




# The Village, the Elephant, and the State: Land Access and Vulnerability in Rural Botswana

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## Abstract

Throughout the world, people resettle to reduce vulnerability to potentially dangerous wildlife, including elephants. In turn, they may become subject to development policies and practices that can either exacerbate or alleviate their vulnerability. Our ethnographic study in the Okavango Delta of Botswana, where 18,000 elephants share territory with 16,000 people, examines how resettlement decisions and settlement policies impacted vulnerability to elephants. We found that people who came into regular conflict with elephants frequently relocated from cattleposts to villages. Although people historically resettled near family, in 2015 a newly introduced “first-come, first-served” residential plot allocation policy spatially separated families within the village, creating further vulnerability for households relying on kinship networks. We found that government planning that incorporates locally available strategies, such as the ability to access support from kinship networks, may reduce vulnerability for those forced to resettle by elephant encroachment on their land.

**Keywords** Human-elephant interactions · Resettlement · Settlement policy · Kinship networks · Ethnicity · Female-headed households · Okavango Delta · Botswana

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## Introduction

Mobility has long been an important livelihood and wellbeing strategy for people to reduce their vulnerability to challenging social and environmental conditions (Adamo & Izazola, 2010; Qin, 2010). People’s decisions about where to live are based on an array of factors, including government incentives and policies, family and community connection to place, access to natural resources and infrastructure, and vulnerability to environmental threats, among others (e.g., Hitchcock & Ebert, 1989; McLeman & Hunter, 2010; Milgroom & Ribot, 2019; Milgroom & Spierenburg, 2008; Warner et al., 2010). Where people live, in turn, determines their access to natural resources and space, sense of community and place, and may in some instances lead to unanticipated vulnerabilities (Artur & Hilhorst, 2014; Cernea, 2000).

Resettlement can be a strategy for people who share space and natural resources with dangerous yet protected wildlife, such as elephants (Perera, 2009), that access shared resources in ways that can result in unwanted human-wildlife interactions (Buchholtz et al., 2019). Across much of sub-Saharan Africa, the potential for unwanted human-elephant interactions (HEI) shapes decisions for elephants and people alike

since they can have serious consequences, including the death of both people and elephants (Lee & Graham, 2006).

For people, these decisions are made within a specific cultural and historical context, yet can also be impacted by local land use policies and practices, including village building and settlement regulations and designation of elephant corridors, making it challenging to understand drivers of household resettlement without extensive on-the-ground research (Redmore, 2020; Songhurst et al., 2016). In addition, policies and programs aimed at reducing vulnerability of rural residents to HEI may be applied arbitrarily or have unintended consequences. For example, wildlife tourism projects intended to lift people out of poverty can exacerbate tensions between development and conservation goals when benefits are not distributed equitably (Schroeder, 2008; Koot & Hitchcock, 2019). People living near protected areas with elephants may decide to relocate to government-sanctioned settlements, at once pushed away from the protected area by potential HEI and attracted to new settlements by promises of housing, potable water, health clinics, and other infrastructure or opportunities (Hitchcock, 1998; Milgroom & Spierenburg, 2008; Saugestad, 2005; Witter, 2013). Yet the concentration of people in villages means they have longer travel distances to access their agricultural fields and other natural resources, thereby continuing to risk HEI during their daily livelihood activities (Redmore et al., 2020).

Scholars have explored some of these access pressures, which we term “squeezes,” in other contexts, for example pastoralists in Kenya facing land and resource grabs in peri-urban environments (Letai & Lind, 2013), and rural communities in coastal East Africa faced with compounding stressors of global market fluctuations and tourism and conservation-driven land insecurity (Bunce et al., 2010). Less studied are land access-related squeezes resulting from the competing pressures of conservation and development initiatives within the context of HEI.

In the Eastern Panhandle (Panhandle) of the Okavango Delta, Botswana, elephant populations have tripled in the past 20 years, a growth rate most likely due to regional immigration (Chase et al., 2018; Songhurst et al., 2016). At the time of this research (2018), approximately 18,000 elephants outnumbered the approximately 16,000 people that also lived in the Panhandle (CSO, 2011). Elders from the Panhandle reported that direct elephant sightings were infrequent in years past but had become a regular occurrence on roads, in the village and woodlands, and on farms (Redmore, 2020). From 2009 to 2015, over half of all reported human-wildlife conflicts in the Panhandle involved elephants (Pozo et al., 2021), resulting in an estimated 25 elephant deaths each year (Tipping-Woods, 2018). Human lives are also tragically lost in these encounters, and in 2018 alone 36 people across Botswana died as a consequence of these encounters (Chaukura et al., 2020).

In this context, our research addressed the question of the nature of the relationship between rural settlement policy and practice and rural resident vulnerability to elephants. We first present a literature review, followed by a description of the study site and our research methods. We conclude with a summary of our findings, and a discussion of their implications.

## Literature Review

### Vulnerability, Post-independence Rural Development, and Land Squeezes Stemming from both Conservation and Rural Development Strategies

People who depend on natural resources in wildlife-rich landscapes are differentially vulnerable to the negative impacts of wildlife (Naughton-Treves, 1997). Using Chambers' (1989) definition of vulnerability as exposure to risks, shocks, or stress that are embedded in livelihood systems, we recognize vulnerability as not merely a function of characteristics and capabilities of individuals, households, and communities, but also dependent upon environmental conditions and the wider political economy (Adger, 2006). Households with strong social support networks are better able to reduce their vulnerability to environmental challenges through access to labor, resources, and information (Cassidy & Barnes, 2012; Pretty, 2003; Pretty & Smith, 2004). Vulnerabilities resulting from HEI, specifically, are not experienced uniformly across the population but rather differ across social groups, negatively impacting some individuals, often women and the elderly, more than others (Ogra, 2008; Redmore et al., 2020).

Spatial mobility can be an important strategy for residents to reduce their vulnerability, although it is increasingly impacted through development policies and rural resident resettlement schemes (Chambers, 2003). Village-building, or *villagization*,<sup>1</sup> policies widely implemented across Africa since World War II by pre- and post-independence governments led to displacement estimated at over 25 million people (de Wet, 2012; de Wet & Fox, 2001). Although villagization schemes vary in practice among countries,

<sup>1</sup> Villagization is government-directed resettlement of people into central locations, and may occur in conjunction with the sedentarization of historically migratory people, for example hunter-gatherers or itinerant herders (Lorgen, 2000; Van Leeuwen, 2001). Often villages are planned on a grid system that centralizes people around basic government-provided services, such as clean water, schools, and other services (Lorgen, 1999). In the process, some governments have overlooked cultural conceptualizations of space and society, preferring instead “modern” villages without locales for people to gather informally while doing their daily chores, for example facilitating the exchange of information among women when collecting water or doing their washing (De Wet, 2015).

they have been shown to prioritize social control, national unity, and economic growth at the expense of social and cultural wellbeing (Gomersall, 2018; Robins, 1994).

Several studies document how conservation efforts for elephants pose real threats to peoples' lives and livelihoods to a degree that they shift resources, change their spatial/temporal movements across land, or resettle to new locations (e.g., Redmore et al., 2020; Witter, 2013). In conjunction with resettlement regulations, HEI may restrict where and when people move through the landscape due to risk of unwanted direct interactions with elephants (Lee & Graham, 2006), or whether and how they can access land. For example, households in Limpopo National Park where HEI was increasing were induced or forced to resettle from informal settlements to state-sanctioned villages outside of the park, leading people to lose their local autonomy, self-determination, and access to land (Witter, 2013; Massé, 2016; Milgroom & Ribot, 2019).

In one example of this land access squeeze in the context of HEI, Dasgupta (2006) describes the case of traditionally mobile herders in India who, in response to increasing elephant populations and changes to forest policy that restricted their access to land, reduced the amount of time spent grazing livestock, chose grazing lands closer to their village, and left family members at home to defend against elephants, fundamentally altering the social fabric of their community.

### The Crossroads of State Policy and Elephants in Botswana

Similar to other post-independence nations in Africa and beyond, rural settlement in Botswana today is shaped by the intersection of policies aimed at developing both people and territory. Following independence in 1966, the government pursued policies of agrarian expansion, supporting initiatives in farming and ranching (Harvey & Lewis Jr, 1990). As the government incentivized agrarian livelihoods across the country, fewer men went to work in South Africa's mines and agricultural landholdings grew. In 1968, the Tribal Land Act established Land Boards throughout the country to oversee land allocation by granting citizens rights to hold land through an extended government lease for residence, agriculture, livestock, and business purposes (Harvey & Lewis Jr, 1990). Land was considered an unalienable right, and many households occupied more than one dwelling in different locations, allowing them to access a suite of livelihood resources across the dry Kalahari Desert. While many dwellings were left unoccupied for parts of the year as people moved seasonally, others became permanent rural homes, leading to the conversion of cattleposts into year-round villages. As a result, between 1971 and 1981, the number of rural villages, mostly those with fewer than 500

people, doubled (National Development Plan 1985–91: 12, cited in Harvey & Lewis Jr, 1990: 36).

Two key policies targeted rural development throughout the country that in combination led to villagization. Beginning in 1965, Botswana adopted the National Development Plan (NDP) that by 1972 included provisions for a Rural Development Council, a committee comprised of key government and nongovernment representatives focused on issues of rural development (Magole, 2009). Recognizing the unequal growth of cities at the expense of rural areas, by 1976 the government committed to equal spending on rural and urban development (Holm, 1982). However, this imbalance persisted and by 2016 at the eleventh iteration of the NDP, spending focused on delivery of social services and infrastructure development with the aim of reducing migration of rural residents to urban centers (MFDP, 2016) (see Fig. 3 below).

At the same time, the 1979 National Settlement Policy (NSP) classified settlements according to population size (Magole, 2009) to allocate resources to “provide guidance for people to settle in areas with the best development potential offering opportunities for improved standards of living” (Ministry of Local Government (MLG), 1996). Settlements of 500–999 people were to be classified as villages, subject to the elaboration of Village Development Plans and governed through the Land Boards (Republic of Botswana, 1998). The NSP sought to limit the development of new settlements by encouraging people to move to existing settlements to avoid duplication of services and underuse of public facilities in smaller villages (MLG, 1996). Mosha (2014) pointed out that whereas people historically settled according to kin groups based on shared cultural norms and values, these two policies undermined the community values that led to the development of shared social norms and sense of place.

Alongside broad-sweeping rural development reform, the government introduced a suite of complementary social programs designed as a safety net for the most vulnerable households, including the government Public Works Program for poverty reduction (*ipelegeng*), Destitute Persons Program, primary and secondary school feeding program, and vulnerable groups feeding program, among others (Maundeni & Mupedziswa, 2017; Nthomang, 2018). This fabric of rural development policies targets the country's high levels of social inequality driving rural exodus, yet only 25% of the country's population is rural (Hillbom, 2011), dependent on natural resources and vulnerable to interactions with dangerous wildlife (Mmopelwa et al., 2009).

For residents who share space with elephants, the government has enacted other policies and programs to reduce the costs of HEI, including various compensation programs for loss of property and loss of life, and community-based natural resource management policies to deliver tourism

revenue directly to communities living alongside wildlife (DeMotts & Hoon, 2012; Mbaiwa, 2015; Mayberry et al., 2017). Despite these efforts, unequal impacts of HEI persist, influencing where and how people live, although scant attention has been paid to the relationships among access to land and mobility, settlement policy, and vulnerability to elephants (Redmore, 2020).

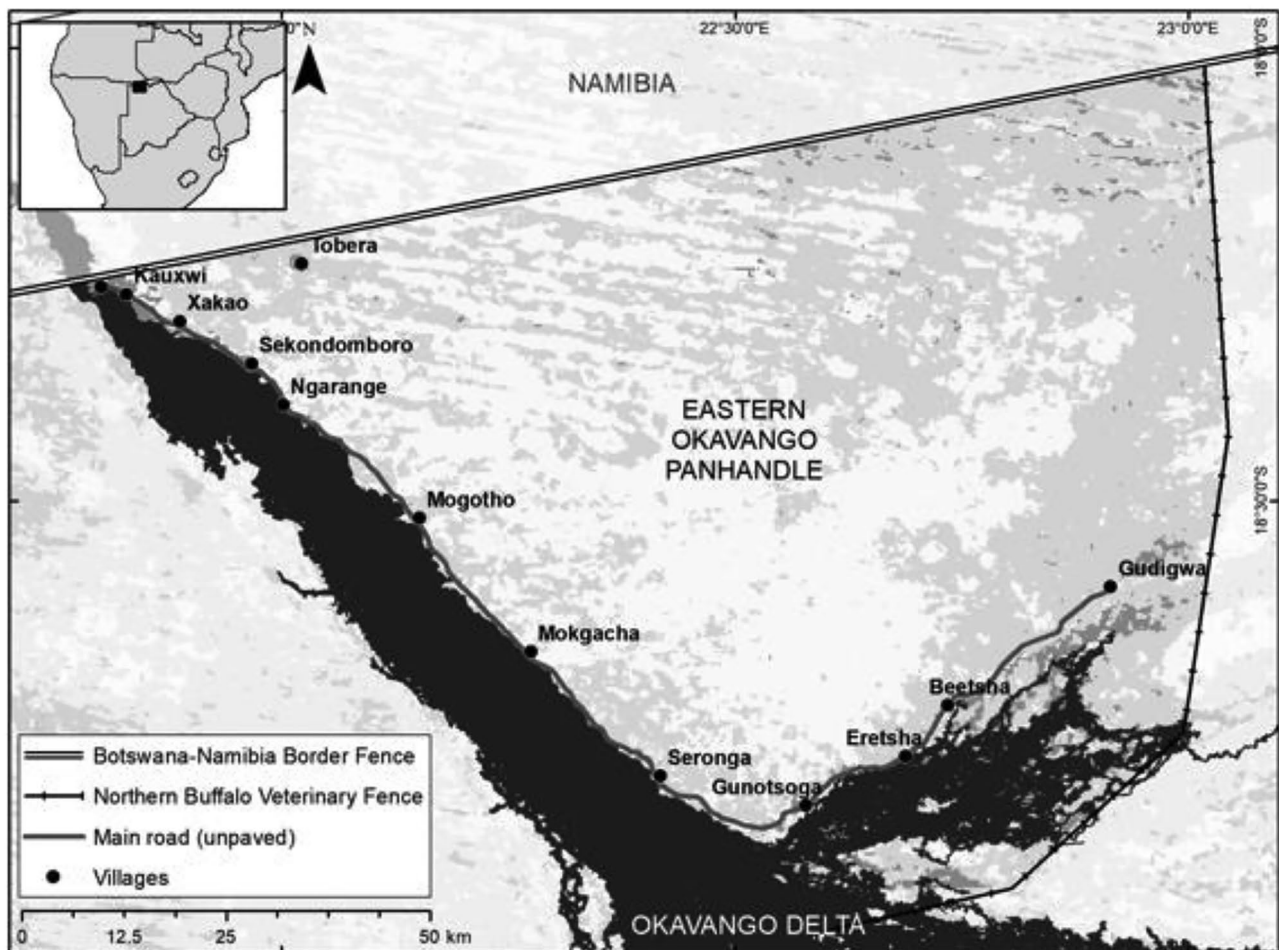
## Study Site

The Panhandle of the Okavango Delta, Botswana (Fig. 1) is the location of the Ecoexist Project, a nongovernmental organization co-founded by three of the co-authors that works to mitigate the causes and impacts of unwanted and negative HEI. The study site is Mokgacha village and associated cattleposts (Fig. 2; Table 1).

People sometimes maintain multiple households, including both in Mokgacha and the cattleposts, or occasionally

in another village like Seronga or Mogotho. In total, there were 561 people across the study site; 387 residents lived exclusively in Mokgacha village, while 84 people had no residence in Mokgacha village, living either in a cattlepost and a different village, or a cattlepost exclusively. Residents of Mokgacha and associated cattleposts belonged to four ethnic groups: Yeyi, Hambukushu, Boga Khwe and //ani Khwe. We selected this village due to the growth of the population despite lack of infrastructure (including potable water and electricity) that was readily available in neighboring villages, as well as representation of all four ethnic groups from across the study area, and importantly, because the *Kgosi* (headman) was receptive to our research being conducted in the village.

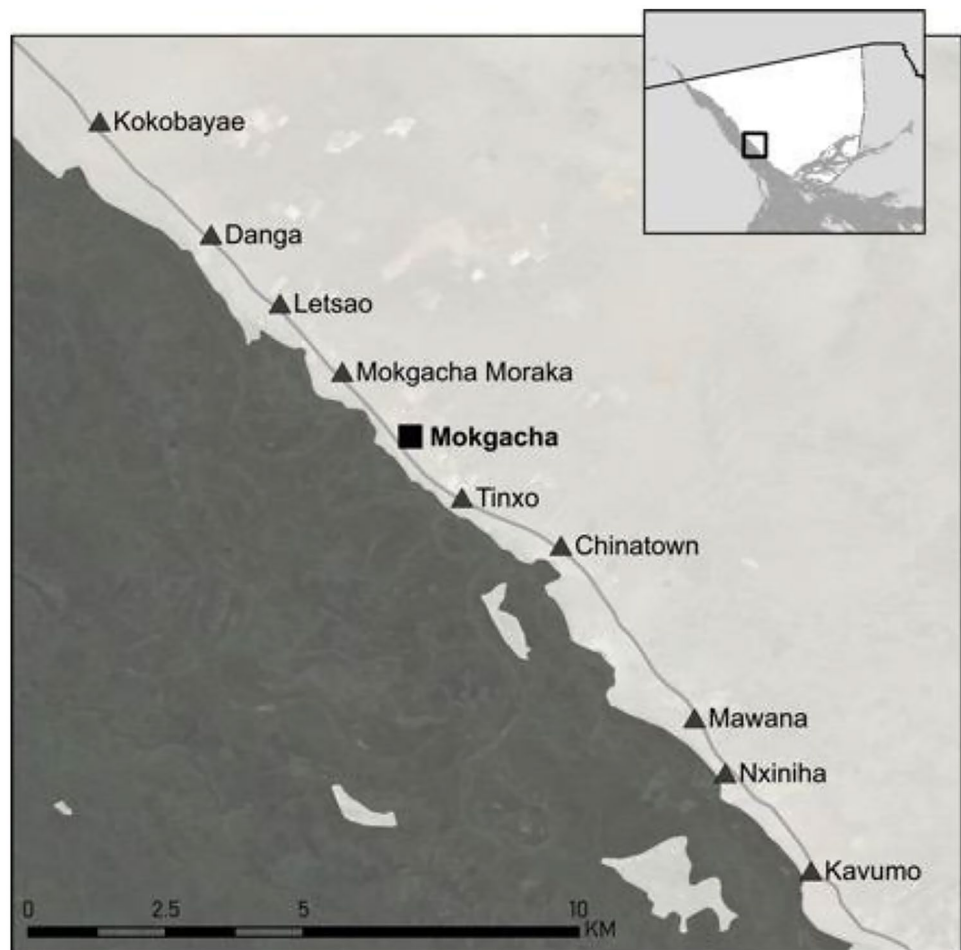
Though the population of Mokgacha was relatively stable for 40 years from 1971 to 2001, the most recent census (2011) and our study show significant growth, which led the government to officially declare Mokgacha a village in 2014 (Table 2). During the period of research, Mokgacha



**Fig. 1** A map of the study area, with the study site, Mokgacha village, located between Seronga and Mogotho villages (credit: Erin Buchholtz)



**Fig. 2** The study site, including Mokgacha and all associated and former cattleposts (Credit: Erin Buchholtz)



had limited infrastructure, including a shelter for public meetings, water tanks that were filled with potable water a handful of times, and Village Development Committee (VDC) offices that housed the temporary elementary school and teachers. Official designation as a village merited other government-organized developments, including a full primary school, a health clinic, and a police office, some of which have been realized in the years since the research described here. Thus, at the time of our research, residents often needed to travel to the neighboring villages of Seronga and Mogotho to consult a nurse or doctor, or to file a report with the police. Transportation options were limited and many people would walk 20 km to either village if they were unable to find a ride.

Residents engaged in diverse, natural resource-based livelihood activities, including farming, fishing, harvesting of firewood and building materials, and gathering of wild fruits. Elders over the age of 65 relied on a monthly pension, and unemployment was high, with around 15% of the adult population receiving income through *ipelegeng*.

## Methods

This ethnographic study was led by the first author as a part of her doctoral research as a fellow with the Ecoexist Project, and was intended to complement work focused on HEI in the Panhandle produced by other researchers associated with the organization. During her first field season from May through August 2016 in a neighboring Panhandle village, a young father, protecting his wife and baby, shot and killed an elephant that had repeatedly entered their home compound to eat seed pods from a tree that shaded their thatch-roof home, highlighting the fluid nature of human/elephant territories and guiding the focus and design of our research on the relationship between resettlement and HEI.

Fieldwork resumed from October 2017 through July 2018, when the first author lived in the village and hired Ipolokeng Katholo (second author) as a research assistant to support cultural navigation and interpretation between Setswana, English, and all four local languages. Additionally, her life experiences as a young mother in the village

**Table 1** All Mokgacha settlements according to 2017 population count, reasons for abandonment (if abandoned), and predominant resident ethnicity

Settlement	Estimated resident population	Reasons for abandonment	Predominant resident ethnicity
Kokobeye	-	Lions <sup>a</sup>	Hambukushu
Danga	51	Occupied	Hambukushu Yeyi
Letsao	-	Elephants and to build Mokgacha	Hambukushu
Mokgacha Moraka	-	Elephants and to build Mokgacha	Hambukushu
Mokgacha Village	387 full-time; plus 90 at least part-time from all settlements except Kavumo	Occupied	Hambukushu Yeyi Boga Khwe //ani Khwe
Tinxo	17	Occupied	Yeyi Boga Khwe Hambukushu
Chinatown	23	Occupied	Boga Khwe
Mawana	22	Occupied	Yeyi Boga Khwe
Nxiniha	49	Occupied	Yeyi
Kavumo	12	Relocated 0.5 km due to elephants	Yeyi

<sup>a</sup>The focus of this work is on elephants due to four of the authors' affiliation with the Ecoexist Project, which was established to respond to elephants' large and increasing population and shared use of space and resources with people. However, many different species of wildlife shaped people's daily livelihood decisions. Rebounding lion populations were a more recent phenomena in the study site, while hippos, hyenas, wild dogs, cheetahs, and crocodiles were also a source of livelihood-related conflict across the study area (Pozo et al., 2021)

shaped our research design to understand how residents navigate life with elephants (Bernard, 2006). Ethical approval adhered to Institutional Review Board protocol, and while we guaranteed confidentiality to residents, we informed official representatives that we would use their titles where necessary to inform data interpretation. We gained a culturally informed, emic, and nuanced perspective of life in the village and HEI through participant observation, recording notes about the nature of social interactions, resource use, labor and resource sharing, livelihoods, vulnerability, and HEI. Participant observation informed both study design and interpretation of findings (Bernard, 2006). We regularly recorded events throughout the day and generated memos of key findings as they emerged, allowing us to take an inductive approach to data collection and analysis (Emerson, 2001). By using an ethnographic approach, people's lived experiences guided theory development.

We used a sequential, mixed-methods approach, starting with broad questions around HEI and narrowing in over

time to inform theoretical and empirical findings (O'Reilly, 2005). We also conducted archival research in Gaborone to identify and locate key policies relating to settlement and land management.

## Household Survey

We first introduced ourselves and the project to each household head, explaining in their preferred language the first author's role as a fellow with the Ecoexist Project, the focus of the study on HEI through the lenses of settlement and firewood harvest, their rights as potential participants, as well as risks and potential benefits, including their choice to opt out before we began. We aimed to conduct a household survey across Mokgacha and all associated cattleposts to describe household composition, livelihoods, and resident history (Colson, 1971; Van de Walle, 2006) following guidelines developed by the Botswana National Census (CSO, 2001), identifying each household initially according to yard boundaries and then asking household heads who shares food from the same pot.

When no adult was available in a household, we noted the name and location code and returned at later. We captured 77% of all households in the study site ( $n = 122$  of 158 total). In total, we conducted the survey with 14 households in the cattleposts and 108 in Mokgacha. We were not able to survey a total of 36 households: 25 households had a primary residence in a different location for work or other circumstances, six were single member households who were unavailable

**Table 2** Population of Mokgacha village by year, according to Central Statistics Office data (CSO, 2011) and this study

Year	Population of Mokgacha village
1971	129
1981	94
1991	103
2001	132
2011	354
This study	477

each time, and two households opted out of participation due to research fatigue.

## Interviews

We conducted three sets of interviews. First, to explore the drivers and barriers of resettlement, we purposively selected individuals from Mokgacha using two key factors: those who lived in or out of Mokgacha; and those with or without a residential plot in Mokgacha. We selected participants for diversity in ethnicity and gender to capture a range of experiences, and conducted semi-structured interviews to explore livelihood and settlement decisions, as well as the drivers and barriers of development. We stopped at 30 interviews when we understood the major themes of resettlement in an elephant landscape (Glaser & Strauss, 1967; Hennink et al., 2017).

Second, we conducted guided interviews with 29 elder residents from all four ethnic groups who lived in and around Mokgacha. We identified elders using a snowball sampling method, whereby we first identified knowledge leaders and asked for recommendations of who might also have knowledge about the specific information we were seeking (Bernard, 2006). Interviews focused on historical knowledge regarding settlement around the area, as well as cultural and experiential knowledge concerning elephants and HEI.

Finally, to learn about perceived resident vulnerability to HEI and rural resettlement in policy and practice, we conducted open-ended interviews with fourteen government and nongovernment representatives. Among the participants were government representatives from the Tawana sub-Land Board of Seronga, Department of Wildlife and National Parks (DWNP), the Seronga Social Services office, in addition to village representatives, including the village *Kgosi* and the village land overseer in charge of ensuring land use practice was carried out lawfully and bringing attention to any land use conflicts. Because formal representatives' positions were important to data analysis and interpretation, we retained their title.

## Data Analysis

Communication was almost exclusively carried out with the assistance of Ipolokeng Katholo. This reduced the flow of conversations and constrained understanding of potentially important dynamics. To improve the trustworthiness of our interpretation, from May through July 2018 we checked emergent findings with key participants, sharing back key themes in both one-on-one meetings and at a community meeting to ensure trustworthiness of our data, to check the credibility of our interpretation of the data and to solicit further input to refine our understanding (Harvey, 2015).

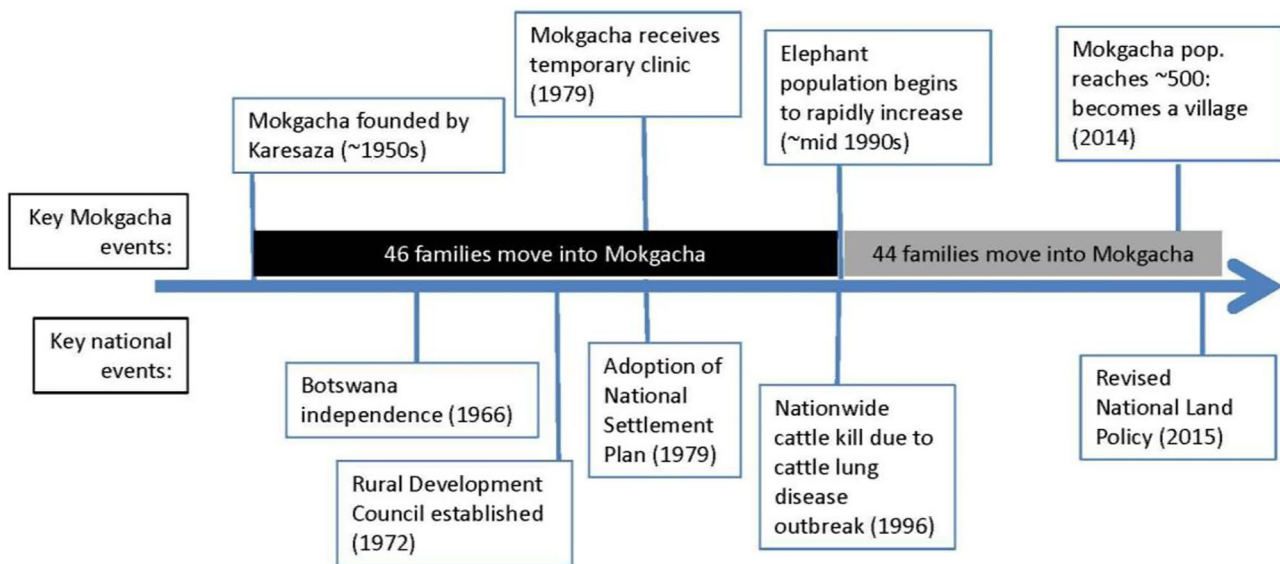
We analyzed all data using an iterative-inductive approach whereby research design and analysis developed as the research progressed (O'Reilly, 2005). Throughout data collection, we reflected on findings and refined our methodological approach, relying on memos to guide our analysis (Bernard, 2006; Gibbs, 2018). We combined an ethnography-as-art with an ethnography-as-science approach (O'Reilly, 2005; Wolcott, 2005), coding all transcripts and documents for key emergent themes (Chowdhury, 2015), including sociocultural identity, vulnerability to HEI, and drivers and consequences of resettlement.

## Findings and Discussion

### Residents Resettled to a Newly Sanctioned Village in Response to Livelihood Transitions and HEI-related Vulnerability

Though the government officially designated Mokgacha as a village in 2014, the process of village siting began in the 1970s, impacting geographies of vulnerability to HEI many decades after development plans were set in motion. Starting in 1979 the government began to make strategic directives for the rural population to come together to receive infrastructural investments (Fig. 3). The neighboring village of Seronga had long been the administrative center for people living in surrounding settlements and was providing government services to people across the Panhandle. Village elders recalled that visiting nurses ordered residents of Mokgacha and Mawana, both cattleposts at the time, to decide amongst themselves where the government should build a health clinic. As a result, residents of both cattleposts engaged in a competition to build a shelter for supplies and a medical examination room to try to secure that investment by completing the task first.

Mokgacha residents, led by the charismatic *Kgosi*, were faster than neighboring Mawana residents at self-organizing to build huts for visiting nurses, and the government declared that Mokgacha would be the central receiving point for all services despite having a smaller population at the time. This gave rise to a long-standing disagreement between those who wanted Mokgacha and those who wanted Mawana to be the central point, leading many residents of Mawana and other cattleposts further south feeling alienated from the decision-making process and reluctant to move to Mokgacha. At the time of this research, many people who lived in cattleposts south of Mokgacha had second homes in Seronga where they could access basic government services that were not available at the time in Mokgacha, including potable water, schools, and electricity. Those who decided to make Mokgacha their home explained that they chose to move to build



**Fig. 3** An overview timeline of key local (above the blue line) and national events (below the blue line) that impacted resident resettlement decisions across the study site, with bars showing the number of families that set-

led in Mokgacha before the mid-1990s (black) and from the mid-1990s to 2018 (grey)

up a place they perceived as theirs. Although it would take another 18 years for Mokgacha to become a formally state-sanctioned village, people were attracted to the village by the promise of future infrastructure developments as well as government-sponsored wage labor through *ipelegeng*.

Mokgacha's population began to grow in earnest in the mid-1990s, driven by the co-occurrence of two major events—a cattle lung disease outbreak and the early years of rapidly increasing elephant populations—that changed where and how people were able to live and conduct their livelihoods. In 1996, an outbreak of cattle lung disease threatened the national livestock economy, and the government mandated a cattle kill operation in affected areas around the country, offering either money or replacement cattle as compensation for lost livestock. Most cattle holders around the Panhandle, including many from Mokgacha, opted for cash (Hoon, 2004; Kgathi et al., 2007). As a result, households without livestock no longer needed permanent residence in cattleposts around Mokgacha, fundamentally reshaping the landscape as they began to resettle in Mokgacha, which was itself still a cattlepost at the time.

Around the same time, increasing elephant populations also began to push many people from the cattleposts into Mokgacha as they sought safety from HEI. Of the 11 households that relocated from a neighboring cattlepost to Mokgacha in the 17 years following the NSP and prior to the cattle kill (1979–1996), only one household had left the cattlepost for fear of elephants (9%). In contrast, 17 of the 56 households that moved to Mokgacha in the years following the cattle kill (1996–2017) cited fear of elephants as a

major consideration (30%). Most of these household heads explained that they felt safer in the village because elephants are less likely to move through areas with more human activity. Some of those households even continued to maintain livestock, with male household members travelling to their cattle enclosure twice daily, often in the dark, putting them at additional risk of HEI.

Elephants also likely influenced future resettlement decisions of households that remained in the cattleposts. For example, one 51-year-old man in a cattle-holding household from Chinatown reported, “I want to live here, but there are too many elephants.” Similarly, a 58-year-old woman living with her extended family in Nxiniha explained, “Maybe we'll move in years to come because elephants are everywhere.” She further clarified that she felt safer in her second home in Seronga because there are many people there. Yet life in the village changed access to land and resources in ways that made residents more vulnerable to elephants in other ways.

### Residents Relied on Site Relocation and Kinship Networks to Buffer Vulnerability to HEI

Though elephants were more likely to disrupt life in the cattleposts, they could also disrupt life in the village, and chances of HEI were influenced by factors associated with the siting of homes, including proximity of trees and other resources that attract elephants, as well as development density of the area surrounding a home. The *Kgosi* of Mokgacha explained that, “Today, wild animals just go right through



the village. When there's no one staying on that plot of land, the animals can just go through without fearing." One man, originally from Mokgacha but living with his young family on a plot of land in a new neighborhood of Seronga, echoed this experience: "With elephants, it's a major concern. Last year, an elephant got into my yard and walked around and let himself out with the gate." He explained that because the village had yet to extend water services to residential plots in his neighborhood, most people refused to move to their government-allocated plots. His plot was on an isolated road in the woodlands on the outskirts of Seronga, and he noted that he and his family have encountered elephants on their way to fetch water at the nearest standpipe. In Mokgacha, elephants also visited plots that were in less developed parts of the village, especially those on the outskirts where the village was expanding and those in the southern part of the village where plots were more spaced out.

Additionally, as the village grew, important resources became harder for residents to access, especially firewood, which required residents to travel further into the woodlands than they would had they remained in the cattlepost. Residents frequently considered risks of unwanted encounters with elephants as they went about their daily livelihood activities, although some people were more vulnerable than others, especially older individuals with impaired hearing or vision. As a DWNP officer from Seronga explained:

The biggest risk we're having now is people who don't know how elephants behave... It's normal for people to see elephants... They think they're used to them and they reduce their self-protection measures... most young people aren't having problems with elephants as compared to old people who can't see or hear well.

Residents combined two important strategies to buffer their vulnerability to elephants: site relocation and accessing kinship networks for resources and labor sharing. For example, all residents of Kavumo resettled together in 2016 less than half a kilometer down the road from their former settlement where, by 2018, only the dilapidated wooden frames of their huts remained. The head of Kavumo explained that their former homes were surrounded by tall trees that attracted elephants for the browse. He was afraid the elephants would push a tree onto his thatch-roofed hut, so the entire community relocated to a nearby area clear of tall trees, rebuilt their homes on a common area, and surrounded the new cattlepost with a wire strung with cans to alert them of visitors and elephants. Flexibility in settlement options allowed Kavumo residents to reduce their vulnerability to HEI without having to accept vulnerabilities in other aspects of their lives—an option no longer available to Mokgacha residents who held formal lease over their residential plots.

Kinship networks also provide a buffer to environmental threats through resource and labor sharing, which was

especially important for elders and other vulnerable populations. Women would often leave their young children in the care of elder family members, freeing them to harvest firewood and other resources in the woodlands. Elders were, in turn, provisioned with resources and kept safe from elephants. For example, a single mother who resettled in Mokgacha from Danga in 1996 noted: "When we first came to Mokgacha we were choosing our own plots based on how we can be close [to family] because I'm the one who's responsible for helping my mom with firewood and even food." She would leave her young son with her mother next door when she went to harvest firewood and food, allowing her to remain vigilant in the woodlands for sounds and signs that might signal a nearby elephant.

### **State Settlement Policy Rendered some Residents more Vulnerable to HEI**

The ability for rural residents to rely on ad hoc site relocation and kinship networks changed in two key ways when Mokgacha was formally designated a village in 2014. First, land allocation decisions had been made locally in consultation with the *Kgosi*, the land overseer, and the community at large, mainly requiring consensus that desired plots were not already held by someone else. Following the gazette-ment, the Land Board centralized residential plot decisions, implementing villagization policies to govern local settlement arrangements. With its national recognition as a village and the land allocation process managed through the Land Board, Mokgacha experienced attempted land grabs by people from across the country. As the Deputy sub-Land Board Secretary explained, "When the village was gazetted, we had people from all over the country coming in and saying that they've been living in Mokgacha. The villagers were raising the alarm with the land overseer." The Land Board put the land allocation process on hold until they were able to consult with the community to verify that people occupied the plots that had been registered, a process that had not resumed by the end of our fieldwork. This had the effect of preventing more people living in the cattleposts from formally claiming land in Mokgacha and kept people who had recently come of age or started their own families in Mokgacha from building their own homes.

Furthermore, the 2015 revised National Land Policy anonymized residential plot allocation, changing the process of where residents could settle. The Deputy sub-Land Board Secretary explained that policy revisions required applicants for residential plots to put their names on a waiting list, and as plots became available they would be allocated land on a "first come, first served" basis. During our interview in his office, he brought out the draft plan for Mokgacha that contrasted the haphazard, non-rectangular appearance of residential plots allocated in the past to the logical, gridded, and planned

approach for the future that served to transform and modernize the experience of life in the village. Each plot had a unique identifier that the Land Board would use to allocate land to people on the waiting list, regardless of whether or not they previously resided in the surrounding area.

Combined, the issues of attempted land grabbing by outsiders and the 2015 “first come, first served” policy had the potential to make certain households more vulnerable to HEI through the disruption of their kinship networks. As the Deputy sub-Land Board Secretary explained:

Some of them who've been allocated plots, they're not from Mokgacha. And if you're a civil servant living there now and you get sent to work somewhere else, your plot will be unoccupied. So here in Botswana where maybe I can borrow salt from my neighbor if I run out, it can be difficult if my neighbors are absent... When the elephants come, if your neighbor isn't there and you need help, it can mean you're alone with the elephants. You might have to walk a long distance to ask for things from your family and that can be hard.

In addition to the potential for HEI in areas with undeveloped or unoccupied residential plots, households that sought to develop their own plot of land no longer had the option of staying close to kin, also resulting in the disruption of social safety nets that can buffer vulnerability to HEI. As one mother in her mid-twenties explained:

As a village becomes bigger, young people move to their own plots, leaving their grandparents and elders alone. This leaves elders struggling for firewood, water, and other resources they need. It's not that they can only be killed by elephants. There are other endangered wildlife species, too. They might interact with [wildlife], so it's better that they stay with grandchildren, children nearby to help them, not leaving them alone.

The *Kgosi* explained that, “The policy in the past didn't have conflicts and didn't impact the villagers like today. Like today you can be allocated a plot far away from your family even if you want to stay close.” In these ways, development policies intended to facilitate equitable land access left vulnerable residents with few options to adapt to the threat of HEI.

The temporary hold on residential plot allocation and selection ability left younger household heads who were ready to build their own households in limbo, forcing some to continue living in tight quarters with family and others to build on illegally occupied land close to family. For example, a 30-year-old mother explained that she had not applied for a plot of land for her own young family because she lived with and cared for her aging mother and brother, both of whom lived with disabilities. Should she apply for a plot of land, it remained uncertain whether she would be granted a plot close to her family or one on the other side of the village, a

20-min walk through deep Kalahari sand, where many plots had yet to be allocated. In another case, a 44-year old woman who settled a plot of land in Mokgacha without a certificate from the Land Board explained:

This situation of being separated from closest family, that's why I settled here without the Land Board consent, as you see. Because in the past we grew up in a big family without the Land Board process.”

Although most people saw the right to land as a net positive for society, government-centralized settlement decisions spoke to concerns of rural development priorities and ideals of rural modernization. The Deputy sub-Land Board Secretary further discussed the logic behind the residential plot allocation practices:

You might have a village where Basarwa [Boga Khwe] and BaHambukushu live, and you allocate them land on the other side [of the village] with the other people [from a different tribe], and they don't want to go. They want to share food with their brother and share other responsibilities. We have a mapped area with amenities, electricity, water, all on roads in a straight line, not scattered like things are now. They have to get used to it.

Geographic separation reduced the ability for family members to rely on kinship networks since unless they are visiting or being visited regularly by family members it is difficult to learn of who needs help—an issue faced by Ipolokeng Katholo, who in the years since this research has herself been assigned a plot of land on the opposite side of the village from the rest of her family, presenting a challenge for her to care for her elderly mother and to ensure care of her children. While the Land Board did allow for household heads to voluntarily swap plots, this put the onus on individuals to come to an amicable arrangement without support from local governing institutions, like the VDC and the *Kgosi*, as had customarily been the case.

The Land Board also recognized the role of kinship networks for people with special needs who qualify as “destitute” through Social Services. The sub-Land Board Secretary explained:

What we've been doing for vulnerable groups is if a [person who qualifies as] destitute wants a plot and the council will build a house for them, we allocate where they can be provided with a plot of land that's near to people that can provide them the support they need.

However, as in many rural areas across the country, one third of all Mokgacha household heads were single women. Those who lived near extended families were able to buffer the effects of vulnerability to HEI through shared labor and resources more easily than those living near non-related neighbors. For example, a 25-year-old Hambukushu woman explained:

I can leave my kids with my nearby family. When I'll be [living] at another part of the village, I can leave my kids with non-related neighbors because there's no one else who can watch them. I'll just go with worries in my heart.

Residential plot allocation policies disproportionately impacted female-headed households and the elderly because of their reliance on extended kinship networks. Villagization policies brought a one-size-fits-all approach to rural development, threatening cultural conceptions of place and squeezing vulnerable residents who relied extensively on informal social safety nets made possible through access to land.

## Conclusions

As Okavango Delta villages grow, in part because of people relocating from more HEI-vulnerable cattleposts, as well as the draw of public infrastructure that makes village life increasingly attractive, it is also critical to understand which factors contribute to the ability for rural residents to share a landscape with elephants. We show that rural residents, squeezed by livelihood transitions and increasing elephant populations, relocated to Mokgacha to reduce their vulnerability. Yet in relocating to the village, residents' options were once again squeezed as they were rendered vulnerable to HEI through centralized settlement policies that sought to bring a uniform approach to residential plot allocation. In this way, residents' vulnerability was increased as their access to land was compromised by the dual goals of conservation and development. However, not all residents experienced this double squeeze equally. Female-headed households and the elderly who were the most reliant on kinship networks to reduce their vulnerability to HEI were disproportionately disadvantaged by resettlement patterns in the village that afforded no allowances for proximity of related households. We argue that more research is needed to understand and mitigate the trade-offs in decision making, especially on the potentially conflicting goals of conservation and rural development and settlement, as well as the downstream effects that complicate the vulnerability equation for rural residents.

Because people move in and out of vulnerability temporarily, whether daily, seasonally, or over the course of a lifetime (Maundeni & Mupedziswa, 2017), government programs are unable to provide support for all in need (Mupedziswa & Ntseane, 2013). In contrast, kinship networks can respond quickly and are crucial for many households facing daily or seasonal environmental threats, including unwanted HEI (Kgathi et al., 2007). Government policy that complements rather than replaces traditional safety nets, particularly kinship networks, may help mitigate vulnerability by supporting

innovative, quick-responding, and often localized approaches. More attention to the process of public participation in planning efforts, with special attention to key segments of the population (e.g., the elderly, female-headed households, youth, etc.), offers a way ensure that local culture and context are used to inform and evaluate policy, and ideally, alleviate the impacts of this double squeeze.

The Government of Botswana is faced with a complex task to reduce HEI and human-wildlife interactions, more generally, while relying on wildlife tourism as an important source of local and national revenue to bring development to underserved areas. Through the use of ethnographic methods, our research provides a more complete understanding of the relationships between vulnerability to HEI and rural resettlement, making connections across history, policy, household livelihood decisions, and land access. To this end, additional use of ethnographic methods can deepen our understanding of the interactions between government policies and everyday decisions made by rural residents who live in elephant-rich landscapes. Research and planning that attends to local needs, governing institutions, and social practices can serve to better align conservation and development goals, especially where policies conceived far from the daily challenges facing rural residents may have unintended consequences for people and their continued tolerance for sharing space with elephants. Village-level planning and efforts to reduce HEI and the broader landscape of human-wildlife interactions would benefit from working in tandem, to ensure that dual goals of conservation and development are met without leaving anyone behind in the process.

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