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2 **Original Research Article**  
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4 **Assessment of Stakeholder Involvement in the**  
5 **Management of Yankari Game Reserve Bauchi,**  
6 **Nigeria**

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13 **ABSTRACT**  
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**Aims:** To examine the involvement of stake holders in the management of Yankari Game Reserve (YGR).

**Study design:** The study is a survey that is cross-sectional, descriptive and analytical.

**Place and Duration of Study:** The study was carried out at YGR, Bauchi, Nigeria between June and November 2014.

**Methodology:** Applying a multistage sampling approach, 139 staff members of YGR and 320 members of the host community were randomly selected and interviewed with semi structured-questionnaire to elicit data. Data collected were analyzed using descriptive statistics.

**Results:** The highest proportions; 94.2% and 95.7% of the respondents respectively asserts that host community members were not involved in the management and protection of YGR. Similarly, 92.2% of YGR staff members asserted that host community leaders and opinion leaders were not consulted for inputs in management decisions about YGR. Also, majority (83.7%) of the respondents reported that community associations like hunters, traditional rulers, youths and non-timber forest products collectors were not involved in the management of YGR. Assessment of stakeholder involvement in management activities showed that Government was leading in capacity building (69.0%), financing (70.4%) and management decision making (58.0%). Non-governmental organizations (NGOs) were leading in awareness creation (71.4%). Among the NGOs that were involved in the foregoing management activities, World Wide Fund for Nature (WWF) was leading by 70.5%.

**Conclusion:** The management of YGR was therefore carried out primarily by government and NGOs. Host community involvement was abysmally low. This portends a conflicting relationship between government and host communities over the conservation and management of YGR. Management should therefore work towards enlisting all stakeholders in the management processes of the reserve to ensure a more effective management regime at the reserve.

15  
16 *Keywords: Yankari Game Reserve, Stake holder involvement, host community,*  
17 *management activities*

## 18 **1. INTRODUCTION**

19

20 Protected areas are sites for conservation of biodiversity aimed at checkmating the  
21 damaging impact of human activities on natural habitat and the resources therein,  
22 particularly wildlife [1]. Protected areas are economic engines. Through tourism, they provide  
23 employment and other livelihood opportunities. Water and fisheries, which are of immense  
24 economic value, are also harbored by the protected areas.

25 Yankari Game Reserve (YGR) is Nigeria's oldest and best-known wildlife sanctuary [2]. The  
26 reserve was first designated as a game reserve by the British colonialists in 1956. By 1957,  
27 it was conceived as a forest reserve and later designated as Game Reserve by the defunct  
28 Northern Nigeria Regional Government. The establishment of this reserve marked the  
29 beginning of concerted efforts at wildlife conservation in Nigeria [3; 4]. Following the  
30 adoption of National Resource Conservation Strategy in 1985 and the subsequent  
31 promulgation of Decree No.36 of 1991, Yankari Game Reserve was upgraded to a National  
32 Park [5]. This was reverted to its initial status of a Game Reserve following its handing over  
33 to Bauchi State Government in 2006 [2].

34 The reserve is blessed with a diverse array of wildlife, including elephants, lions, hippos,  
35 crocodiles, warthogs, buffalos, and baboons. Others are the various species of monkeys,  
36 hornbills, kingfishers, and bushbuck and waterbuck antelopes. According to the most recent  
37 survey conducted in 2006, YGR with an estimated 348 elephants, is home to one of the  
38 largest remaining elephant populations in West Africa, [2].The park boasts of two potential  
39 tourist attractions; the Wikki and other natural hot spring pools and the man-made caves,  
40 which archaeologists believe were dug into sandstone cliffs as hiding places during the  
41 slave-trade era [2]. Yankari Game Reserve has a unique location, surrounded by agricultural  
42 farmland and human settlements [6].

43 According to [7], research efforts in Natural Resources and wildlife conservation in Nigeria  
44 are abysmally low, and there is paucity of information and data for the development of  
45 effective management plan for the protected areas. Thus, the creation of forest reserves in  
46 Nigeria has not yielded the desired result because strategic plans are not available to tackle  
47 the challenges associated with this conservation practice [8]. The Yankari Game Reserve, in  
48 Bauchi State, Nigeria, is besieged by management challenges. The reserve is under the  
49 pressure of human interference and disturbance [9]. There are reported cases of increased  
50 poaching activities, grazing offences, uncontrolled burning/fire out breaks, and declining  
51 tourists and tourists' activities on the park. These means Yankari Game Reserve (YGR)  
52 requires a more careful and intensive management regime to survive.

53 Conservation scientists including [10, 11, and 12] advocated the inclusion of many partners  
54 and an array of stakeholders including the community members in the management and  
55 governance of protected areas. The knowledge and skills of these stakeholders if available  
56 and utilized will engender the conservation and management of wildlife resources on a  
57 sustainable basis [13]. This means adequate information on the knowledge and skill of  
58 stakeholders of reserves require documentation for effective planning. The YGR lacks this  
59 kind of data and information [7, 12]. Correlatively, the [14] also reported that the forestry  
60 sector in Nigeria is poorly funded and formal records are not in place to ascertain its revenue  
61 generation potential for effective development, the YGR inclusive. On the other hand, [11]  
62 decried that Management of Game Reserves do not always carry along their host  
63 communities while taking and implementing managerial decisions. This often results to  
64 chaos, anarchy, poor cooperation and confrontation between management staff and host  
65 communities. This study therefore examines management activities at YGR to determine the  
66 level of involvement of stakeholders in this regard. Outcomes would be useful for  
67 recommending appropriate management approaches for improved biodiversity,  
68 environmental protection and sustainable livelihood development. In fact, it aims at providing  
69 data for informed management and conservation decisions about Yankari Game Reserve.

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## 71 **2. METHODOLOGY**

72

### 72 **2.1. Study Area**

73

74 The Yankari Game Reserve lies between Latitude  $9^{\circ} 50' N$  and Longitude  $10^{\circ} 30'E$  within  
75 the Sudan savanna vegetation zone. The vegetation at the reserve belongs to a complex  
76 usually described as *Burkea africana* woodland savanna made up of trees and shrubs with  
77 open canopy and a continuous layer of annual and perennial grasses [15]. The Reserve  
78 records an average rain fall of about 1000mm per year occurring between April and October.  
79 The Gaji and Yashi River dissects the reserve giving succor and security to both the fauna  
80 and flora resources within the reserve. The reserve also contain four natural warm springs;  
81 Wikki, Gwana, Dimiland and Mawulgo. However, only the Wikki warm spring is developed  
82 for tourists' recreation. Other tourism resources in the reserve include the Marshall Caves,  
83 Dukkey wells, Shaushau and Ampara ancient iron smelting sites and Dogonruwa rock  
84 paintings among others.

85 The Reserve also houses a wide variety of wildlife species, prominent among which are the  
86 savanna elephant (*Loxondonta africana*), buffalo (*Syncerus cafer*), baboon (*Papio anubis*),  
87 hartebeests (*Alcelaphus buselephus*), waterbucks (*kobuselli psiprymnus*), hippopotami  
88 (*Hippopotamus amphibious*), crocodile (*crocodiles niloticus*), Lions (*Pantherleo*), Roan

89 antelops (*hippotragus eguinus*), warthog (*Phacochoerus aethiopicus*), and a profusion of  
 90 birdlife especially at Gaji River valley [15].  
 91 YGR is surrounded by 15 host communities within the range of 1-5km [16]. These host  
 92 communities are predominantly subsistent farmers and hunters with few engaged in petty  
 93 trading businesses.

94 **2.2 Study Population and Sampling Procedure**

95 The study population comprises the host community members and the staff members of  
 96 YGR. The sample size for the study was 459 respondents comprising 139 staff members of  
 97 YGR and 320 members of the host communities.

98 A sampling intensity of 50% was applied to randomly select eight (8) host communities out of  
 99 15 around YGR for the study. In each host community, a systematic random sampling  
 100 approach was used to identify 40 households, in which the senior male or female household  
 101 member present was selected as respondent. Thus, 320 respondents were selected within  
 102 the adjoining communities for the study.

103 Staff population at Yankari Game Reserve was 211 distributed in five departments as shown  
 104 in Table 1. Out of this number, 139 respondents were sampled using Taro Yamane's formula  
 105 (equation 1) recommended by [17] for this kind of data collection.

106 
$$n = \frac{N}{1+N(e^2)} \dots \text{Equation 1}$$

107 Where; N = Population,  
 108 1 = constant,  
 109 e = tolerable error or limit of precision,  
 110 n = sample size

111 Respondents were sampled from each Department proportionately using the following  
 112 relationship:

113 
$$nh = \frac{n \times Nh}{N}$$

114 Where: nh = Sample size for a Department,  
 115 Nh = Staff population in each Department  
 116 n = Staff to be sampled for the study (sample size for the  
 117 study).  
 118 N = Total staff population of YGR  
 119

120 The sampling frame for staff members of YGR is presented in Table 1.  
 121

122 **Table 1: Sampling Frame for staff members of Yankari Game Reserve, (<sup>a</sup>N=211)**  
123

Name of Departments	Staff Population by Department	Sample Size by Department
Conservation/ Recreation	105	69
Finance	13	9
Administration/Personnel	11	7
Hotel Management	47	31
Estate Management	35	23
<b>Total</b>	<b>211</b>	<b>139</b>

124 Note: <sup>a</sup>N= Staff Population125 **2.3 Data Collection and Analyses**

126 Data for the study were collected using two sets of semi-structured questionnaires  
127 administered on 459 respondents. The first set of the questionnaires, comprising of 320  
128 copies, was administered on 320 respondents sampled from the host community members,  
129 and data on their involvement in the management of YGR was collected. Similarly, the  
130 second set was administered on 139 staff members of YGR to elicit data on management  
131 issues about the reserve. Experts' (forest economists, conservation scientists, biometricians  
132 and ecologists) opinions were consulted in validating the research instrument- the semi-  
133 structured questionnaire. The validated instrument was then administered on respondents  
134 for data collection.

135 Data collected were analyzed using descriptive statistics. Tables and charts were utilized in  
136 presenting the results.

137 **3.0 RESULTS AND DISCUSSION;**138 **3.1 Result**139 **3.1.1 Host community involvement in the management of YGR**

140 The responses of YGR staff members on the involvement of host community members in the  
141 management of YGR are presented in (Table 2). A greater proportion of the staff (94.2%)  
142 agreed that host community members were generally not involved in the management of  
143 YGR. Furthermore, 92.8% of the staff members agreed that the views of community leaders  
144 and opinion leaders of the community are not usually consulted for inputs on managerial  
145 decisions about YGR. Similarly, most staff members (95.7%) of YGR indicated that host

146 community members were not involved nor employed in the protection of the YGR. Only  
 147 4.3% of the staff members indicated that some host community members are sometimes  
 148 employed in the protection of the reserve. The general view of the above results is that host  
 149 community members are rarely involved in the management decisions of YGR

150 Table 2: Yankari Game Reserve Staff responses on the Involvement of Host Communities in  
 151 its Management of the Reserve

Responses Criteria	Frequency	Percentages
<b>Are Host Communities involved in the Management of YGR?</b>		
Yes	8	5.8
No	131	94.2
Total	139	100.0
<b>Does management consult Community Heads and Opinion Leaders for inputs in the Management of YGR?</b>		
Yes	10	7.2
No	129	92.8
Total	139	100.0
<b>Does management involve Host Community in Protecting YGR?</b>		
Yes	6	4.3
No	133	95.7
Total	139	100.0

152 Note: YGR = Yankari Game Reserve.

153 **3.1.2 Responses of community members on the involvement of community**  
 154 **associations in the management of YGR**

155 The Responses of community members on the involvement of community associations in  
 156 the management of YGR is presented in Table 3. From this result, 83.7% of the respondents  
 157 debunk the involvement of community associations in the management of YGR; however,  
 158 8.1% reported that traditional rulers' association was involved in the management of YGR.  
 159 Furthermore, 3.8% of the respondents assert that hunters associations were involved in the  
 160 management of YGR, while 2.5% and 1.9% assert that Non-timber forest products collectors

161 and youth associations respectively were also involved in the management of YGR. No  
 162 women association in any of the villages adjoining YGR was reportedly involved in its  
 163 management. The result therefore shows that the involvement of community associations in  
 164 the management of the reserve was abysmally low.

165 Table 3: Involvement of Community Associations in the Management of Yankari Game  
 166 Reserve

Associations	Frequency	Percentages
Women Associations	0	0.0
Hunters Associations	12	3.8
Traditional rulers Associations	27	8.1
Youth Associations	6	1.9
Non-timber forest products collectors Association	8	2.5
None of the above	268	83.7
Total	320	100.0

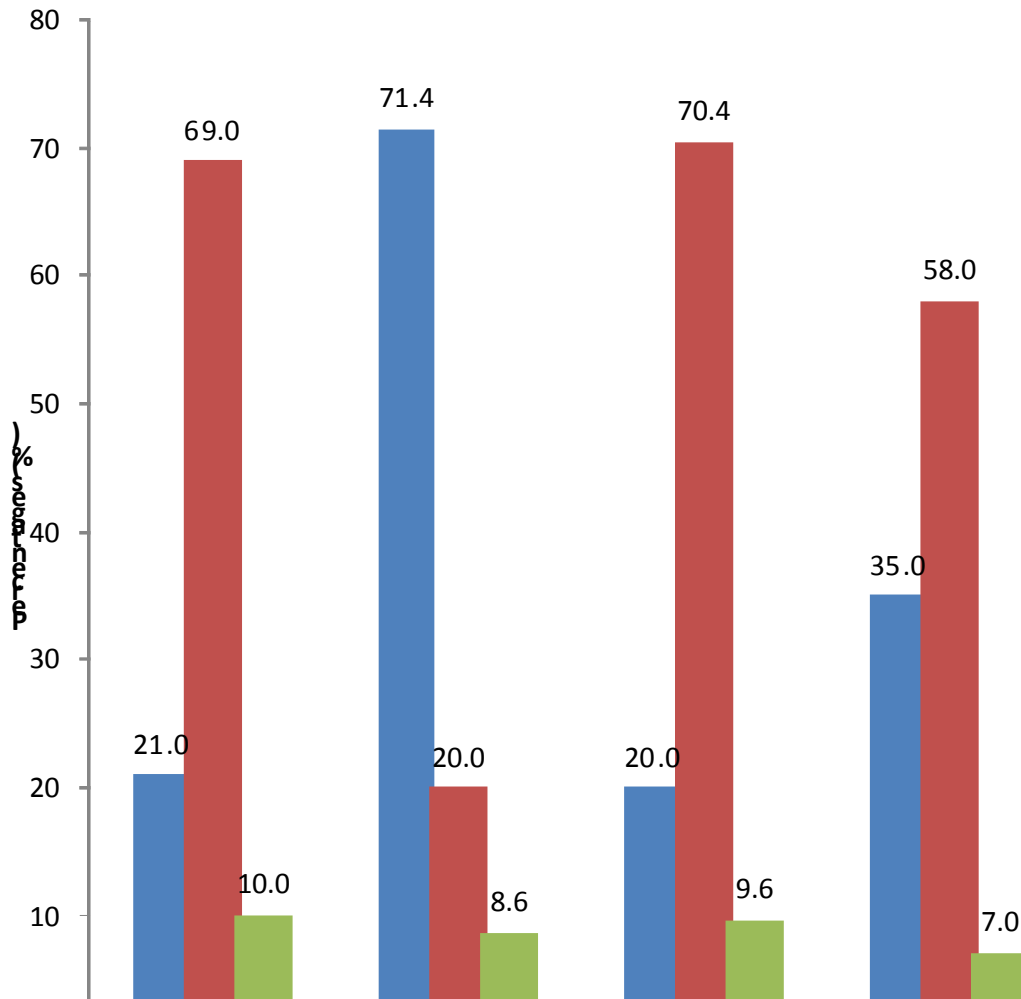
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168 **3.1.3 Comparative Assessment of Stakeholders Involvement in the Management of**  
 169 **YGR**

170 The involvement of stakeholders namely Non- Governmental Organizations (NGO), the  
 171 Government and the Host Community Members (HCM), in the management of YGR is  
 172 presented in Fig. 1. Four management criteria namely Capacity building, awareness  
 173 creation, financing and decision making were considered.

174 Government was the major key player in capacity building with 69.0% followed by NGOs  
 175 (21%) and the Host community (10.0%). Non- Governmental organizations were the key  
 176 players in awareness creation as 71.4% of the respondents asserted. Government and host  
 177 communities followed in that order with 20.0% and 8.6% respectively. In terms of financing,  
 178 most respondents (70.4%) asserted that Government is the key player. This was followed by  
 179 NGOs (20.0%) and then HCM with 9.6% of the responses respectively. Government (58.0%)  
 180 was also a key player in decision making, followed by NGOs (35.0%) and then the HCM  
 181 (7.0%).

182 The management activities on the reserve were therefore carried out primarily by  
 183 government and non-governmental organizations. Host community involvement was  
 184 abysmally low.



185 **Fig. 1. Stakeholders' involvement in the Management of Yankari Game Reserve**

186 **3.1.4 Assessment of NGOs' Involvement in the Management of YGR**

187 The staff members of YGR were asked to indicate in their own perception the NGOs that  
 188 contribute predominantly to the management of YGR. The result is presented in Table 4.  
 189 Majority of the staff members 70.5% asserted that World Wide Fund for Nature (WWF)  
 190 contributed more to the management activities in YGR. The Nigerian Conservation  
 191 Foundation, NCF (13.7%), Friends of the Environment, FOTE (7.2%), Nigerian



192 Environmental Study Team, NEST (6.5%), and Nigerian Environmental Society, NES (2.1%)  
 193 followed in that order. Five NGOs were therefore involved in the management of Yankari  
 194 Game Reserve, with the WWF playing the dominant role in all management activities of the  
 195 reserve. Other NGOs contributed marginally.

196  
 197 Table 4: Involvement of Non Governmental Organizations in the management activities of  
 198 Yankari Game Reserve

Non Governmental Organization	Frequency	Percent (%)
NCF	19	13.7
WWF	98	70.5
NEST	9	6.5
FOTE	10	7.2
NES	3	2.1
Total	139	100.0

199  
 200 NOTE:  
 201 **NCF**: Nigerian Conservation Foundation  
 202 **WWF**: World Wide Fund for nature  
 203 **NEST**: Nigerian Environmental Study/Action Team  
 204 **FOTE**: Friends of the Environment  
 205 **NES**: Nigeria Environmental Society

206

207 **3.2. Discussion**

208 Inferences drawn from the involvement of the host communities in the management of YGR  
 209 indicated that the host communities were not involved in the management of the Reserve.  
 210 Considering the low educational level of the inhabitants and their engagements in the non-  
 211 administrative cadre, their involvement in management would not be expected. However,  
 212 modern school of thought on conservation and management of protected areas canvasses  
 213 participatory approaches [18]. When local communities feel that both government and  
 214 conservation stakeholders value wildlife more than their lives, livelihoods or aspirations,  
 215 retaliation and opposition to conservation initiatives can be swift and uncompromising. One

216 solution to this is to empower communities to manage and benefit from wildlife resources  
217 found in communal group ranch dispersal areas [19].

218 Although there was a popular opinion of the non-involvement of community associations in  
219 the management of YGR, the abysmal involvement of some few associations like the  
220 traditional rulers, hunters, non-timber forest products collectors, and the youths played vital  
221 roles in the development of YGR. They were involved in mobilizing contractors/casual staff  
222 for YGR. They were also involved in brokering peace, security and cordial relationship  
223 between the host communities and the Reserve. For instance, the traditional rulers and  
224 youths were sometimes involved in resolving crises relating to poaching and encroachments  
225 on the reserve for farming activities and non-timber forest products collection and bush  
226 burning. It is therefore important for YGR to work towards enhancing the involvement of  
227 these associations in the management of the reserve.

228 The government played the most prominent role in the management of YGR. This was  
229 shown in their involvement in capacity building, financing and decision-making. Awareness  
230 campaigns on conservation practices were however propagated by NGOs. In this light,  
231 World Wide Fund for nature (WWF) was most involved due to its close attention in  
232 harnessing the endangered species in African Sub-Saharan region.

233

## 234 **5. CONCLUSION**

235 The management status of YGR reflects an abysmally low involvement of host communities;  
236 indicative by the low involvement of community heads, opinion leaders and local  
237 associations in the management functions of the reserve. This portends a conflicting  
238 relationship between government and host communities over conservation and management  
239 initiatives at the reserve.

240 The involvement of some non-governmental organizations in capacity building, awareness  
241 creation, financing and decision making functions at the YGR portends a more effective  
242 management of the reserve in time. NGOs like WWF, NEST, ECS, FOTE and NCF were  
243 involved in the management of YGR in the area of capacity building, awareness creation,  
244 financing and decision making. WWF dominated in this group.

245 The YGR management should ensure the involvement of host communities and local  
246 Associations in managerial decision-making about the reserve. The management should  
247 also ensure more and equitable provision of basic infrastructural facilities and amenities to  
248 adjoining communities to the reserve.

249 The management of YGR should work towards keeping their relationship with the current  
250 NGOs partnering with it, while more efforts are made at enlisting other NGOs in their  
251 management functions. Assistants from these NGOs and their activities should be directed  
252 at the host communities to boost and enhance their social relationship with the reserve and  
253 the host communities.

#### 254 **COMPETING INTERESTS**

255 We hereby declare explicitly that no competing interest is attached to this research activity.  
256

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