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Unpacking the challenges of wildlife governance in community-based conservation programs to promote human–wildlife coexistence

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Abstract

One of the numerous global challenges today is how to promote biodiversity persistence and at the same time reduce poverty and improve livelihoods, especially in multiple-use landscapes shared by people and wildlife. In such landscapes, where the cost of sharing the landscape with large wildlife can be high, Community Based Natural Resource Management (CBNRM) program is a model promoted to offset negative wildlife impacts. However, such programs, that promote sustainable utilization of wildlife, are not always successful. To better understand how CBNRM governance systems enable or hinder human–wildlife coexistence, I implemented an 11-weeks participatory co-learning program in conservancies in the Zambezi region of Namibia. Framing human–wildlife relationships as occurring within complex social–ecological systems, participatory dialogues were used to unpack the system to better understand why human–wildlife conflict remains a challenge after 30 years of CBNRM in Namibia. From listening to communities I identified five key areas requiring improvement: (1) inefficient communication and transfer of information between management and community; (2) lack of policy and process clarity; (3) lack of support, knowledge, resources, and implementation of mitigation measures; (4) lack of accountability by both management and conservancy members; and (5) lack of skills and capacity by both management and conservancy members. To address these problem areas, I propose three key priority actions: (1) harmonize conservancy policies and management practices; (2) improve information flow; and (3) implement an adaptive management mitigation measure program. While this study focused on a small part of Namibia, I expect this methodology and many of the key findings and proposed interventions will be relevant for other areas applying collaborative approaches to improve human–wildlife coexistence.

KEYWORDS

collaborative governance, human–wildlife conflict, participatory dialogues, systems thinking, wildlife governance

1 | INTRODUCTION

Human–wildlife conflict (HWC) is increasingly receiving attention due to its global reach and concern (Gross et al., 2021). A key challenge is in multiple-use landscapes where many wild animals still occur and the willingness of people to coexist with wildlife is necessary (Crespin & Simonetti, 2019). In these landscapes, the potential for incurring extra costs is elevated compared with landscapes without wildlife, and therefore achieving coexistence is difficult. These costs can range from minor to severe impacts for both people and wildlife and include crop and livestock loss, human and wildlife injury and death as well as a range of intangible costs to people such as psychological stress and worry (Barua et al., 2013; Gross et al., 2021; Thondhlana et al., 2020). Early research focused on managing species and finding technological solutions to prevent financial costs with the assumption that this would promote tolerance and coexistence. However, later it became clear that HWC was more complex requiring more nuanced, holistic, and transdisciplinary approaches (IUCN, 2020; König et al., 2020; Pooley et al., 2020). Recently, a number of frameworks have emerged where the "conflict" is framed more broadly as human–wildlife interactions occurring within complex social–ecological systems (Balasubramaniam et al., 2021; Ceauşu et al., 2019) that require innovative approaches to address the complexity of the problem. Programs and processes that include communities in collaborative approaches to co-create solutions are especially promoted (IUCN, 2020; Mishra et al., 2017; Redpath et al., 2017; Salvatori et al., 2021; White et al., 2005).

In light of the complexity of the problem and calls for more collaborative processes, I designed and implemented the Human–wildlife Coexistence Social Learning Program (program)—a participatory dialogue and learning program, in communal conservancies in the Zambezi Region of Namibia in southern Africa. The Namibian government has implemented this devolved governance model on communal lands since it gained independence from South Africa in 1990 (NACSO, 2022). The aim of communal conservancies is to promote wildlife conservation by providing benefits to communities from the sustainable use of natural resources, including wildlife (NACSO, 2022). The aim of the program was to "unpack" the governance system of conservancies focusing on how it facilitates or hinders human–wildlife coexistence. This approach is novel in that while HWC is being acknowledged as complex, there have been few attempts to understand this complexity, specifically in relation to how governance systems enable or hinder coexistence.

Communal conservancies in Namibia are example of a collaborative governance model popular in wildlife-based systems in Africa called Community Based Natural Resource Management (CBNRM) (Nelson et al., 2021). CBNRM's theoretical underpinning comes from common research suggesting that sustainable natural resource management is possible when local users are given rights to manage, use, or own natural resources (Ostrom, 1990). Thus decentralization of governance and devolution of decision-making power is a key feature (Galvin et al., 2018). A second key feature is that benefits of being part of CBNRM must outweigh the costs of self-organization and collaboration (Brooks et al., 2012; Ostrom, 1990). With regards to negative wildlife impacts, the assumption is that wildlife and other natural resources can produce sufficient benefits to outweigh the costs of resource management and negative wildlife impacts (disservices). These will then incentivize communities to conserve the resource and promote coexistence—defined here as the willingness of communities to share the landscape and tolerate possible costs from wildlife while ensuring sustainable wildlife populations (Kansky et al., 2020).

Despite noble core objectives, CBNRM is not always successful (Brooks et al., 2012; Galvin et al., 2018; Nelson et al., 2021), with two key issues being around the implementation of decentralized governance in practice, and that benefits of participation may not outweigh the costs, especially in relation to addressing negative impacts of wildlife (Gandiwa et al., 2013; Marks, 2001; MET/NACSO, 2018; Songorwa, 1999; Suich, 2013). Namibia is generally considered an exception where its wildlife based CBNRM programs are considered successful due to a highly devolved governance model, impressive increase in wildlife numbers since independence, and substantial economic benefits for communities (MET/NACSO, 2018; Naidoo et al., 2016; Nelson & Agrawal, 2008; Nuulimba & Taylor, 2015). Despite this success many challenges remain, particularly when it comes to the performance of local governance institutions, social justice, and benefits accrued at the household level (Khumalo & Ann Yung, 2015; Koot, 2019; Lubilo & Hebinck, 2019; Morton et al., 2016; Nuulimba & Taylor, 2015; Schnegg & Kiaka, 2018). In addition, due to increased wildlife numbers, HWC remains a key challenge with concern this could undermine the long-term acceptance and hence sustainability of the program (Jirren et al., 2021; Nattrass, 2020; Salerno et al., 2020).

Given that human–wildlife coexistence is presumed to emerge from the CBNRM model and that challenges still remain in one of the more successful CBNRM programs in Africa, I used conservancies in the Zambezi region of Namibia as a case study to understand how HWC is integrated into the governance system and why HWC remains a challenge.

This research was guided by the understanding that human–wildlife relationships occur within complex

social–ecological systems (Balasubramaniam et al., 2021; Ceauşu et al., 2019). Social–ecological systems are systems that consist of both social and ecological subsystems that are interconnected and interdependent (Ostrom, 1990). Systems thinking arose in response to the failure of traditional approaches such as technologies or market forces to solve complex or "wicked" societal problems (Roling et al. in Muro & Jeffrey, 2008). In natural resource management, a systems thinking lens is widely believed to be critical for institutional innovation and transitions to resilient and sustainable futures because it can help to navigate growing complexity facing the world (Berkes, 2009; Fischer & Riechers, 2019; Meadows, 2008; Wahl, 2016) and participatory learning approaches are especially useful for understanding and unpacking complex systems.

Based on this understanding, I designed the Program. Program participants were farmers living in communal conservancies who had experienced HWC. They were invited to voluntarily participate in the program with the understanding that the aim was to find better ways to live with wildlife. The program consisted of 11-weeks half-day workshops, and included two main components: (1) training in non-violent communication (NVC) (Rosenberg, 2005; Williams et al., 2021) and (2) dialogues with invited guests who were primarily members from the conservancy management. The rationale for the NVC training was to facilitate respectful dialogues as well as evaluate the methods' potential to increase empathy and tolerance between people and toward wildlife, since empathy was found to be a significant factor driving human tolerance to damage causing wildlife (Kansky et al., 2021). A detailed description and impact of this aspect of the program is in Kansky and Maassarani (2022). The dialogue component consisted of program participants asking whatever questions they wanted to the invited guests (Table S1). This was to enable participants and the researcher to understand what was working or what not in relation to conservancy governance and management and how this enabled or hindered living with wildlife, with the ultimate goal of finding solutions to improve human–wildlife coexistence. In this paper, I provided a synthesis of my understanding of the issues that emerged from these dialogues, more specifically what was working and what were the challenges. I then discussed these using a systems lens and proposed three priority actions to improve human–wildlife coexistence. In a forthcoming publication, I elaborated and reflected on the overall program, its design and other outcomes in more detail, including from participants' perspectives. In a second forthcoming publication a system diagram is developed highlighting key variables of the system with linkages and feedback loops in a causal loop diagram.

2 | METHODS

2.1 | Study site

The study took place in the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA) in Namibia (Figure 1), one of the five partner countries. KAZA is an initiative of the Southern African Development Community and a collaborative landscape conservation project of Angola, Botswana, Namibia, Zambia, and Zimbabwe. It is the largest TFCA in the world (520,000 km^2) and one of the 18 existing and proposed TFCAs in Southern Africa. It is characterized by large-scale migrations of megafauna such as elephant, buffalo, and zebra. It is home to numerous red-listed species, and contains the world-heritage listed Okavango Delta (KAZA, 2015). Exactly 71% of its area is under some form of wildlife management, leaving 29% for agricultural use, rangeland, and development. It is also home to 27 million people, most of them living in currently unprotected sections (Glatz-Jorde et al., 2014). KAZA, therefore presents an ideal area to examine questions of human–wildlife coexistence in multiple-use landscapes under global developmental pressures, where wildlife corridors are threatened and HWC is a key challenge (Glatz-Jorde et al., 2014; KAZA, 2015; Salerno et al., 2020).

I recruited workshop participants from communities living in conservancies in the Mudumu Complex in Zambezi Region which is part of the Kwando Wildlife Dispersal Area of KAZA (Figure 1). The area is bordered by the Kwando, Linyanti, Chobe, and Zambezi Rivers and is a region of woodlands, swamps, and flood plains. There are three national parks in the landscape, Babwata, Mudumu, and Nkasa Rupara, as well as the Zambezi State Forest. Communal lands and 15 conservancies surround these protected areas. Conservancies in Zambezi are communal lands that are unfenced, multiple use areas with fixed boundaries. They serve as wildlife corridors for movement of wildlife between KAZA countries and the national parks in the landscape. The study area I focused on encompassed three conservancies between Nkasa Rupara and Mudumu National Parks; namely Bamunu (area: 556 km^2, established in 2011, 2304 members), Balyerwa (area: 223 km^2, established in 2006, 1357 members) and Mayuni (area: 151 km^2, established in 1999, 2648 members) (Figure 1).

These specific conservancies were selected for logistical reasons, their interest in participating in the project, and because the author had previously conducted surveys in them. These conservancies are considered typical of the region where human assets are limited due to low-education levels, widespread health risks, and general food insecurity. Financial assets are vested in livestock

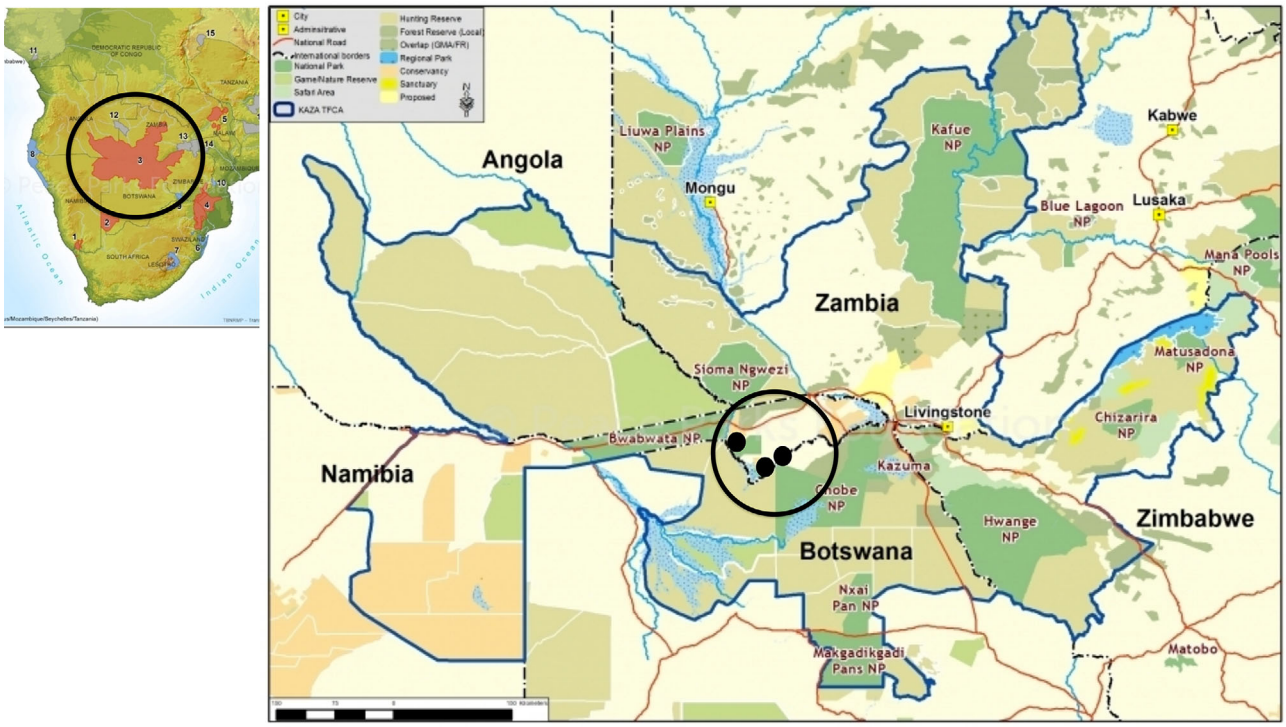

FIGURE 1 Map of study area—the Kavango Zambezi Transfrontier conservation area is southern Africa, showing the Mudumu complex in the Zambezi region of Namibia. Workshop locations are indicated numerically: 1, Bamunu conservancy; 2, Balyerwa conservancy; 3, Mayuni conservancy. *Source*: Main map courtesy of NACSO

ownership, crop farming, and the use of natural resources that are traded in informal markets. The most common threats to livelihood assets are HWC, poor human and livestock health, floods and droughts, as well as variable rainfall (Glatz-Jorde et al., 2014).

2.2 | Governance in communal conservancies

Communal conservancies in Namibia were established post-independence through policies and legislation that granted rights over wildlife and tourism to communal conservancies. These are legal entities that are managed by two bodies: (1) an elected management committee (CMC) voted in by conservancy members and consisting of a chairman, vice chair, area representatives from the villages, a representative from the tribal authority, and a treasurer, and (2) an executive committee consisting of salaried staff who are interviewed and recruited based on their CV and skills and who run the day to day activities of the conservancy. It consists of a manager, a secretary, enterprise officer, field officer (who oversees the game guards), and a book keeper. Several policy documents guide the governance and functioning of the conservancy and include a constitution, benefit distribution plan, wildlife management plan, zonation plan, and HWC management plan (NACSO, 2022; Nuulimba & Taylor, 2015). In terms of national policy, all conservancies must hold annual general meetings according to their constitutions and to hold committees and managers to account, to elect new committee members, and to present financial reports and budgets for approval to the community.

Conservancies are generally divided into areas based on spatial aggregation of villages, generally based on sub-khuta demarcations (a level of management of a local tribal authority). While attempts are made for each of the areas to be of more or less equal number of people, this is not always the case. One or two area representatives are elected from each of the areas to represent their area in the conservancy management committee (CMC) and to transfer information and communication between their communities and the CMC.

Wildlife is owned by Ministry of Environment Forestry and Tourism (MEFT) but annual hunting quotas for each species are allocated to each conservancy. A conservancy then provides a concession to a professional hunter (PH) who can then hunt the species allocated to him and pays the conservancy directly. Depending on the contract, the PH either pays for some species upfront or only after they have been hunted. Generally, a conservancy

also tries to add to the PH contract other development projects to pay additional amount for each species hunted. For example, building a kindergarten, drilling boreholes, or buying a vehicle for the conservancy. Conservancies also negotiate joint venture agreements with private investors to establish lodges or campsites whereby a percentage of beds occupied is paid to the conservancy.

Conservancies are supported by a number of NGOs that provide guidance, training, and assistance for negotiating contracts with the PH and joint ventures with private concessions. These organizations collaborate under an umbrella organization called Namibia Association of CBNRM Support Organizations (NACSO). For more information on conservancies and support organizations see https://www.nacso.org.na/.

2.3 | Recruitment of participants for the human–wildlife coexistence social learning program

Prior to arrival in the area, conservancy offices, local NGOs and other stakeholders that were identified during previous research in the area (Kansky et al., 2020) were sent correspondence giving information of our research. Next, upon arrival in the area, dates were set up in each conservancy to hold community meetings to explain the program in more detail and to enlist volunteers interested to participate. Community meetings were then held for each conservancy area/zone. Criteria for participation included membership of a conservancy, being a farmer with wildlife problems, interest in being a local change leader, and willingness to commit to 9 weeks of the 11-weeks program (Supporting Information 1). The conservancy membership and farmer criteria were chosen because the focus of the research was to understand conservancy farmers' perspectives in relation to wildlife damage and how it is managed within the overall conservancy governance system. Interest in being a change leader was a strategy to promote shared learning from the program in the wider community to stimulate action after the program. Willingness to commit to attend the first 9 weeks was important as each week built on the previous week. Participants were not paid to participate but did receive breakfast and lunch. Those staying far from workshop locations were given transport money. None of the recruited participants had been surveyed during previous research by the author in the area.

In general, 4–5 community members from each of the 4–5 areas in a conservancy were selected. When there were more volunteers than places, communities decided among them who would participate based on equal gender representation. Thus, overall 20 community members from each conservancy (10 men and 10 women) were chosen. The program was conducted in English, while a translator from the region applied simultaneous translation into the local siLozi language.

2.4 | Program content

The program took place between April and August 2019 and consisted of two main components. The first four workshops focused on the first component—training in NVC (Rosenberg, 2005) integrated into dialogues on topics related to living with wildlife. More specifically, Workshop 1 covered sharing of positive and negative aspects of living with wildlife; Workshop 2 covered the present and future perceptions, ideas, and wants around living in conservancies with wildlife; Workshop 3 covered the cultural stories about wildlife and a role-play discussion with an elephant; and the Workshop 4 covered the examples of negative interactions with management in order to practice using the NVC concepts. Workshops 5–8 focused on the second component of the program where guests were invited and participants had the opportunity to ask them questions. Participants decided whom to invite. A total of 14 guests came to the workshops. Guests were members from the CMC, except for one guest who was a veterinarian from the University of Namibia. The first 1.5 h before the arrival of guests was spent on diverse activities. In Workshops 5–6, participants gave presentations on policy documents (constitution, national HWC policy, zonation plan, HWC management plan) followed by a discussion about the policies. In Workshops 7–8, revision and practice of NVC took place before arrival of the guests. Workshop 9 involved an NVC test, discussion around project ideas, and a closing ceremony with certificate presentation. After the 9-weeks program, participants were invited to return after a month break for another two workshops (10–11) to design a HWC mitigation project.

Each workshop started and ended with a feedback session of 20–40 min. For the first feedback reflection participants were asked to report any changes in their thinking or behavior as a result of attending the previous weeks' workshop. This was an open-ended invitation. Sometimes clarifying questions were asked. Toward the end of the training, a second feedback session took place where participants were encouraged to reflect on any insights or learning that stood out for them from the day. All types of commentary were invited, including where applicable, critical feedback. These sessions were used to evaluate the outcomes from the program, especially the NVC component (see Kansky & Maassarani, 2022). At the start of the program, participants filled in consent forms and made agreements on conduct during workshops. Consent was also requested and given to record

the workshops. Ethical clearance was obtained from the university ethics committee (project 0967).

2.5 | Data analysis

Following verbatim transcription of all workshop recordings, I used deductive and qualitative content analysis to construct a coding tree based on prior knowledge, the goal of the program, and assumptions about the change process actuated by the program. The change theory was informed by the education change theory of the Cambridge Conservation Forum measures of conservation success conceptual models (Kapos et al., 2008) as well as social psychological theories of behavior change such as the values–attitude–belief model of behavior change (Homer & Kahle, 1988). My hypotheses were that if participants attend the workshops and find them interesting and useful, they would appreciate the workshops, learn new things, and understand the lessons. Through the dialogue process with invited guests they will ask questions and understand what is working and not working in the conservancy. This will then result in changes in their attitudes and behavior, the emergence of solutions and ultimately sharing these with people in the broader community who did not attend the workshops. Thus the coding tree consisted of the following nine broad categories corresponding to the change hypotheses (Table S2) and that were discrete meaning units—sentences or paragraphs that describe a specific phenomenon (Mayring, 2008): (1) Appreciation—records where participants expressed gratitude for the workshops or any specific component of the workshop; (2) Knowledge and understanding—records that showed new knowledge or better understanding of an issue or topic; (3) Questions—records of the questions that participants asked from invited guests; (4) Working—records of what is working in the conservancy; (5) Problems—records of what is not working well in conservancies; (6) Attitude change—records that reflected how a person's thinking, beliefs, or intention to act toward a psychological object changed toward being more favorable (a psychological object being any discernible aspect of an individual's world, including an object, a person, an issue or a behavior) (Fishbein & Ajzen, 2010); (7) Behavior change—records of actual changes in behavior, often compared with how the person would have behaved before attending the workshops; (8) Solutions—records of ideas that participants suggested to solve specific problems; (9) Social learning—records where participants reported sharing ideas or knowledge with people not attending the workshops. In the current paper, I only presented results for two of the nine codes—working and problems. The remaining codes are discussed in other publications resulting from the program. Coding was done by the author. In addition to these main codes, I created sub-categories in order to further unpack each code into smaller meaning units (Babbie & Mouton, 2007; Mayring, 2008). These were then discussed with colleagues from Leuphana University to increase reliability of the coding process.

3 | RESULTS

3.1 | Participants' attendance and socio demographic profiles

Total 59 community members initially signed up; 54 actually attended; and >80% of participants attended at least seven of the nine workshops. The average age of participants was 30.5 years. The average highest level of education was Grade 10. The average number of adults per household was 2.8 and children was 3.8. The average yearly total household income was 500–10,000 Namibian dollars ($38–$770 US) where 60% of households had some source of additional income to farming, mostly from government support grants and occasional jobs.

3.2 | What is working?

I found 83 records of the working code and these could be coded into two sub-categories: (1) benefits and (2) mitigation measures.

3.2.1. Benefits ($n = 65$)

This sub-category could be coded into two sub-categories: (1) tangible and (2) intangible.

Tangible benefits ($n = 36$): these include monetary or material benefits such as general income from hunting and lodges, development projects (electricity infrastructure, bore holes and water tanks), cash payments, job creation in hunting, tourism and crafts, contributions to funerals, student bursaries and cultural festivals, compensation for wildlife damage, injury and death, foreign exchange income, and general wealth to the country. Lastly, meat and other animal products from trophy hunted animals. Participants also recognized that the conservancy is like the umbrella for the whole village and is the structure that enables these tangible benefits to be actuated (Table S4).

Intangible benefits ($n = 29$): these are non-monetary benefits, of which mostly included positive experiences with wildlife such as enjoyment from watching them behave in their natural environment, or the learning and cultural

value that can be passed on to the next generation. Other intangible benefits mentioned were opportunities to connect—with other community members during meat distribution, with the global community through tourism, and with elders through animal cultural stories. Lastly appreciation values were also expressed, such as appreciation of the beauty of some animals, a sense of pride from knowing animals are present and appreciation for the ecosystem services they provide such as seed dispersal (Table S4).

3.2.2 Mitigation measures ($n = 16$)

These are where participants mentioned examples when mitigation measures were effective or records of receiving support from the conservancy or MEFT with resources and knowledge to implement mitigation measures such as chili or wire for fencing (Table S5).

3.3 | Problems

I recorded 411 problems from the transcribed dialogues. The types of problems could be coded into 12 sub-categories. Key findings from each of the 12 sub-categories are listed in Table S3 and summaries of each of the coded records from the transcribed dialogues are in Tables S6–S17.

3.3.1 | Costs ($n = 86$, 21%)

This was the most frequent sub-category and could be further coded into two more sub-categories: tangible and intangible costs (Tables S3 and S6).

Tangible costs: these included monetary costs such as crop damage from herbivores or primates and livestock depredation from predators, as well as costs from having to invest time and resources into guarding and mitigation measures, costs from damage to property and infrastructure and opportunity costs due to the lower value of meat from raising cattle in a wildlife area. Lastly there were lost livelihood opportunities due to zonation plans, for example not being able to farm next to rivers in wildlife core areas.

Intangible costs: these were the non-monetary costs such as psychological impacts from negative impacts and experiences with wildlife and conflicts between people. For example female participant number 17 said,

> It's really sad when one has used all ones investments in the field and gets nothing after all the hard work.

And another female said,

> It's quite disturbing and very sad that when animals like elephant are quite dangerous, whenever we would go to the river to cut reeds one can easily be killed by the elephants. The same animals also attack or destroy our fields. I fear for the loss of my life.

Human injury and death was also reported, for example, male participant number 25 said,

> My nephew was taking the animals for grazing so the buffalo was near by and he was attacked and only survived in the hospital, all his muscles and the back were cut, he was just herding the cattle and he didn't even provoke the buffalo.

3.3.2 | Communication ($n = 72$, 18%)

This was the second most frequent category and included cases with a lack of adequate communication and knowledge transfer between stakeholders. The majority of complaints were addressed to the CMC ($n = 45$) and these included three key issues: (1) lack of policy information getting through to community members; (2) lack of current information getting through via area representatives; and (3) lack of knowledge communication about mitigation measures. There were 11 complaints by CMC of community members and six records of communication problems with MET. There were also communication and knowledge issues around the budget (Tables S3 and S7).

3.3.3 | Accountability ($n = 53$, 13%)

This was the third most frequent category. It included records where accountability issues were raised. Total 23 complaints were raised by participants of the CMC, which were regarding general mismanagement, for example, policies and budgets not implemented as they should have and lack of consequences for underperformance. Total 23 complaints were toward the community and included not attending meetings, nepotism and incompetent selection of leaders, illegal resource harvesting, farming in wildlife corridors and wildlife core areas and lack of holding leaders accountable. There were also two complaints by participants of MET and eight complaints about the PH including lack of payments and lack of implementation of agreed development projects (Tables S3 and S8).

3.3.4 | Mitigation measures ($n = 53$, 13%)

This was the third most frequent category. It included four key issues around the use of mitigation measures to prevent wildlife damage. (1) Variability in efficacy of methods; (2) lack of resources to make mitigation measures; and (3) lack of motivation and accountability by community in implementing them, for example, farmers are not motivated to spend all night guarding fields, which is a requirement to claim compensation damage. Guard lights and bells for cattle kraals to deter predators were stolen and used on bicycles as decorations and bells were put on cows. Wire to make tin fences to deter elephants and buffalos were stolen to make snares and to fence private homes. The fourth issue was a lack of knowledge and support in applying mitigation measures (Tables S3 and S9).

3.3.5 | Development ($n = 49$, 12%)

This was the fourth most frequent category, which included issues related to benefits and development projects. Three key issues were: (1) lack of sufficient benefits and projects to address the unemployment problem or to support livelihoods; (2) lack of equality in benefit distribution; and (3) inefficiency and lack of implementing development projects, for example, some conservancies still do not have lodges or campsites after many years. (Tables S3 and S10).

3.3.6 | Compensation ($n = 41$, 10%)

This was the fifth most frequent category, which included issues regarding claiming and receiving monetary compensation for wildlife damage. The general policy regarding compensation is that both national government and conservancies contribute equal amounts of funding for pay-outs. Farmers report damages to the conservancy and game guards inspect and report the damage claim. These are then submitted to MEFT who validates the claims and later pay their portion of funds to the conservancy who then pay claimants. Key issues in relation to compensation were: (1) the amount of compensation does not cover the damage and inputs of farmers and therefore impacts livelihoods; (2) inconsistency and lack of clarity on what the policies say and how they are implemented, both national and local; and (3) lack of support from CMC and game guards in reporting damage and making claims (Tables S3 and S11).

3.3.7 | Zonation ($n = 18$, 4.4%)

This was the sixth frequent category. Each conservancy has a spatial plan where areas are divided into agricultural zones (cultivation and livestock) and core areas—wildlife zones for hunting and tourist camping and lodges. Trophy hunting is a seasonal practice and during these periods community members cannot utilize these areas, for example, for reed collection. Across the landscape there are also areas demarcated as corridors for wildlife movement. There are three key issues around zonation; Firstly, some farmers live and farm in the core wildlife areas and wildlife corridors because there are more resources there for livestock and farming, secondly, people do not see benefits from the conservancy and therefore are not motivated to stay out of the wildlife designated areas. Lastly, traditional authorities, who are responsible for land allocation, are allocating land there (Tables S3 and S12).

3.3.8 | Skills ($n = 15$, 3.7%)

In the CMC, some positions are filled by voting in community members while other positions are filled through interviews. The chairs, vice chair, area representatives, and tribal authority representative are elected while a general manager, treasurer, secretary, enterprise officer, and game guards are employed through applying for the job and interviews. Some conservancies also have advisors, generally professional elders living in the conservancy who provide advice on conservancy issues. The area representative's role is to act as a communication channel between the CMC and the community. Most of the lack in skills was attributed to the CMC (63%, $n = 10$) (Tables S3 and S13).

3.3.9 | Support ($n = 14$, 3.4%)

This included a general lack of support for the challenges of living with wildlife from both the conservancy, MEFT and NGOs, as one participant said "they should be able to understand the cry that we have at the moment" and "I wish that MEFT would try and understand us or put themselves in our situations that we are facing by living with wildlife" (Tables S3 and S14).

3.3.10 | Devolution ($n = 5$, 1.2%)

Two problems emerged related to the devolution of governance to conservancies: (1) regarding the need for MEFT to mediate the relationship between PHs and

the conservancy. PHs bid for concessions to bring international trophy hunters to hunt in a conservancy and the proceeds to the conservancy. However, legally, the contract is between MEFT and the hunter because conservancies do not have the resources to take a hunter to court if he fails to deliver the contract. This can be problematic because the conservancy is not always informed of changes in contracts and does not have complete control over the contracts. (2) Problem related to devolution was that at times MEFT brings out directives that can impact conservancies negatively (Tables S3 and S15).

3.3.11 | Wildlife ($n = 3$, 0.7%)

Issues related to wildlife were that there are signs that large sized wildlife species numbers are declining and hunting is not sustainable. Foot and mouth disease causes the price of cattle in Zambezi to be lower than other parts of the country (R4000 vs R8000) and this causes people to resent wildlife (Tables S3 and S16).

3.3.12 | Fire management ($n = 2$, 0.5%)

Fire management is uncoordinated or non-existent (Tables S3 and S17).

4 | DISCUSSION

For CBNRM, to achieve its dual goal of promoting biodiversity conservation and human wellbeing through incentivized economic benefits, perceptions of benefits of participating in the program should out-way perceptions of costs in order to motivate participation and engagement (Ostrom, 1990). This is especially important in wildlife-based systems where there are also negative costs or disservices of sharing the landscape with wildlife. Conservation models based on the use of monetary incentives to promote conservation, referred to as neoliberal conservation have been critiqued for a number of reasons, but especially because they may have a narrow view of success—if monetary outputs exceed monetary inputs (Koot, 2019) and may fail to consider the multiple intangible costs and benefits of this approach. Through the human–wildlife coexistence learning program, we now have a more nuanced understanding of these intangible costs and benefits as perceived by community members. In general, participants appreciated intangible benefits from wildlife such as the enjoyment of seeing and learning about them and the knowledge that their children will also have such opportunities. They also appreciated many tangible benefits such as the monetary income, job opportunities for some, and the meat. Previous research in the study area indicated that conservancy members who perceive benefits from wildlife tend to be more tolerant toward wildlife species (Kansky et al., 2020). Nevertheless, many challenges from the discussions emerged and based on my understanding of these and the governance system in existence, I proposed three priority actions that conservancies could address in collaboration with supporting organizations to improve human–wildlife coexistence.

4.1 | Priority action 1: Harmonize conservancy policies and management practices

Conservancy management is guided by various policy documents including the constitution, a zonation plan, a benefit distribution plan, and a HWC management plan (NACSO, 2022). These local level policies are in turn guided by national policies including Nature Conservation Amendment Act no 5 of 1996, CBNRM Policy, National HWC policy and Standard operating procedures (MET, 2013). A problem identified in the program was that most participants were either not aware these policies existed, or if they had heard about them, were not aware of their contents. Their presentation and discussion as part of the program resulted in participants feeling more knowledgeable and aware of how important it was to know about them in order to understand how the conservancy works and hold the CMC accountable. During these discussions and later through questions with invited CMC guests, it further emerged that there was inconsistent application of the policies or they had been changed in practice but not in the policy document. In addition, the local policies were not detailed enough so many were being interpreted and applied differently by different people. There was also no written information on many processes, for example, what is the process of determining the budget, to report wildlife damage, or to elect office bearers. The lack of clarity of these processes leads to lack of trust between people, increases conflict, and reduces motivation to attend meetings and participate in conservancy affairs. Since policy documents are the blueprint for conservancy management, a first priority for conservancies is to engage with communities to agree on specific processes, update the policies, produce detailed policy documents and, in line with Priority action 2 (outlined below), ensure that everyone knows about them and has access to them.

4.2 | Priority action 2: Improve information flow

The flow of information within collaborative systems is critical to build trust (Musavengane & Simatele, 2016; Ostrom, 1990) and could be the key leverage point (Abson et al., 2017) to improve the conservancy governance system. In conservancies, area representatives are the main information flow system between the CMC and members. Conservancies are divided into areas and members, from each area elect an area representative to represent them and convey news and information from the CMC. They also receive a monthly salary to perform their duties. Besides the lack of skills, motivation, and capacity to perform their duties, a key question is whether the addition of such skills would solve the information flow deficits in the system? Some participants felt that the CMC was deliberately withholding information from members to keep them ignorant so they could maintain more benefits for themselves. Irrespective of whether this is true or not, lack of information thus evidently leads to lack of trust by opening up opportunities for interpretations of reality that may not be based on facts. Therefore, improving information flow in the system could be key to reducing conflict and reducing the costs of collaboration. Thus the "information flow" priority action would aim to re-examine the current information flow system in more detail and either find ways to improve it or completely find a new system which does not rely solely on area representatives to mediate information flow within the system. One idea is for each conservancy to have a physical information center and library run by skilled and trained personnel. This could be a repository for the policy documents as well as have a full-time knowledge broker who would be able to advise members on a wide variety of processes related to the conservancy governance, management, mitigation measures, or damage claims, as well as do outreach programs in villages. It could also serve as a one-stop shop for tourism-based ventures.

4.3 | Priority action 3: Implement an adaptive management mitigation measure program

Negative wildlife impacts are some of the key costs of living with wildlife, yet surprisingly this aspect of conservancy governance receives less attention than expected. During the dialogues it became clear that fearful and dangerous wildlife encounters while going about daily activities are common (Table S6). It was also clear that many participants had little knowledge on how to prevent such encounters or how to behave during an encounter. This was based on stories they reported, questions they asked from game guards about animal behavior and what to do when encountering specific animals, and from participants' feedback from what they learnt from attending the workshops (for example how to read the direction of the wind relative to the position of an elephant to prevent the animal smelling you) (Kansky et al., forthcoming). In combination, this suggests that specific training and information sessions would be useful as well as setting up early warning systems and exploring other strategies to support members (Gross et al., 2021; Sponarski et al., 2016). Support, training, and resources for mitigation measures to prevent crop damage are also scarce, inconsistent and were not specifically budgeted by conservancies. Rather, conservancies relied on donations from NGOs for chilies (to make chili bombs and chili fences to deter elephants) or wire for fencing, which were not supplied consistently. I also recorded local knowledge by participants and game guards about specific mitigation measures that were not widely known or used among community members. Implementing mitigation measures therefore would build on five steps: (1) gathering local and expert knowledge on mitigation measures and strategies to prevent wildlife impacts; (2) developing an on-going program as part of improved information flow (Priority area 2) to ensure knowledge is updated and available; (3) incorporating resources for mitigation measures into the regular conservancy budget; (4) create incentives and policies to promote application of mitigation measures; and (5) developing an adaptive management program to trial and test mitigation measures to further improve the existing and new locally relevant and effective mitigation measures.

4.4 | System level challenges

The three priority areas outlined above have the potential to reduce some of the costs of living in a conservancy with wildlife. However, as the workshops showed, there are additional systemic challenges that may be more difficult and complex to resolve. Next, I discussed some of these system level challenges that I think are important but acknowledge that this list is incomplete.

One issue is the total amount of benefits available relative to the number of members. Common research suggests that this ratio is important because if there are too many users, the motivation to use the resource sustainably decreases (Ostrom, 1990). Other research in Namibian conservancies suggests that this may be the case (Drake et al., 2021; Humavindu & Stage, 2015; Nattrass, 2020; Silva & Mosimane, 2014). Compounding this general lack of resources are uncertainties about the

future, where wildlife numbers, climate change, population growth, and fluctuations in tourist and hunter numbers could all have negative impacts on future benefits (Drake et al., 2021; Jirren et al., 2021). In addition, the transaction costs also increase with increased membership and can result in efficiency decline and increased conflict, for example, through poor communication, as our results showed. On the other hand, potential mitigating factors that may enhance perceptions of benefits that have not been well explored are the extent to which non-monetary benefits can substitute monetary benefits in support for conservancies (Kansky et al., 2020; Kansky et al., 2021). The second question is, to what extent monetary benefits crowd in (Akers & Yasué, 2019; Kansky et al., 2020) or crowd out intrinsic motivations to support conservancies (Akers & Yasué, 2019; Ryan & Deci, 2000). Clarity on this could help to establish optimal membership numbers. Exploring alternative income streams and livelihood options are other possible solutions.

Human capital (skills, knowledge, capacity, and willingness) and social–relational processes are other complex systemic issues that underpin effective collaboration (Bennett et al., 2018; Cockburn et al., 2018) and were a crosscutting issue emerging from our results. Based on commons research, the rationale behind devolution of governance to local communities is that communities have the local knowledge and human capital to ensure accountable and efficient governance. This would ensure that the costs of collaboration are not too high as to outweigh the benefits of collaboration (Ostrom, 1990). This assumption, however, is often not met (Brooks et al., 2012), and our dialogues showed this is the case in our study area as well. While some technical skills training in Namibian conservancies are and continues to be undertaken with the support of NGOs, building capacity for citizenship and democratic principles is still needed. Without active citizens who are able to select competent representatives and hold them accountable, the motivation and costs to participate and actively contribute to conservancies may remain unachievable (Hebinck et al., 2019). Bottom-up social learning programs such as the one I have implemented could be one pathway to achieving this.

Ostrom's institutional design principles (DP) may also guide processes of institutional improvement (Baggio et al., 2016; Cox et al., 2010; Villamayor-Tomas & García-López, 2018). The eight DP emerged after extensive case study research of common pool resources that were sustainably managed through collective action by communities (Ostrom, 1990). For example, DP 2b (Cox et al., 2010) suggests that "the benefits obtained by users from a common-pool resource (CPR), as determined by appropriation rules, are proportional to the amount of inputs required in the form of labor, material, or money, as determined by provision rules." In relation to HWC, this suggests that those experiencing the most costs from living with wildlife should receive benefits in proportion to their costs. However, it appears that this is not being considered in policies. For example, compensation does not pay the full amount of losses and little support and resources are available to prevent damage or offset the non-monetary costs of living with wildlife as seen from our study. Rather, budgets are prioritized for student bursaries, funeral assistance, cultural activities, payments to tribal authorities, and large infrastructure projects that provide collective benefits. While these means of using conservancy funds are potentially valuable, they create rather indirect links between the costs of living with wildlife. More direct ways of supporting the community members who were most severely affected, could help to promote equity in distribution of the disservices from wildlife and promote tolerance and support for conservancies.

5 | CONCLUSIONS

A social learning program in conservancies in the Zambezi region of Namibia was implemented to better understand the challenges of living with wildlife and governing wildlife to promote human–wildlife coexistence. The program created space for both researchers and community members to better learn and understand these challenges, which is a first step toward solving problems in complex systems (Meadows, 2008). From listening to communities five key areas requiring improvement are identified: (1) inefficient communication and transfer of information between management and community; (2) lack of policy and process clarity; (3) lack of support, knowledge, resources, and implementation of mitigation measures; (4) lack of accountability by both management and conservancy members; and (5) lack of skills and capacity by both management and conservancy members. To address these problem areas three key priority actions were proposed: (1) harmonize conservancy policies and management practices; (2) improve information flow; and (3) implement mitigation measures. System level challenges discussed include the ability of conservancies to provide sufficient benefits for the number of members as well as possessing the human capital and social relational factors for accountable and effective governance. Since the underlying rationale behind conservancy success is that benefits outweigh costs and members have the skills and capacity to self-govern, these could impact negatively on the future sustainability of conservancies. To address these issues, diversification in income and livelihood opportunities, exploring the role of non-monetary benefits, better

alignment of policies with local conditions (e.g., benefits in proportion to wildlife costs) and implementing social learning programs to build social capital are suggested. While this study focused on a small part of Namibia, I expect many of the key findings and proposed interventions will be relevant for other areas applying collaborative approaches to improve human–wildlife coexistence.

AUTHOR CONTRIBUTIONS

Ruth Kansky conceptualized, designed, implemented the study and analyzed and wrote the manuscript.

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CONFLICT OF INTEREST

The author has no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

Data are made available online.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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