Indigenous Peoples' Management of Forest and Wildlife Resources: Case study of Local Communities in the Southern Periphery of the Korup National Park, Southwest Region, Cameroon

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Abstract: In Africa, most forest communities for over centuries have developed traditional norms to ensure the sustainable management of forest and wildlife resources, in which their livelihood highly depend upon. The study was an attempt to investigate the relationship between the belief systems and taboos of the local communities in the Southern periphery of the Korup National Park (KNP), vis-à-vis the sustainable management of forest/wildlife resources. A total of 485 out of 775 households (62.84% effective respondents) was sampled in 13 villages in the region. Questionnaire, interviews and field observations constituted the main tools used in data collection. The findings revealed that some significant and endangered wildlife species such as chimpanzees, baboons, mandrills and elephants are tabooed due to the local belief of totemic kinship, which holds that some local people transform into the above animals, and killing them implies killing the totem owners. This view was affirmed by 93.4% of the respondents. The chi statistic test (χ^2) value of 139.055497854, greater than the value of significance (21.026 observed on the χ^2 table), corroborated our findings on the view that there is an inextricable link between the belief systems and taboos of the local people and the sustainable management of forest/wildlife resources. This implication is that these wildlife species are fully protected for the benefit of the ecological system. It was found out that, the Ekpesecret society (the leopard cult) protects wildlife species in the study area; as it regulates wildlife harvest and ensure respect for indigenous protected areas (shrines and sacred groves). The study recommends the integration of indigenous belief systems and taboos linked to wildlife conservation into the national Forestry/wildlife law(s). There is also need to reinforce local wildlife management institutions as there are being threatened of extinction by 'modernity'. This will safeguard the socio-cultural wellbeing of the local communities and empower them to participate in the sustainable management of forest/wildlife resources in the region.

Keywords:- Indigenous people, Belief systems, Taboos, myths, forest/wildlife resources, conservation.

I. INTRODUCTION

Local communities inhabit most of the areas of highest biological diversity on the planet (WWF, 2003). Local populations and forest/wildlife resources constitute what the Declaration of Belem perceives as 'inextricable link' between biological and cultural diversity' (Etiendem, 2011). Kiss et al. (1990), argued that the close link between local populations and their natural resources has made them key actors in resource management. It has enabled them to have knowledge systems and control mechanisms which are related to good stewardship as, appropriate sanctionsare levied against defaulters (Saj, 2006). The management of forest/wildlife resources by local people in most African societies is often translated or manifested through belief system mechanisms, and taboos¹. Such belief systems, myths and taboos are local informal (quasi-statutory) institutions where norms rather than laws and legislations govern natural resource management (Ngoufo et al. 2013). Taboos are considered as informal traditional institutions which are decentralized and self-enforced. Culture, as a tool in conservation science, takes into consideration the role of social taboos in traditional societies. Some wildlife species, especially primates or large mammals are perceived by local people as a symbol of mystical power respect; and are therefore considered as sacred, hence prohibited from harvest. In a related dimension, some tabooed wildlife species are only used for sacrificial or ceremonial purposes; as they are believed to be connected to the ancestors. Such species tend to be highly protected, thus some socio-cultural perceptions have a high propensity to sustainably manage forest/wildlife resources. Although forest communities have a strong cultural attachment and value for some wildlife species, local structures to enhance or empower this appreciation are either weak or missing as a result of exogenous proliferation and adulteration (Ngoufo et al., 2013).

Our study focused on the communities living in the Southern fringes of the Korup National Park as representative area where traditional/customary norms; and belief systems still play a significant role in the sustainable management of forest/wildlife resources. In order to assess the link between the local communities' traditional systems, myths and taboos vis-à-vis forest/wildlife management, the following hypothesis was formulated: "There is an inextricable link between local community belief systems/taboos and the sustainable management of forest/wildlife resources in the Southern periphery of the KNP".

A. Study site Methods and Data Base

The study was carried out in the Southern periphery of the KNP; located in the south west border of Cameroon,

¹ Religious or social customs and myths prohibiting or restricting the exploitation of certain forest/wildlife resources (especially significant species) (www.collinsdictionary.com_).

within the Universal Transverse Mercator (UTM) grid zone 32. Specifically, it is located between the UTM coordinates

442, 750-442, 550-170m North and 495,090-536,950m East (WWF et al., 2003).



Fig 1: Location of the Korup region in the Western Border of Cameroon

Source: Atlas forestier interactif du Cameroun, 2021

The KNP and its support zones cover a surface area of 1 260km² (KNPMP, 2017). Thirteen villages; Akpasang, Erat, Ekon 1, Ekondokondo, Fabe, Mokange, Monsegiselie, Esoki, Massaka, Mofako, Mokange, Ngenye and Mokango were sampled for the investigation. Due to the small number of households observed in the sampled villages, the research team opted to interview all the household heads in the area. In this vein, a total of 485 out of 775 respondents effectively responded to the questionnaire, giving an effective respondents' success rate of 62.58%. Data were collected

between September and November to cover the wet and dry seasons. Some household heads were either not available or were unwilling to collaborate with the survey team, as they were reluctant to provide responses to the questions posed. Our survey covered a wide range of issues including knowledge on the availability of forest/wildlife resources, socio-cultural values and use of the resources, belief systems, myths and taboos relevant to their management. In order to obtain in-depth information on our study theme, the questionnaire were complemented with interviews.



Fig 2: Location of sampled communities for the study area

Source: Atlas forestier interactif du Cameroun, 2021

In this vein, local resource persons such asvillage heads, elders and members of the *Ekpe* society (Leopard cult) were interviewed. They were posed both opened and closed questions in order to get a grasp of some pertinent local perceptions related to forest/wildlife management in Southern Korup; in order to reinforce the standardized surveys. Data was built-up using qualitative and quantitative techniques. In this vein, tables, percentages and photographs were used to present data. Thechi square statistic test (χ^2) was employed as an inferential technique to test our

hypothesis. The Pearson's Chi Square Test formula is stated thus:

$$x^2 = \sum \frac{(O-E)^2}{E}$$
 Or $x^2 = Sum \ of \ (Observed - Expected)^2/Expected$

Where $x^2 = Chi$ Square \sum = Summation O = Observed Frequencies E = Expected Frequencies df = n-1 Alpha level = 0.05

N°	Village	Estimated	Total N° of	Number effectively	% of effective
		population	Households	interviewed	respondents
01	Fabe	532	67	41	61.1
02	IkondoKondo	416	74	53	71.6
03	Akpasang	669	84	37	44.0
04	Erat	856	119	83	69.7
05	Ekon 1	763	103	48	46.6
06	Mosongisele	438	71	62	83.7
07	Esoki	379	54	35	64.8
08	Massaka	286	69	41	59.4
09	Mofako	208	27	16	59.2
10	Mokange	273	26	15	57.6
11	Ngenye	176	21	14	66.6
12	Ikassa	196	28	19	67.8
13	Mokango	191	32	21	65.6
Total	13	3 383	775	485	62.58%

Table 1: Communities in the southern Periphery of the KNP Sampled for the Survey

Source: BUCREP (2005); village chiefs (2021); fieldwork (2021)

The selection of the communities was based mainly on the following criterion: villages with a rich cultural background, with existing traditional institutions

II. RESULTS AND DISCUSSION

A. Indigenous Management of wildlife resources using taboos

Field investigation reveals that local norms to regulate the exploitation of wildlife resources are vested in taboos. The harvest of some endemic/endangered wildlife species such as chimpanzees, mandrills, elephants and baboons have been strictly prohibited by local norms coordinated by the village heads and local institutions such as the *Ekpe* society. Injunctions a placed on local norms to reinforce their application by the local populations. Table 2 below presents the views of respondents as regards some wildlife species classified by local norms as tabooed species.

Questionnaire item	Sampled village	N° of	Agreed	Disagreed	Neutral	% Agreed
		respondents				
	Akpasang	37	36	00	01	97.3
	Erat	83	81	00	02	97.6
	Ekondokondo	53	53	00	00	100
	Ekon 1	48	43	00	05	89.5
	Fabe	41	38	00	03	92.6
Chimpanzees, gorillas and	Mosongisele	62	62	00	00	100
baboons are tabooed wildlife	Esoki	35	31	00	04	88.5
species in your community	Massaka	41	37	00	04	90.2
(i.e. must not be hunted)?	Mofako	16	15	00	01	93.7
	Mokange	15	12	00	03	80
	Ngenye	14	12	00	02	85.7
	Ikassa	19	17	00	02	89.4
	Mokango	21	16	00	05	76.1
	Total	485	453	00	32	93.4

Table 2: Respondents' perceptions on whether or not wildlife species in the Korup region

Source : fieldwork, 2021

93.4% (n=453) of the respondents affirmed the view that some endangered wildlife species such as the chimpanzees, baboons and elephants are tabooed species. It was also noticed that the taboo concept is being gradually eroded (especially) amongst the youths as 6.6% (n=32) of the respondents were innocent (neutral) on this questionnaire item. It is claimed by the local populations that no member in the community is allowed to hunt or kill

tabooed wildlife species. This believe have existed since the inception of the local communities in the Korup forest since the 14^{th} century (source). The charismatic morphology and the human-like nature of these animals were advanced as the main reasons that have caused local people to generate passion and sympathy for these Great Apes. In this dimension, local institutions such as the '*Ekpe*' society (the Leopard cult), are charged with the responsibility to

safeguard the sustainability of such wildlife species. Local sensitisation and check mechanisms have also been put in place to monitor and refrain anyone from harvesting these tabooed species. In order to reinforce the sustainable wellbeing of these animal species, traditional sanctions are being meted on culprits; ranging from dreaded deceases such as epilepsy and body rashes to excommunication from the village.

Plate 1 below presents pictures of some tabooed wildlife species in our study site.



Plate 1: Some charismatic tabooed wildlife species (mammals) in the Korup region

- 1= Preuss's red colobus monkey (piliocolobus badius), with juvenile in the wild
- 2= Mandrill (mandrill's sphinx)
- 3= Chimpanzee (pan troglodytes), with juvenile
- 4= Baboon (genus papio)

Source: retrieved from www.wildlife.org/www.britannica.com.primates. (05/04/2021)

From plate 1 above, the mammals exhibit human-like attitudes of petting and protecting their kids in order to ensure the sustainability of their lineage. Community perceptions towards large mammals can be termed communal, and constitutes a salient example of man and nature in harmony. This local protection mechanism justifies why the Korup forest hosts about one quarter of the world's endangered wildlife species (WWF, 2002). The local conservation of the above wildlife species through taboos has also been strengthened by the local perception of totemic kinship². Consequently, people are scared of killing totem owners. Other totemic wildlife species identified during our survey were gorillas, pythons and the bush baby (nagapies). Whether or not the myth about wildlife-totem relationship is real, the beneficial effect of it on the protection of wildlife is unquestionable.

B. Local Populations Perceptions on the availability of some animal species in the wild

Our findings also revealed that local people have a mastery of most wildlife species and their availability status in the forest, as depicted on table 3 below.

English Name	Scientific Name	Local Name (in Orock dialect)	Traditional Perceptions on availability
Elephant	Loxodonta	Njoku	animal-totem
Buffalo		Nyate	Scarce

 2 Totemic kinship is a local belief held by the Korup inhabitants thatlocal community members transform into these Great Apes in the forest. The killing of such wildlife species is susceptible to killing their relatives who are totem owners.

Chimpanzee	Pan Troglodytes v.	nchewu	animal-totem
Leopard	Panthera pardus	murchu	fairly available
Bush Pig	Ptomochoerus porcus	ngowa	Abundant
Mandrill	Mandrillus sphinx	sombo	often seen
Fox (bush dog)	?	Esawbor	often seen
CR. Gorilla	Gorilla g. dielhi	ewake	animal totem
Python	Python sebac	kuma	scarcely observed
Giant Pangoline	Manis gigantean	ichayaphea	fairly available
Tiger	Panthera tigris tigris	Ngoh	Scarce
Lion	Panthera leo	ngiyer	Scarce
Hippopotamus	Hippopotamus amphibius	njocku cha mariba	Available
Red Capped Mangabey	Cercocebus torquatus	Mbi	Not frequently seen
White Nose Guenon	Cercopithecus nictitans	Koi	Scarce
Pangolin	Manidae	Icha	Abundant
Preuss's Red Colobus	Piliocolobus Preussi	mberri	Scarce
Crocodile	Osteolaemus t.	mokombe	available
Alligator	Alligator mississippiensis	ngando	avalailable
Yellow backed Duiker	C. silvicultor	nchibo	often seen
Red deer	Cervus elaphus	mbindi	not often seen
Blue backed duiker	C. monticola	issery	Scarce
Pocupine	Hystrix cristata	ngomba	abundant
Giant Lizard	Kaupifalco monogrammicus	ngombe	Scarce
Putty nosed Monkey	C.nictitans nictitans	Koi	not often seen
Water Chevrotain	Hyemoschus aquaticus	Jeeh	Scarce
Baboons	Papio	baboons	Animal totem

Table 3: Respondents' Local Knowledge and Perceptions on the Availability of Some Wildlife Species in Southern Korup.

Source: Fieldwork, 2021

It was observed from the responses and views of the local people on the types and availability of wildlife, that they have a good mastery of the appellations and the current status of animal population in the wild. Through long experience, observation and experimentation, local people cumulated adequate knowledge on wildlife in the Korup ecology. It was diagnosed that the tabooed wildlife species including Chimpanzees, Mandrills, baboons and elephants, represent human totems in the area, thus benefiting from the win-win man-animal relationship. For another reason, the consumption of bush baby (sc. name), is proscribed to pregnant women, because it is believed that they may give birth to off springs that take the out-look of the animal.

• Some wildlife species forbidden from pregnant women Although the female folk constitutes the majority of the sex structure in the region, they are being regulated from eating some wildlife species as observed on table 4 below

English Name	Pidgin Name	Scientific Name	Restriction motive (belief)
Red-eared monkey	mbick mbock	Cercophithecus erythrotis	The animal coughs, if consumed by the pregnant woman, the expected baby will be infected with chronic cough
Red River hog	ngume	Potamochoerus Porcus	The animal's activities are associated with witch-craft. It leads to miscarriages if eaten by a pregnant woman
Terrestrial tortoise	nguit	Chelonoidis denticulate	The child will walk sluggishly as the tortoise if eaten by the pregnant woman
Brush-tailed porcupine	nyup	Atherurus africana	The animal is believed to be recalcitrant. The child will be stubborn if eaten by the mother during pregnancy. The child's intellectual capacity is also negatively affected.

Table 4: Some wildlife species banned from consumption by women

Source: Fieldwork, 202

The restriction of pregnant women from consuming some wildlife species has undoubtedly reduced the hunting of these species. This belief is a significant local tool used in protecting wildlife in southern Korup based on the fact that women are those to determine the meals to be prepared for the household. It was observed during field work that this believe has been extended to children who imitate their

mothers by refraining from the consumption of these wildlife species.

C. Shrines and Sacred Forests as Indigenous Protected Areas for wildlife conservation

Indigenous Protected Areas (IPAs) are traditionally demarcated portions of the forest that are believed to host the gods or ancestral spirits of the village. They are patches of primeval forest that the local people protect as abodes of deities. Such 'ecosystem-people' draw their livelihoods from nearby resources and value nature for the ecological services it provides. Hunting and logging are usually prohibited in Sacred Groves. Developmental projects are also not being allowed in these abodes. They represent indigenous in-situ biodiversity conservation hotspots. It was observed that the size of shrines and sacred forest range on the average from about 20 m² to several hectares respectively. Such indigenous protected areas were observed spotted in most village peripheries in our study area.

Questionnaire item	Sampled village	N° of respondents	Agreed	Disagreed	Neutral	% Agreed
	Akpasang	37	36	00	01	97.3
	Erat	83	83	00	00	100
	Ekondokondo	53	53	00	00	100
	Ekon 1	48	48	00	00	100
	Fabe	41	41	00	00	100
Shrines and Sacred Forests	Mosongisele	62	62	00	00	100
have been carved out in your	Esoki	35	35	00	00	100
community?	Massaka	41	41	00	00	100
	Mofako	16	16	00	00	100
	Mokange	15	15	00	00	100
	Ngenye	14	11	00	03	78.5
	Ikassa	19	15	00	04	71.4
	Mokango	21	20	00	01	95.2
	Total	485	476	00	09	93.4

Table 5: Respondents perceptions on the existence and role of Indigenous Protected Areas (IPAs) in their community.

Source: Field work, 2021

A majority of the respondents affirmed the view that indigenous protected areas have been carved out in their community; which have existed and are highly being respected by the local people over the past decades. These shrines and sacred groves have protected the wild from time immemorial till present.



Fig. 3: Spatial distribution of Indigenous Protected Areas (Shrines/Sacred) in the Korup region

Source: Atlas forestier interactif du Cameroun, 2021

According to the respondents, shrines and sacred groves are visited occasionally by influential members of the village such as the chief, landlords, and the members of the Ekpe society. During such visits, traditional rites are performed for the cleansing and over-all wellbeing of village members. It is believed that the socio-economic sustainability of the village (i.e. good crop harvests, health, marriages, births) are directly to the sacrifices performed in these IPAs. As a matter of fact, each village is possessed of a shrine and/or sacred grove for socio-economic and cultural wellbeing and security of village members.



Plate 2: Some indigenous shrines and sacred groves (snapped by g. Agri, 2021)

1: Ikondokondo shrine 'moboko'; 2: Ekon 1 sacred grove; 3: Mosengesilie sacred grove (note (a) the peace plant symbolizing community solidarity)

• Indigenous Institutions involved in Wildlife Conservation in the study area

Based on our field findings, the Ekpe society is the main traditional institution that caters for the sustainability of forest/wildlife resources in the area. Fines are levied by this institution by community members that kill tabooed or restricted wildlife species. Membership into this cult is patrimonial. This implies that only the male is admitted into the cult upon the dead of his father (deceased member of the cult). The Ekpe society has ensured the conservation of most forest segments in the region as its members have a vigilant committee to check any illegal practice in the Ekpe forest.

Name of	Scope	Estimated average	Function	Associated Sanctions	Community
Institution		surface area (in KM)			Attitude
The Ekpe	Found in all		Safeguards the	Fines, mystical deadly	
Society	the sampled	≥ 10	wellbeing of	diseases meted on defaulters,	Highly
	villages		wildlife resources	possible exile	respected

Table 6: some components of the traditional forest/wildlife conservation institution in the study area

Source: Field work (interview with village heads/elders, 2021)

\bullet Verification of hypothesis using the Chi Square (χ^2) statistic test

The chi square (χ^2) statistic test is being used to test our specific hypotheses to verify that the findings do not occur by chance.

Ho: There is no inextricable link between local community belief systems/taboos and the sustainable

management of forest/wildlife resources in the Southern periphery of the KNP".

H1: There is an inextricable link between local community belief systems/taboos and the sustainable management of forest/wildlife resources in the Southern periphery of the KNP".

Questionnaire item	Sampled village	N° of	Agreed	Disagreed	% Agreed
		respondents	_	_	_
	Akpasang	37	37	00	100
	Erat	83	83	00	100
	Ekondokondo	53	53	00	100
	Ekon 1	48	48	00	100
Your belief systems, myths	Fabe	41	41	00	100
and taboos have conserved	Mosongisele	62	62	00	100
forest/wildlife resources in	Esoki	35	35	00	100
your community?	Massaka	41	41	00	100
	Mofako	16	16	00	100
	Mokange	15	15	00	100
	Ngenye	14	11	00	100
	Ikassa	19	19	00	100
	Mokango	21	21	00	100
	Total	485	485	00	100

Table 7: respondents views on the link between their belief systems, myths and taboos; and forest/wildlife management

Source: Fieldwork, 2021

It can be observed from 7 above that all the respondents affirmed the view that their belief systems and taboos have safeguarded forest/wildlife resources in the Korup.

Category	Observed	Expected	ObsExp.	(ObsExp.) ²	(ObsExp.) ² /Exp.
Akpasang	37	37.3	-0.3	0.09	0.0024128686327
Erat	83	37.3	45.7	2 088.49	55.991689008042
Ekondokondo	53	37.3	15.7	246.49	6.6083109919571
Ekon 1	48	37.3	10.7	114.49	3.0694369973190
Fabe	41	37.3	3.7	13.69	0.3670241286863
Mosongisele	62	37.3	24.7	610.09	16.356300268096
Esoki	35	37.3	-2.3	5.29	0.1418230563002
Massaka	41	37.3	3.7	13.69	0.36702412868096
Mofako	16	37.3	-21.3	453.69	12.163270777479
Mokange	15	37.3	-22.3	497.29	13.332171581769
Ngenye	14	37.3	-23.3	542.89	14.554691689008
Ikassa	19	37.3	-18.3	334.89	8.9782841823056
Mokango	21	37.3	-16.3	265.69	7.1230563002680
$\sum n$	485	37.3			139.05549597854

Table 8: Chi square (χ^2) analysis on the relationship between indigenous belief systems/ taboos and the sustainable management of forest/wildlife resources in the study area

Source: Computed from table X above

 $x^2 = \sum \frac{(O-E)^2}{E}$ Or $x^2 = Sum \ of \ (Observed - Expected)^2/Expected$

Where $x^2 = Chi Square$

 \sum = Summation O = Observed Frequencies E = Expected Frequencies Degree of freedom (df) = n-1 (13-1) =12 Alpha level = 0.05

Thus, our calculated x^2 of **139.05549597854** far exceeds the value on the chi square level of significance indicated on the statistic table (21.026). In this regard the alternative hypothesis is retained while the null hypothesis is discarded. In other words, our results reveal that there is an inextricable relationship between the belief systems, myths and taboos of the local communities in the Southern periphery of the Korup National Park and the conservation of forest/wildlife resources. The computed results tie with respondents' views as 100% affirmed the fact that there is a link between their local perceptions and the sustainable management of forest/wildlife resources. The existence of some tabooed wildlife species, the restriction of pregnant women from consuming some animals, and the creation of creation of indigenous protected areas are sufficient indicators to corroborate the computed results.

III. RECOMMENDATIONS

The study recommends the reinforcement of local forest and wildlife management institutions such as the '*Ekpe*' society and its forest. This is justified by the fact that sacred groves and shrines are tabooed areas wherein wildlife, especially significant endangered species are being protected for the socio-cultural wellbeing of the present and future generations. There is also the need to mainstream the indigenous belief systems and taboos link to natural resource management into the Cameroon Forestry/Wildlife law.Village chiefs and elders can be given the chance to sensitize the youths on the significance of indigenous belief systems and taboos in enhancing the wellbeing of wildlife and its habitat. Such an approach has proven successful in India and most parts of East Africa where local people are encouraged to effectively manifest their cultural values in sustaining the wild.

IV. CONCLUSION

The cultural values of the local people largely work in favor of sustainable wildlife conservation.

As earlier mentioned, significant wildlife species such as chimpanzees, mandrills and baboons have been tabooed since they are locally perceived as animal-totems. Unfortunately, no efforts have been made by wildlife management officials to reinforce this perception through the enhancement of local community participation. More so, vital local pro-wildlife conservation institutions such as the *Ekpe* society (the Leopard's cult) have played a significant role in the management of wildlife resources in the Southern section of Korup. The local population is embedded with pro-wildlife management belief systems and taboos that can be exploited, by ensuring their full and effective participation. The Korup region hosts about a quarter of the world's endemic biodiversity due to the sustainable forest/wildlife conservation models and notions embedded in the culture/tradition of the local people. Modern conservation efforts may be thwarted, especially in a long term if the wildlife management perceptions of the local people are not incorporated in management practices, through their maximum and effective participation in the affairs of the wildlife management in Southern Korup.

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