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Stakeholders' Perceptions of the Outcomes of Translocated Eland in Nyae Nyae Conservancy, Namibia

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Translocation of wildlife species from one area to another is a conservation tool that contributes to the restoration of depleted populations, augments declining populations, or establishes of new populations. This paper documents one of the first studies examining in detail stakeholders' perceptions of the factors influencing the outcomes of translocations of wildlife into a community conservation area, using the case of eland (*Taurotragus oryx*) translocations into the Nyae Nyae Conservancy in Namibia. The translocations took place between 2000 and 2005 as part of the national community-based natural resource management programme and were monitored through annual waterpoint counts. These data on perceptions were collected through a household survey and focused group discussions involving community members and leaders and key informant interviews with external stakeholders. Community members' perceptions could not confirm that the translocated eland decreased or increased, however, reflected that eland individuals moved away from the release site soon after translocation to more distant locations further away from human settlements. The outcomes of the translocations were perceived to be most strongly associated with anthropogenic factors compared to habitat or environmental factors. However, stakeholders exhibited divergent perceptions regarding which of the anthropogenic factors was of most importance, particularly with respect to the roles of the different types of hunting, and to a lesser degree, the role of traditional burning of landscapes on translocation outcomes. The paper illustrates the complexities associated with translocations of wildlife into community conservation areas compared to state protected areas, given the strong influence of human disturbances on translocation success. It highlights the importance of understanding the social factors influencing how and why translocated individuals may adapt well or poorly to their new environment. Building this understanding is essential to improving the outcomes of similar translocations in the future.

Keywords: translocation, community perceptions, eland, Namibia, conservancy, community conservation

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INTRODUCTION

Community-based natural resource management (CBNRM) in southern Africa allows rural communities to take a leading and active role in managing natural resources, including wildlife (Jones, 2001; Taylor, 2009; Child and Barnes, 2010). In Namibia, following the enactment of the *Nature Conservation Amendment Act of 1996,* the development of communal conservation areas outside protected areas, known as conservancies, enables local communities to actively participate in the conservation of wildlife and their habitats (NACSO, 2004; Weaver and Petersen, 2008). Silva and Mosimane (2014, p. 184) describe communal conservancies as "legally-recognized, geographically-defined institutions, formed by communities and designed to achieve environmental conservation objectives (e.g., increasing wildlife numbers and preserving habitats) by allowing local residents to manage and benefit from wildlife and other natural resources." The benefits derived include income for conservancy members and communities from tourism and trophy hunting activities and providing game meat for households in conservancies (MEFT/NACSO, 2018). These benefits contribute to livelihoods and economic development both locally and nationally (Jacobsohn and Owen-Smith, 2003; Van Schalkwyk et al., 2010; Silva and Mosimane, 2014).

Communal conservancies play an important role in biodiversity conservation, including connecting wildlife corridors within the country (NACSO, 2014). Conservancies have led to increases in wildlife populations and greater protection and restoration of habitats (MEFT/NACSO, 2018; Stoldt et al., 2020), contributing to meeting the objectives of the international Convention on Biological Diversity. However, the establishment of some conservancies in Namibia necessitated translocation or restocking of wildlife where these had become locally extinct or had very low populations (NACSO, 2014). These translocations involved the movement of wildlife species from state protected areas or privately owned game farms into communal conservancies (Seddon et al., 2007; Paterson et al., 2008; NACSO, 2014) to enhance existing populations or to re-establish populations within their natural range (Buijs et al., 2016).

Historically, local communities' views were often disregarded in natural resource management planning and decision-making, but more recently, understanding people's views has been recognized as important in the evaluation of the ecological impact of conservation, and in responding to them over time, in order to enhance positive outcomes of conservation (Bennett, 2016; Angwenyi et al., 2021; Iñiguez-Gallardo et al., 2021), in particular for CBNRM (Beyerl et al., 2016). Attention has been given to understanding how the involvement of different stakeholders and their interests contributes to natural resources management decision-making, planning processes and practices (Beyerl et al., 2016; Arumugam et al., 2020). For example, the establishment of protected areas, including national parks, which by nature of their establishment, restrict the ability of human populations to access resources necessary for their livelihoods, necessitates engagement or involvement of local communities to include their knowledge and inputs to assure its success (King and Peralvo, 2010). In a similar manner, the establishment and success of community conservation initiatives such as the Namibian CBNRM programme is premised on the involvement and engagement of different stakeholders (NACSO, 2004; Weaver and Petersen, 2008).

This paper, therefore, documents the perceptions of multiple internal and external stakeholders involved in the ongoing management of Nyae Nyae Conservancy, in order to better understand the different experiences and standpoints of stakeholder groups and their perceptions of the translocation outcomes. In this paper, perceptions refer to what people regard, understand, and interpret or peoples' experiences and their interpretation of these realities encountered (Beyerl et al., 2016; Ntuli et al., 2018). Perceptions not only determine people's attitude and behavior—in the case of the present study, toward the translocation and conservation in general—but therefore, also the success of natural resources management (Ntuli et al., 2018).

The perceptions of different stakeholders regarding natural resources management initiatives are shaped by multiple factors and their interactions, with social factors and community expectations standing out as particularly important (Ogra, 2008; Dickman, 2010; King and Peralvo, 2010; Gore and Kahler, 2012; Villamor et al., 2014; König et al., 2020; Cruise and Sasada, 2021; Hebinck, 2021; Van Der Wulp and Hebinck, 2021). Consideration of often divergent perceptions, values, knowledge, and experiences of different stakeholders facilitates the identification of shared views and contentious grounds (Villamor et al., 2014) that are relevant to the outcomes of natural resources management interventions. Thus, it is important to examine the perceptions of more than one group, to allow for broader inputs in conservation programs, recognizing that opinions will differ not only between groups (Cortes-Avizanda et al., 2021), but also within groups.

There is a wide variety of natural resources management contexts in which research on perceptions of different stakeholders has been investigated and reported. These include (but are not limited to) conservation in general (King and Peralvo, 2010), human-wildlife conflicts (HWC) in and around protected areas (Ogra, 2008; Dickman, 2010; Drake et al., 2020; König et al., 2020), deforestation (Durand and Lazos, 2008), marine and freshwater resources management (Velez et al., 2014; Beyerl et al., 2016; Arumugam et al., 2020) and poverty (Hargreaves et al., 2007). Studies have also looked specifically at gendered perceptions associated with HWC (Gore and Kahler, 2012), carnivore translocations (Bavin et al., 2019), costs and benefits associated with wildlife tourism (Drake et al., 2020; Lekgau and Tichaawa, 2020), and contestation over allocation and meaning of land and use of resources (Van Der Wulp and Hebinck, 2021).

However, while the literature demonstrates the clear interest in perceptions of conservation stakeholders, there is still little known about how different stakeholders perceive the effect of their own activities and those of other stakeholders on the outcomes of wildlife translocations. The choice to examine stakeholder perceptions of the eland translocations, specifically in Nyae Nyae Conservancy was made to contribute to this

knowledge gap, and the focus on eland was particularly pertinent because of the species' cultural and historical significance to the residents of the conservancy.

This case study is of particular interest because translocating wildlife from state protected areas to community conservation areas is a relatively recent phenomenon, and is infrequently documented. The range of views of translocation outcomes expressed in this paper, and continuing uncertainty about the outcomes of the eland translocations, demonstrate the need for proper monitoring systems and evaluation of translocation outcomes from both a social and ecological perspective. The sharing of information should allow conservancy residents, local leaders, community rangers and other stakeholders to have a common understanding of the factors affecting translocation outcomes, and of relevant management actions to improve the chances of success, especially for sensitive species like eland.

MATERIALS AND METHODS

Study Area

The study was carried out in the Nyae Nyae Conservancy (located at 20°S, 20°E) in the Tsumkwe Constituency of the Otjozondjupa region (see **Figure 1**). The constituency covers an area of 26,010 km^2, including the Khaudum National Park and communal lands (Mendelsohn and El Obeid, 2002), and Nyae Nyae Conservancy makes up 35% of the area of the constituency, with an area of 8,992 km^2 (NACSO, 2004).

Tsumkwe Constituency is the least populated constituency in the country, with fewer than 10,000 inhabitants (NSA, 2014). Tsumkwe settlement is the main town in the constituency and the conservancy and has a population of 2,000–3,000 people (Hays et al., 2014), the majority of whom belong to the Ju|'hoansi San ethnic group.

The Nyae Nyae Conservancy was formally registered in 1998, making it one of the oldest communal conservancies in Namibia. It borders Ondjou Conservancy in the south, N≠a Jaqna Conservancy in the west, Khaudum National Park (NP) in the north, and the Namibia–Botswana border in the east.

The majority of the people in Nyae Nyae Conservancy are historically hunter-gatherers, though declining natural resources, legislation regulating access to and protection of natural resources and modern education programs in schools has diminished hunter-gathering interest, knowledge and skills (Suzman, 2001). The livelihood activities and support systems on which community members have depended in more recent decades include old age pensions and other social welfare grants, food aid, permanent and casual employment, subsistence crop production, livestock, small businesses, the sale of natural products, and tourism-related activities (Suzman, 2001; Biesele and Hitchcock, 2013; Dieckmann et al., 2014).

However, hunting remains an important activity in Nyae Nyae Conservancy, and there are three main types: (a) hunting for own use; (b) subsistence/traditional hunting; and (c) commercial trophy hunting. Hunting for own use is organized by conservancy management, and carried out by qualified Ministry of Environment, Forestry and Tourism (MEFT) officials or professional hunters, and the resultant meat is distributed to households and community social events (e.g., conservancy meetings, local festivals and funerals in the conservancy). All conservancy members are allowed to conduct subsistence hunts to provide meat for themselves, their friends, and their family, as long as they use only traditional bows and arrows in the hunt. Commercial trophy hunting (including shoot-and-sell arrangements) is carried out by contracted professional hunters within the conservancy. People from outside the conservancy are not permitted to hunt within conservancy boundaries without appropriate permits.

Natural Resources of Nyae Nyae Conservancy

Although the Nyae Nyae Conservancy receives relatively good rains compared to many parts of the country ranging between 400 and 500 mm, the area still mostly relies on water from boreholes and some dry drainage routes that retain water for a short period after rainfall (Mendelsohn and El Obeid, 2002). The area is fairly homogenous in terms of vegetation type as it is situated within the Kalahari woodlands, which consist primarily of mixed, broad-leaved and acacia woodlands (Curtis and Mannheimer, 2005). Nyae Nyae Conservancy is home to diverse free-roaming wildlife species (Mendelsohn and El Obeid, 2002). The Nyae Nyae Conservancy contains Buffalo Camp, a self-contained area surrounded by game fencing. The camp was initially an area of 2,400 hectares and was established in 1996 to accommodate buffalo that were found in the area, to prevent contact with other species and reduce the potential transmission of foot-and-mouth disease. The rest of the conservancy is open, with free-roaming wildlife species. 2,200 individuals were translocated into these open landscapes of the conservancy, including eland, springbok, oryx, giraffe, red hartebeest, kudu, black rhino, blue wildebeest and Burchell's zebra (Lendelvo, 2018). A total of 268 eland individuals were translocated into the open landscapes from commercial farms (Waterberg and Farm Eden) in 2000, 2003 and 2005 (Lendelvo, 2018). These supplemented a very low founding or existing eland population in the conservancy (12 eland individuals that were counted during an aerial survey in 1998 (Weaver and Skyer, 2003). Wildlife monitoring was carried out annually using the annual water-point counts of all wildlife species at water points in different landscapes. **Figure 2** shows the records for the eland between 2000 and 2013 including the translocated numbers of eland into the Nyae Nyae Conservancy.

Data on Stakeholder Perceptions

Household Survey

A questionnaire survey was administered in the Nyae Nyae Conservancy during June and July of 2015. The bulk of the questionnaire comprised closed-ended questions about respondents' socio-economic status, their awareness of the eland translocations, their views on the changes in the eland population and interaction with different species, and on aspects of hunting. Trained field assistants helped the principal researcher to administer the questionnaire to representatives of sampled households.

The population of interest in this study were household members within the Nyae Nyae Conservancy. Conservancy

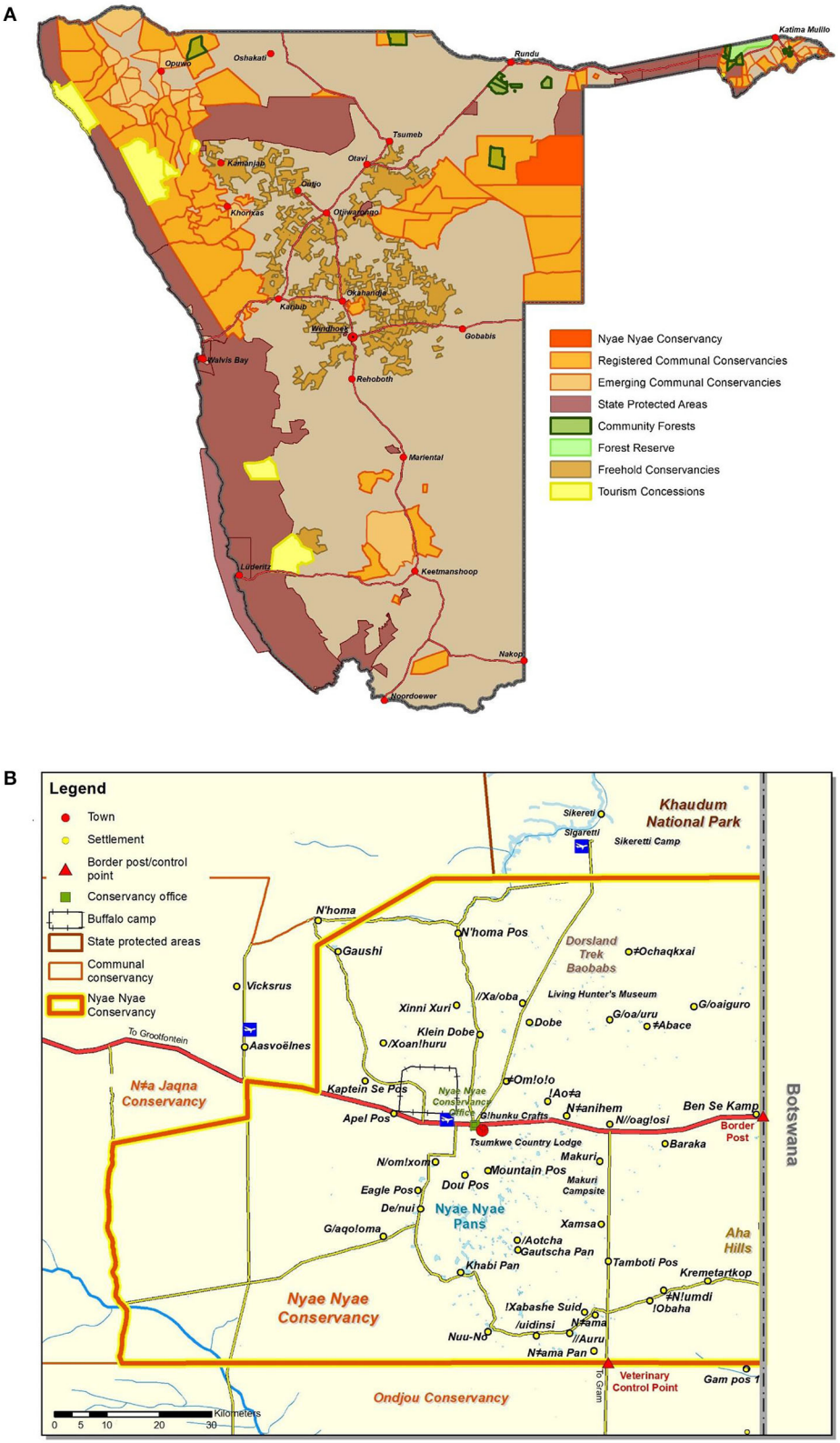

FIGURE 1 | (A) Location map of the Nyae Nyae Conservancy in Namibia and **(B)** map of the Nyae Nyae conservancy. Source: Lendelvo (2018).

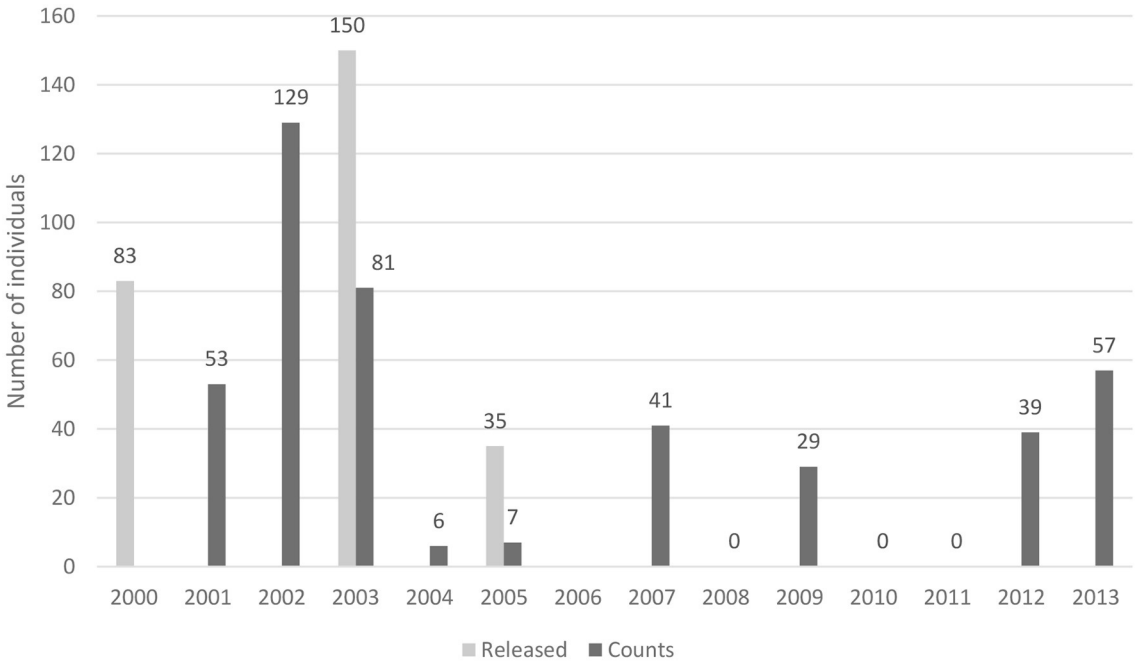

FIGURE 2 | The number of translocated (released) eland and annual counts for eland in the Nyae Nyae Conservancy, 2000–2013.

records showed that there were approximately 500 households in the 38 villages and 300 households in Tsumkwe settlement. These villages are divided into four districts, one of which included Tsumkwe settlement. With the exception of Tsumkwe settlement, the villages are very small, with approximately 10–15 households per village (Hays et al., 2014). The sampling strategy aimed to interview 10 households across four villages in each of the four districts (i.e., two or three households per village). However, additional 20 households were randomly selected for interview from Tsumkwe settlement, given its significantly larger size than other villages. Households were selected randomly from four villages from each of the four districts using a list of computer-generated random numbers. This method was chosen because of its relevance in situations where the population is characterized by widespread variation (Taherdoost, 2016). One respondent from each household was interviewed, who was either the household head, their spouse, or another adult household resident, with all respondents being aged 18 years or over.

Respondents from 56 households from 13 villages from the four districts and the Tsumkwe settlement were interviewed. The actual sample of 56 completed surveys was less than the planned 60 households, because in two originally selected villages, people no longer lived there, and so four interviews could not be undertaken. It was not possible to achieve a larger sample due to financial and logistical constraints. The relatively small sample size means the results presented below are not generalisable to the conservancy population, but they do allow for the examination of a range of views from across the conservancy, and representing with different levels of proximity to the translocation site and wildlife populations, and also likely to have different levels of interaction with the conservancy management.

TABLE 1 | Number of key informant interviews and their organization.

Sector	Total number of respondents
Traditional leaders	4
Nyae Nyae Conservancy leaders and staff	7
Government (Ministry of Environment, Forestry and Tourism)	5
Non-governmental organization (NGO)	2
Conservation support organization	4
Private sector (trophy hunter)	1
Total key informant interviews	**23**

Key Informant Interviews

Local leaders in the Nyae Nyae Conservancy assisted with mapping out potential key informants to be interviewed. They identified different categories of informants to ensure the inclusiveness of a range of different stakeholders' perspectives. 23 key informant interviews (KIIs) were conducted—around half were from the local community, including traditional leaders, conservancy staff and committee members. The remainder were "external" stakeholders, including MEFT and representatives of NGOs and donor organizations (see **Table 1**).

KIIs were typically conducted in English, except those with conservancy leaders and staff who were interviewed in Afrikaans. Traditional Authority members were interviewed in the local Ju|'hoansi language with the assistance of a Ju|'hoansi–English translator. The KIIs aimed to document the perceptions amongst a knowledgeable group of individuals regarding eland translocations in the conservancy, and the influence of anthropogenic and environmental factors in determining the outcomes.

Focus Group Discussions

A total of seven focus group discussions (FGDs) were conducted with conservancy residents in different villages in the Nyae Nyae Conservancy. Three of these groups included both male and female participants, two were women-only groups, and one was a male-only group. Each FGD included people of different ages. Six of the FGDs aimed to build an understanding of community perceptions of the eland translocations and to stimulate open debate around the community's understanding of both the anthropogenic and environmental factors affecting the success of the translocations. The seventh FGD was held with traditional and conservancy leaders. The FGDs were facilitated in Afrikaans with a translator in the Ju|'hoansi language. The facilitation of the FGDs was executed to elicit the range of views of participants, not to achieve a consensus view on the outcomes of, or the factors affecting the eland translocations.

Data Analysis

The questionnaire survey data was entered into SPSS, where frequencies and cross-tabulations including descriptive statistics were generated to establish the proportions of different variables in SPSS. The data from the KIIs and FGDs data were transcribed and analyzed using ATLAS.ti version 7.1.4. Perceptions of the local communities and stakeholders regarding factors that affect the establishment of the translocated eland in the Nyae Nyae Conservancy were derived from the transcribed KIIs and FGDs.

RESULTS

Socio-Demographic Characteristics of Respondents

The demographic characteristics of the survey respondents are summarized in **Table 2**. The respondents were predominantly male (84%) and the household head (79%), and conservancy members (93%). The average age of respondents was 47 years, and the levels of education attained are very low, which is likely correlated with high unemployment levels. Those that were employed (30%) were employed in the government, state-owned institutions, conservancy, private businesses, and also in tourism and hunting. Most of the respondents indicated their livelihoods depended mainly on the conservancy and natural products (plants and animals) from the surrounding forests.

TABLE 2 | Demographic characteristics of respondents (%) (n = 56).

Demographic characteristic	%
Gender	
Male	84
Female	16
Age group	
18–30	21
31–40	16
41–50	27
51-60	20
61 and older	16
Relationship to household head	
Household head	78.6
Wife of the household head	3.6
Sons-in-law	10.7
Other relatives	7.1
Highest educational levels	
None	35
Primary education	44
Secondary education	17
Tertiary education	4
Occupation	
Unemployed	59
Employed (including self-employed)	30
Retired/ Pensioner	11
Conservancy membership	
Yes	93
No	7

Perceptions of Factors Affecting the Translocated Eland

The majority of survey respondents (81%) were aware of the eland population translocated into their conservancy. Many were also able to distinguish the recently translocated eland that was free-roaming in the conservancy and the eland that was translocated into Buffalo Camp before the establishment of the conservancy (62%). However, there were mixed views among the residents about the population trends of the free-roaming eland since the first translocation in 2000. Almost half of the respondents believed the eland population had increased (46%), and close to another half was of the opinion that the eland population had decreased (48%) in the conservancy, while the remaining 6% reported that eland numbers had not changed.

In the 12 months prior to the survey, 52% of respondents reported that they had seen eland and 39% had only seen their tracks. One in five respondents stated that they had sighted an eland or its tracks recently (21%), within the month prior to the interview. These respondents—those who saw the eland or its tracks—did so at their villages (18%), at water points that are close to the settlements (21%) or those further away from the settlement (45%) or in forested areas at a distance from settlements (16%).

FGD participants believed translocated eland were doing well in the conservancy, but indicated that they had moved away from settlements, where there is limited human disturbance. Participants believed eland had moved away from settlements because they felt it had been becoming increasingly difficult to spot eland over time. Living away from the human settlement was believed to give the eland species an opportunity to survive better with limited human interactions. Household members' perceptions about the seriousness of various factors influencing the translocation outcomes are presented in **Table 3**. It is evident that most survey respondents felt that neither water availability, vegetation/range condition, predation, nor farming activities had a serious influence on the translocation outcome of eland. However, a majority felt that poaching, human settlements, and wildlife migrations away from Nyae Nyae had exerted serious influences on the translocation outcomes.

TABLE 3 | Perceptions of community members on the level of seriousness (whether serious, not serious or do not know) with which various factors influenced whether eland had successfully established following translocation in Nyae Nyae Conservancy (n = 56).

	Migration (%)	Human settlement (%)	Poaching (%)	Water availability (%)	Predators (%)	Range conditions (%)	Farming activities (%)
Serious	50	49	40	37	34	26	18
Not serious	41	45	51	63	64	68	55
Don't know	9	6	9	0	2	6	27

Ecological Factors

Availability of Water Resources for Wildlife

The Nyae Nyae Conservancy has many water points, the majority of which are artificially supplied with water from solar and diesel-powered boreholes. Most respondents—both community members and other stakeholders—indicated that water availability was not a serious threat to the establishment of eland in the conservancy, though MEFT officials noted that the frequent breakdown of pumps at water points forced some wildlife to move closer to boreholes established for human use near settlements. Local rangers stated they had witnessed eland using water points in villages. Furthermore, rangers, local leaders, MEFT, and NGO respondents viewed dysfunctional water points as contributing to the disturbance of the eland, especially when they had first been translocated and were new to the environment. Both conservancy rangers and local MEFT staff reported that some translocated eland started moving away from the area they were released into immediately, while others stayed in their release area for up to 6 months. The water points at the release site, although in the central part of the conservancy, were distant from human settlements.

Vegetation and Rangeland Conditions

Over two-thirds of survey respondents (68%) reported that the rangeland condition of the conservancy did not have a serious influence on wildlife species in the conservancy, including the eland species. Key informants were also in agreement that vegetation and habitat in the conservancy were in good condition and able to support a variety of wildlife species, and so not likely to be a factor negatively affecting translocation outcomes.

The vegetation was perceived by both the conservancy residents and other stakeholders to be suitable for eland—that vegetation they generally feed on were still available, and that little has changed in the quality of the habitat: *"These forests of Nyae Nyae are full of different plants that we knew from childhood as good food for eland, meaning that people must know this is a good area for the eland*" said an elderly local pioneer in the establishment of the Conservancy.

A local MEFT official stated that *"This [Nyae Nyae] conservancy has good land cover of different species and has much better vegetation condition than other conservancies."* Another MEFT official observed that the large size of the conservancy and the fact that it is sparsely occupied leaving large expanses unoccupied, combined to enhance and maintain the integrity of the vegetation thereby providing suitable habitats for wildlife, including translocated animals.

Furthermore, almost all FGDs participants and key informants agreed that there were only few and isolated signs of land degradation where loss of vegetation was evident. An NGO representative remarked that the Nyae Nyae area has very good habitats for eland and other wildlife such that in the past, many animals moved into Nyae Nyae Conservancy from neighboring farms due to good range conditions. This observation was further supported by a rhetorical question that was asked by a local ranger: *"if eland could survive for many years in the Buffalo Camp, why should it be hard for them to survive outside the Camp where there are more resources?"*

Predation and Wildlife Movements/Migration

Only 34% of survey respondents believed predation was a serious threat to wildlife, including eland. A similar sentiment was expressed by FGD participants. However, key informants from the conservation support organization, MEFT and NGOs cautioned that predation may only be a threat to translocated individuals around the time of their release into new habitats, as at that time they have increased vulnerability due to their unfamiliarity with their new habitat. Although local rangers and MEFT confirmed there was evidence of predation of some eland, with only three carcasses of eland recorded in the event books between 1999 and 2014, they were therefore assured that it was not a serious problem.

However, evidence of predators was noted during interviews and FGDs: a female conservancy leader recalled that in 2012 *"two lions were seen roaming around their village,"* while an elderly man noted that *"the number of leopards had increased as most of the kills of wildlife and some livestock pointed to them [leopards]."*

Migration of the eland out of the conservancy was thought by 50% of survey respondents to be a serious threat to translocation outcomes of the eland, though 49% did not agree.

Anthropogenic Factors

Human Settlement and Farming Activities

There were mixed views among the survey respondents with regards to the seriousness of the effects of human livelihood activities on the success of the translocated eland. Almost equal proportions of respondents considered human settlements to have a serious impact on the establishment of translocated eland (49%) and to not have a serious impact (45%) on the settling of the translocated eland individuals. A key informant from traditional authority noted that the villages have very small numbers of residents and are spread across the vast conservancy, and that such low human density suggests that the utilization of the landscapes by community members contributed minimally to disturbance of the translocated eland.

Over half (55%) of the survey respondents indicated that farming activities did not have a serious impact on the translocated species, and just over one quarter (27%) did not know what they might be. The KIIs with local respondents highlighted the difficulties for many respondents to provide views on the effect of farming activities because farming is still not common in the conservancy. During an FGD, one resident raised a concerne that the observed influx of people and their large herds of livestock moving into Nyae Nyae Conservancy (at the time of the survey) in search of pasture could potentially heighten competition over resources between livestock and wildlife, including eland.

Because of the low and sparsely distributed population, the location of villages is not broadly perceived to be a problem. However, some stakeholders did feel that the movement of local people into wildlife habitats for hunting and to graze livestock may threaten wildlife, as observed by a MEFT official: *"although this human population size in this conservancy is very low, their livelihoods are solely depended on the forests in their vicinities, and no one is there to monitor the activities carried out there … remember, hunting is the economy of these people."*

Veld Fires and Cultural Burning

Setting veld fires (wild grass and woodland fires) is commonly practiced in many parts of Namibia, including Nyae Nyae Conservancy. FGD participants and key informants noted that burning is a cultural practice where fires are set for various purposes, including (but not limited to) increasing visibility when people were in the 'wild' areas of the conservancy, whether that was for hunting, collecting food products, or simply moving from one area to another. Burning patches of grassland is also done to attract wild animals with the fresh sprouting of new grass. These cultural burning practices are not restricted to any one season—though most of it is possible only during the dry season. Typically, only relatively small areas are burned, except when fires get out of control, if they are set in conditions that are too windy and when the grass is too dry.

In contrast to the views of the local community, local MEFT and NGO respondents expressed their concern about the manner in which burning was carried out by local people, saying that the problem starts if people start fires at any time of the day, any time of year, which can have the cumulative effect of burning large areas of wildlife habitat. A local NGO interviewee suggested that these practices do not need to be stopped but do need to be controlled.

Hunting

In this study, perceptions of survey respondents and stakeholders were most divergent regarding the effect of the different types of hunting on the translocation outcomes of the eland translocations/populations. Conservancy leaders and key informants confirmed that, at the time of the interviews, hunting eland for subsistence was prohibited, mainly because of the instability in the population. Further, there was no evidence from the survey or FGDs to suggest that eland was being hunted illegally by community members. In fact, the results of this study indicated that community members were aware they were not allowed to hunt eland for subsistence, and no household claimed to have hunted eland during 2001 and 2013. Note, however, that survey respondents may have been hesitant to openly report hunting eland, knowing that it was not a legal activity at the time. Some respondents said that the eland had previously been a target of local hunters, especially before the conservancy was established. However, through public awareness, communities were educated regarding reasons why eland should not be hunted until at such a time after they increase in population size.

Both the FGDs participants and key informants confirmed that hunting is an important household and conservancy income-generating activity. Individual local community members hunt wildlife (species other than eland were legally hunted for subsistence at the time of the research), but trophy hunting—carried out by external, professional hunters, following an agreement with the conservancy—is the major source of conservancy income. The key informants revealed that regular reporting by both subsistence and trophy hunters to the conservancy and MEFT was important for the maintenance of sustainable hunting in the conservancy. One local traditional leader said: *"Hunting is our main source of livelihood. Household families go out to hunt as they require food, just as other people go for shopping. Our parents lived with wildlife in this area, only these days they say we are disturbing the animals".*

Besides its economic importance to the community, subsistence hunting (of all species) also remains culturally important. Participants in the FGDs understood that translocation was meant to improve wildlife numbers in the conservancy and enable conservancy members to hunt and feed their families into the future. They believed that conserving and managing local populations of wildlife in the conservancy would allow the continuation of their hunting culture. One traditional leader expressed their appreciation of the eland translocation because of the cultural importance of this species to their area. Another participant stated that "traditionally most rituals of our culture required eland products such as hides, horns, meat and fat," while yet another noted "for anyone to be pronounced and viewed as a good hunter, you needed to hunt an eland." However, the discussion in the FGDs indicated that participants had not heard of any eland being hunted in the conservancy in the years prior to the research being undertaken.

External stakeholders and the conservancy staff and leaders highlighted the complexities associated with subsistence hunting, particularly with respect to the complications associated with accurately monitoring the species and numbers being hunted, when hunting decisions are made at the household level. Indeed, most external stakeholders (MEFT and NGOs) expressed the view that, in practice, traditional hunting was likely to exceed quotas, leading to overhunting, because it was not easy to apply a systematic monitoring system. Conservancy leaders also could not confirm with certainty the reliability of the hunting records regarding hunting by the locals, although they indicated recent improvements in the recordings at the settlement level. *"At least if our people could honestly report the animals they hunted, that will help our management and monitoring efforts,"* said a conservancy leader. However, another view of constraints on hunting was expressed by one local respondent, asking a question anchored on

the local livelihoods: "how can one stop the locals from hunting even when quota levels are reached." The conservancy leadership finds it difficult to stop people hunting, even after quotas are reached, due to its importance for households.

Despite the lack of evidence provided by external stakeholders of illegal hunting in the conservancy (generally, or of eland specifically), those stakeholders did suggest a number of measures they felt would improve the control and monitoring of hunting by locals, including having rangers accompany hunters, local hunters requiring a formal registration and to have to apply for and be granted a new form of hunting permit, and the introduction of a hunting season when conservancy members could hunt. Some suggested that the national regulation that permits hunting by the San people of Namibia be eliminated, and that hunting by locals should be decided by the conservancy leadership. Others called for effective control mechanisms to be put in place to ensure that traditional hunting did not pose a threat to wildlife in the area, considering the importance of wildlife to the livelihoods of the conservancy members.

Hunting activities may have affected translocated populations, even if the animals were not killed by hunters. The NGO respondents believed that most of the conservancy's translocated species, including eland, were mostly affected at the time of their release when some residents started hunting them before they were fully settled into the new habitat, causing fright among individuals in these species. The natural sensitivity of the eland meant that the species would move in search of safer places if they felt threatened. An elderly local male key informant, and a MEFT official concurred that eland had the ability to travel long distances, especially when they were unable to settle due to disturbances. Other stakeholders suggested, with confidence, that eland have moved out to the outskirts of the conservancy, perhaps because locals had tried to hunt them. The professional hunter operating in the conservancy and the conservation support organization both pointed out that translocated eland has the potential to contribute economically if viable populations were established, because of their high value.

DISCUSSION

The relatively high awareness of the eland translocations among conservancy members indicates that the community was well-informed of this initiative in the conservancy. Although community members' views could not confirm that the eland population decreased or increased, they indicated that the tracks were sighted in areas further away from human settlements. Community members' perceptions support the suggestion that eland individuals may have moved away from the release site soon after translocation and remained in those more distant locations. This suggestion is corroborated by the aerial survey reports of 2004 and 2013 showing that eland was mostly spotted toward the edges of the conservancy, and in the neighboring Khaudum NP (Stander, 2004; Craig and Gibson, 2013). Generally, wildlife translocations are considered successful when a viable and self-sustaining population of the translocated species is established in the new location (Pinter-Wollman et al., 2009), and a failure when translocated species die out or severely decline, either naturally or due to habitat and anthropogenic impacts, or when they move out of the area (Novellie and Knight, 1994). Globally, evidence suggests that translocated ungulates can establish viable populations both within and outside their historical ranges because they have the ability to adapt to different habitats, especially when human activities are absent or limited (Novellie and Knight, 1994; Spear and Chown, 2008; García-Marmolejo et al., 2015).

The results of this research show that there are quite different views expressed by different stakeholders about the anthropogenic factors affecting translocation outcomes. Broadly, local community members thought they had little impact, while other (external) stakeholders believed residents' activities probably contributed to the failure of the translocated individuals to create a viable population at the release site, though there is no hard evidence of this. However, the results do illustrate well the additional complexities of translocations of wildlife into community conservation areas—compared to those into state protected areas—and the need to explicitly consider social factors, that are less necessary for state protected area translocations, excepting with respect to control of poaching. Divergence of perceptions of stakeholders or actors in natural resources management is commonly reported, with differences in social factors being the most prominent reasons (Ogra, 2008; Dickman, 2010; King and Peralvo, 2010; Gore and Kahler, 2012; König et al., 2020; Hebinck, 2021). It is, therefore, important to include or consider views or perceptions of different stakeholders, in order to assure success in conservation programs or projects (Knapp et al., 2014; Villamor et al., 2014). The results of this study also highlight that post-release monitoring is critical to understanding the performance of the species in the new environment (Bubac et al., 2019), and why they may adapt well or poorly. Monitoring of eland in Nyae Nyae Conservancy post-release, through established methods such as live or radio tracking, would have contributed data on their establishment, distribution and changes in population sizes.

While there was little evidence found suggesting predation was a negative factor on the eland translocation outcomes, Nyae Nyae Conservancy is characterized by the presence of several predator species such as spotted and brown hyena, wild dogs, leopard, lion, cheetah, caracal, and jackal species (Mendelsohn and El Obeid, 2002; MEFT/NACSO, 2018). This conservancy was among the first conservancies in Namibia to introduce local monitoring of wildlife parameters using the event-book system carried out by the local Rangers (Stuart-Hill et al., 2005). The interviews with government, NGO and conservancy officials revealed a programme implemented to remove some predators from the conservancy to reduce the impact of predation on the ungulate species, a strategy viewed as necessary based on records of predation (of species other than eland) in the event book monitoring system. One of the common characteristics of an ungulate population is to develop natural predator avoidance behaviors (Griffin et al., 2000; Skinner and Chimimba, 2005). However, this is only possible if the ungulate population has good knowledge of the habitat through long-term interaction with a

particular area, which is not the case with newly translocated individuals (Griffin et al., 2000). Thus, eland may have been at higher risk of predation shortly after their release, when they were unfamiliar with the new habitat.

Although conservancy residents were divided in their opinion about the influence of human settlements on the translocated eland, external stakeholders were concerned about the level of interaction with wildlife areas by the residents of the conservancy, via the burning of grassland and woodlands, which was thought to cause disturbances among the translocated species. Both historical and more recent evidence suggests that where there are free-roaming eland populations in Namibia, South Africa and Tanzania, these populations have declined as a result of human activities (Underwood, 1981; Watson and Owen-Smith, 2000; Jessen et al., 2004; Harris et al., 2009; Waltert et al., 2009), in particular by disrupting the species' natural activities, such as breeding and foraging (Bolger et al., 2008).

While conservancy residents light fires during hunting or for other forest uses, these fires typically only cover small patches, though external stakeholders expressed concern about the impact of these fires on translocated species. During the dry season, the fuel load is often high and dry, which may enhance the spread of fires, making them uncontrollable. It should also be noted that while many African societies use veld fires as a traditional habitat management tool to manage the vegetation structure and also as part of hunting activities, this is often done with limited destruction to the environment (Nyamadzawo et al., 2013).

Of all of the factors likely to affect translocation outcomes, the greatest variance in the views of different stakeholders was about the hunting of eland in the conservancy. While hunting remains an important livelihood activity among conservancy residents, the model of allowing household level hunting decisions and self-reporting of hunted animals does create challenges for accurately monitoring the offtake of species. The eland is a very sensitive species to human activities, and the fright response can cause animals to travel long distances away from disturbances, reducing the opportunity for community members to benefit from them (Verlinden, 1998; Harris et al., 2009; Crosmary et al., 2012). In the context of this study, attempts to hunt the eland by the locals may have driven the species away, fleeing from such interactions to habitats farther away.

All external stakeholders and conservancy leadership perceived subsistence hunting to have a negative effect on translocated species, and there is some evidence that eland is targeted by hunters (Buijs et al., 2016), but it should also be recognized that there is a tendency among conservationists to believe that indigenous people are involved in overhunting, poaching and non-sustainable economic activities (Hitchcock et al., 2020). While the residents claimed not to have hunted any eland as it is prohibited by the conservancy, they did not shy away from the recognition that eland is very important to their culture. Hunting by local people is not unique in the Nyae Nyae conservancy but has been viewed in other conservancies as an important livelihood activity contributing to food security (Koot, 2019; Lubilo and Hebinck, 2019).

CONCLUSION

Community members' perceptions could not confirm that the translocated eland decreased or increased, however, reflected that eland individuals have moved away from the release site soon after translocation to more distant locations farther away from human settlements. The results further show that stakeholders' perceptions that the outcome of eland translocations into the Nyae Nyae Conservancy were more strongly associated with anthropogenic factors than with habitat or environmental factors. However, additional research is needed to determine whether the eland failed to survive or whether the translocated individuals simply migrated from the release area to more remote parts of the conservancy or to the neighboring Khaudum National Park. While this migration would technically suggest that the translocation was a failure, the apparent survival of the individuals is clearly a more positive outcome than a translocation failure involving the death of the translocated individuals.

This paper, in which we describe a series of translocations of wildlife into community conservation areas, not a state protected area, illustrates the additional complexities associated with such translocations. These results highlight the importance, in such contexts, of understanding of the social factors influencing the success, or otherwise, of translocations (especially given that ungulate translocations are more likely to succeed when human activities are absent or limited), and how and why translocated individuals may adapt well or poorly to their new environment. Building this understanding is essential to improving the outcomes of similar translocations in the future.

Hunting emerged as the most contentious of the anthropogenic factors affecting the translocation outcomes, with the widest range of views held by different stakeholders. Although there is little evidence of conservancy members hunting eland, there was a strong feeling from external stakeholders that subsistence hunting was likely to have posed a threat to the species translocated into the conservancy, including eland, with hunting disturbances encouraging them to move away from their release site. The accurate monitoring of subsistence hunting by households is difficult and is likely to only be improved with better engagement, trust and knowledge of conservancy activities amongst residents, such as its purpose, benefits derived, and the sense of ownership.

Strengthening collaboration between the community and the MEFT, NGOs and other stakeholders to work together more productively in an ongoing process will be necessary to improve understanding of the game count data and wildlife movements, of the outcomes of translocations, and of other game management activities. If this can be achieved, and these collaborations are based on appropriate respect for all knowledge and knowledge types, such striving for a common understanding and one voice has the potential to improve any future translocation outcomes.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ministry of Environment, Forestry and Tourism Research Permit. The participants provided their verbal informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

SL and JM developed the original idea and designed the study. SL conducted field data collection and analysis. SL, HS, and JM wrote and edited the manuscript. All authors gave final approval for publication and agreed to be held accountable for the work performed therein.

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