

## ATTITUDE OF RURAL DWELLERS TOWARDS BIODIVERSITY CONSERVATION IN ONIGAMBARI FOREST RESERVE OF OYO STATE, NIGERIA

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### Abstract

*This paper examined the attitude of rural dwellers to biodiversity conservation in Onigambari forest reserve, Ibadan Oyo State. A multi-sampling technique was used to select 120 respondents from the study area. Data were collected with the aid of interview schedule and analyzed with both descriptive and inferential analysis. The distribution showed that majority were male (65.8%), married (63.3%) with an average household size of  $7 \pm 4.3$  persons. Most (56.7%) of the respondents recorded low level of knowledge on biodiversity conservation, most (78.3%) manifested an unfavourable attitude towards biodiversity conservation. Biodiversity conservation measures was also low (70.0%) among rural dwellers. Age ( $r = 0.451$ ), years of education ( $r = 0.186$ ), household size ( $r = 0.483$ ) and knowledge of biodiversity conservation ( $r = 0.331$ ) were significantly related with attitude towards biodiversity conservation  $\alpha_{0.05}$ . The study concluded that rural dwellers around Onigambari forest reserve had a negative attitude towards biodiversity conservation. The study therefore recommends the need for campaigns and trainings on sustainable use of natural resources among rural dwellers the rural area by Non-Governmental Organizations, government agencies so as to enhance or improve their knowledge and attitude towards biodiversity conservation.*

**Key Words:** *Biodiversity conservation, Rural dwellers, Attitude*

### Introduction

The term biodiversity has progressed to becoming a powerful symbol for the full richness of life on earth and is now a major driving force behind efforts to reform land management and development practices worldwide and to establish a more harmonious relationship between people and nature (Noss and Cooperrider, 1994; Russell and Holmes,

2015). Biodiversity is a very popular approach in environmental science and has long remained a central theme in ecology. In recent years, many countries have established biological monitoring programs in different ecosystems to assess their state and or to draw inference about changes in state over time (Yoccoz *et al.*, 2001).

Biodiversity has been ascribed as one of the life blood of sustainable development and green economies. However, it is being depleted at an unprecedented rate as human populations and their levels of consumption increases. In addition, changes in climatic parameters such as temperature, rainfall and humidity have continued to expand the ecosystem into new areas thus resulting in extinction and endangered species (Sala *et al.*, 2000). Stuart *et al.* (2000) found that changes in biodiversity and its interaction with the ecosystem poses negative effect on cultural, intellectual, aesthetic and spiritual values that are important to a society; in addition to economic impacts related to the reduction of food resources, fuel, structural materials, medicinal or genetic resources as well as abundance of other species that control ecosystem processes, leading to further changes in community composition and vulnerability to invasion.

Furthermore, Azzez and Aluko (2019) noted that rural dwellers living around forests zones or at forest margins are highly dependent on resources for their livelihood and as a result, they tend to exploit. With this continued exploitation, biodiversity species stands to be endangered if conservative measures are not put in place. Also, has been observed that inhabitants within Onigambari forest reserve, consciously or unconsciously exploit both flora and fauna without knowing the implication or consequences. Thus, it is unclear if dwellers within or around the reserve have better understanding of biodiversity conservation measures as no study has been able to ascertain this assertion.

It is noteworthy that better understanding and favourable

dispositions towards environmental consciousness is key to biodiversity conservation. This is evident as various scholars have shown links between attitudes of local people and conservation of nature (Mehta and Kellert, 1998; Walpole and Goodwin, 2001; Sah and Heinen, 2001; Ninan, 2012). However, most of these studies have been carried out in the developed nation with little or no emphasis on developing nation like Nigeria. Therefore, this paper assessed the attitudes of dwellers residing within or around reserves towards biodiversity conservation. The collected dataset is unique for Nigeria considering the unsustainable use of natural resources and a dearth of information on biodiversity conservation.

#### ***Objectives of the Study***

1. Identify socio economic characteristics of rural dwellers in Onigambari forest reserve
2. Examine the level of knowledge of biodiversity conservation among rural dwellers in Onigambari forest reserve
3. Determine the level of attitude of rural dwellers towards biodiversity conservation Onigambari forest reserve
4. Ascertain the level of biodiversity conservation measures among rural dwellers in Onigambari forest reserve.

#### ***Study Area***

The study was conducted in villages around Onigambari Forest Reserve located in Oluyole Local Government Area of Oyo state. Onigambari is one of the early forest reserves in the state and it is divided into 5 series namely: Onigambari, Busogboro, Onipe, Olonde and Mamu. Onigambari forest reserve is a lowland forest. The reserve is located between latitude 7°25' N and longitude 3°50' E. It is situated at the southern part

of Ibadan bounded on the west by River Ona and on the east by the main road of Ibadan to Ijebu-ode. The reserve is bounded by Abanla and Odo-ona settlements in Oluyole Local government area of Oyo state. Both dry and wet season are experienced in the reserve. Dry season lasts for 3 months (December-February). The average annual rainfall is about 1140

mm and average annual temperature is about 26.4°C (80°F). These areas are along the same equatorial belt with the study area (Salawu, 2002). The target populations of the study are the rural dwellers in the selected villages around Onigambari Forest Reserve of Oluyole Local Government in Oyo state.

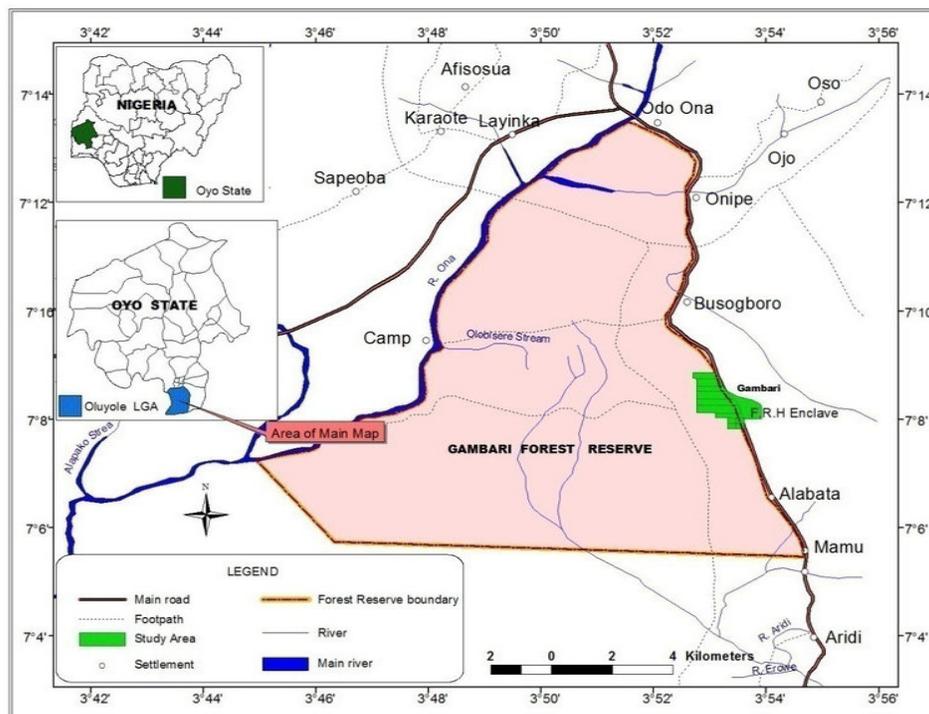


Fig. 1: Map of Onigambari Forest Reserve

**Methodology**

**Data Collection**

Multistage sampling technique was used to select rural dwellers within the study area. From the five (5) series in Onigambari forest reserve, Gambari axis was purposively selected based on proximity to the forest reserve. Also, Gambari axis comprises of eleven villages which are: Aba- Igbagbo, Gbale-Asun, Ajibodu, Lagunju, Akintola, Okeseyi, Akinogbun, Amosun, Olondeige, Oloya and Onipede. . Fifty

percent of the villages in Gambari axis were randomly selected to give six villages namely: Systematic sampling techniques was used to select 25 in Oni-Igbagbo, 19 in Akintola, 16 in Ajibodu, 19 in Lagunju, 29 in Okeseyi and 14 in Oloya. The differences in the number of respondents selected per village are due to the difference in the number of households in these villages. In all 122 respondents were selected and interviewed by means of structured questionnaires in which 120

questionnaires were retrieved at the end of the study.

From a list of eleven knowledge test, knowledge on biodiversity was measured on a two point scale of Yes and no, while the scores of 1, 0 were assigned for correct and incorrect responses, respectively. A composite score of knowledge on biodiversity index was obtained by summing each of the item using the mean criterion, scores within and above mean score of  $4.3 \pm 2.5$  was used to categorize the level of knowledge as high ( $\geq 4.3$ ) and low ( $< 4.3$ ). Attitude of rural dwellers to biodiversity conservation was measured on a 5 points scale of strongly agreed, agree, undecided, disagree and strongly disagree using 10 attitudinal items. Scores of 5, 4, 3, 2, and 1 were assigned for positively worded statements and the reverse for negative worded statements. Altitude on biodiversity index was obtained by summing each of the item. Using the mean as bench mark, scores below were categorized as unfavourable, while within and above mean scores were categorized as favourable attitude. Conservation measures were operationalized on a four point scale of sometimes, rarely and never with scores of 3, 2, 1 and 0 assigned, respectively. Each item was summed to form a composite score of conservative index. A mean score of  $8.4 \pm 3.7$  was obtained and used to categorized into low ( $< 8.4$ ) and high ( $\geq 8.4$ ) level of biodiversity conservative measures.

### **Result and Discussion**

The distribution in Table 1 shows that 65.8% of the respondents were male, while 34.2% were female. This implies that there are more male household heads in the study area. This is in line with the work of Ayad (1997) who reported that

most of household heads are usually male because they are known to be the head of the family except on cases where the male is dead leaving the household heads position for the wife. Also, about 17.5% of the respondents were between the ages of 20-30 years, 23.3% of the respondents are between the ages of 31-40 years, 27.5% of the respondents are between 41-50 years, 23.3% were between 51-60 years while 8.3% are from 61 and above. It can be inferred from the finding that their active age and also they are old enough to state their knowledge about biodiversity. The result also indicated that most (63.3%) of the respondents were married. This shows that respondents in the study area will have additional responsibility to their family. Higher percentage of married people is an indication of more responsible adults in the society.

The educational background of respondents as depicted in Table 1 reveals that majority (89.2%) had one form of formal education or other. This is expected to enhance the understanding of rural dwellers towards biodiversity conservation. Swanson (2008) noted that education enhances individuals' knowledge and attitude towards biodiversity conservation. Also, 65.8% of the respondent had household size of 5-8, 20.0% 1-4 while 14.2% are from 9 above. The mean household size was 7 persons, suggesting a relatively large family size among rural dwellers in Onigambari. Given the importance of households in resource consumption, the relatively large household size could be detrimental to biodiversity conservation as Atiqal-Haq *et al.* (2010) found that households with larger family size tends to exploit more of natural resources.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percentage (%)
Gender		
Male	79	65.8
Female	41	34.2
Total	120	100.0
Age (years)		
20-30	21	17.5
31-40	28	23.4
41-50	33	27.5
51-60	28	23.3
61 above	10	8.3
Marital status		
Single	11	9.2
Married	76	63.3
Divorced	18	15.0
Widow	15	12.5
Total	120	100.0
Education		
0	13	10.8
1-6 (primary)	55	45.9
7-12 (Secondary)	51	42.5
>12 (Tertiary education)	1	0.8
Household (family size)		
1-4	24	20.0
5-8	79	65.8
9 above	17	14.2

**Knowledge of Biodiversity Conservation**

Table 2 reveals that more than half (56.7%) of the respondents recorded low level of knowledge on biodiversity conservation, while 43.3% of the respondents had high level. This suggests

that rural dwellers in the study area are not well informed on biodiversity conservation. This could pose a negative influence on their disposition towards biodiversity conservation as well unsustainable use of forest resources.

Table 2: Level of biodiversity conservation measures

Level	Freq.	%	Maximum value	Minimum value	Mean
Low	68	56.7	8	0	4.3±2.5
High	52	43.3			

**Attitude towards Biodiversity Conservation**

Table 3 reveals that 72.5% of the respondents strongly agreed that conserving biodiversity helps in reducing extinction of flora and fauna. This suggests that proper maintenance will be given to the biodiversity and measures

will be taken to prevent the flora and fauna from exposure to an endangered life which could lead to it extinction. However, 70.0% agreed that activities of biodiversity conservation is a waste of time, 71.7% disagreed that biodiversity conservation improve livelihood. This is an indication that rural dwellers in the

study perceived biodiversity conservation as a strategy that could negatively influence their income generating activities. This is in line with Aluko *et al.* (2015) that rural dwellers around forests area high depend on forest resources for their livelihood. Furthermore, 68.3% disagreed that biodiversity conservation go a long way in ensuring environmental sustainability, while 68.3% agreed that biodiversity conservation is a waste of resources. It can be deduced from this finding that losses of biodiversity are been driven, primarily by unsustainable patterns of resource consumption. This could further pose a negative impact on

biodiversity conservation as previous studies (Sah and Heinen, 2001; Ninan *et al.* (2007) have shown that attitude of dwellers residing within forest areas hold the key biodiversity conservation.

In summary, it was revealed (Table 4) that the larger proportion of the respondents (61.7%) recorded low level of attitude towards biodiversity conservation while 38.3% of the respondents recorded high level. This is an indication that respondents had negative attitude towards biodiversity conservation in the study area. This could be attributed to their low level of knowledge on biodiversity conservation.

**Table 3: Attitude of rural dwellers towards biodiversity conservation**

Attitude statement	SA	A	U	D	SD
Conservation of biodiversity would go a long way in reducing extinction of wild flora and fauna	72.5	0.8	-	26.7	-
Activities of Biodiversity conservation is a waste of time	10.0	70.0	10.8	0.8	8.3
Biodiversity conservation can improve our livelihood	1(0.8)	-	8.3	71.7	19.2
Indiscriminate hunting of wild species does not in any way affect the ecosystem	-	19.2	-	68.3	12.5
I am willing to have the problems of loss of biodiversity solved even if it means sacrificing my goods	-	0.8	11.7	87.5	-
The natural world are sacred and should be left in peace	-	-	18.3	59.2	32.5
Natural resources are God's given gift to nature so I see nothing wrong in its exploitation	0.8	11.7	10.8	68.3	8.3
If we do not conserve our biodiversity today we shall not get expected benefits in the future	12.5	-	-	87.5	-
Biodiversity conservation is a waste of resources	-	68.3	8.3	10.8	12.5
Biodiversity conservation would go a long way in ensuring environmental sustainability	0.8	11.7	10.8	68.3	8.3

Table 4: Level of attitude towards biodiversity conservation measures

Level	Freq.	%	Maximum value	Minimum value	Mean
Low	74	61.7	48	10	33±14.2
High	46	38.3			

### ***Biodiversity Conservative Measures Utilized by Rural Dwellers***

Table 6 reveals that 80.0% of the respondents carried out restriction for a certain period of time so as to help in conserving biodiversity in the study area. The implication here is that restriction practices could enhance the fauna reproductive life while the flora flourish more thereby giving room for preventing resources from going into extinction. In addition, 85.0% of the respondents sometimes promote public education on biodiversity and implement Ex-situ conservation measures (55.0%). However, 82.5% were against the idea of establishment of protected area. The

contrary opinion on protected area could be linked to over dependent of the respondents on the resources in the reserve which might be difficult for them to assess if protected area in such condition. Also, 76.7% and 70% never encouraged conservation incentives and biosafety, respectively. Table 7 further shows that the level of conservation measures among rural dwellers was low as 70.0% fell below the mean score (8.4). This could be linked to the low level of knowledge on biodiversity conservation. The low level of conservation among rural dwellers in the study area may result in unsustainable use of natural resources

Table 6: Distribution by biodiversity conservation measures

Conservation measures	Always	Sometimes	Rarely	Never
Support for established protected area	-	11(9.2)	10(8.3)	99(82.5)
Manage and protect biological resources for conservation and sustainable use	18(15.0)	1(0.8)	101(84.2)	-
Restore damaged ecosystem and threatened species	-	-	30(25.0)	90(75.0)
Ensure biosafety	15 (12.5)	20(16.7)	1 (0.8)	84(70.0)
Create conservation incentives	-	14(11.7)	14(11.7)	92(76.7)
Promote public education	-	102(85.0)	17(14.2)	1 (0.8)
Implement <i>Ex-situ</i> conservation measures	28(23.3)	66(55.0)	26(21.7)	-
Restriction for certain periods	96(80.0)	-	24(20.0)	-

N.B: Percentage in parenthesis

Table 7: Level of biodiversity conservation measures

Level	Freq.	%	Maximum value	Minimum value	Mean
Low	84	70.0	16	0	8.4±3.7
High	36	30.0			

**Test of Relationship between Age, Years of Formal Education, Household Size and Attitude towards Biodiversity Conservation**

Table 8 shows that significant relationship existed between age and attitude of rural dwellers towards biodiversity conservation (0.451, p = 0.000). This implies that an increase in age, increases positive disposition towards biodiversity conservation among rural dwellers. Similarly, years of education showed a positive and significant relationship with attitude of

rural dwellers towards biodiversity conservation (r = 0.186, p = 0.000). This suggests that respondents with higher qualification are more likely to manifest a positive attitude towards biodiversity conservation. In addition, significant relationship also existed between household size of the respondents (r = -0.483, p = 0.000) and their attitude towards biodiversity conservation. This suggests that the probability of manifesting a negative attitude towards biodiversity conservation increases with an increase in family size.

Table 8: Correlation analysis between age, years of formal education, household size and attitude of rural dwellers towards biodiversity conservation

Variables	R	P-value	Decision
Age	0.451	0.000	S
Years of education	0.186	0.021	S
Household size	-0.483	0.001	S

**Relationship between knowledge and attitude towards biodiversity conservation**

Table 9 shows that there is a significant relationship between knowledge and attitude of respondents (r=-0.331, p=0.000) the positive correlation coefficient is an indication that as the respondents knowledge increases, their attitude to biodiversity

conservation increases. The implication of the result is that attitude of the respondent is based on their knowledge towards conserving biodiversity in the study area. This is in congruence with the finding of Nsengimana *et al.* (2017) who reported a significant relationship between knowledge of biodiversity and attitude towards biodiversity conservation in a similar study in Rwanda.

Table 9: Correlation analysis between knowledge and attitude towards biodiversity conservation

Variable	r	P	Decision
Knowledge and attitude towards biodiversity	0.331	0.000	S

### **Conclusion and Recommendations**

The study established a low level of knowledge on biodiversity conservation as well as negative attitude towards biodiversity conservation which in turn resulted in poor biodiversity conservation measures as rural dwellers in Onigambari forest reserve perceived biodiversity conservation as a threat to their income generating activities and livelihood. This work therefore revealed that education and knowledge of biodiversity conservation had a measureable effect on attitude towards biodiversity conservation. This further suggests that education has an important role for gaining knowledge and creating positive attitude towards biodiversity conservation. Hence, since rural dwellers are closest to the environment, they have the potential to play the primary role in conserving and protecting land, water, and forests resources. Therefore, campaigns and trainings on sustainable use of natural resources should be carried out in the rural area by Non – Governmental Organizations, government agencies such as ministry of environment so as to enhance or improve their knowledge and attitude towards biodiversity conservation. In addition, rural dwellers should be carried along in policy formulation and implementation process on biodiversity conservation so as to enhance co-operation and good communication between the community, governments and other stakeholders.

### **References**

- Aluko, O.J, Adejumo, A.A. and Samuel, O.F. (2015). Impact of Conflicts on Marketing of Selected Non Timber Forest Products around Omo Forest Reserve Ogun state Nigeria. XVI Forestry World Congress, Durban, South Africa, 7-11 September 2015, 1-8.
- Atiqul-Haq, S.M and Vanwing, T. and Hens, L. (2010). Perception, environmental degradation and family size preference. A context of developing countries. *Journal of Sustainable Development*, 3(4):102-108
- Azzez, I.O. and Aluko, O.J. (2019). Analysis of Factors Instigating Land Use Conflicts in Selected Forest Reserves of Ondo State, Nigeria. *Journal of Environmental Protection*, 10: 614-624.
- Mehta, J.N. and Kellert, S.R. (1998). Local attitude toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area. *Environmental Conservation*, 25(4):320–333.
- Nsengimana, V., Habimana, O. and Ngarukiya, V. (2017). Knowledge, attitude and awareness of pre service teachers on biodiversity conservation in Rwanda. *International Journal of Environment and Science Education*, 12(4): 643-652.
- Ninan, K.N., Jyothis, S., Babu, P. and Ramakrishnappa, V. (2007). *The Economics of Biodiversity Conservation: Valuation in Tropical Forest Ecosystems*. Earth scan, London, UK.
- Ninan, K.N. (Ed.). (2012). *Conserving and valuing ecosystem services and biodiversity: economic, institutional and social challenges*. Routledge.
- Noss, R.F. and Cooperrider, A.Y. (1994). *Saving nature's legacy: protecting and restoring biodiversity*. Island Press, Washington DC.

- Russell, J.C. and Holmes, N.D. (2015). Tropical island conservation: rat eradication for species recovery. *Biological Conservation*, 185: 1-7.
- Sah, J.P. and Heinen, J.T. (2001). Wetland resource use and conservation attitudes among indigenous and migrant peoples in Ghodaghodi Lake area, Nepal. *Environmental Conservation*, 28(4): 345-356.
- Sala, O.E., Chapin, I.F.F., Armesto, J.J., Berlow, E., Bloomfield, J., Dirzo, R., Sanwald, H.E, Huenneke, L.F., Jackson, R.B., Kinzig, A., Leemans, R., Lodge, D.H., Mooney, H.A., Oesterheld, M., Leroy, Poff, N., Sykes, M.T., Walker, B.H., Walker, M. and Wall, D.G. (2000). Global biodiversity scenarios for the year 2100. *Science*, 287(5459): 1770–1774.
- Salawu, A.A. (2002). Participation of rural people in forest conservation. A case study of Onigambari forest reserve, unpublished project submitted to the Department of Forestry Technology, Federal College of Forestry Jericho, Ibadan. Pp-32-33.
- Stuart, L.P. and Raven P. (2000). Biodiversity: Extinction by numbers. *Nature*, 403: 843-845. doi: 10.1038/35002708
- Swanson, B. (2008). Global Review of Good Agricultural Extension and Advisory Service Practices. Rome: FPAO. 5(10): 980-987. Retrieved on July 1<sup>st</sup> 2015.
- Walpole, M.J. and Goodwin, H.J. (2001). Local attitude towards conservation and tourism around Komodo National Park, Indonesia. *Environ. Conserv.*, 28(2):160–166.
- Yoccoz, N.G., Nichols, J.D. and Boulinier, T. (2001). Monitoring of biological diversity in space and time. *Trends Ecol. Evol.*, 16: 446-453.