

Local community attitudes toward wildlife conservation and protected area management in Dhera Dulfaker Block of Arsi Mountains National Park Ethiopia

Mohammed Kasso

muhesofi@yahoo.com

Hawassa University

Mulatu Girma

Hawassa University

Research Article

Keywords: Community attitudes, participatory conservation, protected areas, wildlife conservation, Arsi Mountains National Park

Posted Date: September 28th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10710736/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Additional Declarations: No competing interests reported.

Local community attitudes toward wildlife conservation and protected area management in
Dhera Dulfaker Block of Arsi Mountains National Park Ethiopia

Running Title

Community Attitudes toward Conservation in Arsi Mountains National Park

Authors

Mohammed Kasso^{1,*} Mulatu Girma²

Authors Affiliation

¹Department of Biology, College of Natural and Computational Sciences, Hawassa University, Hawassa, Ethiopia

²Department of Biology, College of Natural and Computational Sciences, Dire Dawa University, Dire Dawa, Ethiopia

*Corresponding Author

Mohammed Kasso, Biology Department, College of Natural and Computational Science, Hawassa University; P.O. Box 05; Hawassa, Ethiopia; Email: muhesofi@yahoo.com ; Tel: +251911015198; ORCID: 0000-0002-3863-4848

Abstract

The long-term effectiveness of protected areas depends on both ecological management and the support of local communities whose livelihoods are closely linked to protected landscapes. This study assessed community attitudes toward wildlife conservation and protected area management in the Dhera Dulfaker Block of Arsi Mountains National Park, Ethiopia. A cross-sectional mixed-methods design was employed, integrating household surveys, key informant interviews, focus group discussions, and field observations. Household survey data were collected from 151 randomly selected households in three kebeles adjacent to the protected area. Descriptive statistics summarized quantitative data, while qualitative data were analyzed thematically. Respondents generally expressed positive attitudes toward wildlife conservation and recognized the importance of protected areas for biodiversity conservation, environmental sustainability, and future generations. Wildlife conservation received the highest composite mean score (3.64), whereas institutional support received the lowest (2.53). Despite their positive conservation attitudes, respondents expressed dissatisfaction with environmental education, community participation, conservation communication, livelihood support, and institutional engagement. The findings indicate that while local communities support wildlife conservation, they perceive important weaknesses in conservation governance, institutional responsiveness, and opportunities for meaningful participation. Strengthening participatory governance, environmental education, institutional collaboration, equitable benefit-sharing, and livelihood diversification is therefore essential for enhancing community trust, fostering local stewardship, and improving the long-term effectiveness of protected area management in Arsi Mountains National Park and similar social–ecological systems.

Keywords: Community attitudes, participatory conservation, protected areas, wildlife conservation, Arsi Mountains National Park

Introduction

Protected areas (PAs) are widely recognized as essential for conserving biodiversity, maintaining ecological processes, and sustaining ecosystem services. Beyond protecting species and habitats, they contribute to climate regulation, watershed protection, carbon sequestration, and human well-being (Watson et al. 2014; UNEP-WCMC & IUCN 2021). From a human ecology perspective, however, protected areas are not solely ecological entities but social–ecological systems in which conservation outcomes are shaped by interactions among ecosystems, local livelihoods, institutions, and governance processes. Consequently, the long-term effectiveness of protected areas depends not only on ecological management but also on the willingness of local communities to support conservation initiatives and participate in protected area governance (Bennett et al. 2017; Oldekop et al. 2016).

Historically, biodiversity conservation in many developing countries was dominated by protection-oriented approaches that prioritized ecological objectives while restricting local access to natural resources. Although these approaches contributed to the establishment of protected areas, they frequently generated conflicts with neighbouring communities by limiting access to land, grazing areas, forest products, and other resources on which rural livelihoods depended (Andrade & Rhodes 2012; Clements et al. 2014). Such experiences

demonstrated that conservation initiatives are unlikely to achieve long-term success when they overlook the socioeconomic realities of local resource users. Consequently, contemporary conservation has increasingly shifted toward participatory and community-based approaches that recognize local people as key stakeholders in conservation planning, governance, and benefit-sharing. This transition reflects growing recognition that effective biodiversity conservation depends on building trust, fostering collaboration, and creating institutions that are perceived as legitimate, equitable, and responsive to local needs (Berkes 2004; Bennett et al. 2017)..

Community attitudes toward conservation are shaped by complex interactions among socioeconomic conditions, institutional arrangements, and ecological experiences. In rural landscapes where households depend directly on natural resources for agriculture, livestock production, and household energy, perceptions of conservation are often influenced by the extent to which protected areas affect livelihoods and provide tangible benefits. At the same time, institutional factors—including transparency, trust, participation, and equitable benefit-sharing—strongly influence whether communities perceive conservation policies as legitimate and worthy of support (Karanth & Nepal 2012; Mutanga et al. 2015). Positive conservation attitudes are associated with greater compliance with conservation regulations, increased environmental stewardship, and stronger support for protected area management (Oldekop et al. 2016; Moorhouse et al. 2025). Conversely, limited livelihood opportunities, weak institutional engagement, and perceived inequities in conservation governance may undermine community support and increase pressure on protected ecosystems (Ferraro et al. 2011). Understanding these interconnected social and ecological factors is therefore essential for designing conservation strategies that are both ecologically effective and socially sustainable.

Recent conservation research recognizes that the effectiveness of protected area management depends not only on ecological performance but also on the social legitimacy of conservation institutions. Social legitimacy develops when local communities perceive conservation policies as fair, transparent, and responsive to their needs and when they have meaningful opportunities to participate in decision-making processes (Bennett et al. 2017; Oldekop et al. 2016). Such legitimacy strengthens trust, encourages voluntary compliance with conservation regulations, and promotes collective stewardship of natural resources. Consequently, understanding local perceptions has become an essential component of evidence-based conservation planning and adaptive governance, enabling conservation managers to design interventions that balance biodiversity conservation with local livelihood needs while maintaining long-term community support (Watson et al. 2014; Andrade & Rhodes 2012).

Across sub-Saharan Africa, protected areas are embedded within human-dominated landscapes where rural households depend heavily on agriculture, livestock production, and natural resources for their livelihoods. This close dependence creates complex social–ecological interactions in which biodiversity conservation and livelihood security are often pursued simultaneously but may also come into conflict. As agricultural expansion, livestock grazing, and resource extraction intensify, conservation institutions face increasing challenges in balancing ecological objectives with the socioeconomic needs of local communities. Consequently, understanding how rural households perceive conservation

interventions has become a priority for developing governance approaches that promote both biodiversity conservation and sustainable livelihoods (Valbuena et al. 2012).

Ethiopia possesses diverse ecosystems and globally important biodiversity resources but faces continuing environmental pressures associated with land-use change, habitat degradation, agricultural expansion, and increasing human demand for natural resources (Young, 2012; Mengist, 2020). Protected areas in Ethiopia increasingly encounter challenges associated with balancing conservation objectives and local livelihood requirements (Jiren et al., 2021). Studies from Arsi Mountains National Park have further demonstrated that local households remain highly dependent on protected area resources, creating potential tensions between conservation objectives and livelihood needs (Deyaso, 2021). Improving community participation and institutional responsiveness has therefore become central to strengthening conservation outcomes.

Arsi Mountains National Park is one of Ethiopia's most important protected landscapes, supporting diverse vegetation communities, endemic plant species, and wildlife of national conservation significance. Ecological studies have documented both the biological importance of the park and the growing pressures associated with livestock grazing, agricultural expansion, settlement, and resource extraction (Girma et al. 2018; Bantihun et al. 2018). These pressures are particularly evident in the Dhera Dulfaker Block, where protected habitats are closely interspersed with rural communities practicing mixed crop–livestock farming. The resulting interactions between conservation objectives and local livelihood strategies make the area an important social–ecological system for examining how institutional governance, livelihood dependence, and community perceptions influence support for wildlife conservation. Understanding these interactions is essential for developing management strategies that are both ecologically effective and socially acceptable.

Although previous studies have examined biodiversity conservation, natural resource dependence, and human–wildlife interactions in Ethiopia, relatively little empirical attention has been given to how local communities simultaneously perceive wildlife conservation, institutional governance, and opportunities for participation within specific protected landscapes. Existing studies from Arsi Mountains National Park have primarily focused on ecological conditions or household dependence on natural resources, with comparatively limited analysis of the social dimensions of conservation, particularly community attitudes toward institutional support, participatory governance, and conservation service delivery in the Dhera Dulfaker Block. Addressing this gap is important because understanding how local people evaluate conservation institutions provides evidence for designing management strategies that strengthen both biodiversity conservation and community support.

This study contributes to the growing literature on the human dimensions of conservation by examining how livelihood dependence, institutional governance, and community participation influence attitudes toward wildlife conservation in a protected landscape of Ethiopia. By integrating quantitative and qualitative evidence, the study provides insights into the social factors that shape conservation support and offers practical recommendations for strengthening community-centred conservation governance. The findings are expected to inform protected area management not only in Arsi Mountains National Park but also in other protected landscapes where biodiversity conservation must be reconciled with the livelihood needs of neighbouring communities.

Accordingly, this study aimed to assess local community attitudes toward wildlife conservation and protected area management in the Dhera Dulfaker Block of Arsi Mountains National Park, Ethiopia. Specifically, the study sought to:

1. describe the demographic and livelihood characteristics of households surrounding the protected area;
2. assess community attitudes toward wildlife conservation and protected area management;
3. examine local perceptions of institutional support, conservation governance, and community participation; and
4. develop evidence-based recommendations for strengthening participatory conservation and improving protected area management.

Based on previous literature, we expected that respondents would express generally favourable attitudes toward wildlife conservation while identifying weaknesses in institutional support and opportunities for community participation.

Materials and Methods

Study Area

The study was conducted in the Dhera Dulfaker Block of Arsi Mountains National Park (AMNP), located in Dodota-Sire District, Arsi Zone, and Oromia Regional State, Ethiopia. The study area lies approximately 125 km southeast of Addis Ababa and approximately 55 km from the zonal administrative centre. Geographically, the area is located around 8°20'30.88" N and 39°19'44.85" E, with elevations ranging from approximately 2,200 to 2,400 m above sea level. The Dhera Dulfaker Block covers approximately 13 km² and is bordered by surrounding kebeles including Dire Kiltu, Awash Bishola, Dulfaker, and Dhera town administrative units (Figure 1). The block constitutes an important conservation landscape within Arsi Mountains National Park and supports biodiversity resources that are increasingly exposed to anthropogenic pressures associated with agricultural expansion, grazing, and resource extraction (Bantihun et al., 2018).

The area is characterized by mixed crop–livestock production systems occurring adjacent to protected habitats, creating strong interactions between local livelihoods and conservation activities. Arsi Mountains National Park supports diverse vegetation communities and numerous endemic species of conservation importance; however, these resources are increasingly threatened by livestock encroachment, tree harvesting, and other anthropogenic disturbances (Girma et al., 2018). Previous research from other blocks of Arsi Mountains National Park reported substantial household dependence on natural resources obtained from protected landscapes, emphasizing the close linkage between local livelihoods and conservation management within the park system (Deyaso, 2021). Agricultural production and livestock rearing constitute the principal livelihood strategies of surrounding communities.

Previous assessments have highlighted the ecological importance of the Dulfaker Block and identified increasing conservation challenges related to habitat degradation, human

encroachment, livestock grazing, and resource use pressures (Bantihun et al., 2018). These conservation concerns underscore the importance of understanding local community attitudes toward wildlife conservation and protected area management in the area.

The Dhera Dulfaker Block provides an appropriate setting for examining the social dimensions of protected area management because it represents a landscape where biodiversity conservation and rural livelihoods are closely interconnected. Households living adjacent to the park depend primarily on mixed crop–livestock farming and maintain frequent interactions with protected resources for grazing, fuelwood, and other ecosystem services. These interactions create both opportunities for community participation in conservation and potential conflicts over resource access, making the area particularly suitable for investigating how local perceptions of governance, participation, and conservation benefits influence attitudes toward wildlife conservation.

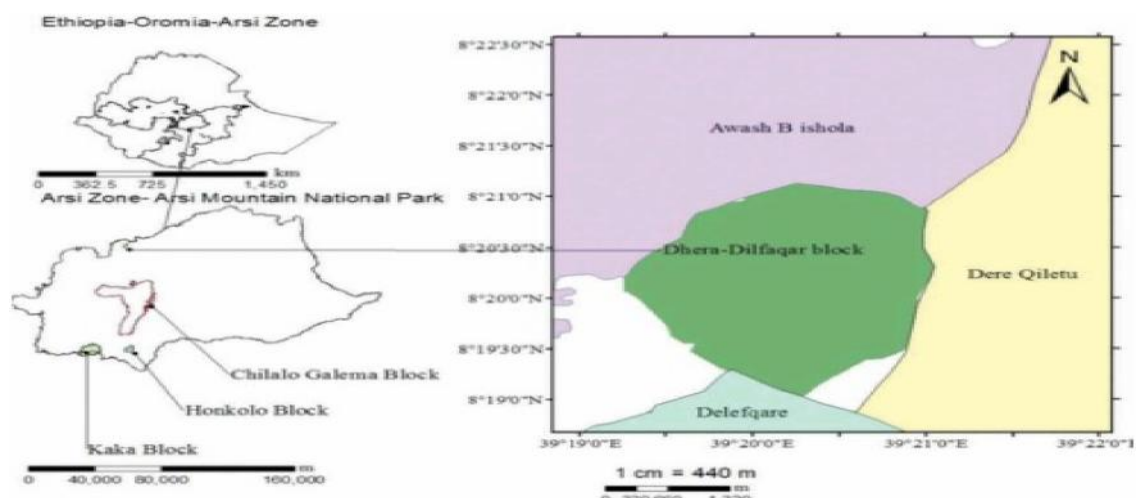


Figure 1. Location of the Dhera Dulfaker Block of Arsi Mountains National Park and surrounding study kebeles
(Sources: AMNP Office)

Study Design

A cross-sectional mixed-methods research design was adopted because the study sought to generate both quantitative and qualitative evidence regarding community attitudes toward wildlife conservation and protected area management. The quantitative component enabled the measurement of patterns in community perceptions across households, whereas the qualitative component provided contextual insights into the experiences, motivations, and institutional factors underlying those perceptions. Integrating these complementary sources of evidence enhanced the credibility and comprehensiveness of the findings and facilitated a more nuanced understanding of the social dimensions of conservation.

The quantitative component relied on household surveys, while qualitative evidence was generated through key informant interviews, focus group discussions (FGDs), and field observations.

Sampling Procedure and Sample Size

The study targeted households residing adjacent to the Dhera Dildaker Block of Arsi Mountains National Park. Three kebeles—Dire Kiltu, Awash Bishola, and Dildaker—were purposively selected because of their direct interaction with protected area resources and proximity to conservation management activities.

According to local administrative records, a total of 2,342 households were identified across the selected kebeles. Households were proportionally allocated among kebeles to ensure representative coverage of the study population. According to local administrative records, the selected kebeles contained a total of 2,342 households. The required sample size was determined using Yamane's (1967) formula at a 95% confidence level and 8% margin of error:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- n = required sample size
- N = total number of households
- e = level of precision (0.08)

Substituting $N = 2,342$:

$$n = \frac{2,342}{1 + 2,342(0.08)^2}$$

$$n = 146$$

Based on this formula, a sample size of 146 households was obtained. To account for possible non-response and incomplete questionnaires, an additional 10 households were included, resulting in a final sample size of 156 households. The sample was then proportionally allocated among the selected kebeles according to the number of households in each kebele (Table 1). A total of 156 questionnaires were administered to the sampled households. Five questionnaires were not returned and were therefore excluded from the analysis, resulting in 151 completed questionnaires retained for the final analysis (response rate: 96.8%).

Household respondents were selected using simple random sampling procedures. Key informants were selected purposively based on conservation experience, institutional role, and familiarity with local conservation issues.

Simple random sampling was employed to minimize selection bias and to ensure that all eligible households within the selected kebeles had an equal probability of inclusion. This approach reduced potential selection bias among eligible households within the selected kebeles and supported descriptive assessment of community perceptions in the study area.

Table 1. Distribution of sampled households across study kebeles

Kebele	Total households	Surveyed households	Percentage (%)
Dire Kiltu	1,020	68	44

Awash Bishola	700	46	29
Dilfaker	622	42	27
Total	2,342	156	100

Data Collection

The household questionnaire was developed based on the study objectives and a review of published literature on community attitudes toward wildlife conservation and protected area management. The instrument was adapted to the socioeconomic and environmental context of communities surrounding Arsi Mountains National Park. Prior to the main survey, the questionnaire was pre-tested with a small number of households outside the final sample to assess clarity, relevance, cultural appropriateness, and the logical sequencing of questions. Based on feedback obtained during the pre-test, minor revisions were made to improve the wording and organization of the questionnaire before the final data collection.

Data were collected in 2023 using four complementary methods: structured household questionnaires, key informant interviews, focus group discussions (FGDs), and direct field observations. The household questionnaire was used to collect quantitative data on respondents' socioeconomic characteristics and attitudes toward wildlife conservation and protected area management. Key informant interviews with park officials, local government representatives, and community leaders provided detailed information on conservation governance, institutional practices, and management challenges. Focus group discussions were conducted to explore community perceptions, experiences, and collective views regarding wildlife conservation and protected area management. Field observations were undertaken to verify information obtained from respondents and to document environmental conditions and human activities within and around the protected area. The use of multiple data collection methods enabled triangulation of evidence, thereby enhancing the credibility and comprehensiveness of the study findings (Johnson et al. 2007).

Structured questionnaires containing closed-ended and open-ended questions were administered to sampled households. Five-point Likert-scale items were used to evaluate attitudes toward wildlife conservation, institutional performance, and conservation participation. Questionnaires were initially prepared in English and translated into Afan Oromo before administration. Prior to field implementation, questionnaire items were reviewed and refined to improve clarity and consistency. A pilot assessment was conducted prior to the main survey to evaluate question clarity, relevance, and respondent understanding. Feedback obtained during pretesting was used to refine questionnaire wording and improve data quality.

Semi-structured interviews were conducted with selected individuals representing park administration, local authorities, development agents, community leaders, and conservation personnel.

Focus group discussions were conducted within the selected kebeles to capture broader community experiences regarding conservation governance, livelihood dependence, and community–park interactions.

Direct observations were undertaken to document visible interactions between local communities and protected landscapes including grazing activities, land-use patterns, settlement expansion, and resource extraction.

Data Analysis

Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS) version 26. Frequencies and percentages were used to summarise respondents' socioeconomic and livelihood characteristics. Attitude items were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and means and standard deviations were calculated for individual indicators. Mean scores were interpreted as strongly disagree (1.00–1.49), disagree (1.50–2.49), moderate (2.50–3.49), agree (3.50–4.49), and strongly agree (4.50–5.00), following Boone and Boone (2012). Four thematic dimensions were considered: park administration, community participation and leadership, wildlife conservation, and institutional support. Composite scores were calculated as the mean of the indicator scores within each dimension.

Qualitative information from key informant interviews, focus group discussions, and field observations was organised and analysed thematically following Braun and Clarke (2006). The qualitative evidence was used to contextualise and interpret the patterns identified in the household survey.

Ethical Considerations

Ethical clearance and administrative permission were obtained from the responsible institutional authorities before field implementation.

Participation was voluntary and informed consent was obtained from all respondents prior to interviews and questionnaire administration. Confidentiality and anonymity were maintained throughout the study.

RESULTS

Socio-demographic Characteristics of Respondents

A total of 151 completed household questionnaires were included in the final analysis (Table 2). Respondents were predominantly male-headed households (89.4%), whereas female respondents accounted for 10.6% of the sample. Most respondents belonged to the 49–65-year age category (57.0%), followed by 36–48 years (23.2%) and >66 years (19.9%).

Educational attainment was generally low. Approximately two-thirds (66.9%) completed primary education (Grades 1–8), whereas 16.6% had no formal education and only 3.3% attained diploma-level education (Table 2). Most respondents were married (95.4%).

Table 2. Socio-demographic characteristics of respondents

Variable	Category	Frequency	Percentage
Gender	Male	135	89.4
	Female	16	10.6
Age (years)	36–48	35	23.2
	49–65	86	57.0
	>66	30	19.9

Education	No formal education	25	16.6
	Grade 1–8	101	66.9
	Grade 9–12	20	13.2
	Diploma	5	3.3
Marital status	Married	144	95.4
	Divorced	7	4.6

Land Ownership, Livelihoods, and Proximity to Protected Area

All surveyed households reported ownership or access to agricultural land. Most respondents (78.8%) owned between 2 and 3 ha of farmland (Table 3).

Approximately 70.2% cultivated land within 1–2 km of the protected area boundary. Mixed crop–livestock farming was identified as the dominant livelihood strategy (71.5%) (Table 3).

Table 3. Household livelihood and land-use characteristics

Variable	Category	Frequency	Percentage
Land ownership	Yes	151	100
	No	0	0
Land size	<1 ha	23	15.2
	2–3 ha	119	78.8
	4–5 ha	9	6.0
Distance to protected area	1–2 km	106	70.2
	3–4 km	40	26.5
	≥5 km	5	3.3
Livestock ownership	Yes	151	100
	No	0	0
Livestock number	1–5	5	3.3
	6–10	15	9.9
	11–15	121	80.1
	>16	10	6.6
Main livelihood	Agriculture	20	13.2
	Livestock	6	4.0
	Mixed farming	108	71.5
	Employment	17	11.3

Community Attitudes toward Conservation and Institutional Roles

Attitudes Toward Park Administration

The community attitude toward park administration is given on Table 4. Respondents generally agreed that park administration collaborated with communities to control illegal tree cutting (3.74 ± 0.79) (Table 4). However, lower scores were reported for environmental education, conservation research support, and promotion of alternative energy.

Table 4. Community attitudes toward park administration

Indicator	Mean $\pm$ SD	Interpretation
Collaboration in controlling illegal tree cutting	3.74 $\pm$ 0.79	Agree
Environmental education	2.22 $\pm$ 0.81	Disagree
Alternative energy promotion	2.44 $\pm$ 0.99	Disagree
Seed conservation initiatives	2.34 $\pm$ 0.89	Disagree
Support for conservation research	2.45 $\pm$ 0.86	Disagree

Community Participation and Leadership

Respondents expressed relatively positive attitudes toward conservation responsibility but lower evaluations regarding practical participation (Table 5).

Table 5. Community participation and leadership attitudes

Indicator	Mean $\pm$ SD	Interpretation
Community responsibility for conservation	3.80 $\pm$ 0.88	Agree
Ecological restoration	3.79 $\pm$ 0.85	Agree
Awareness creation by leaders	2.25 $\pm$ 0.95	Disagree
Participation in wildlife conservation	2.34 $\pm$ 0.78	Disagree
Regular conservation discussion	2.28 $\pm$ 0.95	Disagree

Attitudes Toward Wildlife Conservation

Community attitudes toward wildlife conservation were generally favourable, although perceptions varied across specific conservation issues (Table 6). Strong agreement was expressed regarding the benefits of wildlife conservation for future generations and the role of conservation in mitigating climate change, whereas support for protected area establishment was comparatively moderate.

Table 6. Community attitudes toward wildlife conservation

Indicator	Mean $\pm$ SD	Interpretation
Wildlife conservation benefits future generations	3.87 $\pm$ 0.81	Agree
Protected area establishment	3.29 $\pm$ 0.85	Moderate
Deforestation contributes to climate change	3.83 $\pm$ 0.84	Agree
Conservation areas mitigate climate change	3.53 $\pm$ 0.90	Agree
Protected areas should continue	3.66 $\pm$ 0.86	Agree

Institutional Support and Conservation Services

Respondents reported moderate institutional confidence (Figure 2).

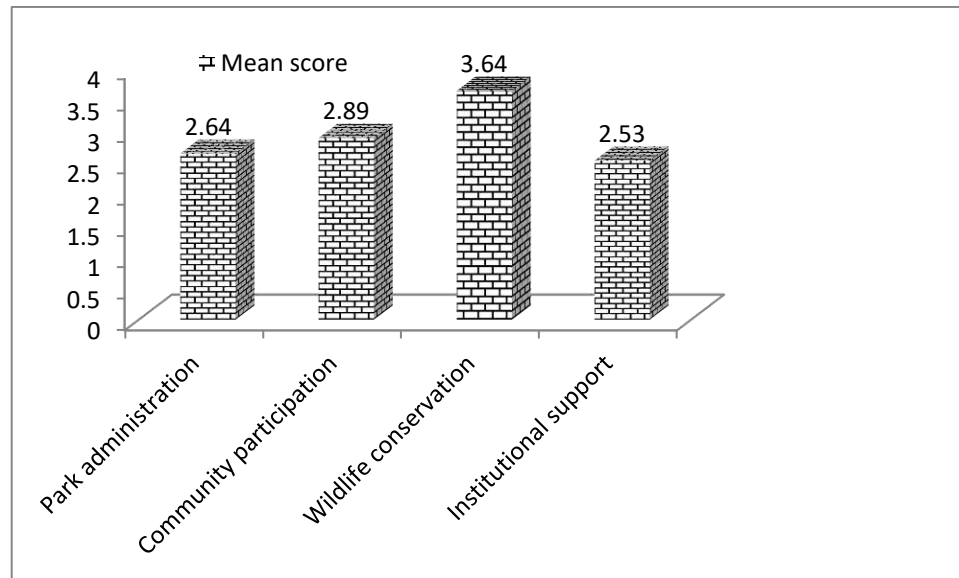


Figure 2. Mean attitude scores across major conservation dimensions.

NB: Interpretation: 1.00–1.49 = Strongly disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Moderate, 3.50–4.49 = Agree and 4.50–5.00 = Strongly agree

Respondents perceived institutional support for conservation activities to be generally low (Table 7). Among the assessed indicators, awareness creation received the highest mean score (3.17 ± 0.91), indicating a moderate level of agreement that institutions conduct conservation awareness activities. However, respondents disagreed regarding the adequacy of other institutional interventions. Alternative energy promotion showed the lowest mean score (2.15 ± 0.93), suggesting limited institutional efforts to support energy alternatives that may reduce pressure on natural resources. Likewise, respondents expressed disagreement concerning conservation research support (2.37 ± 0.82) and conservation enforcement (2.42 ± 0.90), indicating perceived weaknesses in institutional engagement, scientific support, and implementation of conservation measures.

Overall, the findings indicate that institutional efforts were perceived as more visible in awareness creation than in practical conservation support, research, and enforcement activities.

Table 7. Institutional support and conservation services

Indicator	Mean $\pm$ SD	Interpretation
Awareness creation	3.17 ± 0.91	Moderate
Alternative energy promotion	2.15 ± 0.93	Disagree

Conservation research support	2.37 ± 0.82	Disagree
Conservation enforcement	2.42 ± 0.90	Disagree

Integrated Interpretation of Conservation Attitudes

Table 8 presents the overall interpretation of major conservation dimensions assessed in the study area. The findings indicate variation in respondents' perceptions across different components of conservation management. Park administration was rated as moderate, suggesting that management activities and administrative performance are perceived as functioning at an intermediate level but still requires improvement to meet conservation expectations fully. Similarly, community participation was interpreted as moderate, indicating that local communities are involved in conservation activities to some extent, although opportunities for deeper engagement and collaborative decision-making remain.

In contrast, wildlife conservation received a positive interpretation, reflecting relatively favourable perceptions regarding conservation outcomes and efforts directed toward protecting wildlife resources. However, institutional support was interpreted as weak, indicating limited effectiveness of institutional mechanisms, including service provision, research support, enforcement, and facilitation of conservation initiatives.

Overall, respondents demonstrated a generally positive orientation toward wildlife conservation despite identifying important shortcomings in institutional support and community participation.

Table 8. Composite interpretation of conservation dimensions

Dimension	Overall interpretation
Park administration	Moderate
Community participation	Moderate
Wildlife conservation	Positive
Institutional support	Weak
Overall conservation attitude	Moderate-Positive

Overall, communities demonstrated positive conservation values but perceived institutional and participatory limitations (Figure 3).

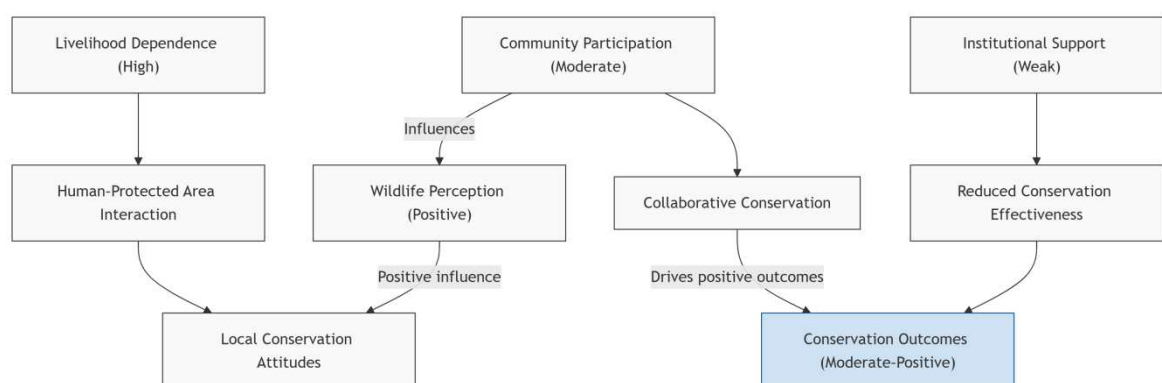


Figure 3. Conceptual synthesis of factors influencing local conservation attitudes.

Note: The conceptual framework was developed by the authors based on integrated interpretation of quantitative survey results, key informant interviews, focus group discussions, and field observations.

Discussion

Community Characteristics and Conservation Context

The demographic and livelihood characteristics observed in this study indicate that conservation outcomes in the Dhera Dildaker Block are strongly influenced by communities with long-term dependence on agricultural and livestock-based production systems. The predominance of mixed farming livelihoods and the close proximity of household farmland to the protected area suggest frequent interactions between local communities and conservation landscapes.

Such livelihood dependence is commonly associated with increased exposure to conservation restrictions and may influence community perceptions toward protected area management. Similar findings were reported from the Chilalo-Galama Block of Arsi Mountains National Park, where household dependence on protected area resources was identified as a major factor shaping interactions between local communities and conservation authorities (Deyaso, 2021). Similar patterns have been reported across protected landscapes in Ethiopia and other African conservation systems where local livelihoods remain closely connected to natural resource access (Jiren et al., 2021; Mengist, 2020; Kasso et al., 2023).

Educational attainment among respondents was generally low, which may influence conservation awareness, access to environmental information, and engagement in formal conservation programs. Previous studies have shown that education can positively influence environmental attitudes and support for conservation interventions (Karanth & Nepal, 2012). The combination of low educational attainment and high dependence on agriculture and livestock production observed in this study suggests that conservation interventions must be accompanied by targeted awareness and capacity-building programs. Where rural livelihoods remain closely linked to natural resource use, conservation outcomes are often influenced by the extent to which local communities understand the ecological and socioeconomic benefits associated with biodiversity conservation (Oldekop et al., 2016; Bennett et al., 2017).

Community Attitudes toward Wildlife Conservation

The findings indicate that respondents generally demonstrated favourable attitudes toward wildlife conservation and acknowledged the importance of protected areas for future generations and environmental sustainability.

Positive perceptions toward conservation suggest that local communities do not fundamentally oppose wildlife protection but rather seek more equitable and practical engagement mechanisms. Similar findings were reported from Chimit Kola in north western Ethiopia, where most respondents expressed positive attitudes toward wildlife conservation despite the presence of conservation-related challenges and livelihood concerns (Wale et al., 2025). Comparable findings have been reported in Ethiopia and elsewhere where communities recognized ecological benefits despite experiencing livelihood-related constraints (Merkebu & Mammo, 2021; Kerorsa, 2024).

The relatively strong agreement regarding the contribution of conservation to climate regulation may reflect increasing local awareness of environmental degradation and changing environmental conditions. This observation supports broader arguments that conservation

support can increase when communities perceive direct environmental benefits (Oldekop et al., 2016; Kasso et al., 2023). Studies across sub-Saharan Africa indicate that conservation institutions frequently receive stronger recognition for enforcement activities than for community engagement, benefit-sharing, and livelihood support functions, resulting in reduced institutional trust and lower participation in conservation programs (Bennett et al., 2017; Jiren et al., 2021).

However, only moderate support was recorded regarding protected area establishment itself. This pattern may indicate continuing concerns regarding restrictions on land access and limited local benefits, which has been documented in previous conservation studies (Andrade & Rhodes, 2012).

The coexistence of positive attitudes toward wildlife conservation and moderate support for protected area establishment suggests that local communities may distinguish between conservation objectives and the practical consequences of conservation policies. Similar observations have been reported in several protected areas where residents supported biodiversity conservation in principle but expressed concerns regarding access restrictions, agricultural expansion, grazing rights, and limited livelihood benefits (Andrade & Rhodes, 2012; Karanth & Nepal, 2012; Oldekop et al., 2016). This finding highlights the importance of integrating social and economic considerations into conservation planning to enhance local acceptance and long-term conservation effectiveness.

Institutional Support and Community Participation

Although respondents expressed generally positive conservation attitudes, they reported comparatively lower satisfaction regarding environmental education, promotion of alternative livelihood options, conservation communication, and institutional engagement.

Lower confidence in institutional support mechanisms may indicate that conservation interventions remain more enforcement-oriented than participatory. Similar challenges have been documented in community conservation initiatives where limited engagement reduced conservation effectiveness and local ownership (Berkes, 2004; Bennett et al., 2017).

Community members also reported relatively weak participation in practical conservation activities and limited awareness initiatives led by local institutions. Participatory conservation approaches increasingly emphasize collaboration, knowledge exchange, and benefit sharing as mechanisms for strengthening conservation outcomes (Bennett et al., 2017). These observations indicate that conservation challenges in the Dhera Dalfaker Block are not solely ecological but also institutional. Effective conservation governance requires transparent communication, accountability, equitable benefit-sharing, and meaningful stakeholder participation. Strengthening these governance dimensions may improve both conservation effectiveness and community trust in protected area management institutions (Jiren et al., 2021; Bennett et al., 2017).

Comparison with previous studies indicated that protected area effectiveness depends not only on ecological management interventions but also on the degree of social legitimacy achieved among local stakeholders. Communities that perceive conservation institutions as fair, inclusive, and responsive are generally more likely to support conservation initiatives and participate in biodiversity protection efforts (Bennett et al., 2017; Oldekop et al., 2016). Where conservation governance promotes transparency, accountability, and equitable benefit-sharing, voluntary compliance with conservation regulations is often strengthened and conflicts between local communities and conservation authorities are reduced (Andrade & Rhodes, 2012; Berkes, 2004). Consequently, investments in community engagement, benefit-sharing mechanisms, and participatory governance should be considered central conservation strategies rather than complementary activities. Such approaches may be particularly

important in Arsi Mountains National Park, where local livelihoods remain closely linked to natural resource use and conservation outcomes are strongly influenced by community cooperation (Jiren et al., 2021; Deyaso, 2021).

These findings suggest that improving institutional responsiveness may generate greater conservation support than increasing enforcement alone. Recent evidence from Ethiopia further indicates that education, awareness, and opportunities for community participation are important factors shaping positive attitudes toward wildlife conservation (Wale et al., 2025). Implication from community-based conservation programs indicates that trust in conservation institutions is often a stronger predictor of conservation support than regulatory enforcement alone. When local communities perceive conservation institutions as transparent, inclusive, and responsive to local concerns, they are more likely to participate in conservation activities and comply voluntarily with management regulations (Berkes, 2004; Bennett et al., 2017). Strengthening communication channels between park authorities and local residents may therefore represent a cost-effective strategy for improving conservation outcomes within the Dhera Dildaker Block.

Conservation and Management Implications

The findings of this study provide important practical implications for protected area management in the Dhera Dildaker Block and other comparable conservation landscapes. These implications are particularly relevant in the Ethiopian context, where many protected areas are embedded within human-dominated landscapes and surrounded by communities that depend substantially on agriculture, livestock production, and natural resource extraction for their livelihoods. Similar challenges associated with limited community participation, inadequate institutional support, and competing resource-use demands have been documented across multiple conservation areas in Ethiopia, indicating the broader relevance of community-centred conservation approaches for improving conservation outcomes at the national scale (Jiren et al., 2021; Mengist, 2020; Merkebu & Mammo, 2021; Kasso et al., 2023).

The generally positive but not uniformly strong conservation attitudes observed in this study suggest the need to strengthen environmental education and awareness initiatives. Enhancing local understanding of biodiversity values, ecosystem services, and the long-term benefits of conservation may improve community participation and reinforce support for protected area management (Wale et al., 2025).

The findings also highlight the importance of creating more inclusive governance structures that enable communities to participate meaningfully in conservation planning, implementation, and decision-making processes. Strengthening participatory mechanisms can improve transparency, increase local accountability, and reinforce shared responsibility for biodiversity conservation.

Effective conservation outcomes additionally require stronger coordination among park administration, local government institutions, and community representatives (Kasso et al., 2023). Enhanced institutional collaboration may improve trust, reduce conflicts over resource use, and support long-term conservation effectiveness. In this regard, adopting adaptive co-management approaches that integrate scientific evidence with local ecological knowledge offers a promising pathway for improving conservation legitimacy, strengthening conflict

resolution processes, and enhancing community ownership of conservation initiatives (Berkes, 2004; Bennett et al., 2017).

Given increasing anthropogenic pressures across protected landscapes, adaptive governance frameworks that balance ecological objectives with local development needs are increasingly recognized as essential. In Arsi Mountains National Park, ecological studies have already documented the impacts of livestock encroachment and vegetation disturbance on biodiversity resources, further emphasizing the need for effective community-based conservation approaches (Watson et al., 2014; Girma et al., 2018).

Strengths of the Study

Despite limitations associated with the availability of respondent-level datasets during manuscript preparation, the study provides important evidence regarding local community attitudes toward wildlife conservation in an understudied section of Arsi Mountains National Park. The integration of household surveys, key informant interviews, focus group discussions, and field observations strengthened the reliability of interpretations through methodological triangulation. Furthermore, the study contributes empirical evidence from Ethiopia, where understanding community perspectives remains essential for strengthening conservation governance and improving protected area management. The findings therefore provide useful insights for conservation practitioners, policymakers, and protected area managers seeking to promote community-centred conservation approaches in tropical landscapes.

Study Limitations

This study has some limitations. The cross-sectional design captures community perceptions at a particular point in time and therefore cannot assess changes in attitudes over time or establish causal relationships. In addition, the study focused on three kebeles surrounding the Dhera Dulfaker Block, and the findings should therefore be interpreted primarily within this local conservation context. Nevertheless, the integration of household survey data with key informant interviews, focus group discussions, and field observations provided complementary evidence for understanding community perceptions of wildlife conservation and protected-area management.

Conclusions and Recommendations

Conclusions

This study assessed community attitudes toward wildlife conservation and protected area management in the Dhera Dulfaker Block of Arsi Mountains National Park, Ethiopia. Overall, local communities expressed generally positive attitudes toward wildlife conservation and recognized the ecological and socioeconomic importance of conserving protected areas. However, respondents also identified important shortcomings in institutional support, community participation, and practical conservation interventions, indicating that positive conservation attitudes alone are insufficient to ensure long-term conservation success.

The findings demonstrate that effective wildlife conservation depends not only on ecological protection but also on strengthening relationships between protected area institutions and neighbouring communities. Greater transparency, meaningful community participation, equitable benefit-sharing, and improved institutional responsiveness are likely

to enhance public trust and encourage stronger local support for conservation initiatives. These findings reinforce the importance of integrating social and ecological dimensions in protected area governance and support the growing recognition that successful conservation requires collaborative approaches that balance biodiversity protection with sustainable rural livelihoods.

The study contributes to the human dimensions of conservation by providing empirical evidence on how institutional governance, livelihood dependence, and community participation shape conservation attitudes within a protected landscape in Ethiopia. The findings offer practical insights for protected area managers and policy-makers seeking to strengthen community-centred conservation and improve the long-term sustainability of biodiversity conservation in Arsi Mountains National Park and similar protected landscapes.

Management and Policy Recommendations

Based on the findings of this study, the following actions are recommended to strengthen wildlife conservation and protected area management in the Dhera Dildaker Block of Arsi Mountains National Park:

1. **Strengthen participatory governance.** Park management should promote meaningful community participation in conservation planning, implementation, and monitoring to enhance local ownership and improve institutional trust.
2. **Enhance institutional support and communication.** Regular dialogue between park authorities, local government, and surrounding communities should be strengthened to improve transparency, address local concerns, and build collaborative relationships.
3. **Promote sustainable livelihood opportunities.** Conservation programmes should be integrated with livelihood diversification initiatives, including support for sustainable agriculture, alternative energy sources, and income-generating activities that reduce dependence on protected area resources.
4. **Expand environmental education and awareness programmes.** Continuous conservation education should be provided to increase public understanding of biodiversity values and encourage long-term stewardship of wildlife and natural resources.
5. **Support long-term monitoring and future research.** Periodic assessments of community attitudes, institutional performance, and conservation outcomes should be undertaken to evaluate management effectiveness and guide adaptive protected area governance.

Implications for Conservation

The findings demonstrate that effective wildlife conservation depends not only on ecological protection but also on strengthening relationships between protected area institutions and neighbouring communities. Positive community attitudes alone are unlikely to ensure long-term conservation success unless they are supported by transparent governance, meaningful participation, equitable benefit-sharing, and livelihood opportunities. The lessons from this study are relevant not only to Arsi Mountains National Park but also to other protected landscapes in Ethiopia and similar social–ecological systems where biodiversity conservation depends on collaboration between conservation institutions and local communities.

Declarations

Funding

This work was supported by Dire Dawa University under MSc student fund.

Ethics Approval

This study was conducted in accordance with applicable ethical standards. Ethical approval was obtained prior to data collection. Permission to conduct field data collection was obtained from the appropriate authorities.

Clinical Trial Number

Not applicable.

Funding

This work was supported by Dire Dawa University, Ethiopia.

Acknowledgements

The authors express sincere appreciation to local communities, park management authorities, local administrative offices, and all participants who contributed information and support during data collection.

Author Contributions

MK: Conceptualization, Methodology, Data analysis, Writing – review & editing, Supervision. MG: Conceptualization, Methodology, Data collection, Data analysis, Writing – original draft both authors approved the final version of the manuscript.

Competing Interests

The authors declare that they have no competing interests.

Ethics Approval and Consent to Participate

Ethical approval for this study was obtained from the Dire Dawa University Institutional Review Board as part of the approval of the MSc research proposal before data collection commenced. The study was conducted in accordance with applicable institutional and national ethical requirements and the ethical principles of the Declaration of Helsinki, where applicable to non-clinical social research involving human participants. Participation was voluntary, and informed consent was obtained from all participants before completion of the questionnaire or participation in interviews and focus group discussions. Participants were informed of the purpose of the study and their right to participate voluntarily. Confidentiality and anonymity were maintained throughout the study, and no personally identifying information was disclosed. The study involved no clinical intervention, biological specimen collection, or human tissue sampling.

Consent for Publication

Not applicable.

Availability of Data and Materials

The datasets generated and/or analysed during the current study are not publicly available because the underlying questionnaire and interview data were collected from individual participants and may contain information subject to confidentiality and ethical restrictions. The data are available from the corresponding author on reasonable request, subject to appropriate ethical and privacy considerations.

References

- Andrade, G. S. M., & Rhodes, J. R. (2012). Protected areas and local communities: An inevitable partnership toward successful conservation strategies? *Ecology and Society*, 17(4), 14. <https://doi.org/10.5751/ES-05216-170414>
- Bantihun, G., Tadele, S., & Mengistu, A.A. (2018). Conservation Status of Dilifekar Block, Arsi Mountains National Park, Ethiopia. *International Journal of Research in Environmental Science*, 4(1), 20-26. <http://dx.doi.org/10.20431/2454-9444.0401003>
- Bennett, N. J., Roth, R., Klain, S. C., Chan, K. M. A., Christie, P., Clark, D. A., Cullman, G., Curran, D., Durbin, T. J., Epstein, G., Greenberg, A., Nelson, M. P., Sandlos, J., Stedman, R., Teel, T. L., Thomas, R., Verissimo, D., & Wyborn, C. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, 205, 93–108. <https://doi.org/10.1016/j.biocon.2016.10.006>
- Berkes, F. (2004). Rethinking community-based conservation. *Conservation Biology*, 18(3), 621–630. <https://doi.org/10.1111/j.1523-1739.2004.00077.x>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Boone, H. N., Jr., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*, 50(2), Article 2TOT2. <https://doi.org/10.34068/joe.50.02.48>
- Clements, T., Rainey, H., An, D., Rours, V., Tan, S., Thong, S., Sutherland, W. J., & Milner-Gulland, E. J. (2014). An evaluation of the effectiveness of a direct payment for biodiversity conservation: The Bird Nest Protection Program in Cambodia. *Biological Conservation*, 171, 50–59. <https://doi.org/10.1016/j.biocon.2014.01.002>
- Deyaso, S. F. (2021). Determinants for households' dependency on natural resources of Arsi Mountain National Park: A case of Chilalo-Galama Block, Ethiopia. *Journal of Science and Sustainable Development*, 9(1), 59–75. <https://doi.org/10.20372/au.jssd.9.1.2021.0259>
- Ferraro, P. J., Hanauer, M. M., & Sims, K. R. E. (2011). Conditions associated with protected area success in conservation and poverty reduction. *Proceedings of the National Academy of Sciences*, 108(34), 13913–13918. <https://doi.org/10.1073/pnas.1011529108>
- Girma, Z., Chuyong, G., Evangelista, P. H., & Mamo, Y. (2018). Vascular plant species composition, relative abundance, distribution, and threats in Arsi Mountains National Park, Ethiopia. *Mountain Research and Development*, 38(2), 143–152. <https://doi.org/10.1659/MRD-JOURNAL-D-17-00006.1>

- Jiren, T. S., Leventon, J., Jager, N. W., Dorresteyn, I., & Schultner, J. (2021). Governance challenges at the interface of food security and biodiversity conservation: A multi-level case study from Ethiopia. *Environmental Management*, 67, 717–730. <https://doi.org/10.1007/s00267-021-01432-7>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112–133. <https://doi.org/10.1177/1558689806298224>
- Karant, K. K., & Nepal, S. K. (2012). Local residents' perception of benefits and losses from protected areas in India and Nepal. *Environmental Management*, 49(2), 372–386. <https://doi.org/10.1007/s00267-011-9778-1>
- Kasso, M., Bekele, A., & Lavrenchenko, L. A. (2023). Local community attitudes towards conservation of Afroalpine habitat in Chilalo-Galama Mountains Range, Arsi Mountains National Park, Ethiopia. *Harla Journal of Applied Science and Materials*, 2(1), 25–42.
- Kerorsa, K. L. (2024). Examining the roles and attitudes of the local community in wildlife conservation of Ethiopia. *International Journal of Ecology*, 2024, Article 6036549. <https://doi.org/10.1155/2024/6036549>
- Mengist, W. (2020). Challenges of protected area management and conservation strategies in Ethiopia: A review paper. *Advances in Environmental Studies*, 4(1), 277–285. <https://doi.org/10.36959/742/224>
- Merkebu, S., & Mammo, D. Y. (2021). Assessment of human–wildlife conflict and the attitude of local communities to wild animal conservation around Borena Sayint National Park, Ethiopia. *International Journal of Ecology*, 2021, Article 6619757. <https://doi.org/10.1155/2021/6619757>
- Moorhouse, T. P., Ntuli, H., Nketiah, P., Elwin, A., & D'Cruze, N. C. (2025). Attitudes of local communities to wildlife conservation and non-consumptive, alternative income sources, near Kruger National Park, South Africa. *Biological Conservation*, 309, Article 111331, 1–12. <https://doi.org/10.1016/j.biocon.2025.111331>
- Mutanga, C. N., Vengesayi, S., Chikuta, O., & Muboko, N. (2015). Community perceptions of wildlife conservation and tourism: A case study of communities adjacent to four protected areas in Zimbabwe. *Tropical Conservation Science*, 8(2), 564–582. <https://doi.org/10.1177/194008291500800218>
- Oldekop, J. A., Holmes, G., Harris, W. E., & Evans, K. L. (2016). A global assessment of the social and conservation outcomes of protected areas. *Conservation Biology*, 30(1), 133–141. <https://doi.org/10.1111/cobi.12568>
- UNEP-WCMC & IUCN. (2021). *Protected Planet Report 2020*. Cambridge, UK: UNEP-WCMC and IUCN.
- Valbuena, D., Erenstein, O., Homann-Kee Tui, S., Abdoulaye, T., Claessens, L., Duncan, A. J., Gérard, B., Rufino, M. C., Teufel, N., van Rooyen, A., & van Wijk, M. T. (2012). *Conservation agriculture in mixed crop–livestock systems: Scoping crop residue trade-offs in Sub-Saharan Africa and South Asia*. *Field Crops Research*, 132, 175–184. <https://doi.org/10.1016/j.fcr.2012.02.022>
- Wale, M., Bekele, A., & Yihune, M. (2025). Challenges and attitudes of local communities towards wildlife conservation in Ethiopia. *Tropical Conservation Science*. <https://doi.org/10.1177/19400829251340580>
- Watson, J. E. M., Dudley, N., Segan, D. B., & Hockings, M. (2014). The performance and potential of protected areas. *Nature*, 515(7525), 67–73. <https://doi.org/10.1038/nature13947>
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). New York: Harper and Row.

