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## ASSESSMENT OF RECREATIONAL POTENTIALS OF AGODI GARDENS, IBADAN, NIGERIA.

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### ABSTRACT

This study is an assessment of the recreational potentials of Agodi zoological gardens, Ibadan. It examines the history and development of the site, and the management practices and problems facing the zoo. The procedures adopted included: vegetation survey (point centre quarter method); soil nutrient capacity survey; assessment of the recreational potentials of the area with structured questionnaire. The chi-square test of independence was used in data analysis. The absolute density of the woody plants was found to be 995.02 trees/ha. of the 32 tree species sampled, Teak (*Tectona grandis*) recorded the highest density of 134.68/ha. The study revealed that age and gender had no significant effect on visitation to the zoo ( $P < 0.05$ ) while marital status and profession were observed to have significant effect on visitation to zoo ( $P < 0.05$ ). A sizeable number of the respondents called for the resuscitation of the Agodi gardens. It is hoped that this study would contribute to the body of knowledge that would ultimately result in a management plan for the purpose of effective management of the zoo. This is for it to regain its past glory and for better development to attain standard recreationist requirement.

*Keywords:* Recreation, Potentials, Agodi gardens.

### INTRODUCTION

Whatever be the reasons behind the creation of zoological gardens (zoos) in our society, the basis of such establishment primarily, is to introduce to our urban population (who do not have the opportunity to visit National parks or Game reserves) wild animals that exist around us. Such introduction awakens interest in and appreciation of nature, and solidifies the relation of co-existence between man and wild animals.

The idea of zoo keeping started in the ancient times. Then, zoos and park-lands were either associated with royalty or established by feudal lords for the purpose of protecting their sport and excluding people outside their immediate social circle (Chambers Encyclopaedia, 1970; Lasdun, 1991 quoted by Falade, 1994). With increasing public interest in natural history, zoos provide real, close-up visual and sensual opportunities for the general public to appreciate the world's biological riches (Encyclopaedia Britannica, 1984). The management of wildlife in zoos and gardens is an ex-situ form of conservation (IUCN-UNEP-WWF, 1980). In Nigeria, there are about 13 zoological gardens (Table1).

The wide and varied objectives of modern zoo management are in agreement with broad National objectives for wildlife conservation in Nigeria, viz: preservation of natural heritage, conservation for tourism and recreation, and utilisation for food.

**Table 1: List of Zoological gardens in Nigeria**

SN	NAME OF ZOO	OWNERSHIP	YEAR FOUNDED
1.	University of Ibadan zoo	University of Ibadan	1948
2.	Obafemi Awolowo University	Biological Gardens	Obafemi Awolowo University Ile-Ife 1968
3.	University of Nigeria, zoo	UNN, Nsukka	1972
4.	Ahmadu Bello University zoo	ABU, Zaria	1967
5.	Agodi Gardens Ibadan.	Oyo State Government	1967
6.	Kano zoo garden	Kano State Government	1970
7.	University of Ilorin zoo	University of Ilorin	NA
8.	Jos zoo	Federal Government of Nigeria	NA
9.	Calabar zoo	Cross River State Government	1971
10.	Zoo Park, Port-Harcourt	Rivers State Government	NA
11.	Biological Garden Enugu	Enugu State Government	1971
12.	Ogba zoo, Benin, City	Edo State Government	1980
13.	Ikogosi zoo	Ondo State Government	1988

Source: Omeni (1992).

\* NA = Not available.

The positive contributions of zoos to national development and conservation cannot be over-emphasised. Zoological gardens have long served as places of relaxation and entertainment for the overstrained inhabitants of the urban areas. During festive seasons, Nigerians troop in multitudes to zoological gardens as a form of recreation. During 1967 and 1968, 6,216 visitors were recorded at Agodi gardens (M.A.N.R., 1968). Zoos can be important centres of biological research, especially in the area of drug testing and vaccine production (Harrison and Roth, 1970). Zoos also serve as centres for the study of animals including such aspects as comparative anatomy, pathology, reproduction and behaviour (Encyclopaedia Britannica, 1984). They also stand as an efficient 'classroom for natural resources conservation education-such that people can be convinced on the need to conserve our natural heritage - wildlife, forest, etc. In addition to the role of zoos as wild animal sanctuary, they also serve as reserves where species that are endangered in their natural habitat can be bred in captivity (and subsequently re-introduced into the wild) over generations with a view to preserving the species. Zoos can also contribute a lot towards the domestication of wildlife species with a view to reducing the pressure on wild populations of those species as well as augmenting protein production.

There is tremendous need for such centres to be many in a place like Ibadan with high and dense population. Obateru (1981) gave the minimum number of outdoor recreational areas required in Ibadan, and the number available as at 1981 (Table 2). This is a pointer to the fact that the resuscitation of Agodi gardens is a step in the right direction.

Table 2: Ibadan Outdoor recreational area: minimum number required and number available.

Recreational facilities	Minimum No. Required	No. Available
Children's play ground	500	9
Neighbourhood Play ground	125	1
Neighbourhood park	125	9
District park	31	0
City park	10	2
City Stadium	10	3

Source: Adapted from Obateru, 1981.

The Agodi gardens was a major recreation centre in Ibadan city (Adeyoju 1975) as reflected by the total number of visitors to the centre which grew at about 8 percent per annum between 1971 and 1979 (Durojaiye, 1983). However, the gardens record regular flooding during the rainy season. The zoo section which was a major factor in attracting visitors to the gardens, unfortunately, now exists in the histories of the gardens and the deteriorating animal houses. This was due to the last very serious Ogunpa flood disaster of 1980 (which reportedly swept away some of the animals and destroyed fragile vegetation). Consequently, the number of visitors declined at about 9 per cent / annum from 1979 to 1983 (Durojaiye, 1983).

Since the last flood disaster the only effort made was the building of Usman Arcadia Recreational Centre. This centre was commissioned on the 6<sup>th</sup> April, 1998. However, the restaurant was yet to take off as at December, 1998. This government gesture did not affect the zoo section of the gardens. So far no effort was initiated to monitor ecosystem restoration.

In spite of the neglect, there are periodic visits to the gardens especially during Muslim and Christian festivals (Table 3). If visitor satisfaction index is to be met and the role of preservation is to be meaningful, management must have baseline data to rely on.

Table 3: Monthly data of visitors recorded at Agodi Gardens between February 1995 - November, 1998.

	Jan	Feb.	Mar.	Apr.	May	Jun	Jul	Aug	Sept.	Oct.	Nov.	Dec.	Total
1995	-	1450	750	1850	500	650	250	500	400	1050	2506	680	8250
1996	1200	1500	200	2900	300	1000	200	300	300	600	200	150	8850
1997	500	850	600	4450	100	150	150	100	150	75	60	55	7340
1998	145	112	67	1900	350	500	175	400	775	400	642	-	5466

## METHOD

The study started with a preliminary survey of the area. The point centre quarter method was used for the vegetation survey. All plants above 1m in height were sampled. The site was stratified into three zones and a transect line was chosen randomly in each zone.

The gardens was toured frequently during the study. Animals sighted were noted, while the birds were observed through binoculars and identified using the coloured plates in Elgood (1960).

It should be noted that information on avifauna and wildlife fauna was restricted to casual observation.

Furthermore the vegetation survey did not include non-woody plants as well as herbaceous ground cover since clearing of undergrowth was part of routing management activities.

The three sampling zones fell into three topographic levels (<198.12m above sea level, < 213.36m as 1. And >213.36 as 1.). Consequently soil samples were collected from each zone and analysed in the laboratory.

Additional information were collected from the inhabitants of Ibadan with the use of structured questionnaires. The respondents included civil servants, students, business men, and traders among others.

The chi-square analysis was used to test the relationship between visitation to zoological garden and age; gender; marital status; profession. It was also used to test the relationship between topography and soil nutrient capacity.

## RESULT

A total of 207 individual trees were sampled at 52 sampling points. The frequency distribution of the girth sizes of the trees is as shown in table 4.

The absolute density of the woody plants was found to be 995.02 trees per hectare while the relative densities of the 32 species are as shown in Table 5. *Tectona grandis* had the highest density ( 134.68/ha).

The soil nutrient capacity of Agodi gardens at the different topographical levels is as shown in Table 6. From the statistical analysis, it was observed that topography had no significant effect on the nutrient capacity of the soil ( $p < 0.5$ )(Table 7). This no doubt is due to the protective effect of the luxuriant vegetation of Agodi gardens.

**Table 4: Girth Class of Trees at Agodi Gardens, Ibadan**

No	Girth Class	Frequency
1.	0.05 - 0.03	26
2.	0.31 - 0.05	74
3.	0.56 - 0.80	59
4.	0.81 - 1.05	27
5.	1.06 - 1.30	9
6.	1.31 - 1.55	7
7.	1.56 - 1.80	4
8.	1.81 - 2.05	0
9.	2.06 - 2.30	0
10.	2.31 - 2.55	1
TOTAL		207

No animals remained in the cages. All the animal species sighted (on the free range) during the frequent tours of the gardens, including those sighted by the Agodi garden workers, are as follows - grass cutter (*Thryonomys swinderianus*), giant rat (*Cricetomys gambianus*), crocodile (*Crocodilus spp.*), cobra (*Naja spp.*) straw coloured fruit bat (*Eidolon helvum*), laughing dove (*Stigmatopelia senegalensis*), lizard buzzard (*Kaupifalco monogrammicus*), long - crested Helmet - shrike (*Prionops plumata*), red patas monkey (*Erythrocebus patas*) and squirrel (*Helioscirus gambianus*). Fruit bat, however, was the most abundant single species.

Tables 8 depict the effects of age, gender, marital status and profession on visitation to Agodi gardens, Ibadan ( $p < .05$ ).

Table 5: Relative Densities of Plant Species in Agodi Gardens, Ibadan.

No	Species	Frequency Density	Relative (No/ha)	% Species Composition
1.	<i>Azela africana</i>	2	9.62	0.97
2.	<i>Afromosia alata</i>	4	19.24	1.93
3.	<i>Albizia ferruginea</i>	2	9.62	0.97
4.	<i>Antiaris toxicaria</i>	4	19.24	1.93
5.	<i>Araucaria cunninghamii</i>	2	9.62	0.97
6.	<i>Azadirachta indica</i>	18	86.58	8.70
7.	<i>Callitris spp</i>	2	9.62	0.97
8.	<i>Senna siamea</i>	12	57.72	5.80
9.	<i>Milicia regia</i>	4	19.24	1.93
10.	<i>Cordia millenii</i>	1	4.81	0.48
11.	<i>Cedrela odorata</i>	2	9.62	0.97
12.	<i>Eucalyptus camaldulensis</i>	2	9.62	0.97
13.	<i>E. deglupta</i>	3	14.43	1.45
14.	<i>E. torelliana</i>	15	72.15	7.25
15.	<i>Gliricidia sepium</i>	3	14.43	1.45
16.	<i>Gmelina arborea</i>	16	76.96	7.73
17.	<i>Khaya grandifoliola</i>	8	38.48	3.86
18.	<i>K. Senegalensis</i>	23	110.63	11.11
19.	<i>Lagerstromia tomentosa</i>	1	4.81	0.48
20.	<i>Malancata novolis</i>	10	48.10	4.83
21.	<i>Millettia thonningii</i>	1	4.81	4.83
22.	<i>Nesogordonia papaverifera</i>	4	19.24	1.93
23.	<i>Newbouldia laevis</i>	1	4.81	0.48
24.	<i>Pinus Caribaea</i>	4	19.24	1.93
25.	<i>Piptadeniastrum africanum</i>	9	43.29	4.35
26.	<i>Ricinodendron heudelotii</i>	2	9.62	0.97
27.	<i>Sterculia rhinopetala</i>	4	19.24	1.93
28.	<i>Tectona grandis</i>	28	134.68	13.53
29.	<i>Terminalia cartapa</i>	1	4.81	0.48
30.	<i>T. Superba</i>	3	14.43	1.45
31.	<i>Treculia africana</i>	12	57.72	5.80
32.	<i>Triplochyton scleroxylon</i>	4	19.24	1.93

**Table 6: Soil Nutrient capacity of Agodi Gardens (0 - 15 Depth).**

Chemical Element	Sample Description		
	<198.12masl.	<213.36masl.	>213.36masl.
pH (H <sub>2</sub> O)	6.2	5.3	5.8
pH(kcl)	6.6	5.7	6.2
Nitrate (mg/g)	3.08	2.48	3.24
P(ppm)	1.15	0.70	1.85
k(meg/100g)	0.14	0.16	0.15
Na (meg/100g)	0.19	0.17	0.19
Mg meg/100g	0.57	0.58	0.72
Ca meg/100g	2.69	3.74	4.47

**Table 7: Chi-square Analysis of Relationship between soil Nutrient and Topography**

Characteristic	X <sup>2</sup> cal. value	X <sup>2</sup> tab value	df.	Decision
Topography	0.893	23.7	14	NS

P<0.05, N.S. = Not Significant, df = degree of freedom.

**Table 8: Chi-square Analysis of the effects of Age, Gender, Marital status, and Profession on visitation to Zoological Garden.**

Characteristics	X <sup>2</sup> calc. Value	X <sup>2</sup> tab. Value	df.	Disicion
Age	6.376	7.815	3	NS
Gender	0.086	3.841	1	NS
Marital Status	11.133	3.841	1	S
Profession	34.883	11070	5	S

P<0.05, N.S. = Not Significant, S = Signifacant, df. = degree of freedom.

Awareness of and preference for zoo/recreation centres is as outlined in Table 10. More than 70% of the respondents were aware of the existence of Agodi gardens, while 35.1% preferred zoo to other recreation centres. The comments passed by respondents on the Agodi gardens are shown in table 10. A greater percentage of them called for the rehabilitation of the Zoological section of the Agodi Gardens. The respondents' frequency of recreation outing, features of interest/dislike in a zoo and animals of interest are presented in Tables 11, 12 and 13 respectively.

Table 9: Awareness of and respondents' preference for zoo/recreation centres.

Awareness of and respondents preferences for zoo/recreation centre.		Frequency Distribution	
Variables		No of respondents	%
Awareness of the existence of.	Agodi Gardens	160	72.1
	University of Ibadan zoo	198	98.2
Prefer zoo to other recreation centres	Yes	78	35.1
	No	144	64.9

Table 10: Visitation to Agodi Gardens

Respondents that have visited Agodi Gardens before, and comments		Frequency Distribution			
Variables		No of Respondents	%		
Visited Agodi Zoological Gardens	YES	96	43.2		
	NO	126	56.8		
M O M E N T S O F A G O D I G A R D E N S	Y E S	For Scientific Study / Education	12	5.4	
		For revenue generation	18	8.1	
	N O	For recreation	96	43.2	
		For employment opportunity/manpower development in zoo management	6	2.7	
	C O M M U N I T Y	S U G G E S T I O N S	To reduce pressure on University of Ibadan zoo	6	2.7
			More accessible than UI zoo (more central)	12	5.4
	R E H A B I L I T A T I O N	O P I N I O N S	It will encourage truancy of pupils/students	6	2.7
			Concentrate on UI Zoo	6	2.7
	S O F A G O D I G A R D E N S	A D V I C E S	Use the land for poultry or some other things	6	2.7
			No comment	84	37.8

Table II: Frequency of Recreation outing (Zoo/Amusement Park)

RESPONDENTS FREQUENCY OF RECREATION OUTING			FREQUENCY DISTRIBUTION	
VARIABLES			No. of Respondents	%
V	Often		12	5.4
I	Once in a while		150	67.6
S	Hardly ever		60	27.0
I	Visitation	Yes	102	45.9
T	outside festive periods	No	120	54.1
A	Set aside	Yes	66	29.7
T	money time for recreation	No	150	67.6
		Abstention	6	2.7
O	Visit one	Yes	156	70.3
N	recreation centre at a single outing	No	60	27.0
		Abstention	6	2.7

**Table 12:** Features of Interest/dislike in a zoo or recreation centre (or features expected in a rehabilitated Agodi Gardens).

ACTIVITY/ DEMANDS OF RESPONDENTS Variables		FREQUENCY DISTRIBUTION	
		No. of Respondents	%
FEATURES OF INTEREST	Snake Section	6	2.7
	Call of animals	6	2.7
	Aesthetic appeal (Cool, serene, colourful scenery)	18	8.1
	Orderly display of animal species	6	2.7
	Recreational facilities (swing and others)	12	5.4
	Good management	6	2.7
	Scarcity of animals on display	12	5.4
FEATURES OF DISLIKE	Rowdiness/noise	12	5.4
	Untidiness/improper care/irritating odour	24	10.8
	Poor maintenance of facilities	6	2.7
	Inadequate feeding of animals	12	5.4
	Swimming pool (many get drowned)	6	2.7
	Snake section	6	2.7
	Merry-go-round	6	2.7

**Table 13: Animal species of interest to the respondents in a rehabilitated Agodi Gardens**

Animals species of interest to respondents in a rehabilitated Agodi Gardens	Frequency distribution	
	No of respondents	%
Animal species		
Lion	114	51.4
Elephant	42	18.9
Snakes	36	16.2
Chimpanzee	24	10.8
Gorilla	36	16.2
Buffalo	6	2.7
Monkeys	60	27.0
Tigers	30	13.5
Hycna	12	5.4
Leopard	24	10.8
Hippopotamus	18	8.1
Birds	36	16.2
Reptiles	12	5.4
Giraffe	12	5.4
Scorpion	6	2.7
Sea horse	6	2.7
All animals	30	13.5

The statistical analysis indicates that only marital status and profession had significant effects on visitation to the zoo ( $p < 0.05$ ).

## DISCUSSION

The vegetation cover in Agodi Gardens could be described as a high density forest.. This forest provides a cool, quiet and serene environment for the visitors. It also performs the important role of water-shed and stream conservation. The result of the soil chemical analysis indicates that the soil of the garden is generally acidic, containing low nutrient reserves. This agrees with Ogunkunle (1995) who declares that Nigerian soils are principally dominated by low activity clay. This is because of their limitation which includes acidity and Aluminium toxicity, low nutrient reserves, nutrient imbalance and multiple nutrient deficiencies.

People always wish that the luxuriant forest be cut down and the land handed over for arable agriculture. This, if done, would result in a disaster in that the land would be rendered unproductive within a short period of time due to the above limitations, and the topography of the Agodi gardens soil which encourages erosion. Therefore, there may be no reasonable alternative to leaving the area as reserved.

The majority of those who engaged in zoo visitation were in the age group 18 - 35 years and 36 - 45 years. This represents the period when man is of the highest vigour and able to move about pursuing his interests. However, it was observed that age group had no significant effect on visitation to zoos ( $p < 0.05$ ). The reason behind the observation that marital status had significant effect on zoo visitation may be seen in the fact that a considerable number of those who engaged in zoo visitation did so in response to pressures mounted on them by their wards. Gender had no significant effect on visitation. However, the highest percentage of those who engaged in zoo visitation were males.

It was observed that profession had considerable effect on visitation to zoo ( $p < 0.05$ ). The highest percentage of those who engaged in zoo visitation were students and civil servants. The incidence among the civil servants may be due to the availability of time during festival holidays and annual leave. The high incidence among students is ingrained in youthful exuberance. Despite the fact that the respondents were quite aware of the existence of Agodi gardens, there is need for more powerful advertisement to boost the image of the Agodi gardens.

According to Obateru (1981), the number of recreational areas available in Ibadan is far below the minimum required (Table 2). Thus, the resuscitation of the zoological section of Agodi gardens is a step in the right direction. Furthermore, rehabilitating the zoo section would go a long way in augmenting the revenue generation by the gardens. This, hopefully, would justify the tax payers' money being spent on the gardens. Revenue generated from the gardens so far, as shown in Table 14 is not encouraging. This can however, be improved upon with rehabilitation of the gardens.

**Table 14: Annual Revenue Data of Agodi Gardens (1991 to November 1998)**

YEAR	1991	1992	1993	1994	1995	1996	1997	1998
Plant sales	3660.5	2934.1	4625.5	1251.0	1360.0	NA	No plant sale	3600.0
Gate taking	2481.5	1126.0	1708.0	6796.5	34058.5	NA	27677	73855.0
Total	6142.0	4060.1	6333.5	8047.5	35418.5	NA	27677.5	77455

• 1996 Not available

Among the expected features in a rehabilitated Agodi gardens mentioned by respondents, aesthetic appeal ranked highest followed by the availability of recreational facilities. The respondents disliked untidiness, scarcity of animals on display, irritating odour, rowdiness/noise and the sight of starved animals in a zoo/recreation centre. A good management no doubt would satisfy the interest of the public and eliminate those undesirable features. Presently, the management activities being carried out in the gardens include the sale of tickets at the gate, growing and sale of plant tree seedlings, and security patrol. The gardens is faced with the following problems - lack of electricity, erosion of the water courses, illegal bush burning, illegal hunting (especially, of bats), dumping of refuse and inadequate finance. However, the overriding limitation in the management of the garden is finance.

## CONCLUSION

The results of this study show the recreational potentials of a rehabilitated Agodi Gardens. It is more reasonable to leave the garden as a recreation centre. Converting the gardens to other uses (like arable agriculture) would result in a lot of environmental discomfort to the surrounding population in particular and the inhabitants of Ibadan in general. Granted that a sizeable number of respondents called for the rehabilitation of the garden's zoo, there is no doubt about the fact that it would record a significant number of visitors monthly. Moreso, the majority of the respondents go for recreation once in a while. This zoo, with proper development, adequate funding, skilled personnel and powerful publicity would attract not only local visitors who wish to see African Wildlife (and cannot afford the time and expense of going to the parks) but also foreign visitors.

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