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Forest conservation practices: Insights of local communities near wildlife protected areas in Ghana

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Abstract

Effective forest conservation depends on active community participation; however, local communities in Ghana are often excluded from policy development and decision-making processes. This study explored community perspectives on forest conservation by identifying practices that local inhabitants believe could help preserve and sustainably manage two wildlife-protected areas within the forest–savannah transition zone of Ghana: Boabeng-Fiema Monkey Sanctuary (BFMS) and Kogyae Strict Nature Reserve (KSNR). A cross-sectional survey of 300 respondents was conducted using semi-structured questionnaires to gather insights into conservation practices suggested by the local populace. A Multinomial Logistic Regression (MLR) model was employed to assess whether sociodemographic variables such as age, sex, education level, occupation and residential status influenced these perspectives. Results indicate that wildfire prevention was the most emphasised conservation strategy in BFMS (38.6 %), reflecting concerns over increasing fire incidence and its ecological impacts, whereas, respondents in KSNR (37.2 %) emphasised the need for increased staffing and improved monitoring and enforcement capacity. Socio-demographic characteristics did not have a statistically significant influence on conservation preferences ($p > 0.05$), indicating that direct interaction with the forest, as experienced by local communities, is one of the key drivers of knowledge on how to sustainably preserve and manage it. These findings highlight the important role of local knowledge and community-driven strategies in shaping sustainable land-use practices and improving governance of protected landscapes. Integrating such perspectives into formal conservation policies can enhance ecosystem resilience, strengthen landscape multifunctionality and support equitable resource management. The study contributes to ongoing discussions on participatory governance and policy innovation in tropical landscapes and aligns with global sustainability goals, particularly SDG 13 (Climate Action) and SDG 15 (Life on Land).

Introduction

Communities surrounding protected areas (PA) possess valuable knowledge and perspectives on forest conservation developed through long term interactions with forest ecosystems Sobeng et al 2023. These perspectives shape community participation in conservation through locally practiced forest management approaches, including agroforestry and selective logging Sarfo Adu et al 2022. Integrating local knowledge into community-based conservation can strengthen sustainable forest management. Nonetheless, local communities are often excluded from formal decision-making, limiting the contribution of their knowledge to conservation efforts. This study assessed forest conservation practices from the perspective of communities living near two wildlife-protected areas in Ghana. Specifically, it aimed to a) Identify forest conservation practices that local communities believe can help preserve the protected area forests b) Assess the influence of socio demographic characteristics on community perspectives regarding forest conservation practices.

Material and Methods

The study targeted adult residents (≥ 18 years) of communities surrounding Boabeng Fiema Monkey Sanctuary (BFMS) and Kogyae Strict Nature Reserve (KSNR) (Figure 1). Based on a reconnaissance survey and consultations with community leaders, the accessible adult population was estimated at approximately 1600. Using Slovin's formula at a 5% margin of error, a minimum sample size of 320 respondents was determined. However, due to incomplete responses, 300 completed questionnaires were analysed comprising respondents from Boabeng (n=78), Fiema (n=72), Congo Nkwanta (n=40) Domeabra (n=49) Njaya (n=41) and Sankasase (n=20). Primary data were collected using semi-structured questionnaires administered through face-to-face interviews (Figure 2) and field observations. The questionnaires comprised open and closed-ended questions addressing respondents' socio-demographic characteristics and perceptions of forest conservation practices. Interviews were conducted in Twi to accommodate participants' linguistic backgrounds. A systematic random sampling approach was employed, with every third household selected along predetermined routes within the communities. Participation was voluntary and respondents were informed about the study objectives, confidentiality and their right to withdraw. Data were cleaned, coded and analysed using SPSS. Respondents' perceptions of forest conservation practices were obtained through the open-ended question: "What practices do you think can help preserve the forest in your area?" Responses were thematically coded into categories including wildfire prevention, staffing of forest protection units, community engagement, reforestation, alternative livelihoods and enforcement of forest laws. Each conservation theme was coded as a categorical outcome and analysed separately. Multinomial Logistic Regression (MLR) was used to assess the influence of age, sex, education and residential status on the likelihood of respondents mentioning specific conservation practices. Statistical significance was assessed at the 95% confidence level ($p < 0.05$).

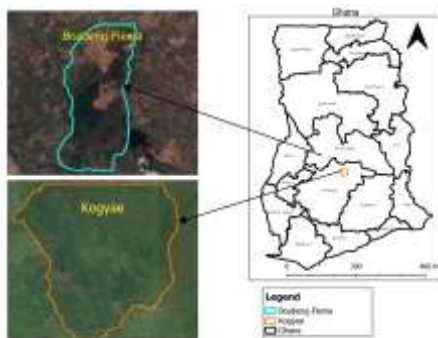


Fig. 1: Study area.



Fig. 2: Interviewing local inhabitants on forest conservation practices.

Results and Discussion

Farming was the predominant occupation, accounting for 61% of respondents in BFMS and 79% in KSNR (Figure 3). Most respondents in BFMS were indigenes (92%), whereas KSNR was predominantly composed of settlers (56%). The dominance of farming supports previous studies identifying the forest–savannah transition zone as a major agricultural landscape in Sub-Saharan Africa (Amankwah et al., 2021). The high proportion of settlers in KSNR migrated mainly in search of arable land for farming. This pattern has implications for land tenure, community dynamics and sustainable use of forest resources (Oduro-Ofori et al., 2015).

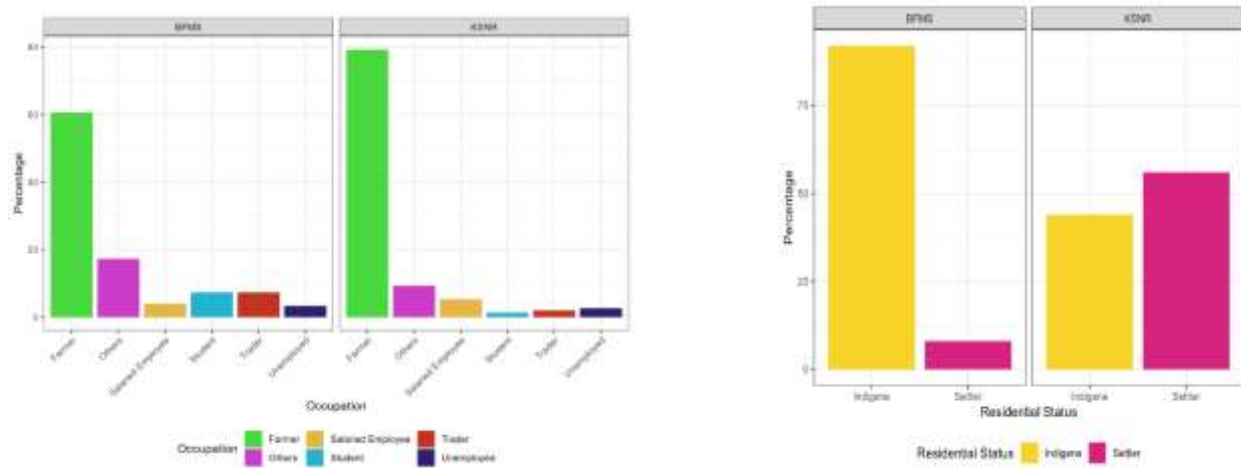


Fig. 3: Socio-demographic characteristics of respondents from Boabeng-Fiema Monkey Sanctuary (BFMS) and Kogyae Strict Nature Reserve (KSNR).

Local communities identified wildfire prevention (BFMS) and increased forest protection personnel (KSNR) as the most important conservation priorities (Table 1). Staffing shortages in KSNR, coupled with deteriorating staff quarters and lack of replacement after retirements, continue to weaken forest management capacity (Ayivor & Ntiemoa-Baidu, 2015). Slash-and-burn agriculture was prevalent in both sites, exacerbated by population growth, shorter fallow periods and climate stress. These practices increase the risk of bushfires and accelerate forest degradation (Amankwah et al., 2024).

Table 1: Perspectives of forest conservation practices from the local communities near the Boabeng-Fiema Monkey Sanctuary (BFMS) and the Kogyae Strict Nature Reserve (KSNR).

Conservation practices	BFMS (%)	KSNR (%)
Implementation of wildfire preventive measures	38.6	6.5
Staffing up the forest protection unit	1.8	37.2
Educating the populace about the importance of the forest	7.1	11.8
Enforcement of forest legislation	19	16.3
Prohibiting illegal felling of trees	7.1	
Regulating hunting activities		3.8
Enforcement of penalties for forest law violators	3.5	2.7
Engagement of the community in forest conservation programmes	4.4	13.3
Replanting indigenous tree species	9.3	
Intensifying management		4.6
Introduction of an alternative source of livelihood	2.2	
Others	7	3.8

The Multinomial Logistic Regression (MLR) analysis revealed that socio-demographic characteristics (education, age, sex and residential status) did not significantly affect respondents' perspectives on forest conservation in BFMS or KSNR (Table 2). The absence of a significant effect suggests a shared baseline conservation awareness among these communities, likely shaped by traditional ecological knowledge passed down through generations (Sinthumule & Mashau, 2020). Direct reliance on forest resources and participation in conservation efforts foster a communal stewardship mindset, potentially outweighing individual sociodemographic influences (Cebrián-Piqueras et al, 2020).

Table 2: Effect of socio-demographic characteristics on community forest conservation perspectives in BFMS and KSNR.

Socio-demographic Characteristics	BFMS p-value	KSNR p-value	Interpretation
Education	0.31–0.78	0.09–0.68	Not significant
Age	0.41–0.99	0.26–0.50	Not significant
Sex	0.76	0.22	Not significant
Residential Status	0.36	0.49	Not significant

Conclusions

- ✚ Increasing staffing, wildfire prevention, law enforcement and restoration through planting indigenous tree species is essential for conserving the forests of BFMS and KSNR.
- ✚ Conservation strategies that actively engage all community members can promote local stewardship and conservation outcomes.
- ✚ Integrating local knowledge with improved governance and monitoring systems will support the long-term ecological integrity of BFMS and KSNR.

Outlook

- ✓ Promote community participation in conservation, decision-making and implementation.
- ✓ Evaluate the long-term effectiveness of participatory conservation and environmental education programmes.
- ✓ Develop and assess integrated conservation policies that combine scientific evidence with traditional ecological knowledge.

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