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Visitors' Perception of the Roles of Zoos in Conservation in Three Selected Zoos in South West Nigeria

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Abstract

The Zoo is one of the ex-situ methods for the conservation of endangered wild animals. Also, the roles of zoos in human entertainment can not be overemphasised. This study was therefore carried out to examine visitors' perception of the roles of zoos in wildlife conservation in three Zoos: Federal University of Agriculture Abeokuta Zoo park, University of Ibadan Zoological garden and the Obafemi Awolowo Botanical Garden. The data for the study were collected with a well-structured questionnaire administered to three hundred and five (305) randomly selected respondents. The respondents were made up of 273 visitors and 32 staff members in the three zoos. The Data obtained were analysed using descriptive statistics (percentages, frequency and mean), while the relationship between respondents' demographic characteristics and their perception of the roles of zoos was presented using multiple regressions. The results showed that the majority of the visitors to these zoos were women (51.3%) and the majority of them were in the age range of 16-25 years. Most of the respondents indicated that zoos are important in the conservation of animals (mean=4.47, SD=0.71) and encouraged zoos to increase animal collection (mean=4.39, SD=0.76). The results showed that the staff are concerned about the dignity and welfare of animals in captivity (mean=4.50, SD=0.72). The result showed that there is an association between education (χ^2 = 21.575 p=0.001) and the perceived role of zoos in conservation. The study concluded that an increase in the number of visits to zoos could increase their perception of the roles of zoos in conservation. It is therefore recommended that zoos should provide incentives such as zoo vouchers, gift vouchers and zoo membership benefits that will stimulate visitors' interest in zoos.

Keywords: Zoos, Tourist attraction, Education, Conservation

Introduction

Zoos are places that enable human-animal interaction, they are usually visited by more than 700 million people annually worldwide (Kirchgessner and Sewall, 2015). Zoos are collections of wild animals, usually established in parks or gardens for the study, conservation or display to the public (Oxford University Press, 2018). Zoos have a very long history in ancient Greek and Roman times for keeping wild and exotic animals (Miller *et al.* 2013). Zoos include zoological gardens, biological parks, safari parks, public aquariums, bird parks, reptile parks and insectariums (Catibog-Sinha, 2011).

They are places that help the public to learn by reflecting on the relationships between animals in nature (Carr, 2016). Thus zoos can be seen as choreographed and constructed places for controlled interaction between human and non-human animals, guiding the interaction between the visitors and the captive animals in many concrete, subtle and practical ways (Braverman, 2011). Zoos have the important mission of educating and protecting wildlife (Patrick *et al.*, 2007). Modern zoos can also be said to be an establishment where wild animals or sometimes strange domestic animals are kept for exhibition to which members of the public have access with or without admission charge for more than seven days in any period of twelve consecutive months. (Hosey, 2013).

Zoos are known to be important and popular tourist attractions site around the world (Frost, 2011). There are around 10,000-12,000 zoos in the world and they include zoological gardens, biological parks, safari parks, public aquariums, bird parks, reptile parks and insectariums, out of which there are only around 1,000 public or private owned zoos, with around 600 million visitors annually, that are recognized for their good animal care and involvement in species conservation (Catibog-Sinha, 2011). Zoos are often the last refuges where endangered

animals are kept and bred for the sake of future restocking of the wild (Frost, 2011). A zoological garden is an ex-situ form of conservation where animals are kept in cages or enclosures for exhibition to the public. Zoological gardens exhibit wild animals for aesthetic, educational or research and conservation purposes (Thawait *et al.*, 2014)

Many studies (Falk, 2005; Roe and McConney, 2015; Spooner *et al.,* 2019) have shown that people think of zoos as entertainment centres rather than see their value in the conservation of various species of animals. Although perceived as an entertainment centre, zoos are also appreciated for their part played in education, conservation and research (Puan and Zakaria, 2007; Reade and Waran, 1996). Mason (2011) revealed that the roles of zoos are diverse ranging from educating people about animals, conserving endangered species, safeguarding the welfare of visitors, entertaining visitors to generate revenue, providing visitor facilities such as catering and merchandising, re-introducing captive breeds into the wild and carrying out zoological and veterinary research to improve animal welfare in the wild and in captivity. These responsibilities are very important. For zoos to be accepted in modern society, they need to concentrate primarily on conservation and education before entertainment.

Zoos also promote environmental education as one of their major roles. This is because zoos argue that they have a unique opportunity to provide the public with a chance to link with nature that no other conservation organization can (Conway, 2011; West and Dickie, 2007; Wharton, 2007). This responsibility is perceived to be ever more important owing to the loss of a connection with wildlife by the general public due to the urbanization occurring in many parts of the world. The public's understanding or perception of zoos and their role in education and conservation come directly from the experience of visiting zoos but also from the media (Shaw, 2011).

Understanding whether the public sees zoos as mere entertainment centres despite the emphasis placed by zoos on their conservation involvement would allow zoos to better communicate their achievements. It is important to understand whether the central role of zoos in conservation has trickled down to the public. Therefore, it is necessary to evaluate the roles and effects of the Federal University of Agriculture, Abeokuta, University of Ibadan and Obafemi Awolowo University zoos on conservation. This study was therefore carried out to assess the role of Zoos in conservation**,** determine the perception of visitors on the role of zoos in conservation and establish the relationship between the characteristics of the respondents and their knowledge of conservation.

Materials and Method

Study Area

The data for this study were collected at the Federal University of Agriculture, Abeokuta Zoo Park, Abeokuta, Ogun State, University of Ibadan Zoological Garden, Ibadan, Oyo State and Obafemi Awolowo University Zoological Garden, Ife, Osun State, Nigeria. The University of Ibadan (UI) Zoological Garden is located in Ibadan, Oyo State, Nigeria approximately between Latitude 7°.44'32" N and Longitude 3°.89'47" E. Some of the wildlife species in the UI zoological garden include *Panthera leo* (lions), *Giraffa camelopardalis* (giraffe), *Taurotragus debianus* (eland) *Struthio camelus (*Ostrich), *Crocodylus niloticus* (Crocodile) and Kobus kob *(*kob). Obafemi Awolowo University (OAU) Zoological Garden is located in Ile Ife, Osun State Nigeria and lies on Latitude 7°.44'32" N and Longitude 4°.52'50" E. The zoological garden has several different sections and the animals are put in sections by species. The fauna species found in this Zoo include *Panthera leo (*Lion), *Crocuta crocuta* (Spotted hyena), *Cephalophus maxwelli (*Maxwell duiker), *Papio anubis (*Baboon), *Erythrocebus patas (*Patas Monkey). The vegetation represents an interphase between the tropical rainforest and the derived savannah. The Federal University of Agriculture, Abeokuta (FUNAAB) Zoo Park, is located at Odeda Local Government, Ogun state, Nigeria between Latitude 7°.22'12" N and Longitude 3°.44'66" E. The zoological garden boasts many flora and fauna species. The fauna species found in this Zoo include *Struthio camelus (*Ostrich) *Crocodylus niloticus* (Crocodile), *Python regius* (Royal python), *Cephalophus maxwelli (*Maxwell duiker), *Papio anubis* (Baboon), *Erythrocebus patas (*Patas Monkey), *Cercopithecus mona (*Mona monkey)

Data Collection and Analysis

For data collection, a well-structured questionnaire was administered at the selected zoos. The questionnaire was administered to both the staff and visitors of the zoo during weekdays, weekends and public holidays, to ensure that a wide range of people from different backgrounds was included in the survey. Two hundred and seventy-three (273) questionnaires were distributed in total 98 in FUNAAB Zoo Park, 99 in UI Zoological garden and 76 in OAU Botanical garden), the copies of the questionnaire were filled and retrieved on the spot. The questionnaire is divided into three parts and was designed to address the roles of zoos in the conservation of animal species. The first part was developed to capture the respondents' demographic characteristics, the second part focused on the roles of the zoos in animal species conservation, and the third part was developed to determine the visitor's perception of the zoo and visitation rate. Parts two

and three were measured on five-point Likert scales where respondents were requested to specify their level of agreement or disagreement with the statements under the sections. The scale used was as follows: 5= Strongly Agree (SA), 4= Agree (A), 3=Undecided, 2=Disagree (D) and 1= Strongly Disagree (SD).

The copies of the second set of questionnaire were administered to 31 staff of the zoos; OAU Zoo (7), UI Zoo (6) and FUNAAB Zoo (18).

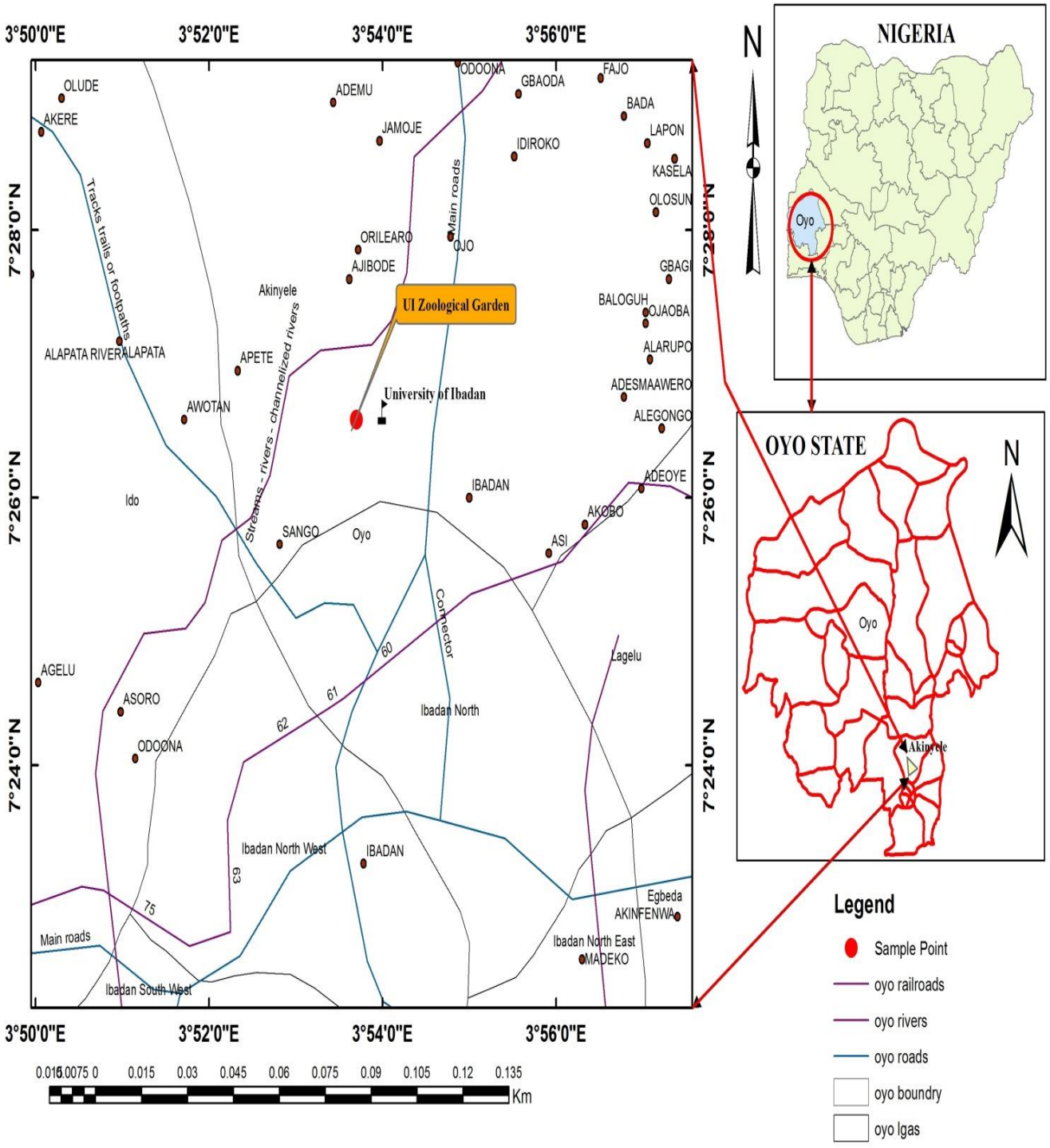

Figure 1: Map of Oyo State showing the University of Ibadan Zoological Garden

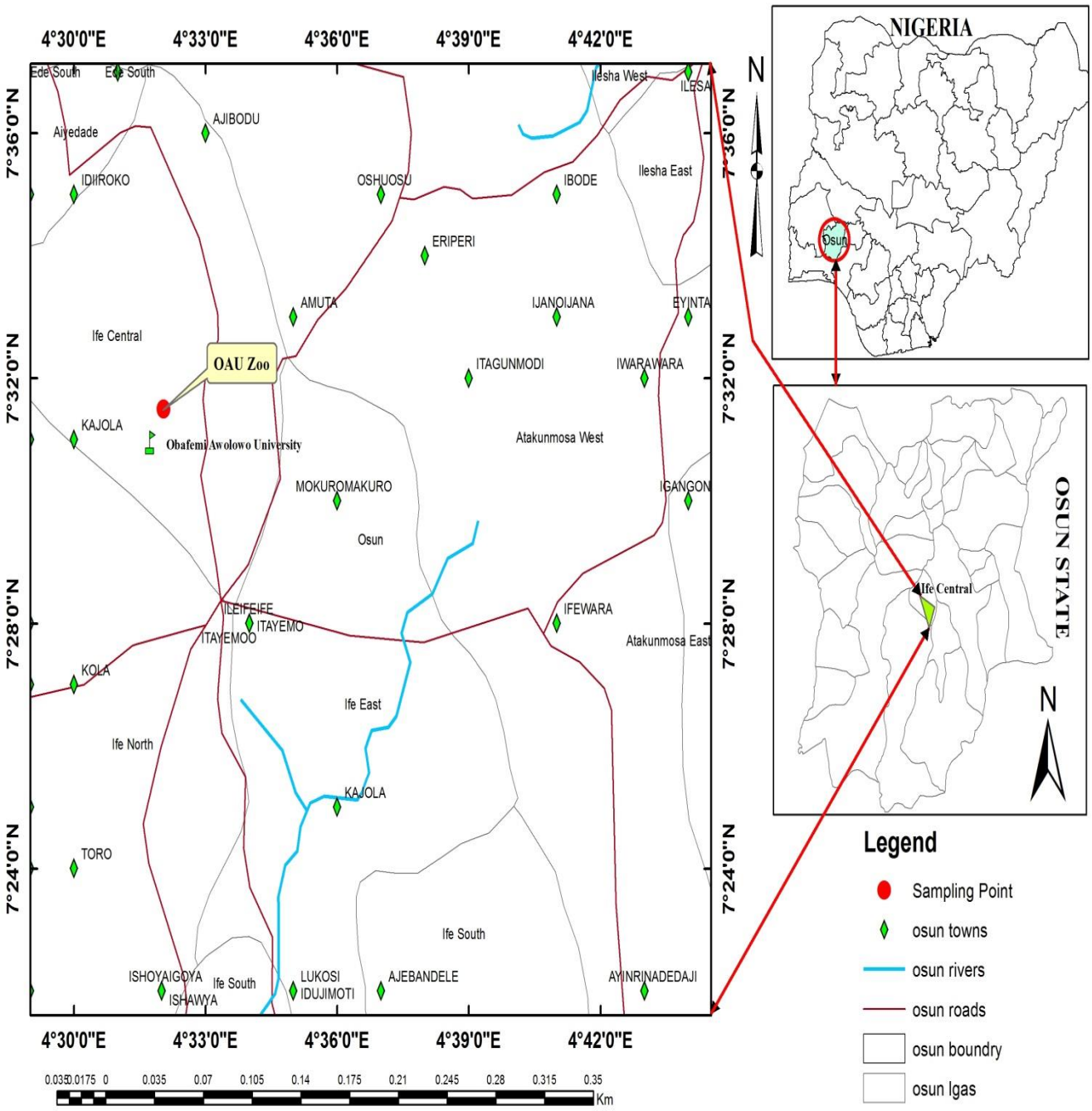

Figure 2: Map of Osun State showing the Obafemi Awolowo Zoological Garden

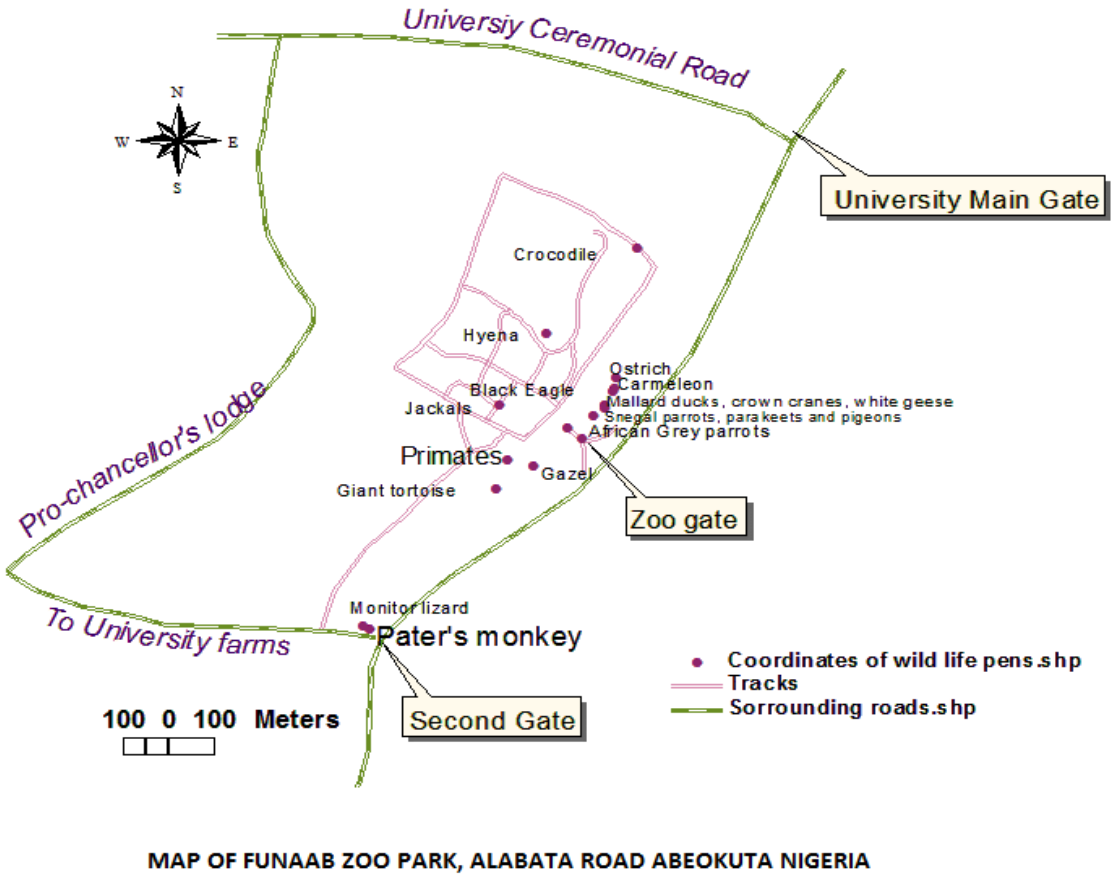

Figure 3: Map of Ogun State showing the Federal University of Abeokuta Zoo Park.

The staff questionnaire is divided into two parts, the first part was developed to capture the staff's demographic characteristics and the second part was on the primary reasons for breeding animals in captivity and their roles in Zoo management.

The independent variables were the visitors' profile which consists of gender, marital status, level of education, religion and occupation. Gender was measured as male=1, female=2. Marital status was measured as single=1, married=2, divorced=3. Religion was measured as Christianity=1, Islam=2, Traditionalist=3. Level of education was measured as non-formal education=1, primary=2, secondary=3, Diploma/ND=4, Bachelor=5, Master=6, PhD=7. Occupation was measured as students =1, self-employed= 2, civil servant =3, private sector=4, unemployed=5. The dependent variable was visitors' perceived knowledge of the role of the zoo in conservation. Data obtained were subjected to descriptive analysis such as tables, percentages and means, while the relationship between respondents' characteristics and their perceived knowledge of the role of zoos in conservation was analysed using the Chisquare analysis.

RESULTS

Over Fifty-one per cent (51.3%) of the respondents were females, while 65.9% were in the age range of 16-25 years. In terms of educational qualification, 52.0% had a Bachelor's degree and 86.4% of the respondents were single. The results also showed that 83.2% of the respondents were Christians and 54.9% were students. The majority of the respondents (98.5%) were Nigerians, while 0.4% were Ghanaians, 0.4% were South Africans, and 0.4% were Cameroonians. Most of the respondents (85.3%) were from the Yoruba ethnic group, 8.8% were Ibos, 2.9% were Hausas, and 2.9% were other tribes. (Table 1)

In terms of the first visit to the zoo, 52.4% of the respondents were first-time visitors, while 47.6% visited the zoo more than once. Also, 27.1% of the respondents visit the zoo once a month, while 26.0% only visit during the festive periods (Table 2). The majority of the respondents are aware of the existence of the zoo through handbills and pamphlets (50.2%) and friends and relatives (33.7%) (Figure 4). The majority (94.9%) of the respondents agreed that zoo establishment is important, while 5.1% disagreed. Also, 65.9% of the respondents indicated that conservation is the main purpose of the establishment of the zoo (Figure 5). Furthermore, 91.2% of the respondents agreed that the conservation of wild animals is important, while 8.8% disagreed that the zoo is important.

Table 1: Demographic characteristics of the respondents in the zoos

Variables N		OAU ZOO (76)	UI ZOO (98)	FUNAAB ZOO (99)	Total (273)
Sex	Male	40 (52.6)	43 (43.9)	50 (50.5)	133 (48.7)
	Female	36 (47.4)	55 (56.1)	49 (49.5)	140 (51.3)
Marital Status	Single	66(86.8)	85 (86.7)	85 (85.9)	236 (86.4)
	Married	10 (13.2)	13 (13.3)	13 (13.1)	36 (13.2)
	Divorced	-	-	1 (1.0)	1 (0.4)
Age	16-25 years	48 (63.1)	63 (64.3)	69 (69.7)	180 (65.9)
	26-35 years	18 (23.7)	26 26.5)	20 (20.2)	64 (23.4)
	36-45 years	6 (7.9)	8 (8.2)	6 (6.1)	20 (7.3)
	46-55 years	2 (2.8)	1 (1.0)	4 (4.0)	7 (2.6)
	56years above	2 (2.8)	-	-	2 (0.7)
Occupation	Students	42 (55.3)	52 (53.1)	56 (56.6)	150 (54.9)
	Civil servant	6 (7.9)	10 (10.2)	2 (2.0)	18 (6.6)
	Farmer	1 (1.3)	-	2 (2.0)	3 (1.1)
	Artisan	17 (22.4)	16 (16.3)	22 (22.2)	55 (21.4)
	Teaching/lecturing	7 (9.2)	23 (23.5)	7 (7.1)	55 (21.4)
	Unemployed	3 (3.9)	2 (2.0)	5 (5.1)	10 (3.7)
Religion	Christianity	64 (84.2)	76 (77.6)	87 (87.9)	227 (83.2)
	Islam	10 (13.2)	21 (21.4)	11 (11.1)	42 (15.4)
	Traditional	2 (2.8)	-	2 (2.0)	4 (1.5)
Education	No formal education	2 (2.8)	1 (1.0)	1 (1.0)	4 (1.5)
	Primary school	5 (6.6)	1 (1.0)	2 (2.0)	8 (2.9)
	Secondary school	11 (14.5)	18 (18.4)	14 (14.1)	43 (15.8)
	Diploma /NCE	12 (15.8)	13 (13.3)	19 (19.2)	44 (16.1)
	Bachelor /HND	33 (43.4)	59 (60.2)	50 (50.5)	142 (52.0)
	Masters /PhD	12 (15.8)	6 (6.1)	14 (14.1)	32 (11.7)
Nationality	Nigerian	75 (98.7)	97 (99.0)	98 (99.0)	270 (98.5)
	Ghanaian	-	-	1 (1.0)	1 (0.4)
	South African	-	1 (1.0)	-	1 (0.4)
	Cameroonian	1 (1.3)	-	-	1 (0.4)
Tribe	Yoruba	67 (88.2)	89 (90.8)	77 (77.8)	233 (85.3)
	Hausa	2 (2.8)	2 (2.0)	4 (4.0)	8 (2.9)
	Igbo	4 (5.3)	5 (5.1)	15 (15.2)	24 (8.8)
	Others	3 (3.9)	2 (2.0)	3 (3.0)	8 (2.9)
Income	>₦50000	61 (80.3)	87 (88.8)	84 (84.8)	232 (84.9)
	₦51000 - ₦100000	9 (11.8)	5 (5.1)	7 (7.1)	21 (7.7)
	₦101000 - ₦150000	2 (2.8)	4 (4.1)	4 (4.0)	10 (3.7)
	₦151000 - ₦200000	-	-	2 (2.0)	2 (0.7)
	₦201000 - ₦250000	1 (1.3)	-	1 (1.0)	2 (0.7)
	₦251000 – above	3 (3.9)	2 (2.0)	1 (1.0)	6 (2.1)

Table 2: Frequency of visits by the Respondents

Range of Visit	N	Number of visits	N	First visit	N
Once a month	74 (27.1)	One time	128 (46.9)	Yes	143 (52.4)
Quarterly	30 (11.0)	Twice	61 (22.3)	No	130 (47.6)
During festive period	71 (26.0)	Three to five times	36 (13.2)	Total	273 (100)
Weekly	55 (20.1)	More than five times	48 (17.6)		
Occasionally	28 (10.3)	Total	273 (100)		
First time	15 (5.5)				
Total	273 (100)				

Values in parenthesis are percentages.

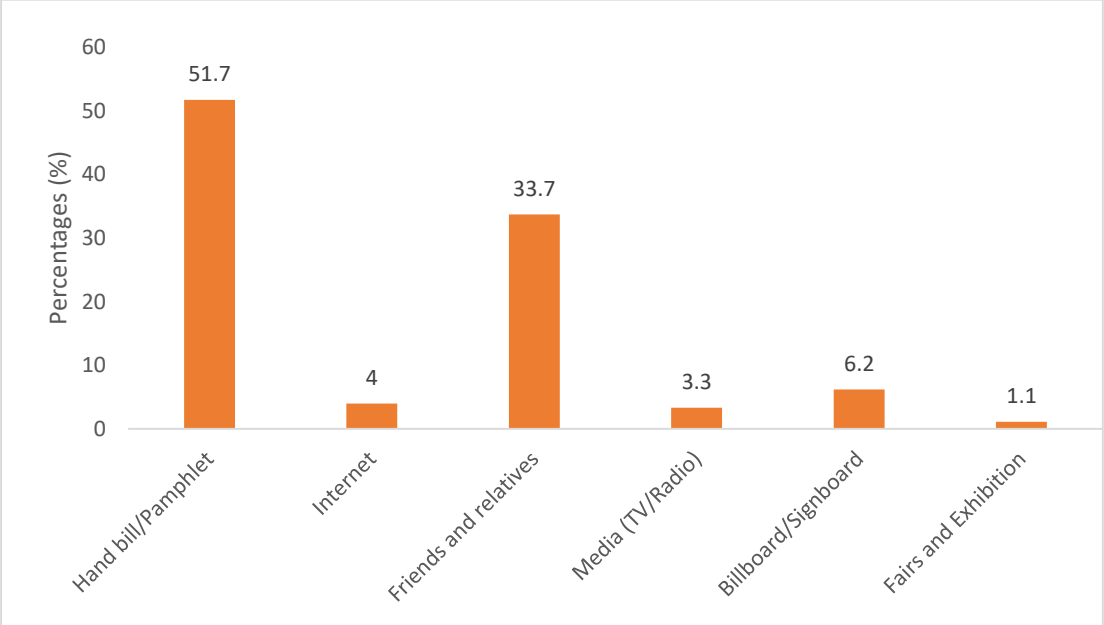

Figure 4: Respondents' source of information about the zoo

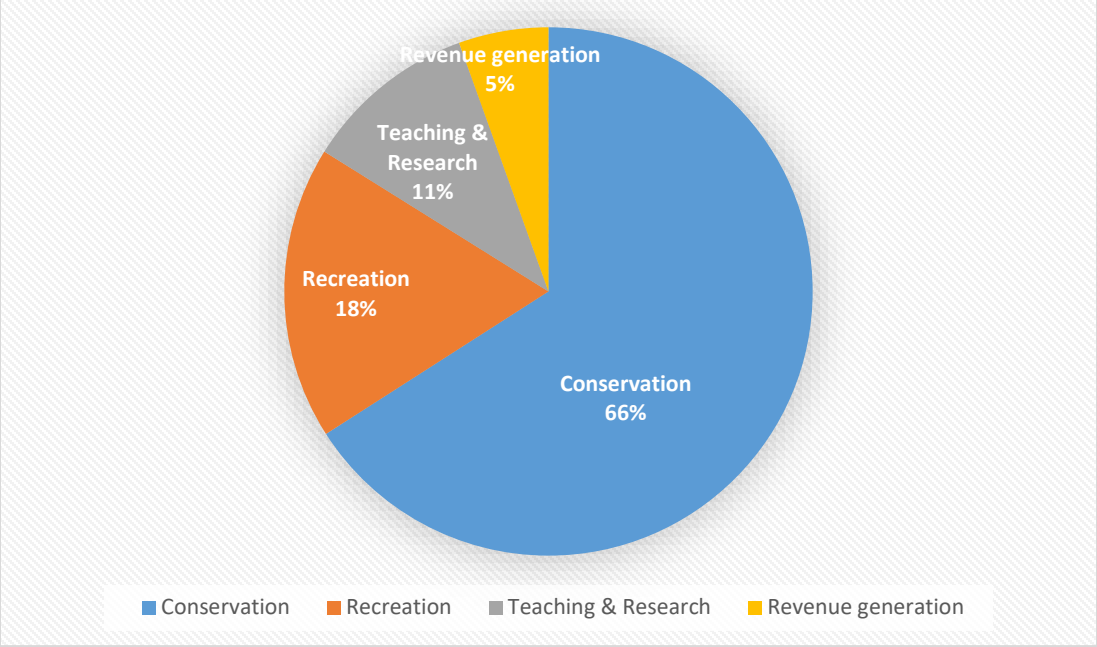

Figure 5: Respondents' perception of the purpose of the zoo

In terms of conservation awareness, 59.7% agreed that zoos are creating enough conservation awareness. Also, 50.9% of the respondents are of the view that conservation is important, 41.0% agreed that conservation is very important, while 8.1% indicated the fact that conservation is not important. Most of the respondents (51.7%) got information about the zoos from handbills and pamphlets, while 33.7% heard about the zoos from friends and relatives who had visited the zoos in times past. In terms of medium for creating conservation awareness in zoos, 68.8% of the respondents opined that media and advertisement can be used to create more awareness of the conservation roles of zoos. Also, 11.7% indicated that public enlightenment can be used in creating more awareness of conservation in zoos. Other suggestions include the exhibition of more animals in the zoos (9.9 %), internet advertisement (2.9%) and cheaper gate fees from visitors (1.5%), (Figure 8).

The means and standard deviations of the respondents' perception of the zoos are presented in Table 3.

The mean ranges from 3.29 to 4.57 with the highest level of importance attached to the need for the Zoo owners to be encouraged to increase animal collection (mean= 4.47, SD=0.71), followed by the need for management to improve their conservation awareness (mean=4.41, SD=0.84), the need for zoos to increase animal collection (mean=4.39, SD=0.76) and the need to take conservation serious as it may be the only means to conserving wild animals (mean=4.39, SD=0.83). Table 4 shows the result of the chi-square analysis of the relationship between the socio-economic factors of the respondents and the perceived role of zoos in conservation. The result shows that there is an association between education (χ^2 = 21.575 p=0.001) and the perceived role of zoos in conservation.

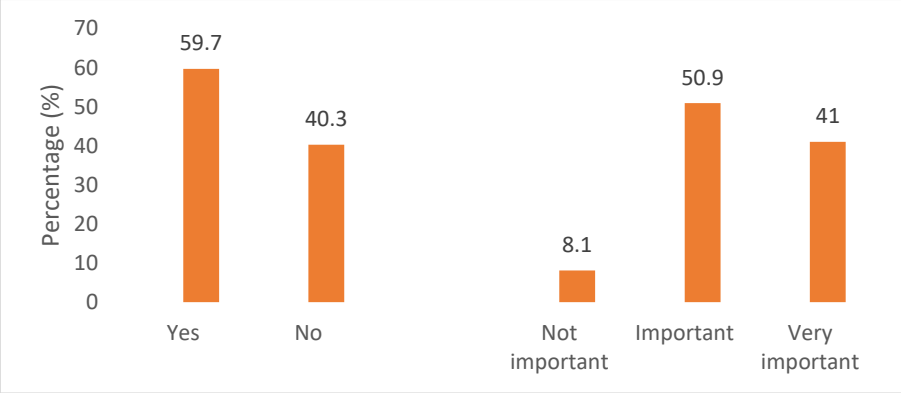

Figure 6: Respondents' perception of conservation awareness and view of conservation issues

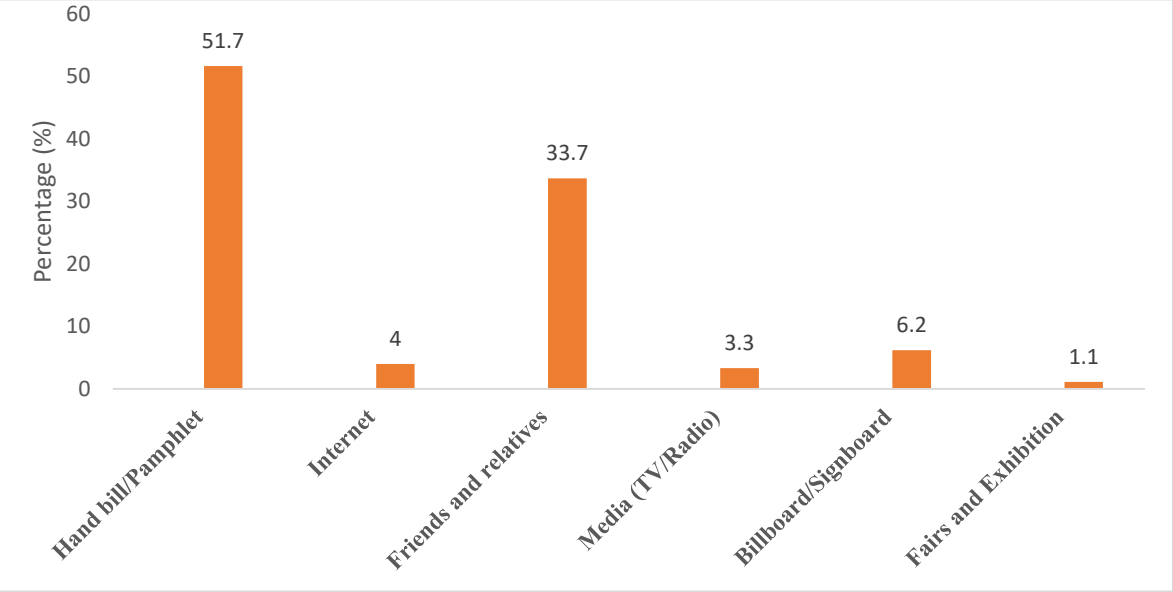

Figure 7: Respondents' source of information about the zoos

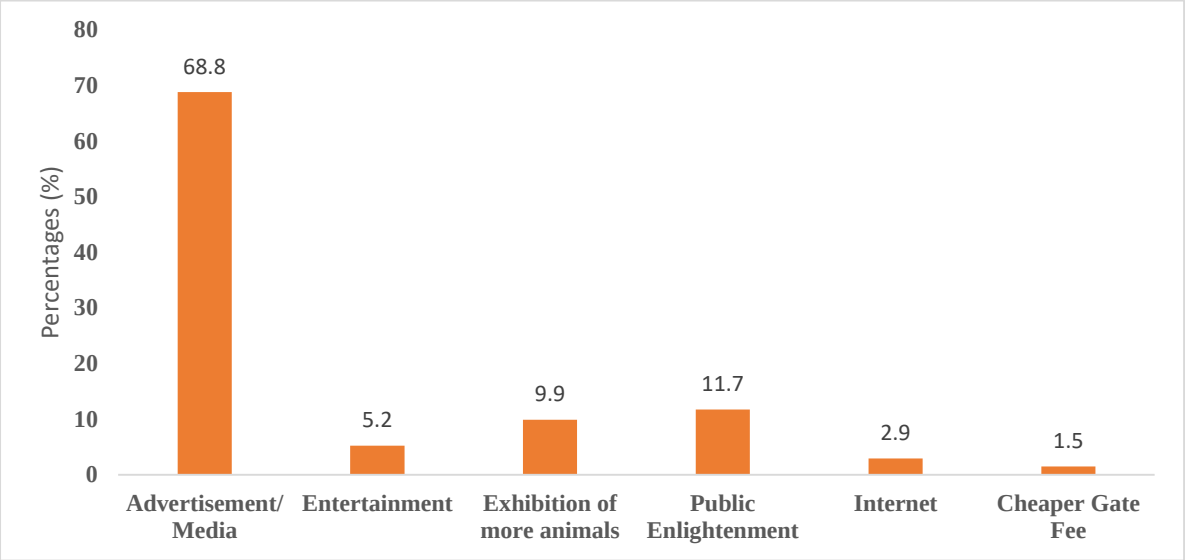

Figure 8: Ways of creating awareness by the zoo

Table 3 Perception of Respondents about the Zoo

Perception Questions	Mean	SD
Willingness to contribute to the conservation of animals	3.90	1.05
Willingness to join the zoo conservation club	3.29	1.20
Willingness to visit the zoo again	4.19	0.97
Visitors' interest in watching zoo animals	4.38	0.72
I have learnt new things about zoos and conservation	4.13	0.93
Wild animals are important	4.36	0.79
Zoos should be encouraged to increase animal collection	4.39	0.76
This zoo often enlightens on conservation during the visit	3.97	0.92
This zoo rarely talks about conservation during the visit	3.18	1.30
This zoo has a large proportion of threatened animals	3.19	1.14
This zoo has a large proportion of endangered animals	3.25	1.18
This zoo belongs to one or more conservation organizations	3.30	1.12
This zoo has enough facilities to safeguard animal species in their collection	3.62	1.03
This zoo is much more concerned about leisure and recreation	3.55	1.08
The conservation work carried out by this zoo is satisfactory	3.62	1.04
My conservation experience is enriched in this zoo	3.84	0.99
Protection of animals in the zoo is important	4.31	0.90
Protection of animals in the zoo will help prevent the disappearance of these animals	4.37	0.95
Zoos are important in the conservation of animals	4.47	0.71
Conservation awareness should be encouraged	4.41	0.84
Conservation should be taken seriously as the only chance to save wild animals	4.39	0.83
More Zoos should be established	4.34	0.93
The zoo environment is unique and natural	4.10	0.90
Satisfied with information on the animals provided by the zoo.	4.06	0.93
Satisfaction with what was seen in the zoo	3.77	1.16
This zoo does not have enough wild animals	3.86	1.23

SD –Standard deviation

Table 4: Relationship between the socio-economic characteristics of the respondents and perceived role of zoos in conservation.

Variable	χ^2	*df*	*P-Value*	Decision
Gender	0.010	1	0.922	NS
Marital Status	0.533	2	0.766	NS
Religion	0.604	3	0.896	NS
Education	21.575	6	0.001*	S
Occupation	6.239	8	0.991	NS

P < 0.01 χ^2 – Chisquare df - Degree of Freedom S – Significance

Demographic Characteristics of the staff in the Zoos

A total of thirty-two staff respondents were interviewed in the three Zoos. Most of the zoo staff (81.3%) were males, and 18.8% were females. The majority (53.1%) had Bachelor/HND degree, 21.9% of the respondents had secondary education, 18.8% had a Diploma/NCE education, and 6.3% had a Master/PhD degree. The results of the marital status revealed that 71.9% were married while 28.1% were single. The results also showed that 78.1% of the respondents were Christians, 18.8% practised Islam, and 3.1% were traditionalists. The majority (68.8%) of the zoo staff were Yoruba, 15.6% were from other tribes, 12.5% were Ibos, and 3.1% were Hausas. The majority of the staff (46.9%) were in the age range of 36-45 years, 28.1% were between 26-35 years, 15.6% were between 16-25 years, while 9.4% were above 46 years old. The result also revealed that the majority (62.5%) of the staff were Technical staffs, 15.6% Accounting staff, 15.6% Administrative staff, and 6.25% were IT students. (Table 5).

Table 5: Demographic characteristics of staff in the zoos

Variables		OAU ZOO	UI ZOO	FUNAAB ZOO	Total
Sex	Male	6 (18.8)	6 (18.8)	14 (43.8)	26 (83.9)
	Female	1 (3.6)	-	4 (12.5)	5 (16.1)
Age	16-25	-	1 (3.1)	3 (9.4)	5 (15.6)
	26-35	1 (3.1)	2 (6.3)	6 (18.6)	9 (28.1)
	36-45	4 (12.5)	3 (9.4)	8 (25)	15 (46.9)
	46-Above	2 (6.3)	-	1 (3.1)	3 (9.4)
Marital Status	Single	-	2 (6.3)	6 (18.6)	9 (28.1)
	Married	7 (21.9)	4 (12.5)	12 (37.5)	23 (71.9)
Tribe	Yoruba	6 (18.6)	4 (12.5)	11 (34.4)	22 (68.8)
	Hausa	-	1 (3.1)	-	1 (3.1)
	Igbo	1 (3.1)	1 (3.1)	2 (6.3)	4 (12.5)
	Others	-	-	5 (15.6)	5 (15.6)
Religion	Christian	4 (12.5)	5 (15.6)	15 (46.9)	25 (78.1)
	Islam	2 (6.3)	1 (3.1)	3 (9.4)	6 (18.8)
	Traditional	1 (3.1)	-	-	1 (3.1)
Post held	Accounting staff	1 (3.1)	1 (3.1)	3 (9.4)	5 (15.6)
	Administrative staff	1 (3.1)	-	4 (12.5)	5 (15.6)
	Technical staff	5 (15.6)	4 (12.5)	11 (34.4)	20 (62.5)
	IT Student	-	2 (6.3)	-	2 (6.25)
Education Level	Secondary certificate	3 (9.4)	1 (3.1)	3 (9.4)	7 (21.9)
	Diploma/NCE	3 (9.4)	2 (6.3)	1 (3.1)	6 (18.8)
	Bachelor/HND	1 (3.1)	3 (9.4)	12 (37.5)	17 (53.1)
	Masters/PhD	-	-	2 (6.3)	2 (6.3)

Staff Perception of Visitors' Experience, Knowledge and Awareness of Conservation

The majority (71.9%) of the staff rated the visitors' experience to be satisfactory, 18.8% average, and 9.4% not satisfactory. Most (65.5%) of the staff rated visitors' knowledge of conservation as average, 21.9% as very low, 6.3% poor, and 6.3% high. Furthermore, 59.4% of the staff rated the awareness of conservation among visitors to be on average, 18.8% very low, 15.6% high and 6.3% as being poor (Table 6).

The results of the relationship between staff perception and their roles in zoo conservation showed a significant relationship with the various zoos, F (1, 30) = 68.672, p = 0.000. The measure of effect R^2 was 0.696 and it infers that the zoos accounted for 70% of the variance in the staff perception of the role of zoos in conservation. The correlation coefficient of the relationship between the respondents' perception and the zoos was high (0.834) and positive. This implies that the more the number of years spent in the zoo, the more knowledgeable the staff are on the conservation roles of zoos. The correlation coefficient R was 0.834 and it shows that the observed and predicted values of the dependent variable had a positive linear association (Table 7).

The result of the relationship between staff perception and the roles of zoos on conservation showed a significant relationship with age, F (2, 29) = 42.563, p = 0.000. The measure of effect R^2 was 0.746 and it infers that age accounted for 75% of the variance in the perception of roles of zoos on conservation in the three zoos. The coefficient of the relationship between the respondents' perception and age was low (0.226) and positive. This indicates that the older the zoo staff are, the more knowledgeable they are about the conservation roles of zoos. The correlation coefficient R was 0.864 and it shows that the perception of the role of the zoo and the age of staff had a positive linear association (Table 7).

The means and standard deviations of the staff perception of the zoo are presented in Table 8. The mean ranges between 0.78 and 4.50 with the highest level of importance attached to the welfare of the animal in captivity (mean= 4.50, SD=0.72), followed by the Zoo being a member of a conservation organization (mean=3.56, SD=.52), the zoo educating visitors to conserve wild animals (mean=3.16, SD=1.65) and the zoo breeding animals in captivity primarily for public viewing (mean=3.00, SD=1.52) (Table 8).

Table 6: Staff Perception of Visitors' Experience, Knowledge and Awareness of Conservation

Visitors Experience	N	Visitors Knowledge	N	Awareness on Conservation	N
Satisfactory	23 (71.9)	Very low	7 (21.9)	Very low	6 (18.8)
Average	6 (18.8)	Average	21 (65.6)	Average	19 (59.4)
Not satisfactory	3 (9.4)	High	2 (6.3)	High	5 (15.6)
Total	32 (100)	Poor	2 (6.3)	Poor	2 (6.3)
		Total	32 (100)	Total	32 (100)

Values in parenthesis are percentages.

Table 7: Staff Perception on the Roles of Zoos on Conservation

Dependent Variables	F (df)	Sig.	Coefficient	R	R^2 (%)
Zoos	F (1, 30) = 68.672	p = 0.000	0.834	0.834	0.696 (70)
Age	F (2, 29) = 42.563	p = 0.000	0.226	0.864	0.746 (75)

***** Significant at 1% (p<0.01)***

Table 8: Staff Responses on the primary reasons for breeding animals in captivity and their roles in the Zoo management

Reasons and staff roles	Mean	SD
Wildlife species conservation	2.97	1.71
Public viewing	3.00	1.52
Educating zoo visitors on the need to conserve wild animals	3.16	1.65
Prevention of wildlife species from extinction	2.41	1.81
Educating the public on threatened species	2.06	1.34
Support conservation projects outside the zoo to conserve wild animals	2.87	1.36
Donations to conservation organizations	2.63	1.13
Breeding mostly endangered animals in the zoo	2.56	1.54
Re-introduction of animals to the wild	0.78	1.18
You rarely re-introduce animals to the wild	3.56	1.32
Membership in any conservation organization	3.56	1.52
Maintenance of the dignity and welfare of animals in captivity	4.50	0.72

SD –Standard deviation

DISCUSSION

From the study, most of the respondents in the zoos were females which was in accordance with the findings of Adetola and Adedire (2018) who reported that the majority of visitors to UI zoo and OAU zoos were females. This may be attributed to the fact that females have an affinity for nature and recreation. Ecofeminist scholars (Jackson, 1993; Ray, 2007; Jackson, 1993; Mies, 1993; Leach; 2007) posited that women are, by their biological relationship to reproduction, more closely linked to nature and nature recreation and also more likely to be the ones responsible for its conservation.

The majority of the respondents were single which was also similar to the findings of Adetola *et al*. (2016) who reported that the majority of the visitors to UI zoo were singles. Also, in a study of three zoos, the University of Ibadan zoological garden, Federal University of Agriculture, Abeokuta Zoo Park and Prof. T.A. Afolayan Wildlife Sanctuary, Federal University of Technology Akure, Ogunjinmi *et al*. (2017) reported that the majority of the visitors were singles. So also, the predominant tribe of the respondents in the zoos was Yoruba. This is because all the zoos in the study areas were in the South-Western part of the country which is the home of the Yorubas and live within the metropolis where the zoos were located. This is in line with Adetola *et al.* (2016) that the majority of the visitors to the University of Ibadan Zoological garden reside within the Ibadan metropolis.

Moreover, the majority of the zoo visitors were students which was in line with the findings of Alarape *et al*. (2015) who reported that 70% of students visited Markurdi Zoological Garden during the period of their study. This is also in line with Ogunjinmi *et al*. (2017) who reported that 61% of the visitors to the University of Ibadan Zoological Garden, Oyo State, Prof. T.A. Afolayan Wildlife Sanctuary, Federal University of Technology, Akure and Federal University of Agriculture, Abeokuta Zoo Park, Abeokuta were students. This could be attributed to the fact that all the zoos visited were owned by Universities and domiciled within the University campus and students are more inclined to recreation and excursion. Furthermore, the majority of the respondents were Christians which contradicts the findings of Omonona and Kayode (2011) who reported that the majority of UI zoo visitors were Muslims. This difference could be attributed to the period of religious festivals during which the study was carried out in the zoos. However, Ogunjinmi *et al.* (2017) also reported that 70.5% of the visitors to the Federal University of Agriculture, Abeokuta Zoo Park, UI Zoo and Prof T. A. Afolayan Wildlife Park were Christians.

This study reveals that the majority of the visitors had tertiary education which was also in agreement with the findings of Adetola *et al*. (2016) who reported that 80.6% of the UI zoo visitors had tertiary education. The study further shows an association between the level of education of the respondents and their perceived role of zoos in conservation. This implies that well-educated respondents believed that zoos plays important role in the conservation of animals. Ogunjinmi *et al.* (2017) indicated that the educated are aware of the importance of zoos and are willing to visit. The study also shows that most of the visitors in the zoos were Nigerians which is also in agreement with the work of Adetola *et al*. (2016) who stated that 98.8% of UI zoo visitors are Nigerians. This indicates less patronage from foreigners.

The study further revealed that the majority of the zoo visitors preferred to visit the zoos once a month which contradicts the findings of Yager *et al*. (2015) who reported that zoo visitors prefer to visit Makurdi Zoological Garden mostly during the festive period. This contrasting view could be a result of the differences in the locations of these zoos. It was observed that most of the visitors were first-timers. Studies (Miller *et al.*,

2013; Clayton *et al.,* 2017; Moss *et al.,* 2017) have shown that repeat visitors retain significantly more conservation information, have more positive attitudes about conservation, and conduct more conservation-related behaviours than visitors who are attending the same zoo for the first time.

The majority of the visitors believed that zoos were established to create awareness of wildlife conservation and that the major role of zoos is conservation. Fabregas *et al.* (2011) reported that the contribution of zoos to conservation has generated growing interest. The visitors further believed that zoo establishment and issues relating to wild animals is important. Studies by Clayton *et al.* (2017) and Jensen *et al.* (2017) suggest zoos create awareness about conservation and prompt visitors to rethink their roles in conservation issues after their visit. Conde *et al*. (2011) stated that the potential for zoos to contribute to conservation is enormous and not a new concept for the zoo community. Bahne, (2015) reported that zoos exist for the sake of human entertainment and they also perform conservational roles.

This study also revealed that the majority of the respondents are willing to contribute to the conservation of animals after their visit and have also learnt new things about zoos and conservation. This is in line with the study by Godinez and Fernandez (2019) that visitors are willing to contribute towards conservation after their visit. Most of the visitors also believed that zoos are important in the conservation of animals. Furthermore, the study revealed that the influence of the respondents' visitation to zoos affects their perception of the roles of zoos on conservation, which was similar to the findings of Adetola and Adedire (2018) that frequent visit to the UI and OAU zoos by visitors increases their knowledge on the conservation roles of the zoos.

Some studies (Jensen, 2014; Moss *et al*., 2015) have also reported that visitors' conservation knowledge and interest persisted after a zoo visit. This study revealed that larger portions of the zoo staff were males. This could be attributed to the fact that zoo work is strenuous. The majority of the zoo staff rated the visitors' experience in the zoos as satisfactory, while they rated visitors' knowledge and awareness of conservation as average. Zoos fulfil their roles by providing educational experience (Roe and McConney, 2015), connecting with visitors based on their prior knowledge (Dove and Byrne, 2014) and providing entertaining or enjoyable experiences (Spooner *et al.,* 2019). Furthermore, most zoo staff believe that animals in captivity breed freely in captivity and not that the zoos are actively and practically involved in breeding endangered species. Conde *et al. (*2011) and Fa *et al. (*2011) reported that captive breeding can be costly and may therefore be a misallocation of the essential fund. However, Conway (2011) noted that each zoo may make a larger conservation contribution by specializing in breeding a few at-risk targeted species, rather than aiming to increase its species diversity, as specialization increases breeding success. He reported further that captive breeding in zoos may be the only short-term practical conservation option for species confined to dwindling habitats. Coonan *et al*., (2010) indicated that some species have benefited from the expertise of the zoo community regarding captive breeding and reintroductions after the population plummeted very low.

Conclusion and Recommendations

An increase in the number of visits to zoos by the visitors increased their perception of the roles of zoos in conservation. The less frequent the visitors are to the zoos, the lesser their perception of the roles of zoos in conservation. Most of the visitors saw the zoos as recreation and wildlife conservation centres. The level of awareness about conservation among the visitors was high and they viewed conservation as an important issue.

Most of the respondents obtained information about the zoo through handbills/pamphlets and friends and also advised the zoo to create more awareness about the zoo through advertisements and media publicity. The more the number of years spent in the zoo, the more knowledgeable the staffs are on the conservation roles of zoos. The older the zoo staffs are, the more knowledgeable they are about the conservation roles of zoos.

It is therefore recommended that incentives such as zoo vouchers, gift vouchers, zoo membership benefits, and educational and informative programs especially those involving children that will stimulate visitors' interest in zoos should be provided. Also, there should be the creation of more zoos aimed at the conservation of threatened and endangered animals. Zoos should also focus more on enlightening the visitors and encourage them to be part of conservation clubs.

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