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South Africa



GUIDANCE DOCUMENT:

Improving the response to human-wildlife conflict in the Mozambique and South Africa constituents of the Great Limpopo Transfrontier Conservation Area

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2020

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Acronyms

ANAC:	Associação Administração Nacional das Áreas de Conservação (National Administration of Conservation Areas)
APNR:	Associated Private Nature Reserves
BR:	Biosphere Reserve
CBNRM:	Community-Based Natural Resource Management
CPeace:	Centre for Conservation Peacebuilding
DCA:	Damage-Causing Animal
DEFF:	Department of Environment, Forestry and Fisheries
DNFF:	Direção Nacional de Florestas e Fauna Bravia (National Directorate of Forestry and Wildlife)
EM:	Environmental Monitor
GLC:	Greater Lebombo Conservancy
GLTFCA:	Great Limpopo Transfrontier Conservation Area
HWC:	Human-Wildlife Conflict
IWT:	Illegal Wildlife Trade
K2C:	Kruger 2 Canyons Biosphere Reserve
KNP:	Kruger National Park
LNP:	Limpopo National Park
LEDET:	Limpopo Department of Economic Development, Environment and Tourism
MTPA:	Mpumalanga Tourism and Parks Agency
NACSO:	Namibian Association of CBNRM Support Organisations
NGO:	Non-Governmental Organisation
PA:	Protected Area
PPF:	Peace Parks Foundation
SANParks:	South African National Parks
USAID:	United States Agency for International Development
WWF:	World Wide Fund for Nature

Executive summary

Human-wildlife conflict (HWC) is a 'wicked problem' due to its complexity; in the Great Limpopo Transfrontier Conservation Area (GLTFCA) multiple stakeholders with different backgrounds and objectives operate at multiple scales within an ever-changing, larger socio-ecological system. Attempts to resolve HWC without an understanding the whole system may have unintended consequences that lead to further conflicts in different places or at different times.

The World Wide Fund for Nature (WWF) South Africa, with support from the United States Agency for International Development (USAID), conducted a study to understand the current responses to HWC and their effectiveness in the South African and Mozambican constituents of the GLTFCA.

We applied a model developed by Madden & McQuinn (2014) to explore the depth of conservation conflict and develop appropriate solutions. The model proposes that HWC occurs at three different levels: 'dispute', 'underlying' and 'deep-rooted'.

At the dispute level, conflict relates to actual damages caused by wildlife, such as predators killing livestock, large herbivores damaging crops, dangerous wildlife threatening people's lives, and wildlife-borne diseases infecting livestock, and people killing such wild animals in retaliation.

At the underlying level, HWC is driven by the lack of inaction or slow responses to address HWC at the dispute level. These include a lack of compensation and/or the slow pace of compensation payments.

Deep-rooted conflict is the result of historical events; for example, land dispossession or political oppression that manifests itself today in protest action against conservation authorities.

We reviewed relevant literature and interviewed key stakeholder institutions in the study area and found substantial evidence of HWC at all three levels - dispute, underlying, and deep-rooted - in both the Mozambican and South African landscapes.

Elements of all three levels of conflict are likely to exist in any given situation in the study area. Thus, the response to HWC should be multi-layered. We recommend that HWC management strategies and plans should include technical solutions to reduce actual damages (substance). Improve reporting and decision-making processes to ensure these are widely accepted and adhered to (process). Finally, seek to improve relationships among the stakeholders by redressing past injustices and building current trust (relationships). These correspond roughly to the settlement, resolution and reconciliation objectives in Figure 2, page 7. Thus, any HWC plan will fall somewhere within the conceptual triangle in Figure 3, page 17, depending on which of the three aspects are most prevalent in a given situation.

Introduction

Human-wildlife conflict (HWC) is a complex and multi-layered form of conflict that occurs when human-animal interactions lead to conflict between people and wildlife or between different groups of people. HWC is a 'wicked problem' due to its complexity, where multiple stakeholders with different backgrounds and objectives operate at multiple scales within an ever-changing, larger socio-ecological system. The Great Limpopo Transfrontier Conservation Area (GLTFCA) is an example of such a system. Thus, while the initial cause of conflict may be obvious, managing this conflict involves processes and relationships that are embedded within broader historical, cultural and socio-economic contexts. Attempts to resolve these problems without understanding the whole system may have unintended consequences that lead to further conflicts in different places or at different times.

The World Wide Fund for Nature (WWF) South Africa, with support from the United States Agency for International Development (USAID), conducted a study to understand the responses to HWC and their effectiveness in the GLTFCA. The study covered the landscapes around the Kruger National Park (KNP) and the Associated Private Nature Reserves (APNR) in South Africa and the Limpopo National Park (LNP) and Greater Lebombo Conservancy (GLC) in Mozambique (Figure 1). The study was informed by a literature review and interviews with key stakeholder institutions. Based on the findings, this guidance document recommends interventions to address HWC in the study area.

Methodology

We applied a conceptual model developed by Madden & McQuinn (2014)¹ to explore the depth of conservation conflict and develop appropriate solutions to specific situations, particularly considering the interactions among different stakeholders. This model posits that conflict has three different levels – dispute, underlying and deep-rooted (Figure 2).

At the *dispute level*, the cause of conflict is clear – crops are destroyed or livestock is killed by wild animals, and people kill these animals in retaliation. This level of HWC reveals the direct impacts of conflict on livelihoods and wildlife conservation, which can be a useful indicator for policymakers. While livestock losses and crop destruction are recognised as an economic threat to the commercial farming sector, these losses can threaten the livelihoods and food security of subsistence farmers. Factors that affect HWC at the dispute level include human population density, edge effects, land use types and types of animals and crops being farmed, and HWC mitigation measures in place.

However, conflict situations are rarely as simple as they appear because the communities and the local authorities or conservation agencies responding to the conflict have a history of previous interactions. If these previous experiences were negative (e.g. authorities arresting people for poaching or promising compensation that did not materialise), then there is a level of *underlying conflict* that intensifies the negative emotions surrounding the current incident.

Finally, there may be some *deep-rooted issues* that cause the different stakeholders to distrust each other – these include historical legacies (e.g. land dispossession during apartheid) and/or current differences relating to the stakeholders' core identities or values.

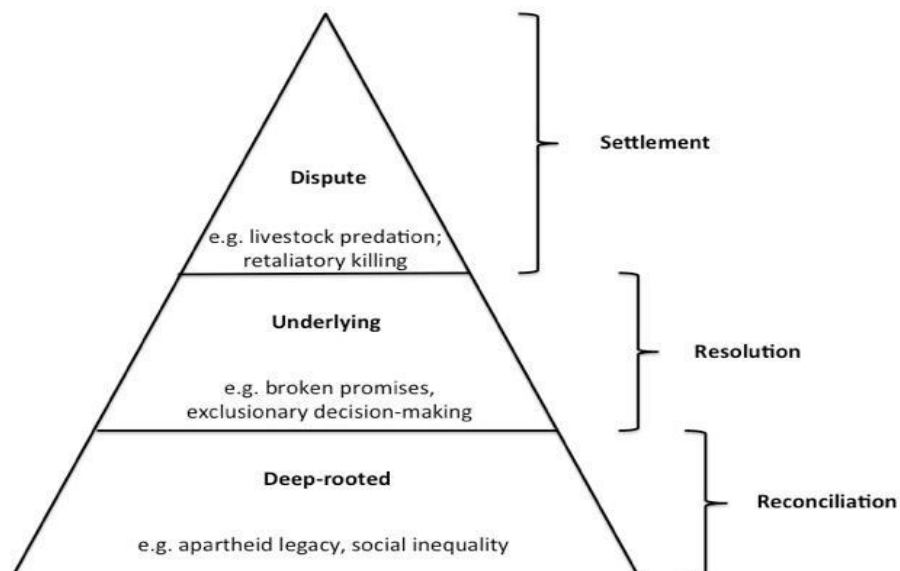


Figure 1. Theoretical framework for examining different levels of HWC. Adapted from Madden & McQuinn (2014)

¹ MADDEN, F. & MCQUINN, B. (2014) Conservation's blind spot: The case for conflict transformation in wildlife conservation. *Biological Conservation*, 178, 97–106.

Results

Dispute-level human-wildlife conflict

Around the KNP and APNR in South Africa, the most problematic species are buffalo, lion, elephant, hippo and crocodile. HWC intensifies close to the KNP (<20 km from the boundary) and wildlife are less likely to be tolerated where human population density is high. Some communities report problems with crocodiles which is particularly contentious because livestock losses due to crocodiles are not covered by the KNP compensation scheme, and they also pose a threat to human life. Very little has been published about the extent of crop losses, which are mainly due to elephants and primates, in the KNP landscape and crop losses are also not covered by the KNP compensation scheme. Other types of HWC include losses of game to African wild dogs and damage to large trees by elephants.

Since the start of the South African National Parks' (SANParks) compensation scheme in 2008, 155 claimants, with verified incidents of 184 livestock losses, were paid out over R1,4 million. This is likely an under-estimate of the actual damages caused as it does not include crop damage and under-reporting as those experiencing HWC may not be aware of the SANParks compensation scheme.

Little is known about levels of retaliatory killing of wildlife. This information can be difficult to obtain as people are less likely to report illegal activities. One comparative study found that 60% of the commercial farmers reported killing animals in retaliation, mainly by shooting or poisoning, while 40% of the communal farmers reported killing animals using a wide variety of methods (e.g. beating with sticks, spearing, trapping, shooting, poisoning). Retaliatory killing near KNP was recorded in Giyani, where people reported killing lion, buffalo and elephant.

Around the LNP and GLC in Mozambique, elephants, buffalo, crocodile, hippo, lion and spotted hyaena were the most common species involved in HWC. Most of the conflict occurred along the southern boundary of LNP near Massingir dam, although villages within the park and near Pafuri in the north were also considered hotspots by LNP rangers. The main form of HWC was crop destruction attributed to elephants. Lions were responsible for most of the cattle losses while crocodiles targeted small stock. Twelve human deaths were recorded, caused by crocodile, hippo, buffalo and elephant.

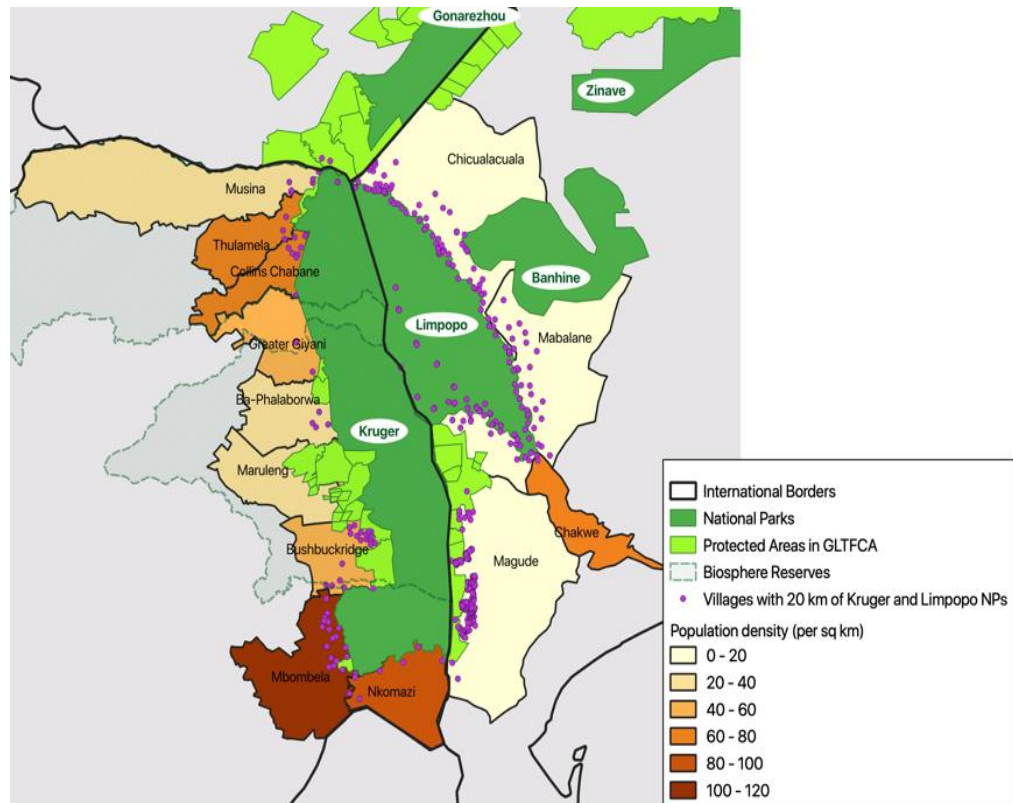


Figure 2. Map showing the distribution of villages within 20 km of Kruger National Park (based on 2011 census data) and Limpopo National Park (based on 2007 census data), the human population densities of each municipality and the boundaries of the biosphere reserves and protected areas.

Underlying human-wildlife conflict

Underlying conflict refers to unresolved disputes in recent history that may reduce trust between stakeholders. These may not be directly related to HWC but may involve other aspects of people-park relations. Perceived benefits and costs associated with the protected area (PA), along with positive experiences and perceptions of the provincial and PA authorities are likely to reduce the chance of people breaking the park rules (e.g., by trespassing, poaching, or retaliatory killing). These include benefits and opportunities, quality of engagement with communities, unmet expectations or promises around compensation, quality of fence maintenance, response times to incidents, the effectiveness of responses, impacts of disease and relationships between groups of people.

In Mozambique, many points of conflict between communities and PA management revolve around the planned resettlement for villages currently in the LNP, including restrictions in the use of natural resources, lack of benefits, poor engagement between communities and officials, increases in HWC due to growing wildlife populations, lack of compensation and tension caused by poaching. Communities report feeling neglected with the issues raised to park management going unaddressed.

Deep-rooted human-wildlife conflict

Deep-rooted issues involve historic and current differences in personal identity and deeply held beliefs and cultures between different stakeholders. South Africa and Mozambique have tumultuous histories that involved struggles against the injustice perpetrated by the apartheid and colonial governments, respectively. South Africa's history of racial segregation and oppression undoubtedly affects how the KNP's management is perceived by neighbouring communities and vice versa. In Africa, people have a deep connection to the land, which was disregarded by colonial governments during the establishment of PAs. From the neighbouring communities' view, PAs have denied them access to natural resources, ancestral gravesites and other important cultural resources and activities. In Mozambique, resettlement is ongoing with the establishment of LNP and its inclusion in the GLTFCA. Militarised anti-poaching in response to rhino poaching may be perceived as continuing this oppression by the neighbouring communities.

Deep-rooted conflict can also be linked to how groups of people identify themselves in relation to other groups. Even within relatively small communities, there are likely to be group differences caused by social-economic differences and political alliances. Outside the communities, different governments, non-government organisations (NGOs) and donors may either work together or against each other, depending on their institutional identities. Each of these stakeholder groups identifies itself in different ways and any given proposal to reduce conflict that threatens one or more of the stakeholders' core values and identities could lead to worse conflict.

Responsible authorities and jurisdictional mandates

Kruger National Park & the Greater Kruger, South Africa

SANParks jurisdiction is technically restricted to managing wildlife within the KNP boundary but they do address situations where animals breach the fence and enter neighbouring farmlands. *SANParks* recognises the need for maintaining good relations with their neighbours and has therefore established the compensation scheme to manage dispute HWC.

Limpopo Department of Economic Development, Environment and Tourism (LEDET) & Mpumalanga Tourism and Parks Agency (MTPA) are mandated to manage HWC outside PAs within the Limpopo and Mpumalanga provinces respectively and are the primary responders to conflict incidents.

The Kruger to Canyon Biosphere Reserve (K2C BR) and Vhembe Biosphere Reserve (VBR) fall under the auspices of the national Department of Environment, Forestry and Fisheries (DEFF) and receive their core funding from DEFF through *SANParks*. Of the two BRs, the K2C is the most active and has a team of full-time staff and over 300 environmental monitors. The VBR has one full-time staff member and limited funding to initiate projects or support environmental monitors. K2C's area overlaps with the Limpopo and Mpumalanga provincial boundaries and therefore works with LEDET and MTPA, while VBR works only with LEDET.

The Associated Private Nature Reserves and other private reserves occasionally assist with HWC incidents, particularly when the damage-causing animals (DCA) come from their reserves. Their response is usually in partnership with the provincial authorities to return escaped animals to PAs. The APNR fence is well maintained so incidents are quite rare. The APNR holds quarterly meetings with the government stakeholders and engages with NGOs that work to mitigate HWC.

NGOs have varying levels of interaction with the state and private PAs and responses to HWC. NGOs do not have the mandate to manage HWC directly, however, they can offer support to the relevant authorities through educational programmes, training on responses to incidents and data collection, and analysing data to inform management practices.

Limpopo National Park & the Greater Lebombo Conservancy, Mozambique

Administração Nacional das Áreas de Conservação (ANAC, National Administration of Conservation Areas) jointly manage the LNP with the Peace Parks Foundation (PPF). LNP management's jurisdiction is technically restricted to managing wildlife within the borders of the park. However, LNP management will assist with HWC incidents beyond its borders when requested by *Direção Nacional de Florestas e Fauna Bravia (DNFF)* officials.

The *Direção Nacional de Florestas e Fauna Bravia* (National Directorate of Forestry and Wildlife), that falls within the *Ministério da Agricultura e Desenvolvimento Rural* (Ministry of Agriculture and Rural Development), responds to HWC incidents outside PAs.

Private reserves respond to HWC caused by animals that have broken through their fences, though fences are generally well maintained. Karingani Reserve has established a 24/7 hotline for reporting HWC and other incidents (e.g. poaching) that communities and government departments can call for assistance. The Karingani rangers assist with controlling DCAs that do not originate from their reserve at the request of DNFF officials.

NGOs play a similar role in the Mozambique landscape as they do in South Africa, supporting private and state PAs and communities to respond to HWC.

Current human-wildlife conflict management systems

Settling dispute-level human-wildlife conflict

Addressing HWC at the dispute-level requires a response to the direct interactions between people and wildlife, both immediately and as part of long-term strategies. Data on conflict incidents and understanding current mitigation measures and farming practices used in the local context should feed into the development and implementation of mitigation strategies.

Kruger National Park & the Greater Kruger, South Africa

Compensation: In 2014, KNP established a compensation scheme for livestock losses caused by animals coming from the park or nearby PAs and entering communal farmlands. They do not pay market prices for the livestock lost, as the scheme is not meant to be a replacement scheme, and the price does not vary based on the quality or age of the specific animal involved (e.g. for a calf or a bull). The value of the valid claims has not exceeded the available budget and reported incidents seem to be declining since 2008 when the boundary fence was upgraded in response to rhino poaching. However, the rules of the compensation scheme (e.g. what evidence is required, what HWC is covered) are not widely known among the NGOs and the farmers they work with, which limits dissemination of accurate information about the compensation scheme. There are still issues around delays in payments and improving the administration of the scheme, speeding up payment of validated claims, species that are not covered (e.g. crocodiles), damages not covered (e.g. crop damage) and threats to human life, which cannot be fully compensated.

Fencing: The main HWC mitigation used in the KNP landscape is wildlife-proof fencing separating the PAs from the community areas. Few HWC incidents occur involving animals from the private reserves neighbouring KNP, mainly because their fence is well maintained. Fences are used as a form of double protection in the landscape as, by keeping poachers out and keeping animals in, both wildlife and the neighbouring communities are protected.

Responding to incidents: SANParks are willing to help the provincial authorities respond to HWC incidents by sending their rangers to investigate the incidents and take action where necessary (e.g., chasing/destroying DCAs). However, they have yet to reach an official agreement with the provinces.

Co-existence and other mitigation strategies: Addressing conflict involving species present outside of PAs requires mitigation methods aimed at promoting co-existence between people and these species by protecting livestock and human lives (particularly for crocodiles). Other mitigation strategies include livestock guarding dogs and building predator-proof *kraals*. Research is also required to understand where and when incidents occur to identify priority areas and mitigation methods that may work under particular circumstances.

Limpopo National Park & the Greater Lebombo Conservancy, Mozambique

Mitigation strategies: LNP rangers and DNFF officials responded to HWC by chasing or harassing animals away from the conflict site, killing them, monitoring the situation, or creating awareness. DNFF officials rarely try to identify individual DCAs before they destroy them but settle for killing any individual of the same species to appease the community, especially where the meat can be distributed (e.g., hippos, elephants). Rangers also reported that farmers use a variety of methods to prevent HWC, including fencing, making noises with drums, building fires, or herding and strengthening livestock *kraals* or enclosures to prevent livestock predation. Chilli powder and ropes, livestock guarding dogs, scarecrows in crop fields and snares are used rarely.

PPF is starting a new project based on the principles of holistic rangeland management called Herding 4 Health with the villages within LNP. The project includes training community members to be professional herders (called “eco-rangers” in the Herding 4 Health programme) that will herd cattle according to grazing management plans and keep them in predator-proof *kraals* each night.

Responding to incidents: In the LNP buffer zone there is a dedicated unit of rangers with the necessary transport and equipment to respond to all reported incidents. LNP and the private reserves assist the DNFF rangers in responding to HWC incidents upon request.

Fencing: The LNP is not fenced like the KNP, but a fence was recently built along the southern border of the park to prevent elephants from entering crop fields in this area. The fence contributed to greatly reducing the number of HWC incidents reported. Private reserves in the GLC maintain predator-proof fences around their reserves and respond promptly to any reports of animals escaping. HWC incidents are rare where fencing is present and well-maintained.

Compensation: LNP management has a compensation scheme exclusively for the people living within the LNP that covers recent cattle losses and to acknowledge the delay in resettlement plans. Some private reserves in the GLC also run their own compensation schemes to cover losses incurred by animals that escape from the reserve.

Resolving underlying human-wildlife conflict

If the underlying issues are not resolved, HWC will continue to be a source of tension between people and PAs. In resolving underlying HWC, the focus lies on the process of how HWC is addressed, who is involved in decision-making as well as the process used to introduce mitigation strategies. Where farmers feel that the implementing agency took their concerns seriously and adapted the method according to local conditions with extensive input and guidance from the farmers themselves, they are more likely to regard themselves as part of the solution rather than it being something forced upon them.

Thus, resolving underlying conflict requires more than cooperation and information sharing among stakeholders. It requires the adaptation of processes and approaches across the landscape that engage communities and farmers as partners rather than recipients.

Kruger National Park & the Greater Kruger, South Africa

Community Engagement: SANParks has implemented or supported several community outreach initiatives. K2C also engages in numerous community outreach efforts, including hosting workshops for stakeholders about key topics (e.g. community liaison efforts, elephants, education for sustainable development). However, the role of the Biosphere Reserves in the landscape and the link between K2C and SANParks seems little understood and creating more awareness about the link may help improve attitudes towards the park generally. Relationships with the provincial authorities need to be developed as they are perceived as less active in the landscape than SANParks, K2C and private reserves.

Community fora: The seven community fora are a specific type of community engagement that aims to facilitate communication between park officials, provincial authorities and the neighbouring communities on matters of mutual interest such as job and business opportunities created by the park and HWC. These fora are instrumental in allowing communities to voice their concerns over the lack of compensation before 2014 when the current compensation scheme was established. These fora were also engaged by SANParks to develop a participatory monitoring and evaluation plan of the compensation scheme. However, there are concerns that the meetings are often top-down, meaning the agenda of the meetings was not always set in a participatory manner with the communities.

Limpopo National Park & the Greater Lebombo Conservancy, Mozambique

Community Engagement: The LNP has community liaison officers who engage with communities at the village-level to whom communities can report issues that affect the relationship between them and the PAs, such as HWC. The community liaison officers, where necessary, can escalate these issues up the reporting chain in order for them to be addressed.

Reconciling deep-rooted conflict

Deep-rooted conflict requires reconciliation between the stakeholder groups that come into conflict and is achieved through building relationships based on mutual respect and trust. Where these relationships do not exist or are strained by broken promises or past negative experiences, any technical mitigation method aimed at settling dispute HWC or process of consultation aimed at resolving underlying HWC may be undermined. Communities that do not trust the implementing agency or their associates may refuse or even sabotage efforts to help them reduce HWC or improve their livelihoods, which appears counter-intuitive to those who are providing these solutions. Reconciliation can address some of the social and cultural drivers of HWC, poaching and illegal wildlife trade (IWT).

Kruger National Park & the Greater Kruger, South Africa

SANParks has recently turned more of its attention to building relationships with neighbouring communities and developing more participatory planning efforts (notably, the participatory monitoring and evaluation plan for the compensation scheme) than was the case historically. These were not necessarily implemented to mitigate HWC but do impact on addressing deep-rooted issues. Besides managing incidents of direct HWC, SANParks' relationship building includes improving access to the park by reducing the entry fee for community members, hosting groups of school children on educational visits, allowing some of the park's natural resources to be used for cultural and livelihood purposes, recognising traditional authorities and working with traditional healers. Notwithstanding this more inclusive approach and genuine effort to improve people-park relations, the scale of KNP and number of its neighbours means that developing deep, lasting relationships with everyone within these communities is extremely difficult, if not impossible. Therefore, SANParks focuses on enabling better relationships on an extensive basis by meeting with groups of similar communities (e.g. in community fora or groups of private reserves) and working with particular demographics on issues that are likely to affect them (e.g. livestock farmers and HWC compensation; school children and educational visits).

Institutions, including the APNR and NGOs, working on a smaller scale within the KNP landscape are better placed to develop deeper relationships with their neighbouring communities. This can be done through community projects, youth engagement, or organising access to PAs.

Land reform and restitution is a large-scale process that includes SANParks and its neighbours, among other stakeholders. While the Makuleke community has successfully claimed land within KNP, numerous other communities are still waiting for their claims to be settled. This recognition of the harm caused by apartheid is an important aspect of healing the wounds of the past and restoring the relationships between people and PAs, yet it is fraught with political and social complications that are challenging to navigate.

Limpopo National Park & the Greater Lebombo Conservancy, Mozambique

As with SANParks, it is unrealistic to expect the LNP management to develop close relationships with the many different communities living on their borders. However, engagement and relationship building efforts should be undertaken and there is much scope for improving relationships with the villages that have yet to be resettled from within LNP.

Like those in the Greater Kruger, the private reserves in the GLC in Mozambique have a better opportunity to intensively develop close relationships with their neighbours than the LNP management using similar approaches to provide an enabling environment for the community to improve their lives. NGOs can also become involved in community projects, but this is currently more limited in Mozambique compared to South Africa.

Mozambique is still refining its policies and legislative approach to community-based natural resource management (CBNRM). CBNRM allows self-identified communities to form community institutions that have conditional rights to use natural resources in a specified area. Once granted these rights, the communities can create natural resource management plans and enter into agreements with external tourism operators (photographic and/or hunting) that outline respective rights, responsibilities and benefits. The money or other products derived from these arrangements are then shared among members of the community organisation according to agreed benefit distribution plans. This approach to conservation goes some way to reconciling deep-rooted conflict as the communities are fully recognised as managers of their natural resources and have greater control over how to link conservation with sustainable development within their own context. Sites to test the CBNRM concept in Mozambique are still being selected through discussions with the government and other stakeholders.

Links between human-wildlife conflict and illegal wildlife trade

At the incident level, the primary motivations for HWC and IWT are different: the farmer kills an animal to defend livelihood, property or life, while the poacher kills an animal either to obtain food (e.g. bushmeat) or for financial gains to be made from harvesting body parts (e.g. rhino horn).

The only evidence we found of links between HWC and IWT was with regards to lions killed in the northern parts of KNP and the LNP, primarily in response to HWC, where the paws and parts of the face were removed. These lion products are sold either on local *muthi* markets or directly to Chinese people working in the region. These products potentially make their way to international markets in Southeast Asia. It remains unclear to which extent lion poachers are driven by HWC or by commercial benefits.

At the underlying level, frustrations relating to HWC may legitimise poaching and IWT within particular communities, even if individuals have different motivations to become involved in the two types of conflict. Community members in both the LNP and KNP landscapes often compare how authorities deal with HWC to how they deal with poaching and IWT. Communities perceive responses to HWC as too slow and inadequate (e.g., not enough or no compensation) and the animal in question is rarely destroyed. On the other hand, when poaching incidents occur or when rhinos escape, PAs employ rapid responses to address these incidents, creating the perception that the authorities “care about animals more than people”. Increased frustration caused by a perceived lack of care for people can have two possible outcomes that link with poaching. Those affected by HWC, who feel that their requests for help are falling on deaf ears, may illegally hunt the animals involved and sell whatever valuable parts they can harvest as a form of self-compensation. Additionally, a general feeling within a given community that the park does not care about them can create a social environment that legitimises poaching (for subsistence or commercial purposes) as an expression of resistance or rebellion against the authorities. Poachers have a basket of motivations, which may include issues relating to HWC and personal experiences with the park as well as the more orthodox motivation of financial gain.

Finally, deep-rooted conflict includes both HWC and IWT as the historical and socio-economic contexts of the study area in both countries create the conditions for HWC to intensify and IWT to flourish. Past injustices and current conservation policies prevent communities from addressing HWC their own way (e.g., through retaliatory killing) and/or benefitting directly from wildlife, both these aspects continue to obstruct relationship building between different stakeholders as they remain unaddressed. This social environment is further complicated by the broader context of economics and human population growth, thus creating a set of interlinked “wicked” problems that involve more than just conservation-related conflicts. Deep-rooted conflict also links with the cultural identities of those involved, manifests in attitudes towards those in other stakeholder groups and shapes individual views of what conservation is and how it should be achieved. At this level of conflict, not only are HWC and IWT linked, but they are part of a much bigger interwoven tapestry of issues that affect human interactions with each other and the natural world.

Recommendations to improve human-wildlife conflict interventions

Elements of all three levels of conflict are likely to exist in any given situation in the study area and should thus be included in any HWC management plan. The response to HWC should be multi-layered: a) implementing technical solutions that seek to reduce actual damages (substance), b) following processes of reporting and decision-making that are widely accepted and adhered to (process) and c) redressing past injustices and building trust to improve relationships among the stakeholders (relationships).

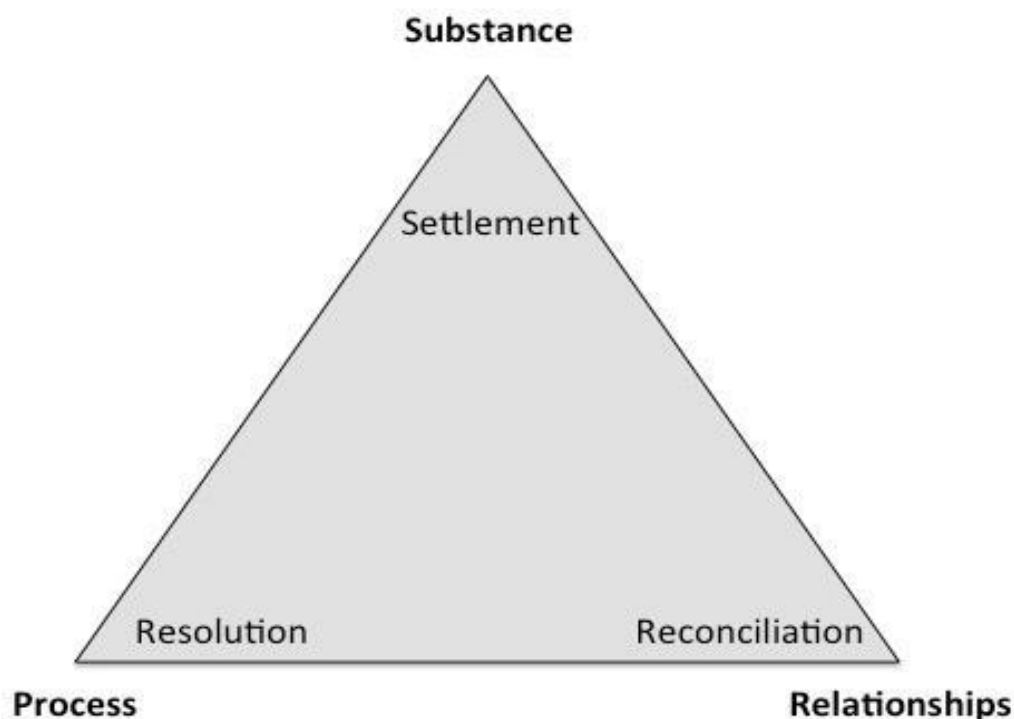


Figure 3. Conceptual triangle showing three key aspects for reducing HWC. Adapted from Madden & McQuinn (2014).

Research

This report provides a starting point and a framework for further investigation to gain a more complete picture of HWC in the landscape. More HWC mitigation and research efforts exist in the landscape and several government departments, NGOs and private reserves in both countries were not included in the interviews².

The literature review reveals gaps in our understanding of HWC (Figure 4). Notably, the South African studies were more extensive (more villages and higher sample sizes) than the Mozambican studies, which were fewer and more intensive (a single village focus over long periods of time). Both are necessary, as extensive studies can reveal patterns and conflict hotspots over large areas yet miss the nuances that exist within communities and changes over time that are elucidated through intensive

² ANAC, MTPA & LEDET did not respond to requests for interviews and input.

research. Furthermore, national databases (Mozambique) and validated compensation claims (South Africa) represent a subset of actual HWC experienced and should be compared with independent studies.

In Mozambique, an extensive study covering the LNP buffer zone communities and those on the opposite side of the Limpopo River would be particularly welcome, especially if the level of HWC reported by these communities were compared with DNFF and PPF records. In South Africa, in-depth long-term studies with individual villages would shed more light on the underlying and deep-rooted conflict that may be missed in extensive studies.

More detailed maps at finer scales that include land-use type, prevalent farming practices and household-level HWC would be especially useful for guiding HWC management on the ground. Target communities should be closely involved with creating these maps to set a precedent for co-learning about the problem that would lead to co-managing the outcomes. Social surveys should be linked with management actions that have tangible outcomes for the people involved.

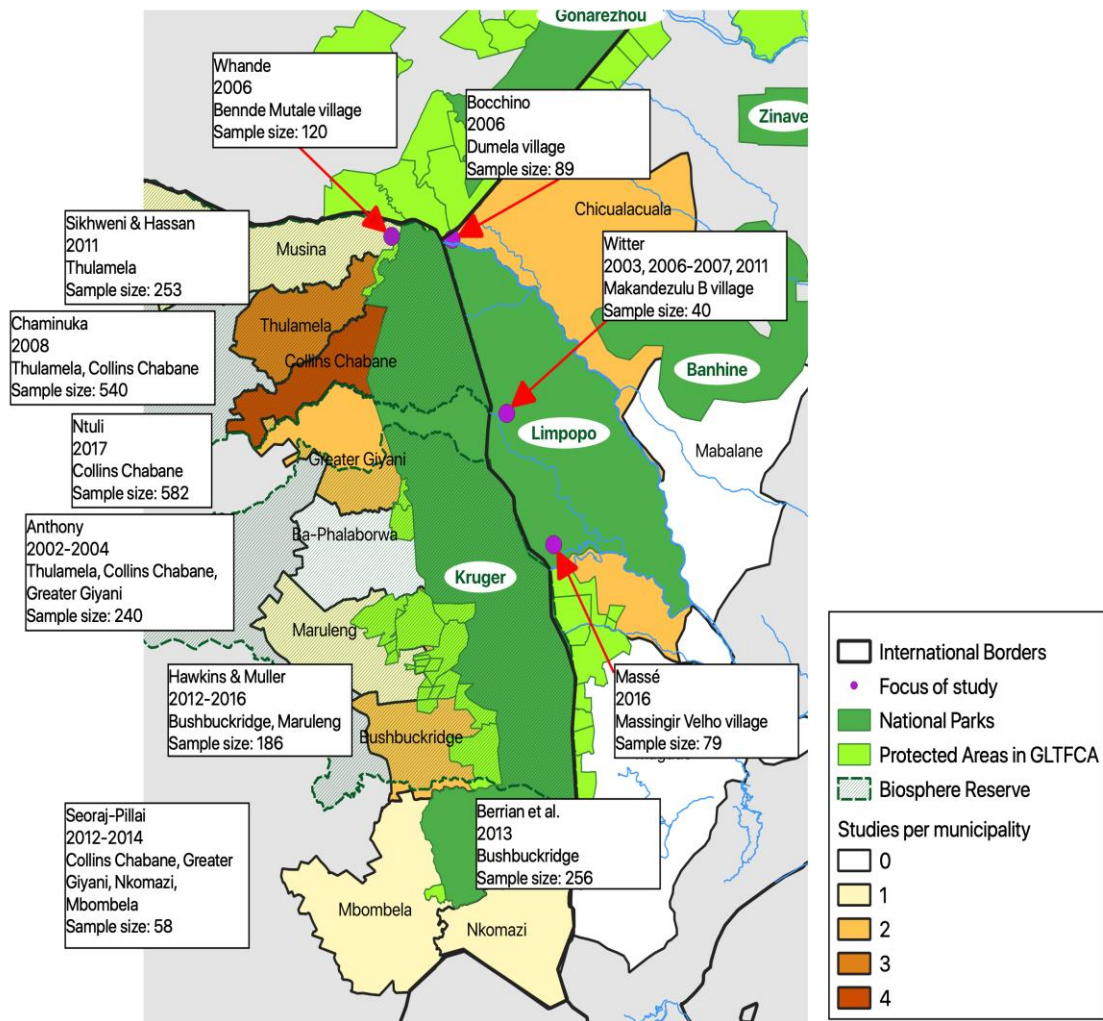


Figure 4. Map of the Khetha Landscape, showing number of original HWC field studies done in each area. Biosphere reserve boundaries from (UNEP-WCMC & IUCN, 2019a, 2019b), Park boundaries and village locations from Peace Parks Foundation.

Thus far, livestock losses from predation have received the most attention in the literature and in HWC mitigation. Crop losses, property damage, human injuries or death, and disease transmission from wildlife to livestock are all acknowledged problems, yet few studies focus on these issues.

HWC interventions should include effective monitoring and evaluation systems as part of an overall system of adaptive management. Wherever possible, all three levels of HWC should be included when assessing the impact of a particular strategy. While studies on all three levels are certainly more challenging to achieve, learning not only what to do but also how to achieve lasting results is invaluable for replicating successful initiatives in other parts of the landscape.

Training needs

Conflict resolution: Develop skills in conflict resolution to address HWC at the dispute, underlying and deep-rooted levels. For example, the Centre for Conservation Peacebuilding (CPeace) offers introductory and advanced courses on what they term, Conservation Conflict Transformation. These workshops and subsequent support aim to bring representatives of a diverse array of stakeholders together to learn about and develop skills to address all three levels of HWC.

Environmental monitors training: Environmental Monitors (EMs), and other similar positions in the landscape, require further training in responding to HWC incidents. The training should include a full understanding of the reporting structures for the provincial authorities and SANParks, the compensation claims system and requirements thereof, how to assess damages and determine their cause, basic training for tracking and behaving around wild animals to ensure their safety, and protocols for reporting. The training should include the use of existing tools that are in use to report HWC incidents, such as CyberTracker. SANParks, LEDET and MTPA rangers can provide most, if not all, of this training.

Knowledge exchange for rangers: The non-lethal methods used by LNP and private reserve rangers in Mozambique have proven useful for reducing HWC. Such methods should be shared with DNFF rangers to improve their response to conflict incidents. We propose a workshop for rangers from these different institutions to share these ideas and approaches towards DCAs.

Knowledge exchange visits on CBNRM for Mozambique community leaders' CBNRM visits: Depending on the outcomes of current negotiations with relevant stakeholders in Mozambique relating to the resettlement of villages, there may be value in knowledge exchange visits for Mozambican community leaders to conservancies in the Zambezi Region of Namibia. The Namibian Association of CBRNM Support Organisations (NACSO) has many years of experience hosting similar exchange visits to share the concept and opportunities of CBNRM.

Environmental education exchange visits: Link environmental educators within South Africa with selected staff members from Mozambican private reserves and LNP to exchange information on their respective curricula and programmes to learn from each other and/or work together on joint projects in future.

Kruger National Park & the Greater Kruger, South Africa

Preventative measures: Fences prevent conflict by creating a barrier between PAs and surrounding communities. In South Africa, fencing is a legislative requirement. However, wildlife and people easily damage fences. Consequently, fencing requires on-going maintenance by relevant authorities. Other preventative HWC measures, such as livestock guarding dogs and predator-proof *kraals*, could be introduced to livestock farmers that are most affected by conflict with carnivores. These methods are known to work in other parts of South Africa and elsewhere, so the technical aspects of implementation are well known; the key for their success in the KNP landscape lies with the process and relational aspects of implementation. Interventions for crop-raiding or threats to human life (e.g. crocodiles in rivers) would depend on the species involved and the circumstances surrounding these incidents (e.g. crop type, seasonal attacks).

Wildlife outside of protected areas: There are several species involved in HWC that exist outside of PAs. Leopards, and to a certain extent African wild dogs and cheetahs, have populations outside PAs that are important to conserve on farmlands. Furthermore, crocodiles are resident in rivers that flow through the park and into neighbouring lands. Smaller predators (black-backed jackal and caracal) and herbivores (primates and birds) can also cause significant damages to livestock and crop fields, respectively. HWC with these species cannot be resolved by translocating the DCA into the nearest PA or relying on the park fence to prevent conflict, so the focus needs to shift towards finding and testing suitable means of co-existence with these species.

Responding and reporting: Mechanisms for responding and reporting HWC can be improved and communicated as people are uncertain about how and where to report losses. HWC responses may be delayed due to the lack of resources and the distance to the affected community from the LEDET and MTPA offices. SANParks is working with the provincial authorities on an agreement to allow SANParks rangers to respond and improve response times.

The K2C EMs are also a valuable resource as they could be trained to collect the right information and evidence required for compensation schemes, advise farmers on ways to reduce future losses and channel important information to the relevant authorities. Well-trained EMs could monitor the situation and liaise with officials en route to the affected area while ensuring people do not put themselves in danger. If the EMs reduce response time and clarify the system of reporting HWC, communities may feel their complaints are being taken seriously, thus helping resolve some underlying HWC. An efficient system is also likely to increase reporting rates, which would increase the value of research on the resultant data.

A CyberTracker-based HWC monitoring system would ensure that reports are completed in enough detail for compensation purposes that could be standardised between all potential investigators (SANParks, provincial rangers or EMs). The CyberTracker database and record of WhatsApp communications would be valuable sources of data for later analysis.

Records of HWC incidents and the actions taken in immediate response to incidents are critical for developing long-term HWC mitigation plans. Species that cause the most frequent and/or the most severe damages (e.g. human death) can be prioritised for targeted mitigation actions, while conflict hotspots that report the most incidents can be identified to test pilot projects. Long-term data on incidents and subsequent management actions (e.g. DCA destruction) can reveal which actions most effectively reduce conflict and should be used in future.

Community-park relations: Existing community fora around KNP present an opportunity and platform for resolving underlying HWC. However, these fora vary in their functionality and effectiveness to resolve issues in the communities they represent. A greater understanding of each forum is required to support and build the capacity of these fora. We recommend a study of each forum, by a suitably qualified social scientist, that considers the history, political landscape, local cultures and current strengths and weaknesses of the forum and suggest areas of improvement.

Reconciling deep-rooted conflict requires long-term projects aimed at fundamentally changing how people and parks interact. While the process and outcomes of land reform within and around KNP will have a substantial effect on people-parks relationships, addressing this issue is beyond the scope of this document. There are nonetheless several small-scale projects in the KNP landscape, such as park visits by schoolchildren, creating tangible links to PAs, skills development and youth engagement, that hold promise for reconciling deep-rooted conflict over time. Supporting these efforts financially and expanding their impact to other parts of the landscape should therefore be a priority.

Limpopo National Park & the Greater Lebombo Conservancy, Mozambique

Dealing with damage-causing animals: There is potential for DCAs to be translocated from the community lands where they are causing HWC to national parks that are being restocked with wildlife. This requires the various management authorities to communicate about HWC incidents before making a final decision on what action to take. An HWC Fund and associated improved communication lines between the private reserves and the relevant government authorities in Mozambique could be established. The purpose of this fund would be to cover the translocation costs and improve livestock protection projects.

Communities within LNP: The presence of villages within LNP and the on-going resettlement is central to addressing conflict in all its forms in this landscape, including HWC and IWT. There is a need to improve the situation, which could include interventions such as pro-actively helping communities to protect their livestock and crops from wildlife that considers how and why livestock and crops are farmed in the current manner. Current and future plans to resolve underlying HWC in this landscape must be particularly cognizant of the process involved in developing these methods, given the current and historical context of these villages. Processes that fully engage livestock farmers and take their ideas and concerns on board have a better chance of success. Furthermore, when villages are resettled, they are likely to become neighbours to LNP. Villagers' perception of how they are treated during this process is likely to influence their attitudes and behaviour towards the park in future.

Implementing CBNRM: The relationships between people and PAs are strongly linked to the policies and legislation governing these issues, which provides the impetus for the CBNRM approach. While there are some concerns about its implementation, the CBNRM approach holds promise for reconciling deep-rooted conflict by recognising the communities' rights to natural resources. They will, however, require extensive support and knowledge exchange to create local governance systems that shoulder the responsibilities associated with managing and sharing the benefits derived from these resources.