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Restoration in Shasha Forest Reserve,
Osun State, Nigeria

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PERCEPTIONS AND ATTITUDES TOWARDS FOREST RESTORATION IN SHASHA FOREST RESERVE, OSUN STATE, NIGERIA

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ABSTRACT: Forest restoration is the actions and processes taken towards re-instating the health, productivity, structure and ecological functioning of a forest and other living components. Successful forest restoration is dependent on the attitude of the local people who are natively connected with the forest and through their active participation in forest management. This study determined the attitudes, perceptions, participation, willingness and relationship of the local people living around Shasha Forest Reserve (SFR) towards forest restoration. A quantitative research survey was employed in this study. Ten villages were randomly selected from the 40 villages in Area 4 and Area 5 across Shasha Forest Reserve. Twenty respondents were randomly selected from each of the ten villages (Orisumbare, Olomidudu, KS, Wagadi, Bolorunduro, Agbele, Araromi Oke Odo, Odesan, Poyika-Adewumi, Poyika-Ogunleye) given a total of 200 respondents. Data were analysed using SPSS and the results presented using descriptive statistics. The results from the study showed that many of the respondents were aware of the forest degradation and habitat fragmentation in SFR as reflected by the estimated mean response score of 3.88 to 4.45. Also, the dwellers around the reserve are positively disposed to forest restoration as evidenced by the estimated weighted mean response scores. The respondents however expressed their willingness to participate in forest restoration in the future. It is believed that the people in the communities would be willing to partner with government in the area of biodiversity conservation. The study recommends amongst others participatory forest management in order to ensure sustainability of efforts by the state and social networking interaction with extension agents which is key in instilling positive perceptions and altitudes toward forest conservation.

Keywords: Forest, Shasha Forest Reserve, Degradation, Restoration, Perception, Attitude, Conservation

1. INTRODUCTION

Habitat restoration has become a more challenging task for conservation practitioners and wildlife managers in

human-dominated landscape (Corlett, 2016). Besides the natural disturbance such as climate change that drives species population decline, the demand for food and dependence on forest for grazing, commercial and socio-

cultural purposes disturb ecological sustainability (Millar and Stephenson, 2015). Over the years, the degradation and modification of the ecosystem is caused by various activities such as excessive use of natural resources for agricultural production, deforestation, mining, fuel etc. Due to severe destruction caused by these activities the remaining forested areas are fragmented with degraded habitat leading to reduction in floral and faunal species (Haddad *et al.*, 2015). Therefore, the major obstructions for restoration are the natural, physical and or anthropogenic disturbances (Millar and Stephenson, 2015).

Protected areas (PAs) are considered to be the cornerstone of conservation strategies safeguarding the floral and faunal species (Andreade and Rhodes, 2012). Despite, the expected level of protection in and around PAs, the rate of the anthropogenic disturbance is high (Knorn *et al.*, 2012). This calls for ecological networks focusing on restoration and conservation beyond the protected areas (Lockwood *et al.*, 2010). However, restoration efforts are increasingly being used to combat the loss of floral and faunal species, with some regions even increasing their forest cover (Wang *et al.*, 2011). While restoration may contribute to biodiversity gains, this relationship is poorly understood, (Aerts *et al.*, 2011) and some studies suggest that greater intervention may be necessary to restore biodiversity and prevent irrevocable loss of ecosystem functions (Barbier, *et al.*, 2019). In order to evaluate the success of restoration efforts, it is important to monitor the biodiversity and health of the remaining forest for effective allocation of funds and conservation efforts.

Past studies on local residents' attitudes towards PAs have shown that effective and sustainable management of forest resources depend on local people's support and active participation (Siraj *et al.*, 2016). Local people close to a degraded site have the most to lose and are expected to have the most negative attitudes (Liu *et al.*, 2011). Therefore, the success of any future reintroduction and restoration programmes is affected by the rural resident attitudes (Ma *et al.*, 2016). A negative attitude can result into illegal behaviour ranging from killing of reintroduced animals in order to purposely sabotage the project as reported in past studies (Sakurai and Jacobson 2011; Capoccia, 2013). It is imperative therefore, to take into account the needs and opinions of local people for long-term sustainable management of natural resources (Macura *et al.*, 2011).

To this end, this paper aims at achieving three objectives which are to (i) determine the attitudes of the local residents towards forest restoration in Shasha forest reserve and (ii) determine the relationship between the socio-economic characteristics, attitudes, participation

and willingness of the local residents towards forest restoration in Shasha forest reserve and iii) determine variation in the villagers' attitude to forest restoration in the study area.

2. METHODOLOGY

2.1. The Study Area

Shasha Forest Reserve (SFR) is located in the tropical forest of the Southwestern Nigeria (See Figure 1). The study area is located within latitude 6°35'N and 7°10'N and between longitude 4°00'E and 4°53'E (Alo *et al.*, 2020). SFR was one of the contiguous forests until 1925 before it was later split into the Omo, Oluwa and Shasha forest reserves which are now presently located in Ogun, Ondo and Osun states of Nigeria respectively (Adepoju and Salami, 2017). The reserve is of considerable biological interest because it occupies a geographically intermediate position between the Upper Guinea forests that extend from Sierra Leone to the Ghana-Togo border and the Central African (or Lower Guinea forests) that reach into eastern Nigeria (Isichei, A.O. 1995 as cited in Ogunesan *et al.*, 2012).

The SFR lies within the zone of the tropical humid climate. The climate is monsoonal in character which has a contrast between well-defined dry and wet seasons (Olokeogun *et al.*, 2014) stretching east-west across West Africa, generally called the Inter-Tropical Discontinuity (ITD). The wet season begins in April and ends in November while December to March is the dry month. The dry season is short lasting generally from December to February (Adepoju and Salami, 2017). The average annual rainfall is about 25mm at the coast and about 1220 mm at the northern limit of the study area (Olokeogun *et al.*, 2014). The monthly mean minimum temperature is about 22.49 °C while the monthly mean maximum temperature is about 31.24 °C with an average yearly temperature of about 26.6 °C. The topography of the study area is generally undulating. It varies from nearly flat to rolling laying at altitude between 90 m and 140 m above sea level. The uneven topography is characterized by small hills which are dissected by the river Shasha, attributed to past geological event (Adepoju and Salami, 2017).

Vegetation of the area was classified by Ogunesan *et al.*, 2012 as a tropical lowland rainforest which consist mainly of secondary re-growth rainforest, plantations, some primary forest and grasslands found in patches (Adepoju and Salami, 2017). The soils are deep clay soil while the land use of the area includes settlements, logging, farming, and hunting. In the past three decades, intense human activities like industrialization, farming, over logging, and over hunting have led to a massive

destruction of forest cover and the unique wildlife in the remaining forest (Adepoju and Salami, 2017).

2.2. Data collection and Analysis

A quantitative research survey was employed in this study. The primary data pertinent to the study were collected through the use of a well-structured

questionnaire administered to 200 respondents using multiple-stage sampling techniques. Ten villages were randomly selected from the 40 villages in Area 4 and Area 5 across Shasha forest reserve, while 20 respondents (household heads) were randomly selected from each village (n=200). Data were analyzed using both descriptive statistical analyses. Statistical Package for Social Science software was used to analyse the data

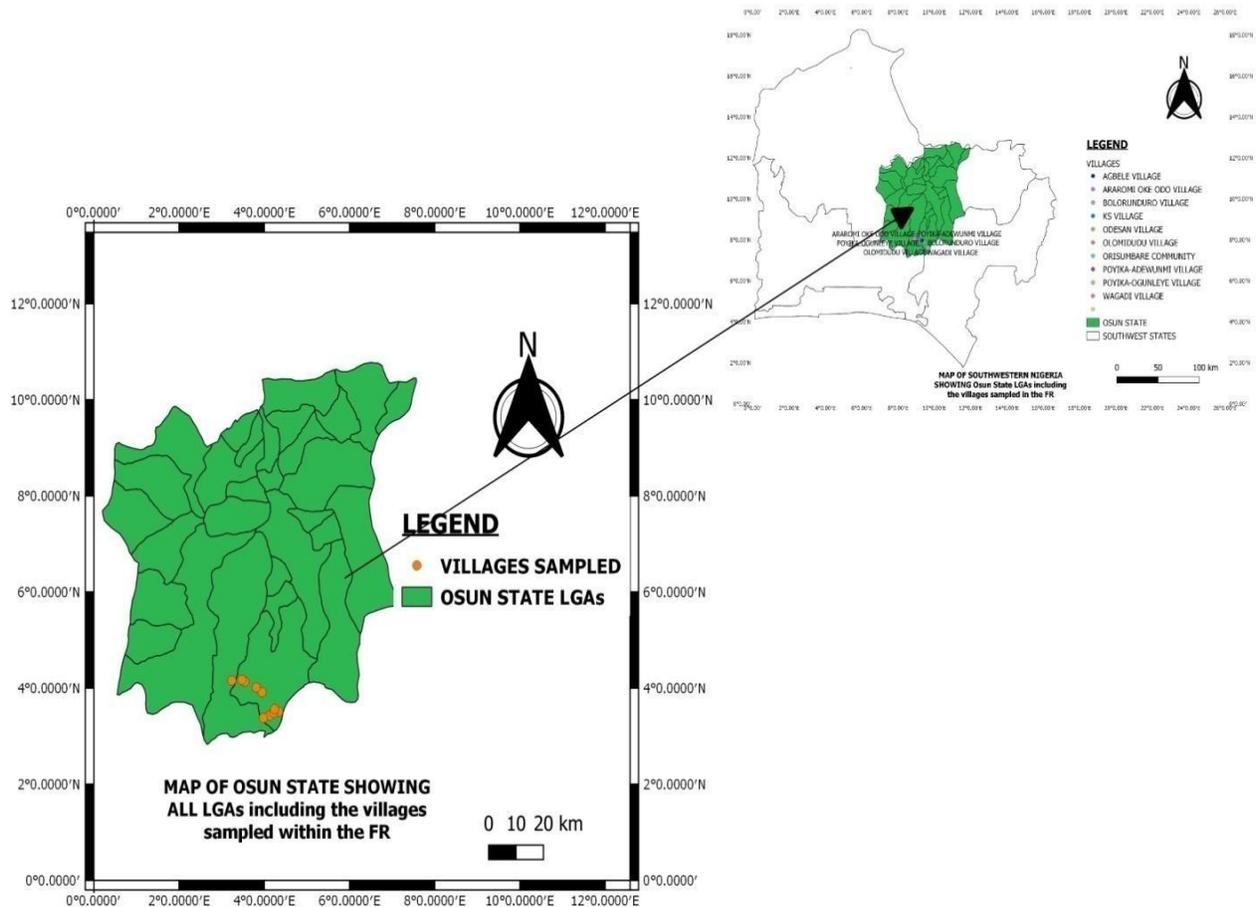


Figure 1: Map of Osun state showing the sampled sites (Villages in SFR)

3. RESULTS

3.1. Socio-demographic Information of Respondents

The results revealed that majority (98% and 94%, respectively) of the respondents interviewed in SFR are males and belongs to Yoruba ethnic group. With respect

to age, majority (87%) were within the age bracket of 21-60 years while the remaining 13% were above 60 years. While 34% of respondents lacked formal education, the remaining 66% had at least primary education. Higher proportion (78%) of the total respondents were married. Majority (66%) had the family size between 2-5 members per household. The results also showed that about 60% of respondents earned above the minimum wage of ₦30,000. The main occupation of more than half of the

respondents was farming as indicated by 53% of the respondents, while the analysis on educational status shows that 63% had secondary occupations. Nearly all (92%) of the respondents indicated that other members of their household earned income.

Table 1: Results of socio demographic characteristics of the respondents at Shasha Forest Reserve. Keys: percentage = (%)

Variable (N=200)	Frequency (%)
Gender	
Male	196 (98)
Female	4 (2)
Ethnicity	
Yoruba	188 (94)
Igbo	4 (2)
Hausa	2 (1)
Others	6 (3)
Age	
21-30	4 (2)
31-40	98 (49)
41-50	28 (14)
51-60	44 (22)
Above 60	26 (13)
Education	
No formal education	68 (34)
Primary	50 (25)
Secondary	70 (35)
Tertiary	12 (6)
Marital status	
Married	156 (78)
Single	44 (22)
Family size	
2-5	132 (66)
6-9	68 (34)
Above 9	-
Income (₦)	
10,000 -30,000	80 (40)
31,000 - 60,000	72 (36)
Above 61, 000	48 (24)
Main occupation	
Farming	106 (53)
Trading	26 (13)
Formal employment	12 (6)
Crafts and artisans	46 (23)
Forest resources extraction	4 (2)
Others	

Table 1 continued

Variable (N=200)	Frequency (%)
Do you have secondary occupation	
Yes	126 (63)
No	74 (37)
Income earned by family member	
Yes	184 (92)
No	16 (8)
Do you rear livestock in your household	
Yes	176 (88)
No	24 (12)

3.2. Perception Towards Forest Restoration

The results of this present study shows that the respondents on the average agreed in their opinions that “Nature in its balanced state is important for mental well-being of human”, “The main purpose of forest restoration should be to promote well-functioning ecosystem”, “unsustainable extraction of forest resources has reduced vegetation cover in Shasha forest restoration”, “Forest restoration can provide livelihood opportunities and economic development”, “Forest restoration should involve collaboration between conservation agencies and the public/local people”, “Household is affected by the changes in forest resources” and that “Nature is a strong source of inspiration so I would love to see it returned to its ancient state”. This is established by the estimated weighted mean response score of 4.03, 4.33, 4.24, 3.85, 4.31, 3.58 and 3.66 respectively. The respondents however disagreed that “Forest should be allowed to evolve without human intervention” but were neutral in their opinions with respect to the 7th and the 9th variables i.e. “I would support forest restoration if most trees large or small is removed” and “Efforts towards forest restoration should be prioritized against human settlement” as reflected by the estimated weighted mean response of 3.36 and 2.96 respectively (See Table 3).

3.3. Attitude Towards Forest Restoration

The results in Table 4 indicated that the respondents on the average disagreed to some attitude statements (in items 1-4). The respondents thought it is a waste of time to participate in tree planting; Logging is a daily life activity in their community and it has no consequence towards forest restoration; If SFR is restored and more forest reserve is established, it will be of immense importance to them and neighbouring communities and the felling of trees in the SFR has nothing to do with forest degradation. Each of these statements has an estimated weighted mean response score of 2.40, 2.27, 2.13 and 2.19 respectively. However, the respondents were undecided in their opinions with respect to statements 5 to 8 (See table 4).

3.4. Perception on Community Participation and Willingness Towards Forest Restoration

Regarding perception on community participation and willingness towards forest restoration. The respondents on the average agreed with nine of the ten statements (see Table 4) with the estimated weighted mean response score ranging from 3.93 to 4.36. However, the respondents were of the opinion that Government alone should not be responsible for forest restoration as evidenced by estimated mean response score of 2.14.

4. DISCUSSION

This study has provided the opportunity to examine the perception and attitudes of stakeholders living near Shasha Forest Reserve towards restoration. Since male gender are more inclined towards the issues related with forest reserves, hence men are those surveyed in this study.

On the issues of forest degradation and habitat fragmentation, most of the respondents indicated that they were aware of the current damage done by deforestation; most especially by timber companies and unrestricted hunting on the forest reserve and uncontrolled animal grazing. This finding agrees with a similar study conducted by Haddad *et al.* (2015). Meanwhile, though many of the respondents were aware of the contribution of sawmills and other timber company around the reserve to gross income of workers in the community, they are however aware of the impact of illegal logging on the disappearance of some of the wildlife in the area. This finding therefore calls for concern as it suggests loss of some native wildlife species in the study area.

It was also discovered that a large number of the respondents also agreed that forest degradation has affected the communities negatively. This agrees with the reports of Golden *et al.* (2016) and Pecl *et al.* (2017) which stated that degradation of natural resources can negatively affect their food and health sovereignty and overall well-being.

Worthy of note is the finding that most of the respondents shared the opinion that wildlife present in the forest needs to be protected. This agrees with the report of Youn *et al.* (2017) that forest products extraction in form of illegal logging, fuel wood gathering and charcoal making are among the major causes of deforestation and forest degradation in many parts of the world, and that fuel wood and charcoal are the primary energy sources for rural households as well as some industrial users in developing countries and more affordable and readily available compared to alternative sources such as Liquefied Petroleum Gas (LPG), kerosene and electricity. May-Tobin (2011) however reported that fuel wood collection and charcoal making greatly contributes to forest degradation because the collectors often engaged in cutting down of fresh trees rather than utilizing the dead and dry ones as required in government protected areas.

It was also established in this study that respondents on the average showed positive perception towards forest restoration; they however want forest restoration to involve collaboration between them and the conservation agencies. This result conforms to the past studies that found out that indigenous people/local communities identify with and rely directly on their immediate environments for meeting basic livelihood needs (Angelsen *et al.*, 2014; Pecl *et al.*, 2017). This probably explained their desire to be part of decision making proper so as to protect their interests.

This study also revealed that though majority of the respondents in the study area recognized the need for forest restoration as reflected in their perception towards the subject matter, their attitudes towards the processes involved in the restoration of the Forest Reserve are however not on a par. The poor attitude of the respondents could be attributed to high rate of poverty in Nigeria especially among the rural dwellers which is responsible for major cause of deforestation, since most rural households depend on the use of wood fuel for private use and for business purposes (Emeodilichi, 2018). In addition, it is believed that forest restoration processes will tamper with their means of livelihood (farmlands, fuel wood sources and/or even their homes), hence they tend to show a poor attitude towards forest restoration. According to Akosim *et al.* (2010), the action of the local resident tends to conflict with the goals of

conservation program if they lack knowledge about the management and conservation of the forest reserve. The need therefore for attitudinal changes among the community dwellers around SFR will go a long way in achieving the desired success in this regard. The issue of forest restoration is now acknowledged as a global environmental priority and many international initiatives are aiming to restore millions of hectares around the world (Suding *et al.*, 2015).

The study revealed that the community dwellers displayed strong participation and willingness towards Forest restoration; this is reflected in the results of analysis carried out in this regard. This finding may be an indication of future intention of the people to contribute to forest restoration. It is worthy of note that forests have served human needs for millennia as a source of food, fiber, and spiritual reflection; today the awareness of society's dependence on forests is as strong as ever, the unsustainable uses of forests abound and more than 2 billion ha of forests are degraded globally and in need of restoration (Lindenmayer *et al.*, 2012). The community dwellers around Shasha Forest Reserve, regardless of their reservations, need to effectively work well with the Forest Reserve, abiding by the rules and playing their parts in tree planting, to see the restoration of the forest. In developing countries like India, Ethiopia, Nigeria and Sudan, researchers have studied local residents' attitudes towards protected areas under the assumption that sustainable, more responsible, and long-term management of forest resources depend on local people's support (Triguero-Mas *et al.*, 2010). Successful forest conservation is dependent on the attitude of the local people who are natively connected with the forest and through their active participation in forest management (Ameha *et al.*, 2014; Siraj *et al.*, 2016).

5. CONCLUSION

The conclusion of this study is highlighted as follow:

1. The main causes of forest cover loss in Shasha reserve according to this study are the indiscriminate and unregulated exploitation of the forest resources. Majority of the respondents living in communities around the reserve rely on fuel wood for domestic energy and sale to generate income.
2. The findings of this study also showed that most of the respondents are aware of the benefits of the conservation of Shasha reserve and also support the need to conserve the forest. It is believed that the communities around SFR would be willing to partner with government in the area of biodiversity and conservation.
3. Specifically, participatory forest management which will ensure sustainability of efforts by the state and social networking interaction with extension agents is very key in instilling positive perceptions and attitudes toward forest conservation. This is because social groups provide a platform for sharing information and capacity building on sustainable natural resource management and general community wellbeing
4. It is recommended that policy makers and organizations involved in conservation should take advantage of the positive attitudes and perceptions held by the communities towards protected area conservation approach as an entry point to promote participatory forest management in the study area to ensure proper enforcement of forest protection rules, as well as equitable distribution of costs and benefits of forest conservation among stakeholders.

Table 2: Result of villagers' perception towards forest degradation and habitat fragmentation in SFR. Keys: percentage = (%)

S/N	Items	SA	A	U	D	SD	Mean	St.Dev	R
1	The community around SFR has a preference for trees	71(35.5)	127(63.5)	2(1)			4.35	0.31	A
2	Degradation of some of the forest areas has affected the community adversely	97(48.5)	51(25.5)	3(1.5)	49(24.5)		3.98	0.27	A
3	Stricter government policies will be able to curb the menace of illegal in SFR	90(45)	94(47)	-	16(8)		4.29	0.30	A
4	Sawmills and other timber company contribute to gross income of workers in the community	71(35.5)	129(64.5)				4.36	0.31	A
5	Illegal logging of tress has led to disappearance of some of the wildlife	99(49.5)	42(21)	-	59(29.5)	2(1)	3.92	0.27	A
6	The community has in place policy that control the hunting of wild animals	104(52)	82(41)	14(7)			4.45	0.32	A
7	Trees in SFR are important to the ecosystem	84(42)	64(32)	4(20)	40(20)	8(4)	3.88	0.26	A
8	Wildlife present in the forest needs to be protected	76(38)	118(59)	6(3)			4.35	0.31	A

Key: SA =strongly agree; A=Agree; U=undecided; D=disagree and SD=strongly disagree, R = Remarks

Table 3: Result showing villagers' perception towards forest restoration in SFR. Keys: percentage = (%)

S/N	Items	SA	A	U	D	SD	Mean	St.Dev	R
1	Nature in its balanced state is important for mental well-being of human	47(23.5)	111(55.5)	42(21)	-	-	4.03	0.28	A
2	The main purpose of forest restoration should be to promote well-functioning ecosystem	76(38)	114(57)	10(5)	-	-	4.33	0.31	A
3	Do you agree that unsustainable extraction of forest resources has reduced vegetation cover in SF restoration?	66(33)	118(59)	14(7)	2(1)		4.24	0.30	A
4	Forest restoration can provide livelihood opportunities and economic development	72(36)	80(40)	2(1)	38(19)	8(4)	3.85	0.26	A
5	Forest restoration should involve collaboration between conservation agencies and the public/local people	72(36)	120(60)	6(3)	2(1)		4.31	0.30	A
6	Forest should be allowed to evolve without human intervention	56(28)	56(28)	12(6)	56(28)	20(10)	3.36	0.23	U
7	I would support forest restoration if most trees large or small is removed	-	-	26(13)	132 (66)	42(21)	1.92	0.28	D
8	Is your household affected by the changes in forest resources?	50(25)	86(43)	8(4)	42(21)	14(7)	3.58	0.24	A
9	Efforts towards forest restoration should be prioritized against human settlement	8(4)	70(35)	24(12)	96(48)	2(1)	2.93	0.22	U
10	Nature is a strong source of inspiration so I would love to see it returned to its ancient state	64(32)	74(37)	10(5)	36(18)	14(7)	3.66	0.25	A

Key: SA =strongly agree; A=Agree; U=undecided; D=disagree and SD=strongly disagree, R = Remarks

Table 4: Result of analysis showing villagers' attitude towards forest restoration in SFR. Keys: percentage = (%)

S/N	Attitude towards forest restoration	SA	A	U	D	SD	Mean	St.Dev	R
1	I think it is a waste of time to participate in tree planting	8(4)	44(22)	8(4)	100(50)	40(20)	2.40	0.21	D
2	Logging is a daily life activity in my community and it has no consequence towards forest restoration	4(2)	24(12)	20(10)	126(63)	26(13)	2.27	0.25	D
3	If SFR is restored and more forest reserve is established, it will be of immense important to myself and neighbouring communities.	-	56(28)	8(4)	42(21)	94(47)	2.13	0.26	D
4	The felling of trees in the SFR has nothing to do with forest degradation	12(6)	20(10)	10(5)	110(55)	48(24)	2.19	0.26	D
5	Sacrificing part of our farmland toward wildlife reintroduction is not worth it	18(9)	78(39)	36(18)	56(28)	12(6)	3.17	0.23	U
6	Forest restoration program is just another means government uses to tax the masses	28(14)	52(26)	68(34)	48(24)	4(2)	3.26	0.23	U
7	More industries is more sensible idea than forest restoration	24(12)	62(31)	14(7)	94(47)	6(3)	3.02	0.22	U
8	There are more important sector the government should focus their resources on than on forest restoration	10(5)	66(33)	12(6)	68(34)	44(22)	2.65	0.23	U

Key: SA =strongly agree; A=Agree; U=undecided; D=disagree and SD=strongly disagree, R = Remarks

Table 5: Result of Villagers' Participation and Willingness towards Forest Restoration in SFR. Keys: percentage = (%)

S/N	Participation and willingness towards forest restoration	SA	A	U	D	SD	Mean	St.Dev	R
1	My participation in forest by planting of tree will go a long way in restoring balance to the ecosystem	52 (26)	128 (64)	14 (7)	6 (3)	-	4.13	0.29	A
2	Community security vigilance will go a long way in curbing illegal felling of tree	60 (30)	116 (58)	22 (11)	-	2 (1)	4.16	0.29	A
3	The forest reserve is a part of our community resources and should be protected	66 (33)	130 (65)	4 (2)	-	-	4.31	0.30	A
4	I am willing to donate a token towards the maintenance of these forest	54 (27)	82 (41)	54 (27)	4 (2)	6 (3)	3.87	0.26	A
5	Government alone should be responsible for forest restoration	8 (4)	-	10 (5)	176 (88)	6 (3)	2.14	0.26	D
6	It should be made compulsory for individual in community to participate in the planting of trees	28 (14)	146 (73)	10 (5)	16 (8)	-	3.93	0.27	A
7	I am going to participate in the education of elderly, young children the uninformed individual about forest restoration	52 (26)	128 (64)	8 (4)	12 (6)	-	4.10	0.28	A
8	Any individual or organization caught illegally felling trees should be made to face the full wrath of the law	96 (48)	86 (43)	12 (6)	6 (3)	-	4.36	0.31	A
9	As a good citizen it is my duty to take care of my environment which include my community forest reserve	58 (29)	136 (68)	6 (3)	-	-	4.26	0.30	A
10	Rules should be placed on individuals in the community that owns livestock	38 (19)	136 (68)	20 (10)	6 (3)	-	4.03	0.28	A

Key: SA =strongly agree; A=Agree; U=undecided; D=disagree and SD=strongly disagree, R = Remarks

AUTHORS' CONTRIBUTION

Author A (Oluseun A. Akinsorotan): Designed the study, managed the statistical analysis, wrote the protocol and work on the first draft of the manuscript up to the result section

Author B (Abosede B. Akande): managed the analyses of the study, did literature search and wrote the discussion aspect

Author C (Adeola H. Olasunkanmi): part of the research team and wrote the first draft of the manuscript

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