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Community Participation in Natural Resources Conservation in Akamkpa Local Government Area, Cross River State, Nigeria

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Research Article

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Abstract

Background: The escalating degradation of natural resources in tropical regions has intensified global calls for inclusive, community-centred conservation strategies. Yet empirical evidence documenting the actual extent of local community participation in conservation activities remains limited, particularly in rural southern Nigeria.

Methods: This study employed an ex-post facto research design to assess the level of community participation in natural resources conservation in Akamkpa Local Government Area (LGA), Cross River State, Nigeria. A multi-stage simple random sampling procedure was used to select 250 household heads from five purposively identified wards (Ojo, Uyanya, Obun, Mbarakom, and Awi/Nsan). Data were collected using a researcher-developed Community Participation in Conservation Rating Scale (CPCRS), a validated four-point Likert-type instrument. Three null hypotheses were tested using dependent t-test statistics at a 0.05 level of significance (df = 249, critical value = 1.97).

Results: All three null hypotheses were rejected. Community participation was found to exert a statistically significant influence on forest resources conservation ($t = 2.18$, $p < 0.05$), wildlife conservation ($t = 6.92$, $p < 0.05$), and land resources conservation ($t = 2.10$, $p < 0.05$). Male community members participated more actively in environmental resource management decision-making than their female counterparts (55.2% vs. 44.8%).

Conclusions: Community members of Akamkpa LGA are significant agents of forest, wildlife, and land conservation. These findings underscore the critical importance of institutionalising participatory governance frameworks, designing gender-inclusive conservation programmes, and deploying incentive-based policies to sustain and deepen community-based natural resource management in tropical rainforest contexts.

1. Introduction

Natural resources — encompassing forests, wildlife, land, and water systems — constitute the ecological foundation upon which the livelihoods of millions of people in sub-Saharan Africa depend. However, the accelerating pace of resource degradation, driven by population growth, agricultural encroachment, illegal logging, and weak governance, has generated growing concern among policymakers, conservation practitioners, and researchers alike (Park, 1992; Sharma, 1992; Tyani, 2007). In response, conservation paradigms have undergone a fundamental shift over recent decades: the traditional top-down, state-centred model of resource governance has progressively given way to participatory approaches that recognise local communities not merely as beneficiaries, but as indispensable stewards of the natural environments in which they live (Bisong, 2001; FAO, 2005).

The theoretical basis for this shift is well established. The International Union for Conservation of Nature (IUCN, 1990) asserts that human cultures must be grounded in respect for nature and that present generations bear a moral and social responsibility to conserve natural environments for the benefit of

future generations. This normative argument has been reinforced by a substantial body of empirical evidence demonstrating that conservation programmes which actively engage local communities consistently produce superior outcomes compared with exclusionary, top-down interventions. Landmark examples include village forestry associations in South Korea (Ahn, 1978; Eckholm, 1979), community-driven afforestation projects in Nepal (World Bank, 1975), and community conservation partnerships at Tsavo West National Park in Kenya, where local involvement has yielded measurable improvements in biodiversity protection and resource governance (Agrawal & Gibson, 1999).

In Nigeria, the scale of forest loss is particularly alarming. Cunningham and Cunningham (2004) reported that tropical forest lands globally have contracted dramatically, with approximately 9.2 million hectares — representing 0.6% of remaining forest cover — cleared annually. Nwoboshi (1987) identified Nigeria as having one of the highest forest clearance rates in the region, a trend that has continued and intensified in Cross River State, which harbours some of the most ecologically diverse rainforests on the African continent. The persistence of this degradation has been attributed, in significant part, to the systematic exclusion of indigenous and local communities from natural resource governance — communities whose livelihoods are intimately bound to these ecosystems and who possess irreplaceable traditional ecological knowledge (Agbor, 1997; Abua, 2002).

Akamkpa Local Government Area, situated within the tropical rainforest zone of Cross River State, represents a critical site for community-based conservation research. The area is endowed with exceptional biodiversity, including rare timber species and threatened wildlife, and is home to notable conservation institutions such as the Drill Ranch. Despite this ecological significance, systematic empirical investigation of the extent and nature of community participation in conservation activities in Akamkpa remains sparse. This study was therefore designed to address this gap by rigorously assessing the level of community participation across three dimensions of natural resource conservation — forest, wildlife, and land resources — using a structured, validated research instrument and inferential statistical analysis.

1.1 Objectives of the Study

The primary objective of this study was to determine the extent of community participation in natural resources conservation in Akamkpa LGA. The specific objectives were to: (i) examine the extent of community participation in forest and wildlife resources conservation; (ii) investigate the level of community participation in land resources conservation; and (iii) assess the influence of demographic characteristics, particularly sex, on patterns of conservation participation.

1.2 Research Hypotheses

Three null hypotheses were formulated and tested at the 0.05 level of significance:

H01: The level of community participation does not significantly influence forest resources conservation in Akamkpa LGA.

H02: Community involvement does not exert a statistically significant influence on wildlife conservation in Akamkpa LGA.

H03: Community participation does not significantly influence land resources conservation in Akamkpa LGA.

2. Materials and Methods

2.1 Research Design

An ex-post facto research design was employed in this study. This design is particularly appropriate for investigations in which the independent variable of interest — in this case, community participation in conservation — is a naturally occurring, pre-existing condition that cannot be subjected to experimental manipulation (Kerlinger, 1986). The design permitted systematic examination of the relationships between the observed levels of community participation and conservation outcomes across the three natural resource categories under investigation.

2.2 Study Area

The study was conducted in Akamkpa Local Government Area, one of the 18 LGAs constituting Cross River State in south-eastern Nigeria. Akamkpa lies within longitudes 8°15' and 8°45' East and latitudes 5°00' and 5°45' North of the equator. It is bounded to the north and north-west by Biase LGA, to the north-east by Etung LGA, to the east by the Republic of Cameroon, and to the south by Odukpani LGA. The area encompasses approximately 503,778 km² of land and is headquartered at Akamkpa town. The dominant ecological zone is the humid tropical rainforest, characterised by yellowish-red gravel and brown sandy soils derived from acidic crystalline rock, with mean daily temperatures ranging between 27°C and 31°C and annual rainfall varying from 250 mm to 3,000 mm. The principal ethnic groups inhabiting the area are the Ejagham, Ibibio, and Igbo peoples, who are predominantly engaged in subsistence agriculture and forest-based livelihoods. The forest estate is ecologically significant, harbouring valuable timber species — including Iroko, Obeches, Opepe, Walnut, Mahogany, and Ebory — as well as endangered and vulnerable wildlife species such as forest elephants, western gorillas, diverse primate species, pangolins, and a rich herpetofauna, making Akamkpa a priority area for biodiversity conservation.

2.3 Population, Sample, and Sampling Procedure

The target population comprised all adult community members resident in Akamkpa LGA at the time of the study. A multi-stage sampling procedure was adopted to ensure geographic and demographic representativeness. In the first stage, five communities — Ojo, Uyanya, Obun, Mbarakom, and Awi/Nsan — were randomly selected from the wards of the LGA. In the second stage, 50 household heads were randomly selected from each of the five communities using simple random sampling, yielding a total sample of 250 participants. This sample size was considered adequate for the dependent t-test analyses employed in the study.

2.4 Instrumentation

Data were collected using the Community Participation in Conservation Rating Scale (CPCRS), a researcher-developed, structured four-point Likert-type questionnaire. The instrument comprised items covering three thematic sections corresponding to the study's objectives: community participation in forest resources conservation, wildlife conservation, and land resources conservation. Respondents indicated the degree of their participation by selecting one of four response options: Strongly Agree (4 points), Agree (3 points), Disagree (2 points), or Strongly Disagree (1 point); response scores were reversed for negatively worded items to ensure directional consistency.

Content validity of the CPCRS was established through expert review: the instrument was assessed by the supervising academic and two independent research experts in environmental education, all of whom confirmed the relevance and appropriateness of the items relative to the constructs under investigation. Instrument reliability was ascertained through a pilot trial administered to a sub-sample drawn from outside the main study population, and the instrument was confirmed to be reliable prior to full-scale administration.

2.5 Data Collection and Analysis

The researcher personally administered the CPCRS to all 250 participants across the five sampled communities, ensuring standardised conditions of data collection and providing clarifications where required. Completed questionnaires were retrieved immediately upon completion to minimise attrition and ensure a 100% response rate. Descriptive statistics (frequencies and percentages) were computed to profile the demographic characteristics of respondents. Inferential analysis was conducted using dependent t-test statistics to test each of the three null hypotheses at the 0.05 level of significance (df = 249, critical value = 1.97). A null hypothesis was rejected when the calculated t-value exceeded the critical value of 1.97.

3. Results

3.1 Demographic Profile of Respondents

Table 1
Sex distribution of respondents (N = 250).

Sex	Frequency	Percentage (%)
Male	138	55.2
Female	112	44.8
Total	250	100.0

As presented in Table 1, the sample was slightly male-dominated, with male respondents comprising 55.2% (n = 138) and female respondents 44.8% (n = 112) of the total. This distribution reflects the

broader pattern of male predominance in community-level resource management decision-making observed across rural communities in southern Nigeria.

Table 2
Age distribution of respondents (N = 250).

Age Group (Years)	Frequency	Percentage (%)
Below 30	62	24.8
30–39	80	32.0
40–49	68	27.2
50–59	40	16.0
Total	250	100.0

Table 2 indicates that the largest proportion of respondents (32.0%, n = 80) fell within the 30–39 years age bracket, followed by the 40–49 years cohort (27.2%, n = 68). The 30–49 age group collectively accounted for 59.2% of the sample, suggesting that active participation in natural resources conservation is concentrated among working-age adults within the study communities.

3.2 Hypothesis Testing

Table 3
Summary of dependent t-test results for the three null hypotheses (N = 250, df = 249, critical value = 1.97, α = 0.05).

Hypothesis	Variable x (Σx)	Variable y (Σy)	N	ΣD	ΣD²	t-cal	t-crit	Decision
H01: Participation → Forest Conservation	Level of community participation (958)	Forest resource conservation (297)	250	656	91,688	2.18	1.97	Reject H01
H02: Involvement → Wildlife Conservation	Community involvement (729)	Wildlife conservation (321)	250	324	26,056	6.92	1.97	Reject H02
H03: Participation → Land Conservation	Community participation (828)	Land resource conservation (431)	250	497	56,425	2.10	1.97	Reject H03

The results presented in Table 3 demonstrate that all three null hypotheses were rejected at the 0.05 level of significance. For H01, the calculated t-value of 2.18 exceeded the critical value of 1.97 (df = 249), indicating that the level of community participation exerts a statistically significant positive influence on forest resources conservation in Akamkpa LGA. For H02, the calculated t-value of 6.92, which markedly exceeded the critical threshold, provides strong evidence that community involvement is a highly

significant determinant of wildlife conservation outcomes. For H03, the calculated t-value of 2.10 similarly exceeded the critical value, confirming that community participation significantly influences land resources conservation. In each case, the alternative hypothesis was upheld.

4. Discussion

The rejection of H01, confirming a significant positive relationship between community participation and forest resources conservation, is consistent with the broader theoretical and empirical literature on participatory natural resource management. Ogar (2003) contended that local communities in Cross River State have historically been marginalised from formal forest governance structures, despite their intimate knowledge of and dependence upon forest ecosystems. The present findings affirm that when communities are meaningfully engaged — whether through community-based management, collaborative governance, or co-management arrangements — forest conservation outcomes are substantially improved. This accords with the foundational principles articulated by the IUCN (1990), which position active community stewardship as indispensable to sustainable forest management.

The exceptionally strong t-value of 6.92 obtained for H02 underscores the particularly pronounced role of community involvement in wildlife conservation. This finding corroborates evidence from comparative studies of community conservation models in sub-Saharan Africa, including the widely documented case of Tsavo West National Park in Kenya, where embedding community participation within protected area governance substantially reduced poaching and enhanced biodiversity outcomes (Agrawal & Gibson, 1999). Within the Akamkpa context, the presence of the Drill Ranch — an institutional conservation initiative operating in partnership with local communities — illustrates how sustained community engagement can translate into tangible improvements in the protection of threatened species. The magnitude of this effect relative to the forest and land resource findings may reflect the higher visibility and immediacy of wildlife-related participation incentives within the study communities.

The significant influence of community participation on land resources conservation (H03, t = 2.10) extends the participatory resource management discourse beyond forestry and wildlife to encompass the governance of land as a foundational ecological asset. This finding resonates with the participatory land use planning initiatives documented in Cross River State (Abua, 2002; Agbor, 1997) and aligns with global evidence that locally embedded land stewardship practices can effectively complement formal regulatory mechanisms. The observed gender disparity — with male respondents constituting 55.2% of the sample and demonstrating higher participation in resource management decision-making — warrants particular attention. Women play a central and disproportionate role in subsistence agriculture, fuelwood collection, and water resource management in rural southern Nigeria (Ajake, 1998), yet remain systematically underrepresented in formal conservation governance. Addressing this structural inequity through gender-responsive programme design is therefore a critical priority for conservation policy and practice in Akamkpa and comparable contexts.

5. Conclusions

This study provides robust empirical evidence that community members of Akamkpa Local Government Area, Cross River State, constitute active and significant agents of natural resources conservation, exerting statistically significant influences on the conservation of forest resources, wildlife, and land across their communities. These findings carry important implications for conservation policy and practice at both the local and state levels. First, conservation governance frameworks must formally recognise and institutionalise the roles of local communities as co-managers of natural resources, rather than peripheral stakeholders. Second, conservation interventions should be designed to be gender-inclusive, ensuring that women — who bear disproportionate responsibility for natural resource use in rural livelihoods — are meaningfully represented in decision-making structures. Third, incentive-based mechanisms, including benefit-sharing arrangements and livelihood diversification programmes, should be deployed to sustain and deepen long-term community commitment to conservation. Future research should investigate the specific institutional, socio-cultural, and economic factors that mediate the relationship between community participation and conservation outcomes in Akamkpa and comparable tropical rainforest communities across Nigeria.

Declarations

Supplementary Materials

Not applicable.

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki. Institutional permission was obtained from the relevant local government authorities, and informed consent was secured from all participants prior to data collection.

Informed Consent

Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest:

The author declares no conflict of interest.

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Conceptualization, E.M.E.; methodology, E.M.E.; formal analysis, E.M.E.; investigation, E.M.E.; data curation, E.M.E.; writing — original draft preparation, E.M.E.; writing — review and editing, E.M.E.; supervision, Dr. Omoogun Ajayi. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement:

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

References

1. Abua S (2002) Okuni community land use plan: A report on participatory land use planning for Okuni Community, Calabar. Cross River State Forestry Commission
2. Agbor CO (1997) Participatory forest management in Cross River State, Nigeria. Paper presented at a two-day seminar on Cross River Basin — Nature and Culture. Natural Museum, Calabar, May 16–20
3. Agrawal A, Gibson CC (1999) Enchantment and disenchantment: The role of community in natural resources conservation. World Dev 27(2):225–247. https://doi.org/10.1016/S0305-750X(98)00140-9
4. Ahn HW (1978) Village forestry in Korea. Paper presented at the 8th World Forestry Congress, Jakarta, October 16–28
5. Ajake AO (1998) Women in forest resources use and management in Akamkpa Local Government Area. Unpublished MSc Thesis, Faculty of Social Sciences, University of Calabar, Nigeria
6. Bisong FE (2001) Natural resources use, conservation and management. University of Calabar
7. Cunningham WP, Cunningham MA (2004) Principles of environmental science: Inquiry and applications, 2nd edn. McGraw-Hill
8. Eckholm EP (1979) Planting for the future: Forestry for human needs. Worldwatch Institute
9. FAO (2005) Sustainable management of tropical forests. Food and Agriculture Organization of the United Nations
10. IUCN (1990) Caring for the Earth: A strategy for sustainable living. IUCN/UNEP/WWF

11. Kerlinger FN (1986) Foundations of behavioural research, 3rd edn. Holt, Rinehart and Winston
12. Nwoboshi LC (1987) Tropical silviculture: Principles and techniques. Ibadan University
13. Ogar A (2003) Community participation in forest resources conservation in Cross River State. Environmental Studies Series
14. Park CC (1992) Tropical rainforests. Routledge
15. Sharma NP (1992) Managing the world's forests: Looking for balance between conservation and development. Kendall/Hunt Publishing
16. Tyani L (2007) An overview of deforestation and its impacts on forest resources in Nigeria. Federal Ministry of Environment
17. World Bank (1975) Nepal: Community forestry and development project. World Bank
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