

Research article

Assessment of the Management of Sanda Kyarimi Park, Maiduguri, Borno State, Nigeria

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Abstracts

The aim of the study is to assess the management of Sanda Kyarimi Park, Maiduguri, Borno State. The objective of the study is to examine the welfare of the animals in captivity, identify the problems in managing visitors and animals and to investigate the staff welfare and their capabilities in managing the park. Data collection for the study were accomplished using questionnaire and on the spot assessment during repetitive visits. Three different categories of questionnaire were administered: to the management of the park; park wardens and zoo keepers, and park visitors. The park wardens and zoo keepers were sampled based on their hierarchy on the organizational chart. Visitors to the park were sampled in four days i.e. five (5) visitors per day by probability as they obtain gate pass. Descriptive statistics using tables, frequencies and simple percentage (%) were employed in presenting the result. Analysis of variance (ANOVA) was used to analyse the relationship between sexes of animals in captivity. The result shows that there are twenty (20) mammalian species, seven (7) avifauna and four (4) species of reptiles. There is significant difference between sexes of mammals and no significant difference between sexes of birds and reptiles ($p > 0.05$). The management policy formulation lies with the zoo management, but funding is by the state government Ministry of Environment. There are sixty (60) workers (40 males and 20 females) in the park. Overtime and hazard allowances are paid to the staff although they are not insured. About 60% of the visitors to the park are males and 40% females. Ninety percent (90%) of the visitors know why the park is established. All the workers indicated that they experience job satisfaction and their services have contributed to the successful management of the park. The animals in captivity of the park are properly managed as to feeding. Problems in managing the park are feeding of animals by visitors, resistance to pay gate fees, unruly behaviour of visitors and indiscriminate waste disposal. The park has a vehicle which is in good condition. Visitor's guides are always present to direct the visitors but they lack practical uniforms. Animal housing such as pens, cages, paddocks and other enclosures are in good condition. Recommendations are made to improve on effective management for visitors' relaxation and satisfaction whilst act of illegal behaviours while in the park should be controlled through prosecution.

Keywords: Species list, animal welfare, staff welfare, visitors and management

Introduction

A park is established primarily to show to our urban population wild animals that exist around us because most urban residents do not have the opportunity to visit national parks or game reserves which are generally located some kilometres away. The establishment of parks awakens interests and appreciation in nature and solidifies the co-existence between man and wild animals (Ayodele *et al.*, 1999). It is also a place of relaxation and entertainment that can give opportunities for people to satisfy their human curiosities in seeing different animal species at a close range. It also educate and create consciousness of the public in the need for conservation and natural resources sustainability in breeding of endangered species in captivity. Parks have aesthetic values which would induce repetitive visits and generation of income from gate fees. Educational research on the inmates on aspects of comparative anatomy, pathology, behaviours and reproduction are also easily undertaken. According to the World Conservation Strategy, parks possess and manage collections that primarily consist of wild non-domesticated animals of one or more species that are housed so that they are easier to see and to study than in nature (International Treaty on Conservation, 2004). Parks serve for conservation which is the management of human use of the biosphere so that it may yield the greatest sustainable benefit to the present generation while maintaining the potential to meet the needs and aspirations of future generations (Allen, 1980). Wildlife Conservation is the practice of protecting endangered plant and animal species and their habitat. Basically there are two major systems of conserving biological resources which are in-situ and ex-situ. The In-situ conservation system is conservation of biological resources within its habitat such as establishment of protected areas (National Park, Game Reserves, and Nature Reserves). Ex-situ conservation system is carried out outside the natural environment such as zoological and botanical gardens and seed banks so as to supplement the conservation of biodiversity within the natural environment (McNeely *et al.*, 1990). The aim of establishing parks lie in the importance of tourism, sustaining vanishing species, educating human societies on wildlife, advances in human medicine, ecological principles in conservation, provision of employment opportunities and income generation (ITC, 2004).

There are problems in managing captive animals and the intending viewers. These include feeding in terms of quality, quantity and timeliness and control of viewers especially children. The objective of this study is to assess the management of Sanda Kyarimi Park with specific objectives of examining the welfare of the animals in captivity; identify the problems in managing visitors and animals; and to investigate the staff welfare and capabilities in managing the park. The result will help in the effective planning for sustainability of animals and park facilities as well as enhancing visitor's satisfaction and comfort while in the park.

Materials and Methods

The Study Area

The Sanda Kyarimi Park is located within the metropolis of Maiduguri Metropolitan Council (MMC) along Shehu Laminu way. It was established in the year 1970 as a neem plantation and serves as a picnic and relaxation area and named after the former Nigerian head of state General Yakubu Gowon by the defunct North-Eastern state government. Few wild animals and birds donated by traditional rulers, individuals and those

confiscated by wildlife protection staff of the government were kept in captivity in the plantation. In the year 1974, the president of Kenya visited the state and donated a large consignment of wild animals from East Africa to the state and the area was called a zoo. In 1976, General Murtala Mohammed named the zoo as Sanda Kyarimi Park to immortalise the late Shehu of Borno, His Royal Highness Shehu Mustafa Kyari Elkanemi. It is opposite to the Borno Radio Television Cooperation (B.R.T.V) and adjacent to it are the Open Air Theatre/Museum and Amusement Park. It covers an area of 17 hectares and houses many animal species of great beauty and serves as recreational area for people especially during festivities.

According to Borno State Government (2013), three seasons have been identified; the cool dry harmattan season (October -March), hot dry season (April-June) and the rainy season (July- September). Temperatures are high all year round with hot season temperatures ranging between 39°C and 49°C, mean annual rainfall of 708mm and relative humidity that ranges from 42%-49% (BOSG, 2013). Maiduguri has a population of 4,151,193 comprising of Kanuri, Bura, Hausa, Shuwa, Margi and Fulani ethnic groups (NBS, 2006). The vegetation of the area is typically of Sahel Savannah type, consisting of drought resistant and fire tolerant trees. Common trees are *Ziziphus mauritiana*, *Z. spina-christi*, *Faidherbia albida*, *Accacia senegal*, *Accacia nilotica*, *Azadirachta indica*, *Khaya senegalensis* and desert dawn palm (*Phoenix thebaica*). Common grasses are *Cenchrus biflorus*, *Pennisetum pedicellatum*, *Setaria pallidifusca*, *Aristida spp.* and *Digitaria spp.* among others. The park is drained by River Ngadabul which passes through the park.

Study Design and Data Collection

Data collection for the study was accomplished using office records, questionnaire and on the spot assessment during repetitive visits adopting Mbaya *et al* (2010) method. Three different categories of questionnaire were administered to (i) the management of the park; (ii) park wardens and zoo keepers and (iii) visitors to the park. One (1) questionnaire was administered to the management, five (5) to the wardens and zoo keepers and one hundred (100) to visitors. The park wardens and zoo keepers were sampled based on their hierarchy on the organisational chart from Deputy Zoo Manager down to Park Attendant. Visitors to the park were sampled in four days; i.e. five (5) visitors per day by probability as they obtain gate pass.

Descriptive statistics using tables, frequencies and simple percentage (%) were employed in presenting the result. Analysis of Variance (ANOVA) was used to analyse the relationship between sexes of animals in captivity.

Results

Checklists of Animals in Captivity in Sanda Kyarimi Park

Table 1 shows the list of mammals identified in the park. The result shows that there are 20 mammalian species. About 75% of the mammals are sexually paired and the 25% are only females which are Cape eland, Dama gazelle, Elephant, Stripped hyena and Wart hog. Table 2 is ANOVA table for analysis of significance between sexes of mammals. The result shows that the differences between the sexes are significant ($p < 0.05$). Table 3 is the list of birds identified in the park. There are 7 species of birds and two (2) of the species are not sexually paired which are Griffon vulture (male) and Tawny eagle (female). Table 4 is an ANOVA table for analysis of significance between the sexes of the birds. The result shows that there are no significant differences

between sexes of birds in captivity in the park. Table 5 shows that there are 4 species of reptiles in Sanda Kyarimi Park. All the species are sexually paired. Table 6 is ANOVA table for analysis of significance between the sexes of the reptiles. The result shows that there is no significant difference between the sexes of reptiles in the park.

Table 1: Checklist of Mammals in Sanda Kyarimi Park Maiduguri.

S/no	Species		Numbers		
	Common Name	Scientific Name	Male	Female	Total
1	Olive baboon	<i>Papio Anubis</i>	2	3	5
2	Cape eland	<i>Tauratragus oryx</i>	0	1	1
3	Chimpanzee	<i>Pan troglodytes</i>	1	2	3
4	Crested porcupine	<i>Hyster cristata</i>	1	1	2
5	Dama gazelle	<i>Gazella dama</i>	0	2	2
6	Domestic pig	<i>Sus scrofa</i>	5	7	12
7	Elephant	<i>Loxodonta africana</i>	0	2	2
8	Grimm's duiker	<i>Sylvicapra grimmia</i>	1	2	3
9	Jackal	<i>Cervis aureus</i>	1	3	4
10	Kob	<i>Kobus kob</i>	1	1	2
11	Lion	<i>Panthera leo</i>	1	2	3
12	Red fronted gazelle	<i>Gazella rufifron</i>	2	5	7
13	Red patas monkey	<i>Erythrocebus patas</i>	3	4	7
14	Senegal hartebeest	<i>Acelaphus buselaphus</i>	2	1	3
15	Sitatunga	<i>Traglophus spekei</i>	1	2	3
16	Spotted hyena	<i>Crocuta crocuta</i>	1	1	2
17	Stripped hyena	<i>Hyena hyena</i>	0	1	1
18	Tantulus monkey	<i>Carcopithecus aethiops</i>	2	2	4
19	Wart hog	<i>Phaecoherus aethiopicus</i>	0	1	1
20	West Africa dwarf Cattle	<i>Bos indicus</i>	1	1	2
Total		25	44	69	

Source: field survey (2014)

Table 2: Analysis of variance (ANOVA) Table for data in Table 1

SV	df	SS	MS	F-cal
Treatments	1	128.05	128.05	113.32
Error	38	43.08	1.13	
Total	39	171.13	129.18	

Table 3: Checklist of Birds in Sanda Kyarimi Park Maiduguri.

Species			Numbers		
S/no.	Common name	Scientific name	Male	Female	Total
1	Crowned crane	<i>Balerica regulurum</i>	1	2	3
2	Griffon vulture	<i>Gyps fulrus</i>	1	0	1
3	Ostrich	<i>Struthio camelus</i>	1	1	2
4	Pea fowls	<i>Pavo cristata</i>	20	30	50
5	Spur winged geese	<i>Plectopterus gumbiansis</i>	2	3	5
6	Tawny eagle	<i>Aguila rapex</i>	0	1	1
7	White stork	<i>Ciconia ciconia</i>	1	2	3
Total			26	39	65

Source: field survey (2014)

Table 4: Analysis of variance (ANOVA) Table for data in Table 3.

SV	df	SS	MS	F-cal.
Treatments	1	270.74	20.83	3.31
Error	12	75.47	6.29	
Total	13	346.21	27.12	

Table 5: Checklist of Reptiles in Sanda Kyarimi Park Maiduguri.

Species			Numbers		
S/no	Common name	Scientific name	Male	Female	Total
1	Giant tortoise	<i>Testudo suicata</i>	3	4	7
2	Nile crocodile	<i>Crocodylus niloticus</i>	15	21	36
3	Rock python	<i>Python sabae</i>	2	2	4
4	Royal python	<i>Python regius</i>	2	2	4
Total			22	29	51

Source: field survey (2014)

Table 6: Analysis of Variance (ANOVA) table for data in Table 5.

SV	df	SS	MS	F-cal.
Treatments	1	381.87	6.12	0.098
Error	6	375.75	62.63	
Total	7	757.62	68.75	

Profile of Visitors to the Park

The profile of visitors to the park is presented in Table 7. It shows that 60% of the visitors are males and 40%, females. Of age classes, 20% of them are between the ages of 15 – 19 years; 30% are of 20 – 24 years and 25% are of 25-29 and above 30 years equally. The educational background of the visitors, 60% are of secondary school education; 20% primary school and 10% are of tertiary education and of no formal education equally.

Table 7: Profile of Respondents (%)

Variable	Frequency	Percentage (%)
Sex		
Male	60	60
Female	40	40
Total	100	100
Age Class (years)		
< 14	0	0
15 – 19	20	20
20 – 24	30	30
25 -29	25	25

Above 30	25	25
Total	100	100
Education Status		
Primary School	20	20
Secondary School	60	60
Post Primary School	10	10
No Formal Education	10	10
Total	100	100

Source: field survey (2014)

Attitudes and Perception of Visitors to the Park

Table 8 shows the result of respondents on their awareness of why the zoo is established which shows that 90% are aware and 10% are not aware. Establishment of the park is a good thing as indicated by 90% of the respondents and a bad thing according to 10% of the respondents (Table 9). On whether they are satisfied by the services provided by the management, 70% of the visitors indicated that they are satisfied and 30% are not satisfied

(Table 10).

Table 8: Percentage of Respondents on their Awareness of why the Park is established

Variable	Frequency	Percentage
Know why	90	90
Do not know why	10	10
Total	100	100

Source: field survey (2014)

Table 9: Percentage of Respondents on whether the Park is a “good” or a “bad” thing

Variables	Frequency	Percentage
Good	90	90
Bad	10	10
Total	100	100

Source: field survey (2014)

Table 10: Percentage of Respondents on whether they are satisfied with the services of the Park or not satisfied.

Variable	Frequency	Percentage
Satisfied	70	70
Not satisfied	30	30
Total	100	100

Source: field survey (2014)

State of Infrastructure and Supporting Facilities

Animal housing such as pens, cages, paddocks and other enclosures are in good conditions. Exhibit designs aimed at exhibiting animals in the context of their natural habitat displaying natural behaviours are properly constructed. Some enclosures are not properly labelled with sufficient barriers to focus attention of visitors to what they see, feel and understand in terms of their experience. The park has a functional vehicle used for the day to day running for the procurement of animal's food.

Public amenities such as clean toilets and refreshment kiosks are not adequate and do not relate to the appropriate forms of building design and construction. Parking space for vehicles of visitors is not enough to meet the anticipated needs of visitors to the park. Play ground facilities for children in the park are not in good condition and inadequate.

Welfare of Animals

The animals are fed ad-libitum but water provision is inadequate to some inmates. The animals should be provided with water at all times as their movement is restricted and temperature is always high.

Management Problems of Visitor's activities

The problems in the management of the park include feeding of animals by visitors, resistance to pay gate fees, unruly behaviours, indiscriminate waste disposal and other illegal behaviours such as fighting.

Management of the Park

The park is an establishment of the state government and managed by the Ministry of Environment who oversees the affairs of the park. It is responsible for funding, staff appointment, promotion and discipline. The ministry appoints the Manager who co-ordinates the activities of the park and reports to the ministry as well as carry the image of the park to other government agencies and the public as well as to solicit for their support.

The organizational structure of the park is shown in Fig.1. There are a total of 60 workers in the park (40 males and 20 females). The Deputy Zoo Manager, Assistant Chief Zoo Manager, Senior Zoo Manager and Zoo Keepers are trained in related fields of wildlife management from Colleges of Agriculture and College of Wildlife Management, New Bussa. The staff of the park do not have insurance cover as security to hazards in handling wild animals. Special allowances such as overtime and hazard allowances are paid to them. Training programmes are not being organized though staff are encouraged to seek for admission to related institutions to further their education as there will be sponsorship by the ministry.

All the workers stated that they experience job satisfaction and that their services have contributed to the successful management of the park. They suggested that they should be provided with practical uniforms for effective discharge of their duties.

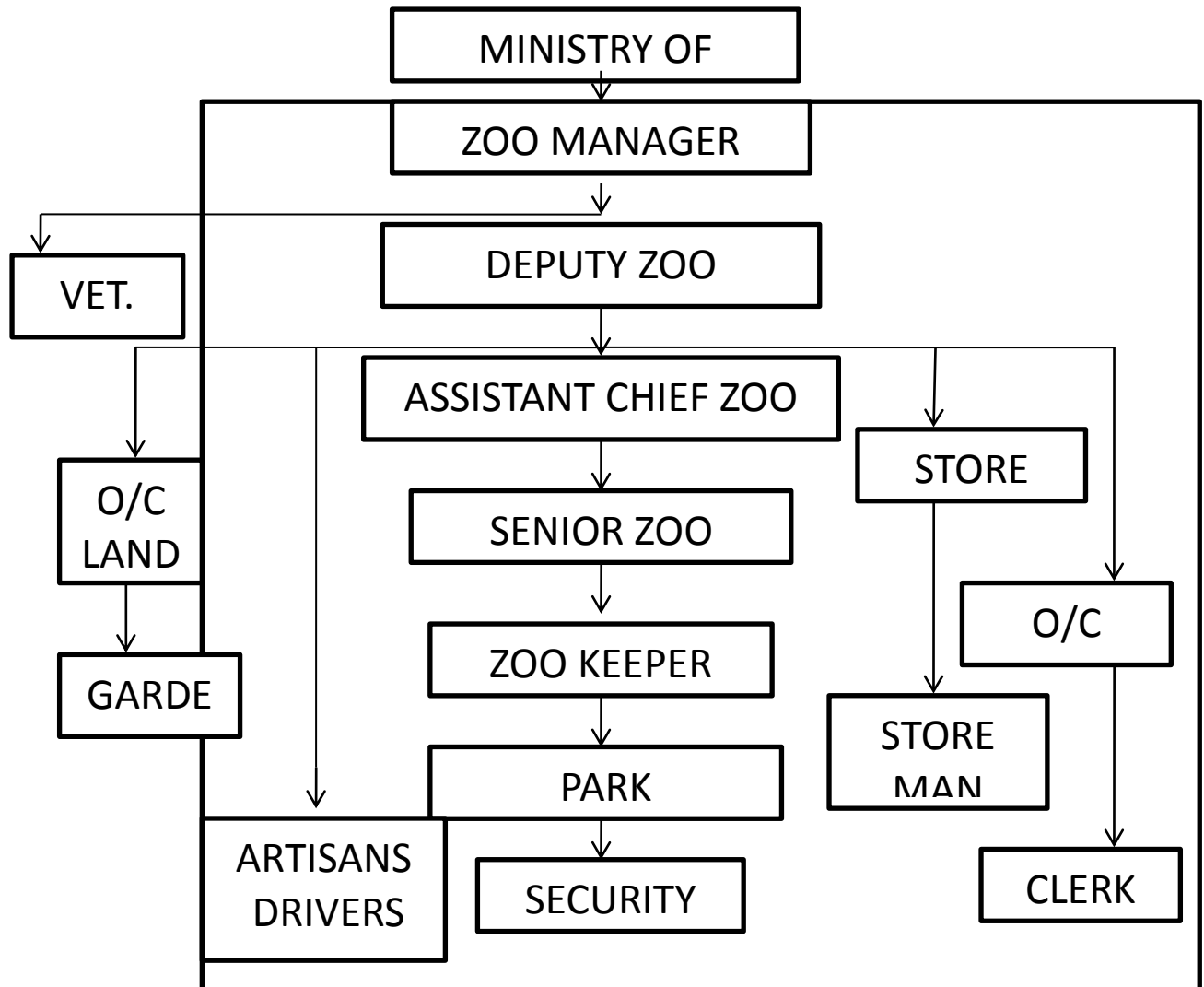


Figure 1: Sketch of the Organisation Chart of Sanda Kyarimi Park.

Discussion

There are thirty (30) different species of animals in the Sanda Kyatimi Park. These include twenty (20) mammalian species, six (6) species of birds and four reptilian species. The animals are representatives of animal species indigenous to Guinea Savannah and Sudano-Sahelian sub-regions of Nigeria. Most of the animals (80%) are sexually paired and some reproduced. Those that have reproduced are lion, red-fronted gazelle, dama gazelle, Senegal hartebeest, sitatunga, Nile crocodile, giant tortoise and ostrich. There is an indication of high level of domestication which according to ITC (2004), breeding of wild animals in captivity is a measure of domestication.

Majority of visitors to the park are males (55%) and are of the age group of 15-29 years. Control of high number of youth visiting the park makes the situation difficult to park staff especially at the primate cages and during festive periods. Categories of park visitors vary from school group, handicapped, elderly and general visitors (Akosim and Ironkanulo, 2008). The school group represent a sizeable group of visitors and are usually led by a teacher but the other groups must have park staff charged with the responsibility of controlling them. Elderly and handicapped visitors require special needs to enjoy the outing just like the rest.

The establishment of the park in Maiduguri is a good development as indicated by 90% of the respondents and similarly the objective of establishing the park is well known to them. About 70% of the visitors are satisfied by the services provided by the management. Those not satisfied with the services of the park are of the opinion that toilets and other conveniences are not in good condition, unruly behaviours of some visitors especially youths, absence of visitor guides and inadequate resting benches. Also, noise by youths and children make the elderly visitors not to derive maximum satisfaction from their visit to the park.

Conclusion and Recommendations

The study assessed the management of Sanda Kyarimi Park, Maiduguri Borno State with the objectives of examining the welfare of the animals in captivity, identify the problems in managing the animals and examine the welfare of staff working in the park. The social amenities the park management provided for visitor's relaxation and satisfaction such as restaurant, toilets, resting benches and children play ground are not to standard. The animals in captivity of the park are properly managed and fed according. Also animal housing such as pens, cages, paddocks and other enclosures are in good condition.

The management reviewed the fee for gate pass by 150% (from N20.00 to N50.00) with effect from 1st January, 2009. With the increase in revenue, the aesthetic value of the park is expected to improve by making sure that it constantly wears a dynamic image by the introduction of new animals and facilities. This will make people eager to be repeating visits. An exchange programme can be organized with other parks in the country especially with those animal species that have reproduced to avoid overcrowding and to acquire other species that are not present. This may be of interest to reporters thereby obtaining regular information for the public. Feeding of animals by visitors should be considered illegal and notice to this act should be placed at appropriate places. A fine should be attached to this act and penalty to other unruly behaviours with strict compliances. Visitors comfort while at the park should be considered the responsibility of the management. Labels mediate between visitors and animals and provide the stimulus to look more closely. Labels are a means of communication with the visitors. It gives direction and information to identify location, name of the species in an enclosure and provide information on or interprets the occupants of the enclosures. It focuses attention on what visitors can see, feel and understand in terms of their own experiences. Labels therefore should be placed near to the animals and must be conspicuous and legible. Workers of the park should be supplied with simple practical uniforms standard to other government agencies to control and conduct visitors as well as to protect the park facilities.

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