

Application of Indigenous Knowledge Systems in Wildlife Management: A Case Study of the Samburu Pastoral Community in Kenya

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Abstract

The value of knowledge-practice-belief complex of the indigenous people relating to conservation of wildlife is seldom recognized in research. In the African context, indigenous knowledge has long been overshadowed and thus ignored by western conservation knowledge. Consequently, much of this knowledge is fast disappearing in application to wildlife diversity conservation. This study was conducted to elucidate how the Samburu traditional knowledge is relevant in the conservation and management of wildlife species. The survey was conducted among three communities in the Wamba Division of Samburu East District. For the study, stratified random sampling was used to draw 72 households from three conservation areas. Key Informant Interviews and Focused Group Discussions were also conducted to consolidate information from interviews. The study identified several indigenous benefits that the community derives from different wildlife species. The benefits include nutritional values, ceremonial wears and traditional uses of wildlife body part, medicinal and aesthetic values. The study concluded that there exist several facets of indigenous knowledge among Samburu community that supports their harmonious living with wildlife. This knowledge can be an important tool in biodiversity conservation in the area.

Keywords: Indigenous knowledge, Wildlife management, Samburu, Human-wildlife conflict, Community based nature conservation

1. Introduction

The use of indigenous knowledge systems (IKS) in wildlife management now gauges interest from global scientists and policy makers (Sobrevila, 2008). This has subsequently led to the adoption several relevant policies and scientific studies, namely; establishment of the Ad Hoc Working Group on Article 8j of the Convention on Biodiversity (CBD), inclusion of ecological IKS in Chapter 15(4) of Agenda 21, the entering into force of the UNESCO Convention on Heritage and the recognition of the cultural services of ecosystem in the Millennium Ecosystem Assessment as well as the prominent position of indigenous people on biological conservation at the UN through Permanent Forum on the Indigenous Issues (MEA,2005;Verschuuren,2006 and BSP, 1993).

Traditional indigenous territories encompass up to 22 percent of the world's land surface and they coincide with areas that hold 80 percent of the planet's biodiversity (Sobrevila, 2008). This convergence of biodiversity significant areas and indigenous territories presents an enormous opportunity to expand efforts to conserve biodiversity beyond parks. According to the Kenya Wildlife Services, more than half of wildlife habitats in the country are outside protected areas, in communal grazing lands, where wildlife, people, and livestock all interact and share the same natural resources such as pasture and water (Mwele, 2011). This increases the susceptibility of human wildlife conflicts in such areas.

The Samburu, among other pastoral communities in northern Kenya, have used their ecological indigenous knowledge systems in rangeland management for the survival of their livestock in the harsh environment (Kameri-Mbote, 2005). Conspicuously, very limited studies have been done to elucidate the relevance of indigenous knowledge on wildlife management among the Samburu community (Oguge *et al.*, 2006). Hitherto, the Samburu is among the traditional community in the country whose culture could be characterized with rich knowledge that can be bolstered in the management of wildlife resources (Nanyinyi *et al.*, 2008). This knowledge is neither documented nor preserved for future generations. Moreover, the IK among communities is dwindling rapidly due to changing lifestyles (Omondi, 2011). Natural resource scientists and managers have increasingly recognized traditional ecological knowledge (TEK) for its potential contribution to contemporary natural resource management creating more resilient social-ecological systems (Verschuuren, 2006). In practice, however, inadequate cross-cultural means to organize and communicate TEK has limited its effective inclusion in management decisions (Maskey, 2007). Samburu IKS involving temporal knowledge of biota (wildlife) and their links with culture and land uses is such type of TEK. This has led to emerged conflicts from the fact that, in many cases, protected area management have not respected the rights of local populations, even though they are the carriers of ancestral knowledge and wisdom about these biodiversity (BSP, 1993). The indigenous communities' effective participation in wildlife conservation programmes just like experts could results into more comprehensive and cost effective conservation and management of biodiversity worldwide (Verschuuren, 2006; IUCN, 2010). This study was conducted to put into perspective the close relationship between Samburu community and wildlife with IKS as the bondage. Moreover, the paper outlines different traditional benefits that the community derived from wildlife biodiversity such as nutritional values, ceremonial wears and use of wildlife body parts, medicinal and aesthetic values.

2.0 Material and Methods

2.1 Study Area and Cultural Background

The study was carried out in Rift Valley Province of Kenya, Samburu East District in Wamba Division. Data was collected within three community wildlife conservation units' including Ngutuk Ongironi, Lodungokwe and Nkaroni (Figure 1). The district is characterized with arid and semi-arid climatic conditions. The district receives low and unreliable rainfall. The mean annual rainfall is about 500mm falling in two rainy seasons. The long rainy season occurs during March – May period, while the short rainy season is experienced between October and November. Frequent and persistent drought lasting several months is a key feature of the study area. In addition, the area suffers from scarce surface water resources. Ewaso Nyiro River, which drains along the southern end of the district boundary, is the only permanent water source in the area. Against high rate of evapo-transpiration and limited technological capability, the low and unreliable rainfall seriously limits livelihood options in the area.

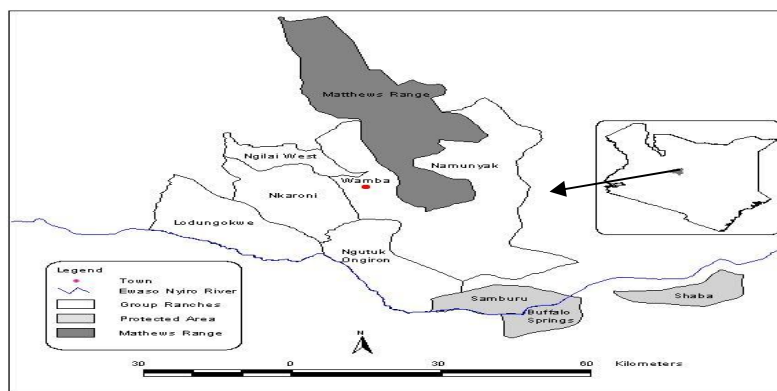


Figure 1: Map of research area. Right: Map of Kenya illustrating the geographical position of Samburu East District. Left: Samburu East District indicating the wildlife conservancy boundaries.

The Samburu community land and its environs have rich faunal biodiversity including 51 species of large and medium sized mammals, 153 species of birds, 22 herpetofaunal species (4 amphibians and 17 reptiles) with lizards (14 species) (De Jong & Butynski, 2010). Most of these animals are threatened species like the wild dog (*Lycan pictus*), African elephant (*Loxodonta africana*) and Grevy's zebra (*Equus grevyi* Oustalet) (Williams, 2002).

The tribe is a Nilotic speaking tribe that inhabits Kenya's northern plains. They are nomadic pastoralists, moving from one place to other following patterns of rainfall in search of fresh pasture and water for their cattle, camels, goats and sheep. The community is the original breeders of indigenous livestock such as East African Zebu Cattle and Maasai Sheep. The animals are particularly suited to local conditions because of adaptation to genetic development through natural selection process and are reared through indigenous rangeland management. Their huts are made of dung supported using branches from trees and surrounded by a fence of thorny bushes from the acacia tree and other types of thorny bushes. Women are responsible for making the huts, milking cows, gathering firewood, fetching water and general maintenance of the homestead. The men take care of the animals. They also wear multi-beaded necklaces, bracelets and earrings some which are made from the wildlife products. Samburu warriors (*morans*) paste their hair with red ochre to create a visor to shield their eyes from the sun. They also have many traditional ceremonies where wildlife products are used for different cultural meanings.

2.2 Methods

The study made use of both secondary and primary data. Primary data was collected through administration of questionnaires to the head of the household and interviews with key informants within the three community wildlife conservation areas (Ngutuk Ongiron, Nkaroni and Lodungokwe). Samburu pastoralists live in manyattas (a large fenced homestead) comprising several households. Manyattas were first identified and enumerated. Stratified – simple – random sampling was used to identify households for the study. The three conservation areas formed the strata for sampling. From each stratum a sample size of 24 households was taken. A total of 72 heads of household were interviewed, six Key Informant Interviews (KIIs) conducted and three Focused Group Discussions (FGDs) were conducted. The FGDs were conducted in each stratum to consolidate information collected from other sources. The people participating in KIIs were selected based on knowledge, attitudes and practices (KAP) survey with the help of local conservancy management. They included local elderly people, opinion leaders, community wildlife conservancy personnel and the local administrators. These interviews were between June and August 2011. The local language (Samburu) was the mode of communication, and the information was then interpreted by trained local field assistants.

Relevant data collected included age set, sex, level of education and occupation of informants as well as different indigenous benefits derived from animals. The age set of the respondents was recorded rather specific age in terms of years. This is due high illiteracy level and strong cultural inclinations among the Samburu community where ages of individuals are categorized into age-sets rather than specific number of years. Women do not have their own age-sets but they adopt that of the husband. The study focused on the older age-sets who were regarded to have had limited influence on the conventional (Western) lifestyle. Therefore the *Lkichami* and *Lmooli* age sets were excluded from the study because they are the youngest ages (*Table 1*).

Table 1 - Samburu Age-Set and Dates of their Beginning

Age Set	Date
<i>Lkichami</i>	2006
<i>Lmooli</i>	1990
<i>Lkuroro</i>	1975
<i>Lkishili</i>	1959
<i>Lkimaniki</i>	1947
<i>Lmekuri</i>	1935
<i>Lkileku</i>	1926
<i>Lmirisho</i>	1911
<i>Lterito</i>	1896
<i>Lmarikon</i>	1882

3.0 Results and Discussion

3.1 Social Characteristics of the Respondents

3.1.1 Age and Gender of the Respondents

The ages of the respondents included in the study were fairly distributed and was recorded in terms of their age sets. This was because the respondent could not better remember their specific years of birth. The study targeted individuals circumcised by 1975 i.e. *Lkuroro* and below (starting dates of different age sets shown in *Table 1*).

This category of people had lived in the area long enough and had a better understanding of the cultural practices related to wildlife found in their community. Majority of the respondents belonged to *Lkishili* age group at 42% followed by, *Lkimaniki*, *Lkuroro* and *Lmekuri* at 32%, 15% and 11% respectively. The gender representation of the study was 29% male and 71% female. This was because, during the survey most men were in the field looking after livestock while the women stayed at home taking care of the young children and doing other house chores.

3.1.2 Respondents' Livelihoods and the Level of Education

In Samburu community, the wealth of a man is determined by the livestock he owns and also the number of wives he has. Early marriages are observed in girls while boys have to go through the rite of passage of *moranhoo*. This has greatly contributed to the high level of illiteracy in the area. According to the survey, 90.9% of the respondents are illiterate (never went to school), 3% have gone through secondary education while 6.1% have gone through primary education.

Majority of the respondents, 83% (n= 72) are pastoralists. They own various types of livestock including cattle, goats, sheep, camels, and donkeys. Twelve percent (12%) of the respondents keep livestock and conduct small businesses. These businesses include selling of multi-beaded necklaces, bracelets and earrings, milk, charcoal, swords, small mobile shops and livestock in the markets. Only 2% of the respondents keep livestock and are employed; however in informal employments like guards in far away cities and towns. Those keeping livestock and bees, business and casual jobs had a representation of 1% each. The casual jobs included manual jobs like cleaning and washing in various business ventures in Wamba town.

3.2 Indigenous Importance of Wildlife Animals

The importance of wildlife to Samburu pastoral community can be categorized into different groups. These include the aesthetic values, cultural values, use of body parts, nutritional values and medicinal values. The community members ranked the benefits differently as their most beneficial product of wildlife.

3.2.1 Traditional Uses of Body Parts

According to the survey, 53% (n= 72) consider use of wildlife body parts as the major benefit of wildlife to the local people. Different body parts of various wildlife species are used by the community in daily activities. These include the use the skin for bedding together with clothing and horn of the Greater kudu for communication during communal activities or alerting others. Animal bones were also used as weapons while piece of hide (from eland and buffalo) cut into strings and used for tethering animals. The warriors, *morans* also made ivory earplugs from the elephant tusks. Nevertheless, many warriors fear arrest for being in possession of ivory by Kenya Wildlife Service personnel or the police in towns hence no longer use the earplugs. The Samburu ritual leaders (*Launoni*) also wore an ivory finger ring to signify their importance and status in the tribe. Before the *Kishili* age set, all spiritual leaders wore elephant tail tips, *lenyau*, on their chest. But the colonial government and the new government outlawed the practice (Kahindi, 2001).

The Samburu Community customs is characterized with different ceremonial activities. These include marriage rituals (*Nkiyama*), fertility rituals for sterile women, warriors naming ceremonies (*Ilmugetlkarna*), initiation and circumcision ceremonies (*Ilmuget lengwenyi or lolbaa*) among others. In most of these occasions, wildlife products are used in one way or another depending on the activity. For example the during marriage ceremonies the bride groom ties a piece of lion skin (*mungen*) on the leg ankles (*Figure 2*), the beads made from a piece of elephant task and headdress made from the eagles feathers. On the other hand, during the circumcision, the *moran* puts on the headgears made of the ostrich feathers (*Figure 3*) while old men hangs the buffalo horn on the neck from where they keep the tobacco for chewing during the ceremony. Based on this uses most respondents considered use of body parts as the most beneficial importance of wildlife.



Figure 2-Pieces of the lion skin (mungen) used during the marriage ceremonies



Figure 3 - An example of a male Somali Ostrich in Samburu whose feathers are used for making headgears

3.2.2 Cultural Beliefs on Wildlife

From the survey, 27 % (n= 72) of respondents said they considered the cultural values as the major benefit of wildlife. This is based on the rich traditional customs practiced by the community and associated with wildlife. Samburu pastoral community has lived alongside the wildlife animals harmoniously because of the legendary and cultural beneficial attachment they have with different wildlife species. The community also has myths, an important contribution to the understanding of Samburu perceptions of the natural world (Ole Sena, 1986). Some animal are regarded as having totemic importance hence treated with caution to avoid the bad curses (*ndarunoto*) from the animal e.g. baboon and elephant, while others helps in prediction of different weather conditions by producing certain sounds e.g. zebra predicting rainfall . Another aspect of cultural belief in the community is use of the elephant dung in making of the “white house” (*Ngajinaibor*) for the newly wedded wife. The young elephant’s dry dung (*modei ltome*) is also during the marriage ceremony to make the first fires as a symbol of unity (*Figure 4*). The dung must be from a young calve that has not committed any “crime” of killing somebody or livestock.



Figure 4-Example of dry elephant dung used during marriage ceremonies

On the other hand, any domestic animal killed by an elephant should not be consumed by any Samburu, because that is seen as eating the elephant's meat itself which against the community traditions. The pregnant women are also forbidden from eating the livestock killed by the lion. However, in case it happens unknowingly, a piece of hide or skin of the livestock eaten is to be tied on the child's neck to prevent the child from developing the skin diseases and other health complications in life. The bones of the dikdik are also used to protect children from witches and bad omens by hanging a piece of the born on the pregnant mothers with previous stillbirths and the twin babies.

3.2.3 The Nutritional Values

The Samburu people are semi-nomadic pastoralists hence they extremely dependent on their animals for survival and source of livelihood. Their diet consists mostly of milk, meat and sometimes blood from their cows. However, meat was only consumed on special occasions. The diet is also supplemented with roots, vegetables and tubers dug up and made into a soup (Ole Sena, 1986). Nonetheless, during drought seasons when animals were away from the homestead, the community diverged to the wildlife and hunt for bush meat. Only 15% of the respondents said they considered nutritional value as the major traditional benefit derived from wildlife. Interview with different key informants indicated that Samburu people hunted only some kinds of wild animals for food, especially those that resemble livestock. Such as giraffes, antelopes (eland, gerenuk, grants gazelles, Oryx, dikdik except the kudu) and buffalo. Moreover, no Samburu social segment ate pig-like animals like warthogs or bush pigs; reptiles and amphibians, insects (except honey from bees) or donkey-like animals. The rhino, which became extinct from the Samburu landscape in 1989 is also said to be a special source of food for the elders belonging to *Lngiro clan*. This applied to the *Lmarikon* and *Lkileku* age sets. From the survey there exist a correlation between the age set of the respondent and the most important traditional benefit. Most elderly generations (*Lkimaniki* and *Lmekuri* age-sets) regarded nutritional values as the most important benefit. This fact can be attributed to the fact that these category of the respondent practiced hunting before it was totally banned by the Kenyan government in 1977.

3.2.4 Aesthetic Values of Wildlife

These includes animals whose presence in the area makes the place have a visual beatification and were considered one of the least traditionally beneficial by the respondents (only 5%). The animals are neither harmful to human nor livestock. They include the male Somali ostrich (*Sidai uwuas*) (Figure 3) zebra and the giraffe.

3.2.5 Medicinal values of wildlife

The community derives ethno-medicine and ethno-veterinary medicine from the wildlife products however no respondent considered this as the major benefit. The animals mostly used are the giraffe skin is roasted into ashes then diluted with water and used as medicine to cure chest pains. On the other hand, soup of the dik dik meat is given to children to cure respiratory problems. The body fat from a lion was used to treat very chronic illnesses in the community.

Table 2- Indigenous Benefits Derived From Wildlife Animals by the Samburu Community

English and Local Samburu Name	Scientific Name	Associated Cultural Uses and Beliefs
African Elephant (<i>Ltome</i>)	<i>Loxodonta africana</i>	Dry dung of young elephant (<i>modei ltome</i>) used during the marriage ceremony to make fire which symbols unity for the new couple. Respected in some clans as a totem (<i>Lukumai</i> clan). Create the water holes and paths to watering points for community members. Tusks used during ceremonies of the first moon appearance to appease ancestors According to Samburu myths, elephants once lived in Samburu homes and worked closely with women, the legend represents the closeness and familiarity that exists. Elephant dung (<i>modei ltome</i>) burned as a form of mosquito repellent. The community has cultural belief that elephant only kills people who have been cursed by elders. Elephants have many similarities with humans and since elephants have a trunk that acts like a human arm and skin that resembles human skin. Are considered to be ancient “relatives” of humans, and thus command much respect amongst the Samburu community The placenta is believed to increase livestock numbers of household if buried inside the homestead (<i>manyatta</i>). Ivory piece used for protection of young children against death (<i>ndarunoto</i>) by placing a piece on the tongue of the new born. Elephants pull down tree branches which are later used as fire wood by community.
African Buffalo, (<i>Losouan</i>)	<i>Syncerus caffer</i>	Skin used for making ropes for carrying firewood and tethering livestock. The horn is used to store tobacco and hanged on the neck by elders and sometimes used as a cup to serve milk. Source of food when found dead or weak after fighting one another. Regarded as women’s cow in some legendary stories.
Lion, (<i>Lngatuny</i>)	<i>Panthera leo</i>	Skin used by tying on ankle during marriage and circumcision Claws used by elders during circumcision ceremonies (<i>latim</i>). Kills a prey which people use as source of meat. Have legend associated with bringing bad omen to the family of its killer. The mane of the male used to crown brave warriors The fat from the lion’s body used for treating whooping cough
Somali ostrich, (<i>Sidai</i>)	<i>Struthio camelus</i>	The tail feathers (from male) used for making headgears during circumcision ceremonies also worn by the <i>morans</i> . Has aesthetic value to the environment Egg shells used by girls for making jewelry tied on their waist for clan identification. Male helps in rainfall prediction when it produces some sound Have legend associated with its being witty
Grevy’s zebra, (<i>Loitiko/ Lobor-lkurum</i>)	<i>Equus grevyi</i>	Have specific vocalization associated with onset of rains Has aesthetic value the environment Regarded as women’s donkey in some legendary stories. Belongs to the same family as the donkey hence forbidden as source of food Attacked by prey such as lion in the bush instead of the livestock Considered harmless to livestock by the community
Wild dog, (<i>Suyan</i>)	<i>Lycaon pictus</i>	Believed to be a circumcised boy (<i>laibartak</i>) who disappeared in the bush Brings curse to the homestead if it enters the <i>manyatta</i> Attack and kills livestock especially young livestock in <i>manyatta</i>
Beisaoryx (<i>Lkuposog</i>)	<i>Oryx beisa</i>	Skin used as bedding, <i>lchoni</i> . Hunted for game meat to supplement diet during drought.
Grant’s gazelle, (<i>Ngolii</i>)	<i>Gazella granti</i>	Hunted for game meat during drought seasons Skin used as clothing and as beddings, <i>lchoni</i> .
Greater kudu, (<i>Lmaalo</i>)	<i>Tragelaphus strepsiceros</i>	Horn (<i>mowuo</i>) used to invite people during ceremonies or raise an alarm in case of any danger to the community Hunted for food during drought
Hyena (<i>Ikonoii</i>)	<i>C. crocuta,</i>	Consumes the dead human (unburied bodies of the <i>morans</i>) Brings curse when it enters a house (<i>manyatta</i> must be cleansed before people enters or migrate to other place) Attack and kills livestock
Eland (<i>Surwa</i>)	<i>Taurotragus oryx</i>	Hunted for food during drought seasons Have aesthetic values to the environment Skin used as a rope for currying firewood

Kirk's dikdik (Rongo)	<i>Madoqua kirkii</i>	Bone tied around the neck of pregnant women to protect them from miscarriages and on young children for protection against bad omen (<i>ndarunoto</i>) The bone used to protect twin children against witchcraft The soup made from the meat has medicinal value for the young children
Giraffe, (Lmara/ Lmeut)	<i>Giraffa camelopardalis</i>	Taken as food when found killed by other animals The skin is roasted and boiled then used as medicine for respiratory problems Hunted for food during drought Tail hair used for making necklaces
Olive baboon (Lotim)	<i>Papio anubis</i>	Regarded as human beings family hence should not be killed Regarded as a totem is some clans Kills goat kids and young lambs
Greater kudu, (Lmaalo)	<i>Tragelaphus strepsiceros</i>	Horn used to invite people during ceremonies or raise an alarm in case of any danger to the community Hunted for food during drought
Warthog (Lbitir, Ngarab)	<i>Potamochoerus larvatus</i>	Brings curse when it enters a homestead, <i>manyatta</i> Should not be killed as it brings bad omen to the killer.
Snake (Lasurai)	<i>Dendroaspis polylepis</i>	If seen mating one has to be cleansed using goat blood at that particular site.

4.0 Conclusion

Within the visited households, there was rich possession of various wildlife products by the community such as bones, bones, hide and skin (a clear indication of close interaction and beneficial relationship). The community also have vast knowledge of habit, habitat, and behavior of the wildlife in their locality useful to the KWS and other institutions involved in wildlife management. According to the culture, Samburu people do not hunt wild animals for income or food except during serious drought and famine where specific animals could be killed for sustenance. The big carnivorous animals such as lions were only killed for frequent predation on livestock.

The killing is only done as the last resort when the animal becomes troublesome to the community members. Nevertheless, if a lion kill one goat it's not treated as issues because the community believed that in every herd of livestock, one belonged to the wildlife (*keatae nolowuoru*). Generally it is forbidden to eat the flesh of animals with claws including mammals, birds and amphibians. The Samburu people also believe that cattle would perish from the smell if elephant meat is brought into a homestead (Fratkin, 1994). Moreover there exists several legendary an example is one involving the elephant and man who used to live together with man (Kahindi, 2001). The study concludes that there exist several facets of indigenous IKS of the Samburu community that supports their harmonious living with the wildlife. These systems can be used by conservation managers as important tools in biodiversity conservation for within Samburu area.

It is therefore imperative for the wildlife conservation institutions such as KWS and others stakeholders to validate and strengthen the community practices that embraces conservation objectives. The educational institutions should also assist the young students in appreciating their cultural heritage and find value in the practices of their forefathers' appreciation of biodiversity. This will better be achieved if indigenous environmental education is infused into the curricular of the schools.

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