a group of young commercial hunters hunts as their main activity, all year round, and a large number of animals. It is necessary to follow this group and control them because the majority of the animal species hunted by these young hunters are

identified as animal species under anthropogenic pressure. To achieve that goal, according to Andersen, Kaltenborn, Pedersen, Storaas, & Solvang, (2009) and Hilde et al. (2013), there are only two means to regulate a game harvest: controlling the number of hunting permits and/or controlling the yield taken by each hunter. In terms of hunter satisfaction, this relates to the hunters' crowding tolerance and how the hunters rate the importance of bag size, respectively. If hunters comprise distinct typologies concerning crowding and bag size, game managers may use this knowledge to tailor hunting regulations more precisely.

Several authors worked on the sustainable management of wildlife and remarked that: at the household level, poverty forces people to pursue ecologically destructive economic options, often violating laws to survive (Himmelfarb, 2006; Kingazi, Mombo, & Shemdoe, 2008). At the national level, limited budgets reduce the capacity of governments to enforce conservation laws aimed at combating poaching and deforestation. The inadequate workforce in protected areas is one of the common constraints associated with poverty in many countries. But the communities can be actively involved in managing resources if their traditional practices are cherished because of their important role in thwarting depletion of resources, as a key incentive for conservation, their economic affordability, their reliability, and sustainability (Mgumia & Oba, 2002; Kideghesho, 2008). The wildlife conservation institution urgently needs to adopt a more effective, strategic approach to address contemporary social values relative to wildlife and changes in wild animal use and ecological conditions (Jacobson, Organ, Decker, Batcheller, & Carpenter, 2010). Such an approach must be grounded on principles that encompass the roles and responsibilities of all players in the wildlife conservation institution: elected and appointed officials, conservation professionals in government, non-government entities, and citizens (Smith, 2011; Wood, 2014). It has important implications for wildlife resource governance (Wood, 2014), particularly to ensuring natural resources for the benefit of current and future citizens.

5. Conclusion

The study focused on hunter's pressure on wildlife in Bobo-Dioulasso (Burkina Faso). Four groups of hunters were identified based on socio-cultural characteristics, the hunting methods, the species hunted and the destination of the hunting harvests. There are Commercial Hunters, Healer Hunters, Night Hunters, and Modern Hunters. It noted that the anthropogenic pressure is in effect over the year and varies, depending on whether the hunting objective is commercial (sale in restaurants as bushmeat), use for traditional medicine or arts and decorative purposes. The young commercial hunters are the most active by hunting a large number of species and the majority of the animal species hunted by these young hunters are identified as animal species under human activity pressure. The wildlife conservation institution in Burkina Faso needs to take action to reduce the decline of wild animal species. Hunting of animals under threats must first be prohibited in these forests. A key among them is to shift from operating under a framework focused predominantly on a narrow set of wildlife interests, to a socio-ecological paradigm and concomitant approach to wildlife conservation that embraces the interests and participation of a broader public. The four types of hunters identified in the present study can be actively involved in managing and conservation resources of wildlife in Burkina Faso.

Future studies must focus on commercial hunters, the economic impacts of hunting and wild product market access in Burkina Faso.

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Conflicts of interest

The authors declare no conflicts of interest.

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Appendix: Traditional use of animals and their products in Bobo-Dioulasso

Animal species			Part used	Traditional knowledge of the use of animals	Method of preparation and medicinal use
English Name	Local name	Scientific name			
Bird					
Francolin	Wolon	<i>Pternistis bicalcaratus</i>	Whole animal	Treatment of jaundice disease and gout disease	Cook with water the whole francolin with the feathers and the patient drinks the soup
Bat	Tolè	<i>Chiroptera thyroptera</i>	Meat	Treatment of sickle cell disease, Hepatitis	A part of the animal is used in the preparation of the therapeutic potion
Parrot	liewli	<i>Psittacus erithacus</i>	-	Potions for the treatment of speech-language pathology for children	Potion based parrot parts and some plants especially known by hunters' brotherhoods named "Dozo" in Burkina
Ostrich	-	<i>Struthio camelus</i>	Bone marrow	Rheumatism and anti-wrinkle potions, anti-aging	A part of the animal is used in the preparation of the therapeutic potion
			Feathers	Use to treat wounds	The feathers are burned to ashes. Once cool, the ashes are spread on open wounds.
Wild turkey	Kongokami	<i>Meleagris gallopavo</i>	-	Asthma, laryngitis, pharyngitis, and tonsillitis	A part of the animal is used in the preparation of the therapeutic potion
Mammals					
Striped hyena	Souroukou	<i>Crocuta crocuta</i>	Meat Bones	For strength and stamina	Cook and eat the meat
Cape hare	Sossani	<i>Lepus capensis</i>	Meat	Reduce cholesterol	A part of the animal is used in the preparation of the therapeutic potion
Warthog	Kongolèè	<i>Phacochoerus africanus</i>	Teeth	Use to treat Swelling, toothache	A part of the animal is used in the preparation of the therapeutic potion
			Skin	Use to treat Herpes	A part of the animal is used in the preparation of the therapeutic potion
Roan Antelope	Dagouwè	<i>Hippotragus equinus</i>	Meat	Bushmeat to get power	Cook and eat the meat

Porcupine	Bala	<i>Hystrix cristata</i>	Thorn/spine	Wound and a broken leg	Potion based porcupine part and some plants especially known by hunters' confreries named "Dozo" in Burkina
			Liver	Diabetes disease	
			Meat	gastritis, and hypertension	
Buffalo	Sinssé	<i>Syncerus caffer brachyceros</i>	Testis	Use in aphrodisiac potions to treat impotence for men	Potion based Buffalo testis and some plants especially known by hunters' confreries named "Dozo" in Burkina
Elephant	Sama	<i>Loxodonta africana</i>	Dung (feces)	Use to remedy for nose bleeding	Potion based elephant dung and some plants are especially known by hunters' confreries named "Dozo" in Burkina
			Sperm	Use in aphrodisiac potions to treat impotence for men	Potion based Elephant sperm and some plants especially known by hunters' confreries named "Dozo" in Burkina
Lion	Djarra	<i>Panthera leo</i>	Grease	Use to treat back pain and treat the sciatic nerve, Use also to treat whooping cough	Potion based Lion grease and some plants especially known by hunters' confreries named "Dozo" in Burkina
Hippopotamus	Mali	<i>Hippopotamus amphibius</i>	-	-	-
Civet	Wata	<i>Civettictis civetta</i>	-	-	-
Leopard	Waranikala	<i>Panthera pardus</i>	-	-	-
Pale fox	Kongowoulou	<i>Vulpes pallida</i>	Brain tissue and meat	Epilepsy, mental disorder	Cook and eat the meat, mixture with another
Reptiles					
Nile monitor	Kokoro	<i>Varanus exanthematicus</i>	Grease	backache, earache, rheumatism, thrombosis	Potion based Varan grease and some plants especially known by hunters' confreries named "Dozo" in Burkina
Python	Minian	<i>Python regius</i>	Grease	Use to healing wounds and Treatment of backache; Spinal cord disorders	-
			Meat	The decrease in stamina and immune system	By consuming the meat of this animal.
Caiman	Bamba	<i>Caiman crocodilus</i>	Stones contained in the belly	- the stones contained in the belly of caiman are used to treat hiccups	A part of the animal is used in the preparation of the therapeutic potion
			Grease	backache, earache, rheumatism, thrombosis	A part of the animal is used in the preparation of the therapeutic potion
			-	Hernia and prostate problems	A part of the animal is used in the preparation of the therapeutic potion
			-	snake bites (antidote)	A part of the animal is used in the preparation of the therapeutic potion
Common chameleon	Goomtiewgo	<i>Chamaeleo chamaeleon</i>	Tail	Use to treat earache	A part of the animal is used in the preparation of the therapeutic potion
West African crocodile	Yimnga	<i>Crocodylus suchus</i>	Skin/Bones	Treatment against the stiffness of joints and bone dislocation	A part of the animal is used in the preparation of the therapeutic potion

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