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Human-Nature Relationship: A Case of Selected Conservation Areas in Nigeria

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Abstract

Conservation areas are iconic landscapes that play key role in sustainability of natural systems and well-being of local communities especially in the rural setting. Understanding the relationship between humans and nature, particularly conservation areas have become the focus of environmental planners and managers. The aim of this study is to explore the connectedness to nature, and environmental behaviour of the people in some selected communities around three conservation areas in Nigeria. The behaviours include interest of communities in conservation area management and their willingness to accept management responsibility. Quantitative research design was adopted, where multi-stage sampling techniques were used in selecting the study sites and the respondents. Stratified sampling was used to categorise the conservation areas according to whether they receive support from the management of the conservation areas or not. Purposive sampling was used to select conservation areas that are surrounded by the highest number of communities. Simple random sampling technique was used in selecting 300 samples from six communities surrounding the three conservation areas. Statistical analysis using Pearson Chi-Square and Cramer's V test statistics revealed that, the communities are attached to their environment and the level of attachment of communities' members with the conservation areas increases with age. Environmental behaviours differ across the sampled communities, as the findings revealed that, there is significant difference in communities' interest in the management of conservation areas. Their willingness to accept management responsibilities also differ across the sampled communities. The disparities can be attributed to benefits enjoyed by the communities from conservation managers and agencies responsible for the conservation areas. The study recommends the need to bring communities closer to management of conservation areas so that they can have the sense of belonging. This can motivate the communities to have interest in the conservation areas and be willing to accept management responsibilities.

Keywords
Conservation areas; place attachment; environment, management; interest; willingness

Introduction

Current research in environmental planning and management focuses on human-nature relationship. Nature in this study refers to conservation areas or natural/unique landscapes with high ecological diversity. Human-nature interaction is among the leading environmental concerns in the 21st century (Chowdhury *et al*, 2014; Krause and Zambonino, 2013; Cardinale *et al*, 2012). This interaction can be traced back to several centuries ago. Ervin, et al. (2010) and Chape, et al. (2005) highlighted that, thousands of years ago, nature or conservation areas are recognized as communal resource, private and spiritual areas, hunting grounds for indigenous and local communities. Nature/conservation areas have long been recognized as iconic landscapes of high natural/ecological, social and economic values (Hassan *et al*., 2015; Hassan *et al.* 2019; Geldmann *et al*, 2015; Watson *et al*., 2014; Kolahi *et al*, 2013; Vodouhe *et al*, 2010; Marguba, 2003). The current tempo reveals that, there are over 200,000 conservation areas distributed over 193 countries of the globe (IUCN and UNEP-WCMC, 2012; Deguignet, et al. 2014; Watson et al, 2014); occupying 19.6 million km2 (equivalent to 13.2% of the earth's landmass).

Humans are so much attracted to nature because nature areas are critical component of human well-being (Romagosa *et al*., 2015). Nature/conservation areas provide natural goods and services for the support of human health/safety through protection from disasters, provision of forest and non-forest products, (Thompson and Hollis, 1995; Carney *et al*, 2014; Giri *et al*, 2015). However, the interaction between people and the nature areas make conservation areas to be vulnerable, particularly when the interaction is an unhealthy one. The interaction depends on characteristics of the nature area, socio-cultural socio-economic characteristics of

the people (Hammitt et al, 2006; DeGroot and Van den Born, 2003). The Federal government of Nigeria established a programme known as the "Support Zone Community Development" in 1981. The programme is aimed at reducing pressure on conservation areas to the lowest level by developing the communities around conservation areas, uplifting their standard, improving their wellbeing and empowering them so that they can avoid any act or behaviour that may likely affect the wellbeing of the conservation areas. The motivating factor of this research is that, little is known about peoples's behaviour towards the environment, particularly the interest of communities in conservation management and their willingness to accept management responsibilities. This is important in ensuring the well-being of the nature/conservation areas. The research therefore focused on the interest of the communities in management of conservation areas and their willingness in accepting management responsibility.

This research is based upon theory of place attachment. The concept of place attachment is recently becoming a widely researched in the fields of environmental science and management. Place attachment in the environment has two faces: place identity and place dependence (Williams et al, 1992). The theory explains that, people can be attached to place for several reasons. The attachment can be to the physical setting of the environment and or the functionality of the environment in terms of support to people (Schreyer, Jacob and White, 1981). People are so much bonded to the natural environment. The theory views place attachment as not only the association between human and the home (Shumaker and Taylor, 1983); but also extends to the larger environment that constitutes the home (Hidalgo and Hernandez, 2001. Hidalgo and Hernandez also referred to place attachment as "an affective bond or link between people and specific places". Place attachment refers to affective bond that occurs between people and their environments (Scannell and Gifford, 2010). It is defined by Shumaker and Taylor (1983) as "the positive bond or association between individuals and their environment".

Humans have been so much attached to the natural environment, particularly the iconic landscapes which exist in form of National Parks, Game Reserves and related naturally attracting places (Hassan, 2019; Scannel and Giffort, 2014; Hammitt, et al., 2006; Korepela et al., 2009) due to their environmental, socio-cultural and economic benefits. Local communities, particularly in the developing world are so much attached to nature or conservation areas because the areas provide basic requirements for their livelihoods (Coad et al, 2008).

People are attached to nature/conservation areas because the areas hold a central position in the existence of humans. Sustainability of local communities surrounding conservation areas depends heavily on the well-being of the natural environment (Kathryn and Craig, 2019). It determines pro-environmental behaviours as the relationship influences human willingness to safeguard the environment (Williams et al., 1992; Gosling and Williams, 2010; Ramkissoon, Weiler and Smith, 2012; Junot, Paquet and Fenouillet, 2017). Environmental behaviours are influenced by level of attachment to the environment (Halpenny, 2010; Gosling and Williams, 2010; Raymond et al, 2010; Ramkissoon, Weiler and Smith, 2012). These behaviours are considered healthy if they are conservation friendly, thereby contributing to environmental quality and performance.

Materials and Methods

Bauchi state of Nigeria is located between Latitude $9^0 30^1 0^{11}$N and $12^0 30^1 0^{11}$N and Longitude $8^0 30^1 0^{11}$ E and $11^0 0^1 0^{11}$E as shown in Figure 1. The state is in the North Eastern part of the country, bounded by Jigawa and Yobe States to the North, Gombe State to the East, Plateau State to the South, Kaduna State to the West and Kano State to the North West. The study was conducted in six communities surrounding three conservation areas in Bauchi State namely: Yankari Game Reserve located in Alkaleri Local Government Area; Lame-Burra Game Reserve cutting across Ningi and Toro Local Government Areas; and Sumu Wildlife Park cutting across Ganjuwa and Toro Local Government Areas.

The study adopted quantitative approach of investigation, where questionnaire as an instrument was used as recommended by (Sekaran and Bougie, 2010; Sekaran, 2003). Multi-stage sampling techniques were used in selecting the study sites and the respondents. Stratified sampling was used to categorise the conservation areas according to whether they receive support from the management of the conservation areas or not. Purposive sampling was used to select conservation areas that are surrounded by the highest number of communities and within 3km radious.

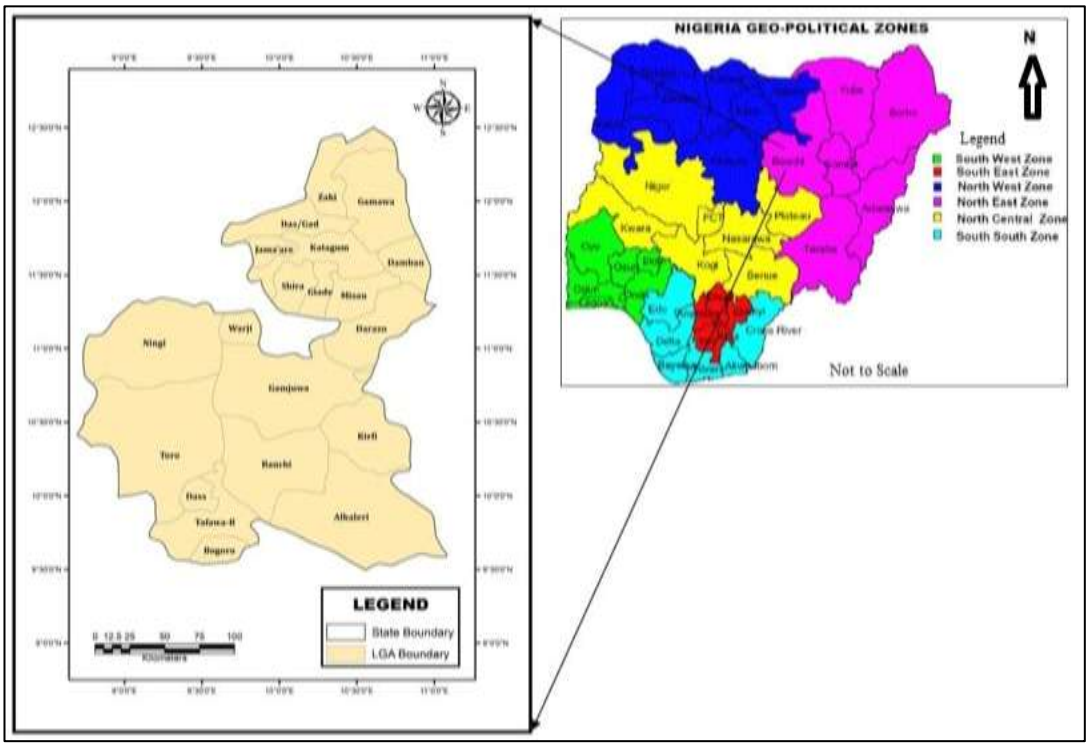

Figure 1: Study Area Showing Study Sites
Source: Adapted from Bakare, M.O. (2015) and https://www.gamers.com.ng/map-of-bauchi-state-nigeria/

The study selected two communities around Yankari Game Reserve namely Mainamai and Duguri; two around Lame-Burra Game Reserve namely Yuga and Kwange; and two around Sumu Wildlife Park namely Sumu and Tafazuwa. Those communities around Yankari Game Reserve have benefited from either the conservation area managers, agencies that oversee the conservation areas, or non-governmental organizations interested in conservation, while the remaining four have not benefited from any of the said bodies. Simple random sampling technique was used in selecting 300 samples from six communities surrounding the three conservation areas. At this stage, all members of the sampled communities had equal chances of been selected as samples (Neuman, 2007; Newing, 2011). Descriptive statistics, Pearson Product Moment Correlation, Pearson Chi-Square statistics and Cramer's V test were employed in analyzing the data. The techniques were employed to determine if there is statistically significant difference in communities' interest in conservation management; willingness of the communities in accepting conservation responsibilities; and to determine the level at which the communities are attached to the environment.

Results

Results of the study are presented in sub-sections below.

Demographic Profile of Respondents

Findings of the demographic profile of the respondents from the six communities neighbouring three conservation areas are presented in Table 1.

The results in Table 1 depict the demographic profile of a typical rural setting where most people get married at younger age, with majority attended basic or non-formal education, thereby ending up engaging in agricultural activities as the main socio-economic activity. The findings also indicate that, the communities are located very close to the conservation areas, to an extent that, a community is located just adjacent of a conservation area and sharing boundary with the area. The locational implications may manifest in unfriendly environmental behaviour such as encroachment into the conservation areas or exploitation of the conservation areas' resources. The low educational background of the communities may also make it difficult to be aware of the consequences of their behaviour.

Table 1: Demographic Profile of Respondents

Variable	Option			Frequency	Percentage
	Single			30	10%
Marital Status	Married			252	84%
	Divorced			8	2.7%
	Widow			10	3.3%
	Non-Formal			210	70%
Highest Qualification	Primary			67	22.3%
	Secondary			19	6.3%
	Tertiary			4	1.3%
	Civil Servant			8	2.7%
Occupation	Crop Producer			196	65.3%
	Livestock Rearer			47	15.7%
	Others			49	16.3%
	Minimum	=	0.2km		
Distance from	Maximum	=	2.5km		
conservation Area	Mean	=	1.12km		
	Standard Deviation	=	0.80km		
	Minimum	=	20 years		
Age	Maximum	=	65 years		
	Mean	=	37.60 years		
	Standard Deviation	=	10.42 years		
	Minimum	=	1 person		
Number of Dependents	Maximum	=	29 persons		
	Mean	=	9 persons		
	Standard Deviation	=	5.98 persons		
	Minimum	=	4 years		
Duration of stay in their	Maximum	=	65 years		
community	Mean	=	31.78 years		
	Standard Deviation	=	12.64 years		
	Minimum	=	4000		
Estimated Monthly	Maximum	=	110,000		
Income	Mean	=	16,250		
	Standard Deviation	=	8871		

Extent of Attachment with the Environment

The findings of the study also revealed that, the communities are attached to the environment. This was revealed by correlating the respondents' age with their duration of stay in their respective communities. The analysis using Pearson Product Moment Correlation revealed that, there is strong and positive correlation between the respondents' age and their duration of stay with a correlation coefficient of 0.67. The increase in attachment with increasing age, coupled with the rapid rate of population increase in rural areas which is higher than that of the urban is a threat to the natural landscape lying in the rural areas. This is because those landscapes cannot be free from exploitation, as previous studies revealed how conservation areas are being exploited by people in order to meet their needs (Mulongoy and Chape, 2004; Osemeobo, 1990; Carey, Dudley and Stolton, 2000; FAO 2010; Dearden, Bennett and Johnston, 2005; Mohammed et al., 2010). This is quite threatening particularly when comparing with the respondents' dependents and their estimated monthly income. The results revealed a mean of nine (9) dependents per respondents, and each respondent averagely gets N4,000.00 per month (equivalent to $11.11 per month). Based on the estimated income of the respondents and their average dependents, it is quite clear that this income cannot support them. Therefore, exploitation of the conservation area resources to augment their needs for survival becomes necessary. That is one of the reason why conservation areas particularly those in rural areas cannot be free from hunting, fuel wood collection, grazing and logging among others.

Communities' Interest in Conservation Area Management

Result of the study with respect to communities' interest in management of the conservation areas is presented in this section. 52% and 42% of the respondents from Mainamaji and Duguri communities respectively indicated having interest in management of Yankari Game Reserve, whereas, 48% and 58% declined having interest in the management as shown in Figure 2. Only 38% and 46% of the respondents from Sumu and Tafazuwa communities respectively indicated having interest in the management of Sumu Wildlife Park; and 62% and 54% disagreed with that. Surprisingly, the result is different for Lame Burra Game Reserve, where only 22% and 28% of the respondents from Yuga and Kwange communities respectively indicated having interest in the management, while 78% and 72% declined having interest.

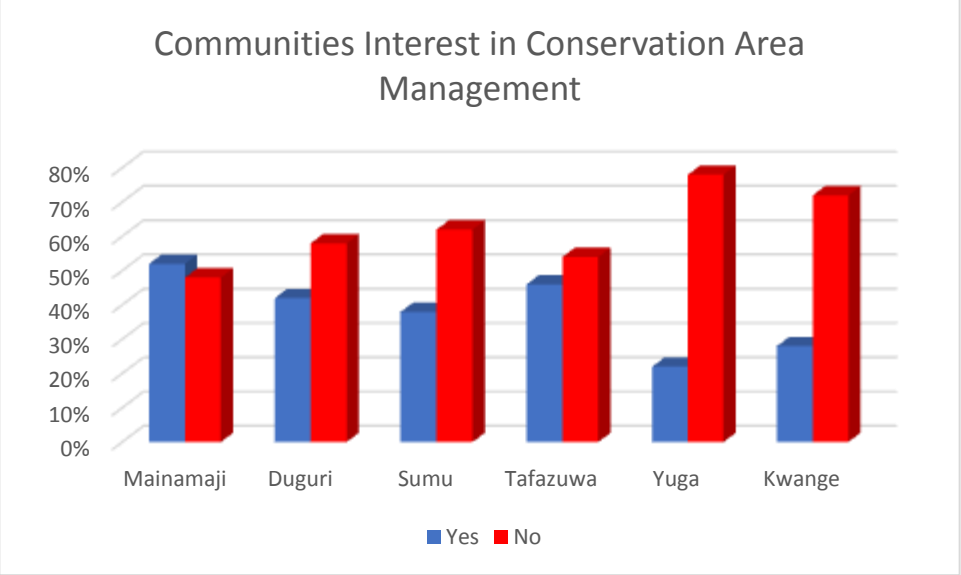

Figure 2: Communities' Interest in Conservation Area Management

Interestingly, communities surrounding Yankari Game Reserve are interested in the management of the area. This is an opportunity as well as added advantage for the managers, agencies overseeing the area because this can facilitate the activities of protection and implementation of management policies and strategies. It also implies that, the communities can be vigilant of all forms of prohibited activities and can report to the management any suspicious activity/movement in or around the conservation area; which also indicates good relationship between management of Yankari and communities surrounding the conservation area.

On the contrary, communities around Sumu Wildlife Park and Lame Burra Game Reserve indicated less interest in the management of the conservation areas surrounding them. This is a challenge to the managers and agencies overseeing the two conservation areas, which can jeopardize the activities of protection and conservation. This can also be attributed to unhealthy relationship between the two parties, and can be a major setback in ensuring ecological well-being of the areas.

Further analysis using Pearson Chi-Square and Cramer's V test statistics indicate that, there exist statistically significant difference in terms of interest in conservation area management across the six communities under study as revealed by Chi Square value of (χ^2) = 13.413, df = 5 at $p<0.05$ as shown in Table 2. Interestingly, the Cramer's V test with a value of 0.211 at $p<0.05$ also revealed that, there is significant difference in communities' interest in conservation area management. The disparities may be attributed to low level of inclusiveness by managers of Sumu Wildlife Park and Lame-Burra Game Reserve. It may also be connected to low level of awareness by the management about the contribution of communities to effective management of conservation areas, and lack of proper knowledge about the benefits of well-managed conservation areas.

Table 2: Chi-Square Table for Communities' Interest in Conservation Area Management

Chi-Square Tests			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	13.413	5	.020
	Value		**Approx. Sig.**
Cramer's V	.211		.020

Communities' Willingness to Accept Management Responsibilities

The finding of this study with regards to willingness of the communities to accept management responsibility is presented in Figure 3. Interestingly, 56% and 48% of the respondents from Mainamaji and Duguri communities surrounding Yankari were willing to accept management responsibilities, while 44% and 52% were not willing to accept management responsibilities. Based on this finding, it can be deduced that community members from Yankari are willing to accept management responsibilities. Similarly, 44% and 36% of the respondents from Sumu and Tafazuwa communities respectively were willing to accept management responsibility, while 56% and 64% of them were not willing to accept management responsibility of Sumu Wildlife Park if assigned. This implies that communities were willing to accept management responsibilities, even though their willingness is low. Their willingness may be due to the effort of the government in reviving the conservation area by bringing wild animals from Namibia (Participatory Management Plan of Sumu Wlidlife Park, 2007). Responses from communities surrounding Lame-Burra Game Reserve revealed that, the communities' members were not willing to accept management responsibilities of the conservation area as indicated 74% and 68% of the respondents from Yuga and Kwange communities, only 26% and 32% were willing to accept management responsibilities.

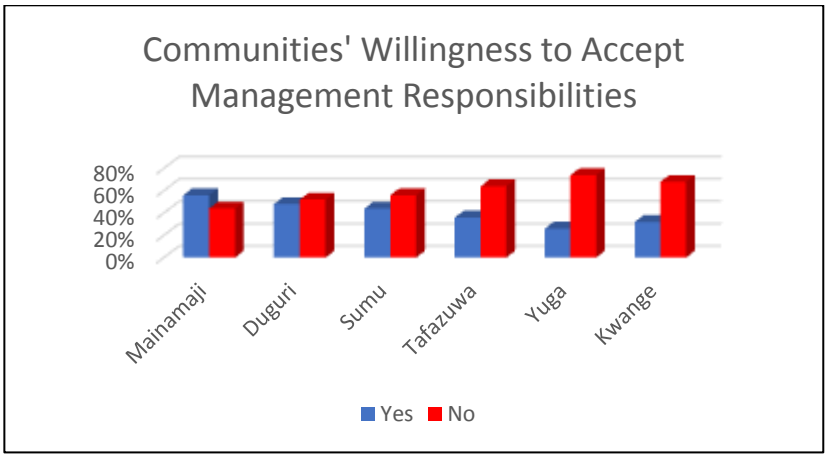

Figure 3: Communities' Willingness to Accept Management Responsibilities

Furthermore, Chi-Square and Cramer's V test revealed that, there is statistically significant difference in communities' willingness to accept management responsibilities across the sampled communities, with a Chi-Square value of (χ^2) = 12.701, df = 5, at $p < 0.05$ as shown in Table 2. Similarly, the Cramer's V test with a value of 0.206 at $p<0.05$ also revealed that, there is significant difference in communities' willingness to accept conservation responsibilities. This implies that, the communities' willingness to accept management responsibilities differs from one community to another. The level of communities' willingness to accept management responsibility depends largely on: (i) level of involvement of local communities in management and decision-making process, (ii) their ability to influence management decision, (iii) uplifting their standard of living and well-being (Participatory Management Plan of Yankari Game Reserve, 2007).

Table 2: Chi-Square Table for Willingness of Communities to Accept Management Responsibilities

Chi-Square Tests			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	12.701	5	.026
	Value		**Approx. Sig.**
Cramer's V	.206		.026

Discussion

The communities surrounding Yankari Game Reserve have been benefiting from the management of the conservation area in terms of educational facilities, medical facilities, and scholarships for members of the communities, as well as empowerment programmes. This support is in collaboration with the non-governmental organisations such as the World Conservation Society and World Bank. This has motivated the communities in having interest in the conservation area as they benefit from bodies managing the conservation area. The international organizations are so much interested in the conservation area (Yankari Game Reserve) because it is among the conservation areas in the country that is rich in ecological diversity, and due to its local, regional and global importance. Protecting these natural landscapes and biodiversity can benefit the global community.

While the reason for less interest by communities surrounding the other two conservation areas may not be unconnected to lack of benefits rendered by the conservation area managers like that of Yankari. By implication, the non-governmental organizations found Yankari as the conservation area that is worth of protection because of its diverse landscape and biodiversity. However, Lame-Burra Game Reserve is almost the same size with Yankari, with diverse natural landscape and biodiversity. However, the area is far behind in terms of achieving its conservation goal. Building communities is one of the policies of the federal government of Nigeria in an effort to ensure environmental sustainability. The "Support Zone Community Development" is designed purposely to empower the local communities surrounding the nature/conservation areas and improve their well-being for the betterment of the conservation areas. This is through training them on poultry, craft, animal fattening, fish farming, and small-scale trading so as to reduce the dependence on the nature/conservation areas.

The findings of the communities' willingness to accept management responsibilities is a reflection of the findings of communities' interest in the management of the conservation areas. This is because, as the communities benefit from the conservation areas or from the non-governmental organizations collaborating with the conservation areas, the more they will be willing to accept management responsibilities. This implies that, managers and agencies responsible for managing Lame-Burra Game Reserve and Sumu Wildlife Park are lacking in terms of carrying along the local communities around them. And so long as the communities lack sense of belonging, they may not be interested in anything that has to do with the conservation areas. These may result to several unhealthy environmental behaviours which may subsequently affect the conservation areas.

It is important to understand that, the communities play significant role in environmental management. When the communities are interested in the conservation areas, they cannot allow any form of illegal activity to take place in the areas, as they will be monitoring the areas. Furthermore, the more conservation managers collaborate with local communities, the more the communities will be willing to accept any management responsibilities and facilitate implementation of management policies. This is evidently displayed by communities surrounding Yankari Game Reserve. Communities' interest in conservation area management and their willingness to accept management responsibilities can play significant role in achieving conservation goals, as conservation policies can be easily implemented even by the communities. It can also lessen the stress of protection and patrol frequency.

Management responsibilities may be in form of assigning communities to be as their watch men, informants who feed them with plans or activities of either members of the communities or people from outside the communities in the conservation area. It may also include reporting any resources sighted in the community which is extracted from the conservation area. Management of conservation areas sometimes engage local communities in cross-checking whether the conservation area boundary is clear, and in some instances where the boundary is not clear, they try to engage the local communities in re-establishing the boundary so as to make it clear for the communities and make them familiar with the boundary.

The Global Environment Facility (2002) states that, conservation areas in Nigeria are not able to achieve their conservation goals and their support zones are becoming threats to the areas. This can be connected to non-interest of the communities in the areas and their unwillingness in accepting management responsibilities. It is important to understand that, cordial relationship between conservation managers and local communities surrounding the areas is fundamental in achieving conservation goals. This has been revealed by several researchers in the field of collaboration in environmental management (Nielsen, 2012; Davies and White, 2012; Hyakumura, 2010; Lockwood, 2010; Gbadegesin and Ayileka, 2000; Stolton, 2004) as these researchers indicate role of local communities in successful management of conservation areas. This relationship can also be a driving force in achieving sustainable management of conservation areas and better performance.

Conclusion

Environmental behaviours vary across the sampled communities. Communities around Yankari Game Reserve displayed healthy and environmentally friendly behaviours by indicating interest in the management of the area. The communities also indicated willingness in accepting management responsibilities. The behaviour is not unconnected to the relationship between communities and conservation managers. The scenario is different for communities surrounding Lame-Burra Game Reserve and Sumu Wildlife Park, as their behaviours towards the environment is an unhealthy and unfriendly. It can be deduced that; well-being of conservation areas depends on well-being of the local communities surrounding them, as realization of conservation goals depends mainly on the well-being of local communities around conservation areas. Therefore, local communities need to be carried along so that they can have sense of belonging and as well display behaviours that are environmentally friendly. This can make the communities serve as agents of conservation, environmental protection and management particularly in rural setting. Non-compliance with these cannot only jeopardize protection or conservation activities but can also threaten the well-being and sustainability of the conservation areas. As the communities around the conservation areas and their population keep increasing, while population of rangers and conservation managers are either static or dropping.

Recommendations

Based on the findings of the research, the following recommendations are made:

1. The conservation area managers need to come up with enlightenment strategies/awareness campaign for the communities on the importance of the conservation areas as well as the effects of destroying them.
2. The agencies responsible for managing the conservation areas and the managers should device a means of carrying the local communities along so that they can sense of belonging and also serve as agents of conservation.
3. Further research should focus on the conservation planning process.

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