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# **Master Thesis - Final Report**

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## **Human-Wildlife Conflict and Involvement of the Local Population: a Case study of the Baviaanskloof**

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## Abstract

Human-wildlife conflict continues to present itself as a major challenge to both conservation and development objectives. Climate change, population growth and the resulting expansion of human-activities have resulted in worldwide biodiversity decline. Simultaneously, conservation strategies and the need to protect wildlife has limited development opportunities for population living with wildlife and limited their means of response. Around the world, many instances of human-wildlife conflict remain unsolved regardless of the attention it has been given over the years and the evolution of mitigation strategies.

In buffer zones, the territories directly adjacent to conservation areas, conflicts continue to escalate as failure to find a solution to the conflict has led to resentment and exasperation amongst the local population. Meanwhile the proximity of such territory with protected areas is threatening the success of conservation activities and the protection of biodiversity on a larger scale. In the last decades, involving the local population in the development of mitigation strategies has been presented as a successful approach to reduce human-wildlife conflict and appease tensions between the local population and conservation authorities. By involving the local population in the development of wildlife management strategies and restoring some kind of control to the local population, it is hoped that communication between the different actors in conflict can be improved and that it will foster cooperation resulting in the development of more successful mitigation strategies.

In South-Africa, the establishment of private conservancies in the vicinity of protected areas opens possibilities for human-wildlife conflict mitigation by allowing private land owners to manage wild animals and natural resources on their land in accordance with the relevant conservation authorities. In the Baviaanskloof, a group of farmers and landowners completely surrounded by the Baviaanskloof Nature Reserve decided to establish a private conservancy. For the farmers, the conservancy presents an opportunity to deal with the human-wildlife conflict involving them and the local population of kudu who causes damages to their crops. The purpose of this research was to establish whether the establishment of the conservancy could help foster better communication and cooperation between the different stakeholders involved in the conflict and whether such would result in the development of successful mitigation strategies. We found that communication and cooperation in the Baviaanskloof was improved as a result of the establishment of the conservancy and resulting in the adoption of wildlife management strategies that seek to meet the different interests of the stakeholders involved. However, we also found that ownership of the project and restoring a sense of control over the conflict was instrumental in improving the local population's tolerance for wildlife and mitigating human-wildlife conflict.

## Introduction

Conflicts between humans and wildlife have been present since the dawn of humanity. Yet, human-wildlife conflicts remain to this day a major concern for humans as well as a serious threat to the future of wildlife. Human-wildlife conflict is usually defined as the overlap between wildlife and human populations and its negative impact on wild animals and their habitat and/or humans and their resources and needs. Human-wildlife conflict occurs "when the needs and behavior of wildlife impacts negatively on the goals of humans or when the goals of humans negatively impact the needs of wildlife" (World Parks Congress, 2004).

For humans, interactions can have direct negative consequences, such as loss of livestock to predators, crop raiding by wild animals, physical attacks on humans resulting in injury or death, transmissions of diseases, competition over scarce resources and so on (Barua et al., 2013; Boyd et al., 1999). But behind those obvious and direct consequences, there are often other indirect and profound repercussions for people dealing with wildlife. Human-wildlife conflict can disrupt people's lives, affect their well-being, threaten their livelihood and food-security as well as their mental and physical health (Barua et al., 2013).

For wild animals, the consequences are not less dire. Negative interactions often result in elimination of individuals and sometimes of entire species (Dickman 2010; Fall and Jackson, 2002). The causes are manifold: fragmentation or destruction of natural habitat, poaching, retaliatory killings, relocation of individuals, introduction of invasive species, pollution etc. (Hoole and Berkes, 2010; Mosimane et al., 2013).

Over the last decades, several factors have exacerbated human-wildlife conflict. First, human population increased dramatically, and as a result, humans required more land and resources to fulfill their needs, thus increasing competition between humans and wildlife (Anthony et al., 2000; Boyd et al., 1999; Madden 2004). The development of human settlements led to urban encroachment while the need to feed the world spurred agricultural expansion and changed agricultural practices (Fall and Jackson, 2002; Hackel 1999; Hill 1997; Jhamvar-Shingote & Schuett 2013). As a consequence, wildlife habitat was reduced and in some areas, the potential for direct conflicts increased as humans and wild animals now live closer to each other.

The second main factor, ironically, is the implementation of conservation measures to protect biodiversity and thus wildlife. As biodiversity declined, the world came to recognize the importance of wildlife and the necessity to preserve it (Boyd et al., 1999). Biodiversity is crucial for the stability of ecosystems and their capacity to provide the ecosystem services necessary to sustain human life (Cardinale et al., 2012). Some individual species also play a key role in the stability of ecosystem services and thus their protection is paramount (Folke et al., 2004). In order to safeguard biodiversity, the conventional approach has been to shield biodiversity from human interventions. This resulted in an increasing amount of territory being recognized as protected areas in which wildlife and wildlife habitat are prioritized over other interests (Fall and Jackson 2002). Traditional methods used to deal with wild animals such as shooting, poisoning, or the use of traps became increasingly criticized and were forbidden in some areas or against certain endangered species (Fall and Jackson 2002). While the establishment of

such protected areas was overall successful in preserving wildlife, it also contributed to the intensification of human-wildlife conflicts. The resulting increase in wildlife population created further opportunity for conflict, especially in territories bordering conservation areas (Madden, 2004). Local people living with wildlife also saw their possibility of response limited by laws and regulations and became as a result more vulnerable to damages resulting from wildlife (Madden 2004).

Despite many conservation efforts, biodiversity worldwide continues to decline while remaining a serious threat to people's lives and livelihood in many regions of the world. As a result, human-wildlife conflicts continue to be a key challenge for conservation as well as human development.

## 1. Scientific background

Recent literature on the subject stresses that human-wildlife conflict is threatening the success and progress of conservation efforts in the long term (Anthony et al., 2010; Boyd et al., 1999; Madden 2004).

First, wildlife activity do not always coincide with the geographical borders of protected areas, leading to animals wandering outside of protected areas and causing damages to adjacent human settlement (Fall and Jackson, 2002). Continued conflicts with the population, particularly in the vicinity of protected areas, reduces tolerance for wildlife and often results in retaliation against wildlife, threatening species and counter balancing the success of protected areas (Anthony et al., 2010; Madden 2004).

Second, there is a general understanding that if we want to maintain biodiversity to a healthy ecological status, wildlife cannot be restricted to a few sanctuaries or hot-spots surrounded by "*wildlife desert*" (Boyd et al. 1999; Hoole and Berkes, 2010). Ecological processes are not only the result of interactions within an ecosystem but also between ecosystems. Ecosystems are inter-connected and influential on a different set of scales (Folke, 2004), thus isolated ecosystem are not sufficient to sustain biodiversity worldwide. While protected areas provide shelter for many species (Pretty and Smith, 2004), the degradation of surrounding territories means that the situation is not sustainable. There is a necessity to make space for biodiversity and wildlife outside of protected areas and retain the inter-connectedness of ecosystems. Human-wildlife conflict worldwide is a major obstacle to that objective.

Reducing or at least mitigating human-wildlife conflict is thus crucial in order to safeguard wildlife, both inside and outside of protected areas. To that effect, conservationists have attempted to improve management techniques of wild animals and reduce the occurrence of impact of conflicts. But strategies often solely focused on the management of wild animals, forgetting part of the equation: the people involved in human-wildlife conflicts.

In fact, until recently, attempts to address the issue were mainly focused on the ecological aspects of the conflict, to the detriment of social aspects (Barua et al., 2013). Extensive research was done on the ecological status or behavior of a particular species but there was very few research on the people involved in conflicts, their relationship to wildlife and the broader social, cultural, political and economic context (Barua et al.,

2013; Boyd et al., 1999; Madden 2004). Later on, economic aspects were progressively included in conflict mitigation strategies, but success remained mitigated. In fact, in some areas where economic loss was reduced as a result of mitigation strategies, tolerance for wildlife did not increase (Bulte and Rondeau 2005; Dickman, 2010). In other areas, compensation programmes designed to assist households affected by wildlife encountered limited success (Bulte and Rondeau 2005; Jackson and Wangchuk 2001).

This is because economic loss only constitutes part of the problem. Research has now shown that for people living with wildlife, human-wildlife conflict is about more than just economic damages. For the local population, human-wildlife conflict is increasingly about loss of ownership, lack of control over wildlife, and the feeling that wildlife is being prioritized over their own needs (Campbell 2002; Els and Bothma, 2008; Hackel 1999; Madden 2004). Laws regulating the use of wildlife and limiting possibilities of response, conservations strategies designed and implemented without the consultation of the local population, and a general lack of understanding of the mindset of the population led to frictions between conservation authorities and the population (Watts and Faasen 2009). As a result, human-wildlife conflict is increasingly becoming a human-human conflict about wildlife (Dickman 2010; Madden 2004; Treves et al., 2006). In territories bordering conservation areas, tensions have been growing between park authorities and the local population. Lack of communication with the local population and unresolved issues have exacerbated the conflict (Ahebwa et al., 2012; Anthony et al., 2010; Campbell 2002; Treves *et al.* 2006). Human-wildlife conflict worldwide has been rising (Anthony et al., 2010; Hill, 1997; Madden, 2010; and Messmer 2009) and there is a pressing need for involvement and consultation of the population in designing strategies to mitigate human-wildlife conflict (Andrade and Rhodes, 2012; Horowitz, 1998; Hill 1997; Jhamvar-Shingote and Schuett 2013; Lagendijk and Gusset 2008; Treves et al., 2006).

## 2. Theoretical approach

Involving the population in designing strategies is not an easy task, as it requires conciliating opposing interests and decades of distrust between conservationist and the population have often rendered communication very difficult. While scientists largely agree on the necessity to include the local population and take into account their needs and opinions in shaping wildlife conservation strategies, there is less consensus on how to go about it. The concept, its contours, and implementation remain unclear and failure of several programmes and initiatives has led some authors to question the feasibility of such approach (Berkes 2004; Watts and Faasen 2009). The debate has also been blurred with discussions regarding the terminology (Jackson and Wangchuk 2001), some authors referring to the approach as community-based conservation, participatory conservation, collaborative management, participatory planning, co-management etc. with no real consensus on what those concepts refer to.

Leaving aside the debate on terminology, analysis of the existing literature allows identification of the rationale and underlying assumptions behind the approach of local population involvement. The main elements or key principles of the approach can also be picked out although they might slightly differ from one author to another, or from one project to another.

As previously mentioned, the development of this approach came from the recognition that conservation strategies focusing solely on ecological aspects or reducing economic aspects to financial compensation are not sufficient to address situations of human-wildlife conflict (Campbell 2002; Hackel 1999). Such strategies do not acknowledge the broader social context of the conflict and thus inadequately address the needs and expectations of the local population. As a result, affected individuals feel left out of conservation strategies and are less likely to comply with the prescribed rules. In the long run, this lack of compliance threatens the success of conservation strategies. To be successful, conservation strategies must therefore restore a sense of control or power to the local population (Campbell 2002; Hackel 1999).

The cornerstone of the approach thus is to include the local population in the decision making process. Strategies need to incorporate at least some form of participation of the local population. The degree of participation prescribed varies in the literature, from mere consultation, to direct involvement in the shaping of the policy. The rationale is that such strategies will directly affect the population and that they should therefore have a say in the content and implementation of the strategies (Campbell 2002; Hackel 1999). If the local population feels that their concerns and needs are listened to and adequately addressed in the conservation strategies, it is expected that they will be more willing to comply the strategy (Andrade and Rhodes, 2012). By involving the local population in the decision-making it is also hoped that communication between conservation authorities and the population can be restored and that understanding each other's perspective can foster collaboration to conciliate opposing interests and set common goals (Horowitz 1998; Watts and Faasen 2009).

The second element is to allow wildlife utilization by the local population, or ensure that they have a financial stake in conservation (Els and Bothma, 2008; Hackel 1999). The aim here is not only to address the economic aspects of the conflicts but also to empower the local population and give them control over their natural resources. Part of the rationale behind the argument of wildlife utilization is that, by giving the local people the possibility to utilize wildlife or deal with a potential conflict situation, they are provided with more security regarding their livelihood and are therefore more likely to comply with the conservation strategies. The second justification behind that element is that humans are part of ecosystems and thus utilization of such ecosystem by humans should be taken into account while designing management strategies. By allowing wildlife utilization, the approach not only hopes to reduce conflicts and reach conservation objectives, but it also aims to foster development. Past conservation strategies have in fact been accused by local people to give priority to conservation objectives to the detriment of development objectives (Boyd et al., 1999). Allowing wildlife utilization is an attempt to satisfy both conservation and development goals. It shows a clear shift in wildlife conservation strategies, from prohibition, to controlled, sustainable, use of wildlife.

### 3. Research objectives

The present research aims at linking theory with practice by assessing the potential of local population involvement for mitigating human-wildlife conflict through the analysis of a case-study (presented there-after). More specifically, the objective of the research is to explore the potential of the approach for the mitigation of human-wildlife in buffer

zones, the territories directly adjacent to protected areas. These territories present a certain challenge as they are usually the most exposed to human-wildlife conflict and the level of tensions between the local population and conservation authorities is usually elevated. At the same time, the ecological state of such buffer zones appear essential to the satisfaction of conservation objectives.

With that aim, the research will seek to shed light on the relations between the different stakeholders usually involved in human-wildlife conflict, paying particular attention to the relations between the local population and conservation authorities. The research will then attempt to identify factors that can facilitate or hinder cooperation between the different stakeholders and the potential effect of such cooperation (or absence therewith) on conflict resolution. The research will also test the underlying assumption behind the theory of involvement of the local population and explore its feasibility in terms of implementation and potential success.

Overall, the purpose of the research is to contribute to the literature on the subject, reflect on the challenges presented by human-wildlife conflict and provide recommendations to advance the debate in light of current initiatives and practices.

#### 4. Presentation of the case study and research question

As previously stated, the aim of this research is to assess the potential for human-wildlife conflict mitigation of involving the local population in designing wildlife management strategies. The research aims at linking theory with practice through the analysis of a case study: the establishment of a private conservancy in the Baviaanskloof, South Africa.

In South Africa, private conservancies are a legal tool for landowners and land-users who wish to associate themselves in order to manage their natural resources in a sustainable way. Because conservancies are voluntary and directly rely on the local population, they present an interest for human-wildlife conflict mitigation. In Eastern Cape, the Baviaanskloof Mega-Reserve surrounds about 50 000 ha of private lands, mainly owned by farmers. The farmer's activities mainly consist in a combination of small livestock and crops. They also grow lucerne in order to guaranty grazing for their livestock, especially in the dry season. But the population of kudus in the area is causing problems for the farmers, as they regularly feed on the lucerne and cash crops planted by the farmers. Attempts to alleviate the conflict have so far been unsuccessful and relationships between the farmers, Eastern Cape Parks and Tourism Agency (ECPTA), the Department of Environmental Affairs (DEA) suffered from it.

In 2013, the farmers and several other landowners of the area decided to constitute a conservancy as mean to manage wildlife and natural resources on their land. The farmers are particularly hopeful that the establishment of a conservancy can assist them in alleviating issues with the kudus by providing them with several wildlife management opportunities.

The research will assess the impact of the establishment of the conservancy on the human-wildlife conflict surrounding the kudus and attempt to identify which factors contributed to a betterment of the situation (if any). More specifically, the research will examine if the establishment of the conservancy contributed to improved



communication between the different stakeholders involved in the conflict and whether it facilitated cooperation for the resolution of conflicts in the area.

The main research question thus reads as follow:

To what extent and how can the establishment of a private conservancy assist in mitigating human-wildlife conflicts in the Baviaanskloof?

Several sub-research questions have been identified to address the different aspects of the problem:

- How is the concept of involvement of the local population defined in the literature and what are its main features?
- What are the factors that contribute to human-wildlife conflict in the Baviaanskloof and how is human-wildlife conflict perceived and experienced in the area?
- What has been the impact of the conservancy regarding the situation with the kudus in Baviaanskloof and how did it deal with different mindsets and interests?
- To what extent has the establishment of the private conservancy been able to foster (or not) communication between the different stakeholders and how?
- Does improved communication and good relations between stakeholders assist in mitigating human-wildlife conflict?

## 5. Research framework and methodology

In order to answer the research question, the study first draws from existing literature on human-wildlife conflict to review the theory and existing scientific knowledge on involvement of local population. The result of the literature research will be presented in chapter 1 of the report and answer the first sub-research question.

The second part of the research is dedicated to the analysis and review of the case study by means of a stakeholder analysis. In a preliminary phase, data was collected to determine the circumstances of the conflict. The study attempts to identify the causes and effects of conflicts as well as current wildlife management practices in the Baviaanskloof. In a second step, potential stakeholders in the conflict were identified and semi-structured interviews based on pre-established questionnaires were conducted with representatives from the most relevant stakeholder groups. The interviews as well as informal meetings and personal observations during field trips provided information on the different interests, perceptions, cultural values, feelings etc. of the different stakeholders. Additionally, it allowed for identification of the nature of relationship between the different actors, their power and influence, and highlight potential disagreements or tensions. The second sub-research question was answered at this stage of the research (Chapter 4).

Finally, evolution of the conflict, communication and cooperation between the different stakeholders was evaluated based on the respondent's comments as well as personal observations, and compared to available historical data in the literature. The stakeholder analysis and qualitative interviews allowed for the identification of the most influential factors on the development of the conflict and provided basis for answering sub-questions 3, 4 (Chapter 4) and 5 of the research (Chapter 5).

## Chapter 1 - Theoretical framework

The aim of this chapter is to present the concept of involvement of the local population within the context of human-wildlife conflict and thus answer the first sub-research question of this question. The first part of the chapter will attempt to explain why the approach is perceived as necessary for the successful mitigation of human-wildlife conflict. The second section will present the concept and explain the mechanisms and underlying assumptions being the approach. Finally, the third section will indicate the limitations with regard to the approach.

### 1. Necessity of the approach

The idea of involving the local population in wildlife management strategies stems from the observation that past practices were not sufficient to reduce human-wildlife conflicts and thus ensure the protection of wildlife and of people's livelihoods. To the contrary, human-wildlife conflict worldwide is increasing (Hill, 1997; Madden, 2004, Messmer, 2000). While conservation strategies encountered success in protecting certain species and ecosystems in some geographical areas (Pretty and Smith, 2004), concerns remain over the longevity of such success and with regard to wildlife conservation on a larger scale. At the same time, human-wildlife conflict continues to be a threat to many livelihoods and concerns were expressed amongst development scientists that conservation objectives are being achieved to the detriment of development objectives; a concern that is often shared by the local population (Boyd et al., 1999). Human-wildlife conflict mitigation strategies thus require a new approach in order to address those shortcomings.

Looking at past practices, the common criticism is that mitigation strategies focused mostly on the ecological aspects of the conflict and that not enough consideration was given to the social aspects of the conflicts (Barua et al., 2013; Boyd et al., 1999; Madden 2004). Strategies mostly aimed at reducing the frequency of conflicts or the resulting damages through the use of barriers, guardians, removal of individual animal... (Treves et al., 2006). While such methods can be effective to reduce the frequency of conflict and mitigate damages, research has shown that in many cases such results were not sufficient to appease human-wildlife conflict suggesting that other factors come into play (Bulte and Rondeau, 2005; Dickman, 2000). There are generally two factors that come as an obstacle to human-wildlife conflict resolution, the population's perception of, and tolerance for wildlife and the existence of social relations that can hinder resolution.

#### (i) Perception of and tolerance for wildlife

Tolerance for wildlife strongly affects people's attitude toward wildlife and can sometimes mean the success or the failure of mitigation strategies.

Dickman (2000) explains that people's perception and their resulting attitude toward wildlife is not only shaped by direct interactions with wildlife but are also influenced by a multitude of other factors such as cultural norms or societal beliefs. For instance, perception of risk is often more influential on human's attitude toward wildlife than the actual risk of conflict. Hill (2004) points out how this a problem when designing mitigation strategies as people's perception of risk are often shaped by social and cultural norms and rely more on past experiences rather than the current situation.

Thus the success of mitigation strategies in reducing the occurrence of conflicts and damages may not be acknowledged by the local population. Even when people take account of the current situation, their perception of risk is often shaped by extreme events rather than the norm (Treves et al., 2006). Perception of risk does not only concern the potential conflicts or damages, but also the potential source of damages. It is not uncommon that wild species are blamed for damages in view of their size or perceived dangerousness when in reality, the majority of damages can be attributed to domestic animals or other wild species less considered (Hill, 2004).

Vulnerability of the population to human-wildlife conflicts also strongly influences people's perception of wildlife and thus their willingness to cohabit with wildlife. Vulnerability can be in a relation to a particular species, lack of wealth but also arise in comparison to other social groups (Dickman, 2000). Financial security and the fate of others strongly influence people's perception of wildlife. Hill (2004) explains that, with regard to agricultural losses, individuals are less likely to tolerate wildlife if their livelihood strongly relies on agriculture. This is even more true when the agricultural production concerns high-value crops and the perceived risk of losses is consequently high (Messmer, 2009). Other factors such as the size of the agricultural production, the duration of residence in the area or the presence of compensation schemes and their effectiveness also influences people's tolerability of wildlife (Hill, 2004; Messmer, 2009).

Perception and tolerance toward wildlife is not necessarily uniform within the population and may vary between societal groups and individuals. An important example is that of farmers, which remain a group amongst which tolerance for wildlife is low (Messmer, 2009). This can be explained by the fact that farmers are often particularly exposed to wildlife and damages resulting from interaction with wildlife can strongly affect their livelihood. This exposure makes them one of the main victims of human-wildlife conflicts while at the same time they potentially constitute an important threat for wildlife and are essential to the success of mitigation strategies. Messmer (2009) reports that farmers who suffered crop losses from deer are more likely to assume that deer population is increasing and be in favour of strategies aiming at reduction of population.

Thus in areas where tolerance for wildlife is low, reducing the occurrence of conflicts or the resulting damages is not sufficient to mitigate human-wildlife conflicts. Such strategies can only be successful in areas where tolerance for wildlife is high or eventually in the long-term, when absence of conflict has increased over time tolerance for wildlife. As a consequence, increasing tolerance for wildlife is seen as a key element of mitigation strategies (Hill and Weber, 2010; Treves et al., 2006). A shift can be observed in the literature from mitigation strategies aiming only at reducing the occurrence of conflicts or the resulting damages to more holistic approaches aiming also at increasing people's tolerance for wildlife.

#### (ii) Human-Human conflicts

One factor that can affect the success of mitigation strategy and used to be overlooked by mitigation programmes is the state of social relations or what can be called human-human conflicts about wildlife.

- Relations between the local population and conservation scientists:

One common obstacle to mitigating strategies is the relations or lack of understanding between the local population and scientists.

For scientists, it can be difficult to grasp the distress of the local population and understand why they perceive wildlife in a certain way. As explained earlier, people's perception of wildlife is often based on extreme events that they will regard as the norm. Scientists, on the other hand will often use averages to quantify human-wildlife conflicts and the resulting damages. As Treves et al. (2006) point out, the use of averages can hide the situation of individuals experiencing extreme losses and suffering from devastating consequences. This divergence might lead to a situation in which the local population over-estimate damages attributable to wildlife and the scientists under-estimate the burden of human-wildlife conflicts on some individuals rendering communication between the two groups difficult.

Mismatch in what consist a successful intervention is also often an obstacle to conflict resolution. When the local population has been confronted with human-wildlife conflicts for many years and/or experiencing high levels of damages, it can be desperate for conflict resolution. Thus the arrival of a research team often brings high hopes for individuals suffering from human-wildlife conflicts and expectations can sometime exceed what is feasible in terms of conflict mitigation (Hill, 2004). So while scientists might consider the programme successful if it reduces frequency of conflict and damages, it might be considered insufficient for the affected individuals. When expectations are not met, there is a risk that individuals blame the scientists and cease to cooperate with the programme. In some areas, repeated disappointment of the local population has given rise to hostility toward researchers (Treves et al., 2006). This is often accentuated by the fact that the local population believes that old methods of dealing with wildlife such as lethal control are effective (Fall and Jackson, 2002) and that restrictions to the use of such methods means that scientists care more about wildlife than their livelihood.

- Relations between the local population and conservation authorities:

The establishment of protected areas was and continues to be regarded as the most effective way to safeguard wildlife (Pretty and Smith, 2004). Nonetheless, their establishment somewhat rendered human-wildlife conflict more complex.

Historically, the creation of protected areas was often effectuated without consent of the local population and sometimes accompanied by displacement of population. This led to resentment within the local population and gave rise to a negative attitude toward protected areas from the outset. Further, the establishment of protected areas was often accompanied by restrictions with regard to wildlife and natural resources utilization by the local population (Hoole and Berkes, 2010). This was often the case for indigenous population who were prohibited from entering the protected area or use the resources within it. This is particularly problematic when the local population used to rely on wildlife utilization or natural resources such as wood for their livelihood.

Finally, protected areas often result in an increase in human-wildlife conflicts. Sheltered within protected areas, wildlife species are often able to grow in numbers and as they venture outside the territory of protected areas, they can cause damages to the neighbouring population. The inability and sometimes lack of action of conservation

authorities to reduce damages has in many cases aggravated tensions between the local population and protected areas.

Conservation authorities often regard local population as a threat to wildlife conservation and are reluctant to wildlife utilization (Hough and Prozesky, 2010). On the other hand, the local population often perceive conservation authorities as people that care more about wildlife than people and their livelihood (Madden, 2010). While some individuals might have a negative attitude toward wildlife, research has shown that in some cases the local population can have be in favour of wildlife and the concept of conservation but retain a negative attitude toward protected areas (Ahebwa, 2012). Such data clearly illustrate how human-wildlife conflicts can in some cases be a human-human conflict.

Designing and implementing conflict mitigation strategies within such context can prove particularly challenging as the two major stakeholder are not willing to cooperate and do not understand each other. Conflict mitigation is however essential as prolonged tensions between the two can threaten conservation in the long-term (Anthony et al., 2010; Campbell, 2002).

### (iii) Existence of socio-ecological systems

Evolution of our understanding of systems also contributed to the involvement of the local population being seen as necessary.

Strategies to preserve ecosystems and wildlife used to focus solely on the dynamics between the ecological components of a system and aimed at limiting human interventions. The scale of human intervention led however to the recognition that humans have interacted and will continue to interact with ecosystems. The notion of social-ecological system comes from the recognition that ecosystems and social systems cannot be separated and that they are inter-connected, influencing each other. Under this understanding, excluding social aspects from management strategies is thus equivalent to ignoring half of the equation.

Additionally, ecosystems are embedded within larger systems, and it is now understood that preservation of a few isolated ecosystems is not sustainable. The inter-connectedness of ecosystems means that biodiversity and wildlife need to exist outside of designated conservation areas (Boyd et al. 1999; Hoole and Berkes, 2010). For this reason, territories directly adjacent to protected areas present a particular ecological interest as they can constitute buffer zones between different conservation areas.

## 2. The concept and underlying mechanisms

The approach requires that the local population be involved in some way in the development of conflict mitigation strategies. The degree of participation can vary, from mere consultation to active involvement in the development of the strategy (Treves et al., 2006). Consultation means that the local population's expectations, beliefs and preferences are considered for the development of strategies. Active involvement often requires the definition of joint-objectives and demands some kind of actions by the local population. In giving the local population a say in the development of management strategies, it is expected that the population will perceive the strategy as more legitimate

and is more likely to accept it (Berkes, 2004). Understanding the process of decision-making and knowing why a certain decision was made is also more likely to reduce tensions in case the policy does not have effect intended (Reed, 2008)

Participation is also seen as a mean to conciliate opposing interests and reduce conflict between different stakeholder groups. Participatory process facilitates communication and brings different ideas to the discussion allowing consideration of management strategies that might otherwise not have been considered (Natcher et al., 2005).

The local population, because they live directly in contact with wildlife, are expected to detain knowledge with regard to the specific context of the conflict. While they might not detain scientific knowledge, they can provide valuable insights and an understanding of how the system works. They are also able to perceive more rapidly changes in the system (Berkes, 2009; Reed, 2008). Information exchange between the local population and conservation authorities means that strategies can be developed with a full knowledge of the context of the conflict and is more likely to result in successful mitigation strategies (Madden, 2010).

Cooperation between the different stakeholders involved in conflict is also argued to contribute to the development of social capital, which would contribute to a more sustainable management of resources (Pretty and Smith, 2004).

Involving the local population also means restoring some kind of control over the conflict to the affected individuals, which is not negligible in human-wildlife conflict. As previously mentioned, perception of risks strongly shapes attitude towards wildlife. When people feel that they have little control over a given situation, the risk is perceived as greatest since the individuals feel powerless. Restoring control means that individuals are more confident that they can act in a given situation and thus the risk is lessened.

Empowerment of the local population through wildlife utilization is another key aspect of the approach. In allowing sustainable utilization of wildlife, it is expected that the local population will feel less exposed to wildlife. If the local population can derive an income from the utilization of wildlife, they will be less vulnerable to human-wildlife conflict and thus it is expected that their perception of wildlife will evolve in positive manner (Pretty and Smith, 2004).

### 3. Obstacles and criticisms

While the approach has been widely discussed by the scientific world, successful documented cases remain rare and several authors have pointed out at some of the limitations of the approach (Berks, 2003; Reed, 2008).

First, the approach is largely based on the notion of community and initiatives often fail to acknowledge that communities are not homogeneous but are rather complex multidimensional networks undergoing constant change (Berks, 2003). The possibility for the community to be adequately represented by an individual or group of individuals has also been contested.

The approach is strongly reliant on the ability of the local population and conservation authorities to listen to each other and communicate (McKinney and Kemmis, 2011).

When tensions exist between the different stakeholders, the approach might fail due to unwillingness to make compromises and impossibility to define joint objectives (Armitage, 2005).



## Chapter 2 - Research context

The aim of this section is to provide an initial background to the case study so as to situate the conflict in its historical, regional, socio-economic and ecological context. The history of the Baviaanskloof in particular needs to be presented in order to explore and discuss the relationships between the local population and conservation authorities as well as identify potential changes brought by the establishment of the Conservancy.

After a brief geographical and ecological presentation of the Baviaanskloof, we will provide background information of the local community of the Baviaanskloof and the evolution of farming practices in the area. Further, historical background will be provided with regard to the establishment and development of the Baviaanskloof Nature Reserve. Finally, the Baviaanskloof Hartland Bewarea (the Conservancy) will be introduced and explanations will be provided with regard to the interest of this particular case study for the purpose of this research.

### 1. The Baviaanskloof

The Baviaanskloof (the Valley of the Baboons) is a valley of unique beauty situated in the western part of the Eastern Cape province, in the Republic of South Africa. The Baviaanskloof spreads for 75 km from east to west and lies between the Kouga Mountains in the South, which separates it from the Langkloof, and the Baviaanskloof Mountains in the North, after which lies the Karoo. These mountains on each side of the Baviaanskloof act as an important catchment area that provides water into the Baviaanskloof river.

The Baviaanskloof is characterized by its high biodiversity and as such it was awarded the status of World Heritage State in 2004. The Baviaanskloof vegetation encompasses various types of biomes such as Fynbos, Subtropical Thicket or Succulent Karoo, and includes several rare plant species (Boshoff, 2005). The valley is also home to a high diversity of wild species, including some species that are considered threatened or near threatened such as the leopard (*Panthera pardus*), the black rhinoceros (*Diceros bicornis*) or the Cape mountain zebra (*Equus zebra zebra*). The Baviaanskloof also constitute a major water catchment area for the provision of water to the Eastern Cape province and particularly the urban area of Port Elizabeth.

The Baviaanskloof is broadly composed of two areas:

- The Baviaanskloof Nature Reserve, which is the third largest protected area in the country and encompass the mountains bordering the Baviaanskloof and the eastern part of the valley floor; and
- The Baviaanskloof Hartland (or Western Baviaanskloof), mostly composed of privately owned land (predominantly farmers) and which includes the valley floor in the west and the surrounding hill slopes.

#### (i) The Baviaanskloof Hartland

The Baviaanskloof Hartland is a very isolated area and access can only be done via a gravel road through the Baviaanskloof Nature Reserve either via the Nuwekloof Pass (4

hours from the nearest town of Patensie) or via the western access of the reserve (1:30 hour from the nearest town of Willowmore). It is not uncommon that the eastern access to the area be closed off after heavy rainfalls due to impracticability of the road.

The population of the Baviaanskloof has been declining in last decades and only a small group of farm owners, workers, pensioners and their respective family remain in the area (Crane, 2006). The decline in population has to been subsequent to the decline of farming in the area due to several ecological and socio-economic factors.

Commercial farming was established in the area following the arrival of European settlers in the 18th century but although most farmers have been established in the Baviaanskloof for generations, they are currently struggling to remain competitive.

Farmers in the valley used to rely mostly on vegetable seeds production, which was very lucrative, as well as on small livestock for wool production. However, at the end of Apartheid in 1994, South Africa was able to export again which meant that the farmers had to compete with farmers around the world and led to a decrease in price (De Vries et al., 2015). Simultaneously, the cessation of agricultural subsidies and introduction of agricultural labour regulations put further stress on the farmer's financial situation (Crane, 2006). Vegetable seed production was no longer lucrative and as a result, most of the farmers had to change their activities so that their farm would remain viable. Nowadays, their activities mostly consist in a combination of small livestock (goats and sheep) for which many grow lucerne to guaranty availability of grazing during the dry season and cash crops production (maize, soy, wheat etc.).

In parallel to a deteriorated economic context, unsustainable agricultural practices contributed to a decline in biodiversity as well as soil erosion. The extensive use of Angora goats resulted in overgrazing on the hill slopes, the consequences of which were not readily apparent at the time. While most of the farmers have now removed their livestock from the hill slopes, vegetation cover is struggling to recover.

Water is also increasingly becoming a concern as reduced vegetation cover and modification of the landscape as affected the capacity of the area catchment to provide water. While only one farmer has so far be forced to stop cultivation due to water shortage, it is a major concern for the farmers has the area can be subject to long dry period and the farmers strongly rely on water supply to irrigate their crops and insure that they have sufficient feedstock for their livestock. The limited water supply also hinders possibility to intensify either the production of cash crops or the number of livestock.

In sum, while the economic context would require the farmers to increase their productivity in order to remain competitive, the ecological transformation of the Baviaanskloof ecosystem indicates that agricultural production has reached its maximum capacity and agricultural productivity has already been declining.

To make things worse, the farmers also have to face recurrent losses due to the presence of wild animals on the farms. Crop production has been affected by crop raiding by birds, monkeys and other small animals. Of more serious concern though is the impact of kudus (*Tragelaphus strepsiceros*), which have been increasingly accused by the farmers for being responsible for significant cash crops and feed losses. Livestock

husbandry on the other hand has suffered from livestock depredation by caracals (*Felis caracal*), black-backed jackals (*Canis mesomelas*) and leopards.

The reduced profitability of agriculture led some of the farmers to engage in alternative activities, mainly tourism, with the establishment of guesthouse and campsites on their land. A significant part of the land was also converted for conservation and restoration activities. Nowadays, there remain only about 13 farmers in the Baviaanskloof (9 of which are actively farming) and 2 farming communities, the Sewefontain Gemeenskap Boardery Trust and the Zaaimanshoek community. Out of the 50 000 ha of privately owned land, farm land represents about 35 000 ha most of which constitute open range land portions which may eventually be used for livestock grazing and only 1000 ha are under cultivation (Knight, 2012).

The transformation and reduction of the farming activities had consequences on the community of farm workers who live in the Baviaanskloof. Many of the workers lost their job as a result and since opportunities for employment are very limited, many remained unemployed or had to leave the Baviaanskloof. A group of farm workers were able to acquire one of the farms of the Baviaanskloof via a trusteeship after the farm owner went bankrupted shortly after the cessation of subsidies. They now constitute the farming community of Sewefontain.

#### (ii) The Baviaanskloof Nature Reserve

The Republic of South Africa is the third most biologically diverse country in the world (Crane, 2006), and as such, the protection of its multiple biomes is of prime ecological importance.

During the apartheid, the conservation strategy in South Africa followed the model of fortress conservation: several protected areas were established in which utilization of natural resources was prohibited or severely restricted. Post apartheid, conservation strategies in South Africa slowly sought to include the local communities in their management practices but the long tradition of fortress conservation has strongly affected relationships between the local population and conservation authorities and remains strongly anchored into the minds of conservation authorities (Crane, 2006).

The foundation of the Baviaanskloof Nature Reserve dates back to 1923 when the Baviaanskloof Forest Reserve was established (Boshoff et al., 2000). At the time, the reserve was managed by the Department of Forestry which later on formed part of the Department Environment Affairs. Around the 1970s, the Baviaanskloof Forest Reserve expanded by means of expropriation and land purchase to become the Baviaanskloof Conservation Area (De Vries et al., 2015). In 1987, the management of the reserve was transferred to the Provincial Administration of the Cape of Good Hope and has since remained under provincial authority (Boshoff et al., 2000). Nowadays the reserve is managed by the Eastern Cape Parks and Tourism Agency (ECPTA).

Starting in 1997, conservation authorities planned to expand the reserve in order to include the valley floor which remained privately owned. The expansion was motivated by concerns over unsustainable agricultural practices and the recognition that successful conservation strategies require the inclusion of full ecosystems (Crane, 2006). The valley floor is precisely an important element of the Baviaanskloof ecosystem

as it provides access to the river and surrounding grasslands, which are both of prime importance for wild species (De Vries et al., 2015). The project, which aimed to be enforced via compulsory acquisition of land, was met strong resistance amongst the landowners and inhabitants of the Baviaanskloof.

In 2002, the new expansion project took a different approach. The newly founded PMU (the Baviaanskloof Mega-reserve Project Management Unit) aimed at expanding the area under protection via voluntary agreements with private landowners. Mega-reserves differ in their conceptualization from traditional protected areas in the sense that the focus is not on prohibition of wildlife utilization but rather aims at promoting sustainable utilization of landscapes (Crane, 2006). Instead of expropriating and excluding people, the PMU aimed at building a partnership with private landowners via the adoption of stewardship agreements (De Vries et al., 2015). The PMU was however met with suspicions from the part of the landowners as many remained bitter about the expansion project of 1997.

Today the Baviaanskloof Mega-Reserve encompass approximately 500,000 ha of land, including the Baviaanskloof Nature Reserve (200,000 ha) and several state-owned protected land as well as privately-owned land under stewardships. The remainder of privately owned land is now completely surrounded by the Baviaanskloof Mega-Reserve (See figure 1 below).

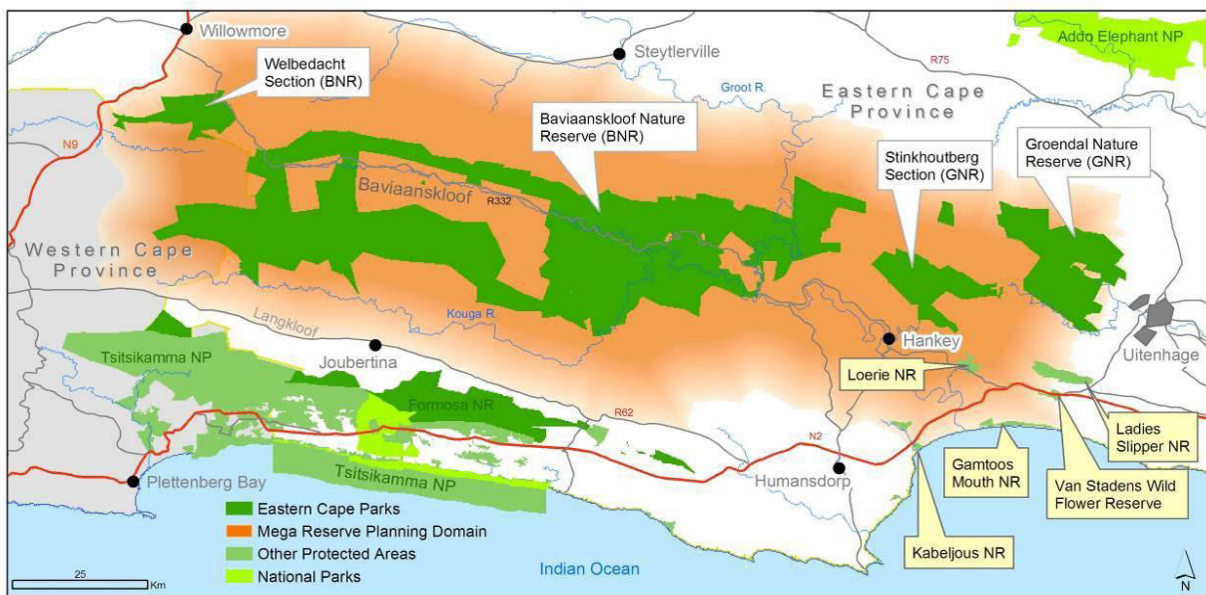


Figure 1: Overview of the Baviaanskloof Mega-Reserve (Source: ECPTA)

## 2. The Baviaanskloof Hartland Bewarea

In 2013, several landowners of the Baviaanskloof Hartland decided to found a conservancy - the Baviaanskloof Hartland Bewarea.

Conservancies are defined by the National Association of Conservancies and Stewardship South Africa (NACSA) as:

"a voluntary association between land users/landowners who co-operatively wish to manage their natural resources in an environmentally friendly manner without necessarily changing the land-use of their properties".

Conservancies are thus a form of community-based conservation at the initiative of the landowners or land users. They differ from the stewardships agreement proposed by the PMU and now ECPTA in the sense that they do not create a partnership with the conservation authorities but only require registration with the relevant provincial government agency (in this case, the regional office of the Department of Environmental Affairs).

The establishment of the Conservancy spurred from a desire of the landowners to tackle the ecological and economic challenges they faced in the last decades and to explore possibilities for sustainable living in the Baviaanskloof. Conservancies, because they do not require the establishment of formerly protected areas, provided flexibility for the landowners of the Baviaanskloof and allowed them to continue to utilize the land as they see fit albeit in a sustainable manner.

While not all of the landowners of the Baviaanskloof Hartland have decided to join the Conservancy, a majority have and the territory of the Conservancy includes approximately 35 000 ha of farmlands (see figure 2 below).

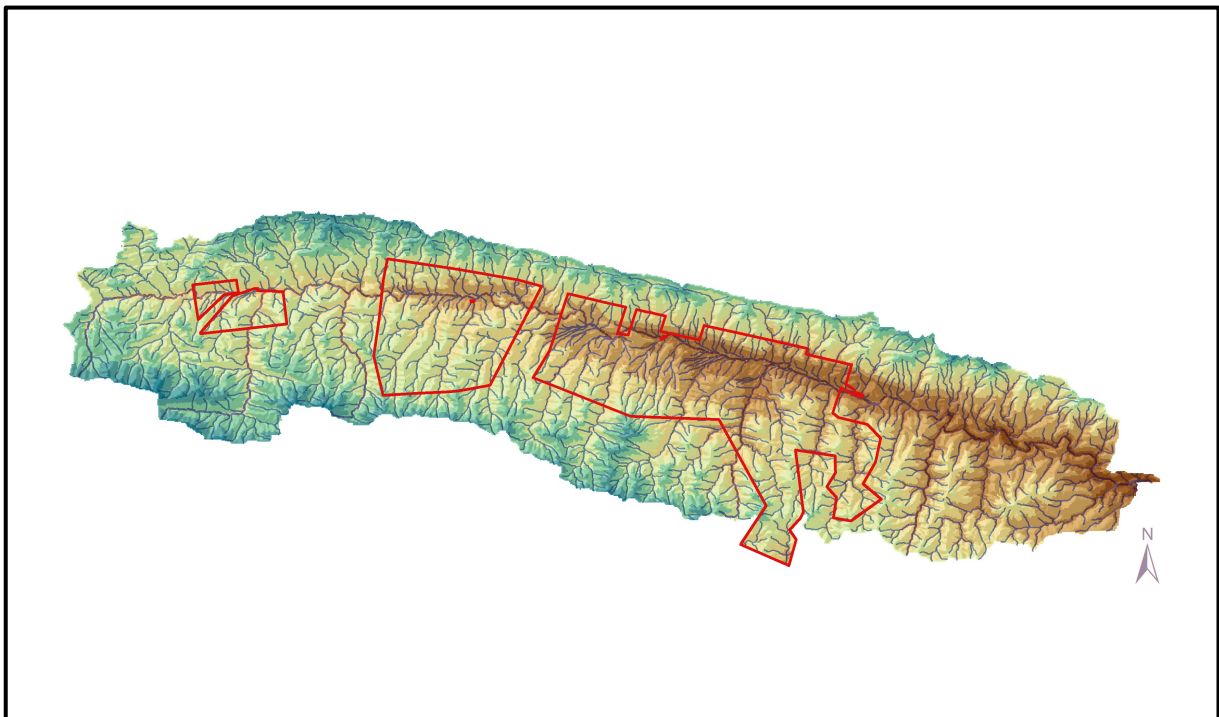


Figure 1: Overview of the Baviaanskloof Bewarea Conservancy (Source: Living Lands)

It is worth mentioning that the establishment of the Conservancy was subsequent to the intervention in the Baviaanskloof of Living Lands, a not-for-profit organization which aims at conserving and restoring "living landscapes". Living Lands started intervening in the Baviaanskloof in 2007 and its vision is to combine ecological, agricultural and social land-uses in order to build sustainable and resilient socio-ecological systems. Living

Lands was strongly involved in the establishment of the Conservancy and remains at the present time instrumental in the functioning of the Conservancy.

### 3. Interest of the case-study

The Baviaanskloof Hartland Conservancy was chosen as a case study as it is a prime case of local population involvement in a buffer zone of significant ecological importance. The preservation of the Baviaanskloof ecosystem is extremely dependent on the ecological status of the Baviaanskloof Hartland and thus necessitates sustainable land-use practices. The fact that the Baviaanskloof Mega-Reserve completely surrounds the Baviaanskloof Hartland also means that the landowners are particularly affected by ECPTA's management policies and regularly exposed to conflicts with wildlife.

The Baviaanskloof Hartland community also constitutes a small heterogeneous group with different interest and values. The small size of the community means that relationships can be investigated with ease and in more depths than if a large community group is considered. The heterogeneity of the group means that it is possible to observe the potential of the Conservancy to deal with different mindsets, reach multiple objectives and transform relationships.

Finally, the human-wildlife conflict surrounding the kudu was chosen as a focus point for two reasons. Along with the conflict with carnivores, it is the human-wildlife conflict in the Baviaanskloof that catalyzes the most tensions between the landowners and the conservation authorities. At the same time, the conflict seems to present more opportunities for conflict resolution in comparison to the conflict with carnivores which appears to be currently stuck in a lock-in. Past intervention of conservation groups and researchers have exacerbated the situation and there were concerns that undertaking research on the conflict with carnivores would only foster further tensions and potentially threaten future cooperation in the area.

### **Chapter 3 - Research method**

In this section we will provide information with regard to the method used for the analysis of the case study (i.e. stakeholder analysis) as well as describe the process followed for the collection of data and the conducting of the interviews. Finally, we will reflect on limitations with regard to the method used and potential bias in data collection.

#### **1- Stakeholder analysis**

Stakeholder analysis is a research method particularly suited to the field of natural resources management and human-wildlife conflicts (Bilgren and Holmén, 2008; Grimble and Wellard, 1997; Reed, 2008). As we explained in section 1, human-wildlife conflicts results from complex interactions between a set of different actors, their different interests and objectives. Understanding these interactions is essential to develop methods for conflict resolution and stakeholder analysis precisely allow for exploration of such complex dynamics.

Stakeholder analysis can be described as a method or a range of tools used to understand a socio-ecological system and the variations within in it by identifying its key actors or stakeholders, and assessing their respective interests related to that system and/or their influence on the system (Grimble and Wellard, 1997; Mushove and Vogel, 2005; Reed, 2008). Used within the field of natural resources management, it allows for identification of the multiple uses and users of the resources as well as potential trade-offs and conflicting interests (Grimble and Wellard, 1997; Reed et al., 2009). In the specific context of human-wildlife conflicts, stakeholder analysis will constitute a holistic approach to apprehend every aspects of the conflict under scrutiny and provide an excellent basis for analysis and development of mitigation strategies.

The method also presents an interest for the development and assessment of participatory approach as it provides tools for the identification and characterization of the multitude of individuals and groups intervening in connection with the resource on different scales, from the local scale to the regional, national and international scale (Grimble and Wellard, 1997). Stakeholder analysis can thus be used to ensure that all relevant actors, including the most marginalized ones, are considered for the participatory process and prioritize their involvement according to their characteristics and relevance to the situation at hand (Mushove and Vogel, 2005; Reed, 2008).

While stakeholder analysis is usually undertaken for the purpose of policy and programme development, and particularly to weight different interventions (Grimble and Wellard, 1997), we will here use the approach as an exploratory method for research purposes. The fact that stakeholder analysis is suited to both natural resources management and to participatory approach means that the method is particularly relevant to this research. Additionally, stakeholder analysis is not a fixed method but rather a set of tools; it thus provided flexibility and could be utilized and adapted to the context and objectives of the research.

The research followed a 4-step process, (i) definition of the objectives of the research and identification of the socio-ecological system under consideration, (ii) identification of stakeholders, (iii) characterization of stakeholders, (iv) investigation of the

relationships between the different stakeholders; the details of which are provided thereafter. Each phase provided information to answer the different sub-research questions previously identified.

#### (i) - Definition of the objectives and identification of the socio-ecological system

The first step aim at clarifying the objectives of the research and identify the boundaries of the system under scrutiny. This preliminary stage is essential as it will determine which stakeholders are included in the analysis and which elements of the system should be given special attention (Brugha and Varvasovszky, 2000; Reed et al., 2009).

As previously stated, the primary objective of this research is to explore the potential of conservancies to foster cooperation between the different stakeholders involved in human-wildlife conflicts, particularly between the local population and conservation authorities; and assess whether such cooperation can have a positive impact on the development of successful mitigation strategies. The conservancy established in the Baviaanskloof Hartland (Baviaanskloof Hartland Bewarea) was chosen as a case study for the purpose of this research. The stakeholder analysis thus needs to be centered on the Conservancy, the conflict under scrutiny (i.e. the conflicting situation between the population of the Baviaanskloof and the surrounding kudu population) and the stakeholders between which cooperation is desired.

The conflict can have consequences beyond the socio-ecological system of the Baviaanskloof as well as be affected by factors outside of the system. However, for the purpose of the research, we will restrict the stakeholder analysis to interactions at the local level, within the socio-ecological system under consideration (i.e. the Baviaanskloof Hartland). This does not mean that important elements outside of the system will not be considered during the data analysis, only that their relevance is secondary to the research and thus they fall outside the scope of the stakeholder analysis. The socio-ecological system of the Baviaanskloof is connected with other systems and embedded within larger systems and this will be acknowledged when interpreting the results.

Once the boundaries of the system have been determined, it is necessary to gather preliminary information on the system in order to understand how the system functions and in this case study, gather information on the context of the conflict. The aim here to is gather information such as the factors contributing to the conflict, the timing as well as the social and financial impacts of conflict, the ecological aspects... It is important to note that this phase does not aim at getting a sense of the stakeholder's perspective or their value and interests, it is about gathering facts and placing the conflict into its context in order to guide the researcher in the following steps of the analysis.

#### (ii) - Identification of stakeholders

Stakeholders have been defined in the literature as "any group of people, organized or unorganized, who share a common interest or stake in a particular issue or system" (Grimble and Wellard, 1997) or any "individuals, groups and organizations who are affected by or can affect those parts of the system" (Reed et al., 2009). The notion of stakeholders thus encompass a wide range of actors, from the local to the international level, from individuals to organizations or institutions, and even to less tangible notions



such as "the public interest" or "future generations" (Reed et al., 2009). Stakeholders are related to the system in different ways; they can affect or be affected by the system, either positively or negatively, directly or indirectly.

In view of the large variety of stakeholders, including all of them can prove challenging while undertaking research and may result in the objectives of the research being lost or diluted. In order to fulfill the objectives of the research, it is necessary to draw a line and develop criteria to identify the stakeholders most relevant to the research (Reed, 2008).

The first criterion for identification of the relevant stakeholders was set earlier while we defined the objectives of the analysis and identified the system under study. Since the purpose of the research is to examine relationships and more specifically the potential for cooperation at the local level, the analysis needs to be restricted to stakeholders interacting at the local level. Thus stakeholders influencing the system but not directly interacting with the local level (such as the national government, international conservation groups, the broader population, future generations etc.) are not considered relevant stakeholders for the purpose of this research.

In addition to this criterion, stakeholders had to fulfill at least one of the following two criteria in order to be considered relevant to the research:

- Stakeholders needed to have a direct connection to the conflict involving the kudu (either directly affect or be directly affected by the issue) or;
- Stakeholders needed to be involved in/with the Baviaanskloof Hartland Conservancy

This combination of criteria ensured that the most relevant stakeholders for the research were taken into account and that the stakeholder analysis properly focused on the human-wildlife conflict involving the kudu, the Baviaanskloof Hartland conservancy and social interactions at the local level.

Finally, the stakeholder list was completed via the snowball sampling methods meaning that each stakeholder interviewed was asked if they knew of other stakeholders relevant to the conflict.

### (iii) - Categorization of stakeholders

During this phase of the analysis, stakeholders are assessed and categorized based on their attributes (Mushove and Vogel, 2005). There are a variety of characteristics according to which the stakeholders can be categorized such as their interests, power, values, perspectives etc.; and which attributes are retained will depend on the objectives of the analysis.

The first categorization that was undertaken was to determine in which way do the stakeholders affect or are affected by the system, which is usually the first step in stakeholder characterization (Grimble and Wellard, 1997). Further, it was decided for the purpose of this research, to pay particular attention to the different perspectives and interests of the stakeholders with regard to the conflict and the Conservancy.

Finally, of particular importance in order to understand the system was the identification of the different conflicts and trade-offs present within the system. Grimble and Wellard (1997) explain that conflicts and trade-offs, although linked, are two different concepts and that it is important to differentiate the two while undertaking a stakeholder analysis. Conflicts result from a situation of competition between two stakeholders or more regarding the usage of the resource. For example in our case-study, a conflict could exist between the farmers of the Baviaanskloof who might want a reduction in the number of kudus in order to protect their crop and ECPTA who might want to preserve the number of kudus for conservation purposes. Trade-offs refer to the situation in which one stakeholder or one stakeholder group is confronted with several objectives that cannot be achieved or fully achieved simultaneously (Grimble and Wellard, 1997). Again in our case study, it could refer to the trade-off faced by farmers between shooting kudus to protect their crops and accepting kudus on their farms to attract tourists. Once the conflicts and trade-offs were identified, we sought to identify potential synergies and compatibilities within the system that could assist with the development of mitigation strategies.

#### (iv) - Investigation of relationships between stakeholders

Categorization of stakeholders often also includes categorization based on the relationships and interactions between the different stakeholders (Mushove and Vogel, 2005). However, in view of the importance of stakeholder relationships for this research, it was preferred to treat relationships as a separate step in order to give it sufficient depth.

As a first step, the research sought to identify power dynamics and the degree of influence between the different stakeholders to understand how they relate to each other. Once this was established, we attempted to identify communication patterns between stakeholders (how often do they communicate, under which circumstances etc.), and assess the degree of cooperation and trust between them. This information was then compiled using actor-linkage matrices (Reed et al., 2009) that would reflect the nature of the relationships between the stakeholders (conflict, cooperation, dependency etc.).

Relationships had to be analyzed on different time scales (from past to present) in order to assess if they had evolved and if such evolution could be attributed to the establishment of the Conservancy. Future evolution of relationships and possibilities for cooperation were also explored to a certain extent.

## 2- Data collection

The research was undertaken under the hospice of Living Lands who provided entry to the site and assisted in organizing the interviews. Research was conducted between January and March 2015 during which 5 trips to the Baviaanskloof were undertaken in order to interview local stakeholders as well as attend meetings between Living Lands and members of the Conservancy. Each trip lasted 2 to 5 days and provided opportunities to engage into informal conversations with the different stakeholders and gather information on the system via personal observations.

The rest of the time was dedicated to the preparation of the questionnaire, scheduling of the interviews as well as interviewing stakeholders located outside of the Baviaanskloof and gathering secondary data with the assistance of Living Lands. Two meetings were also attended: one with a representative from ECPTA in which Living Lands discussed the management of the kudu population in connection with the Conservancy; and one with a representative from the Baviaanskloof Tourism Board which discussed the role of the Conservancy with regard to the development of tourism in the Baviaanskloof.

#### (i) - Preliminary assessment

A preliminary assessment of the conflict was undertaken prior to the development of the questionnaire. This aimed at gathering information on the socio-ecological system under study and particularly on the context on the conflict. A first trip to the Baviaanskloof was undertaken during which informal conversations were held with several farmers. The researcher was also able to participate in a kudu census undertaken by Living Lands to assess the number of kudus on the farms at night. Extensive conversations with Living Lands and review of secondary data gave preliminary background information on the Baviaanskloof socio-ecological system and the conflict at stake. Subsequently, it was possible to draft a first list of relevant stakeholders that should be interviewed in order to conduct the analysis. Three groups of stakeholders were identified as particularly relevant:

- The farmers and other landowners in the Baviaanskloof
- Eastern Cape Parks and Tourism Agency (ECPTA)
- The Department of Environmental Affairs (DEA)

#### (ii) Preparation of the questionnaires

The questionnaire was built in order to gather qualitative information from the different stakeholders. The purpose of the interviews was multifold as it needed to provide data to inform each stage of the stakeholder analysis.

First, the interview aimed at gathering baseline information with regard to the Baviaanskloof socio-ecological system and the conflict involving the kudus to validate and complement the information collected during the preliminary phase. Second, the interviews sought to identify the different perspectives and interests surrounding the conflict as well as understanding how the conflict was experienced in the Baviaanskloof and what were the expectations with regard to mitigation strategies, including the role of the Conservancy. Finally, the interviews aimed gathering information with regard to their relationships with the other stakeholders both by asking them directly about their relationships and by analyzing the way they described and talked about other stakeholders.

The questions had to be slightly adapted to respond to the specificities of the different stakeholders and thus two questionnaires were developed, one for the farmers and other landowners of the Baviaanskloof, and one for the representatives of ECPTA and the DEA (see appendix A and B). In essence however, the questions remained the same and the questionnaires were divided in three parts.

First the respondents were questioned about their personal knowledge and personal experience with regard to the conflict. Questions were developed to enquire about the timing and locations of the conflict as well as the potential losses resulting from the conflict. Respondents were also asked what, in their opinion, were the factors contributing to the conflict. In a second time, respondents were invited to share their knowledge and opinion on past mitigation strategies. They were also questioned about their personal preference with regard to mitigation strategies and asked who they believed should take responsibility for the conflict. Finally, the respondents were asked about their relationship with other stakeholders as well as about their involvement with the Conservancy and opinions towards it.

Particular attention was paid to use language accessible to the respondents when designing the questions. The questions were open ended in order to let the respondents talk and express their own opinions so as to limit researcher bias. Living Lands provided advice to make the questionnaire more accessible to the respondents. One important recommendation was to ensure that the questionnaire would dive directly into the topic as most of the farmers of the Baviaanskloof had been repeatedly interviewed by students introduced by Living Lands and some were not as willing to participate into interviews. Living Lands thus stressed that the relevance of the questions to the research needed to be readily apparent to the farmers in order to ensure their participation and focus during the interview.

### (iii) Interview process

A total of 11 interviews were undertaken with the different stakeholders. Two interviews were conducted with representatives from the DEA and one interview was conducted with a representative from ECPTA. The interview with the representative from ECPTA was complemented by a meeting with another representative from ECPTA in which the management of the kudu population and hunting quotas for the Conservancy were discussed. A total of 8 (out of 20) landowners were interviewed in the Baviaanskloof Hartland.

Living lands provided introduction to the different respondents. At the beginning of each interview, the respondents were informed that the research investigated the human-wildlife conflict in the Baviaanskloof involving the kudus and the potential role of the Conservancy to mitigate that conflict. It was not stated however that the focus of the research was on the relationships between stakeholders so as to avoid bias in response. The interview were semi-structured meaning that the questionnaire was used as a guideline but that the interview aimed at taking the form of a conversation. The respondents were encouraged to elaborate their response and the order of the questions was adapted accordingly. On some occasions, further questions were asked to obtain clarification on aspects mentioned by the respondents. Once the respondents had provided their untainted answers, they were sometimes suggested potential answers. This was for the example the case for questions regarding the factors contributing to the conflict. This process allowed to identify the respondents' perception of the conflict and their primary concern as well as gather information with regard to their knowledge and beliefs.

Each interview lasted from 30 to 55 minutes with the landowners and from 50 minutes

to 70 minutes with representatives from ECPTA and the DEA. The questionnaires were of similar length and it would generally appear that the landowners were less talkative. This can be explained by a certain reluctance to talk amongst landowners. As previously mentioned, many of the landowners have been repeatedly interviewed over the last year and many are no longer willing to participate in lengthy interviews. Additionally, the interviews with the landowners typically took place after a meeting with Living Lands had already taken place and thus the farmers had only a limited time left for the interviews. It is also common in human-wildlife conflict for landowners and particularly affected parties to be reluctant to talk to researchers (Treves et al., 2006). Researchers are often assumed to be pro-wildlife and thus the landowners can be reluctant to share their negative experience with wildlife (Gadd, 2005). In fact, several landowners appeared nervous during the interviews and some expressed concerns about providing the "right answers".

### 3 - Research limitations and potential bias

While efforts were made to limit bias in the research method and data collection, there remain a number of shortcomings that must be mentioned and considered for the analysis of the results.

First, the understanding of the system was partly based on the declarations of stakeholders and may thus be tainted by their bias and different perspectives on the system. We tried to overcome that issue by retaining only aspects that were recurrently mentioned in the interviews and across stakeholder groups. Declarations were also checked against secondary data available on the Baviaanskloof to minimize stakeholder bias.

Second, the research decided to focus on a small number of stakeholders in order to thoroughly explore relationships between such stakeholders but excluded other stakeholders that were considered less relevant. This correspond to a paradox of stakeholder analysis that aims to build a holistic picture of a system and ensure that all stakeholders are included but for reasons of feasibility of the research needs to restrict the number of stakeholders taken into account. Although a line had to be drawn in view of the limited means and time available for the research, some stakeholders, while not of primary importance, could have been included in the analysis. The quality of the research and reliability of findings could have been improved by the mean of interviews with such stakeholders and thorough analysis of their role in the conflict.

The identification of the relevant stakeholders might also have been biased by the involvement of Living Lands and the use of the snowball sampling method. Although Living Lands has been active in the area for several years and has a detailed understanding of the system, the NGO is a stakeholder in itself and there is possibility that their view of what constitute a relevant stakeholder be biased by their own social network. The same holds for the snowball sampling method: while it can assist in identifying stakeholders, it can also ensure that certain stakeholders remain excluded if they do not belong to the social network of the original sample (Reed et al., 2009).

Bias may also be reflected in the interviews. While it was necessary in order to ensure participation of the landowners to dive directly into the topic of the conflict with the kudu, it also meant that it was not possible to ask questions to determine if the issue

surrounding the kudu was considered a priority by the landowners. Additionally, each of the respondents knew that the research was undertaken under the hospice of Living Lands which might have affected their responses and led them to overstate their willingness to cooperate with other stakeholders and/or their interest in the Conservancy. This is reinforced by the fact that several of the interviews with landowners took place in the presence of a Living Lands staff. The work of Living Lands in the last years is also likely to have influenced stakeholder's perspectives on the matter and appeased tensions surrounding the conflict. A significant number of interviews with the landowners also took place right after a meeting with a Living Lands staff was held and there is a strong possibility that what was discussed in that meeting influenced the response of the landowners.

Finally, there is always a risk of discrepancies between what the respondents declare and what they believe and do (Gadd, 2005). This is particularly true when taking into consideration the fact that researchers are often assumed to be pro-wildlife and the researcher appeared as an "outsider" to the Baviaanskloof by not only being a foreigner but also not speaking the mother tongue of the respondents (i.e. Afrikaans). The language barrier was also a repeated issue as most of the meetings between landowners were held in Afrikaans.

## Chapter 4 - Results and data analysis

The following chapter aims at presenting the result of the stakeholder analysis and answering the sub-research questions 2 to 4. The first section will introduce the results with the regard to the conflict surrounding the kudus and present the factors leading to the conflict as well as explain how the conflict is experienced in the Baviaanskloof. The second section will present the data with regard to past mitigation strategies and the impact of the Conservancy on the issue with kudus. Finally, section 3 will present the results with the regard to the Conservancy's impact on cooperation between the different stakeholders and the evolution of relationships.

### 1. The conflict: facts and perceptions

#### (i) Occurrence and damage level

Out of the 8 farmers interviewed, 7 reported that they suffered losses from the kudus, mostly crop losses involving lucerne but also cash crops such as soy, oats and maize. They also reported that fences were damaged as a result of the kudus jumping in and out of the field. One farmer involved in restoration activities and who has dedicated a large portion of this land to the plantation of spekboom (*Portulacaria afra*) for restoration purposes (see figure 3 below) explained that the kudus had in some areas affected and slowed down the restoration process by eating away some of the spekboom planted and in some areas over grazed the restoration area. The only farmer who did not reported losses from the kudus explained that he did not encounter the problem as his farming activity, olive tree plantation, was not at risk of damages by the kudus.

The primary loss was damages to crops and lucerne and all affected farmers reported losses between 5 and 30 % of their harvest. Several of them mentioned that two farmers had experienced 100% losses on some of their plots as the result of kudus. Interviews could not be conducted with those two farmers but a night road census on one of the farm revealed that this particular farmer had the highest number of kudus on its fields.

Farmers indicated that the kudus come on the field at night, making it difficult for the farmers to scare them away. The farmers specified that the amount of damages and presence of kudus on their field fluctuated depending on the season, with the dry season being the period in which they experienced the most damages. The interviews were conducted during the dry season and when asked how often the kudus would come onto their land, the farmers growing lucerne systematically answered "every night".

#### (ii) Factors contributing to the conflict

All stakeholders groups identified the presence of cultivated lands as the main factors for the occurrence of the conflict.

The year-round availability of grazing was clearly identified by all respondents as the number one factor for the conflict. The majority of respondents considered that the kudus came to graze onto the fields because it was more palatable and readily accessible than grazing in the veld. Many compared the cultivated fields as sweets that would be offered to the child.



Figure 3: Plantation of spekboom (*Portulacaria afra*) for land restoration

Several respondents (landowners as well as representative from the DEA) believed that lack of grazing in the Karoo and parts of the Baviaanskloof Nature Reserve were partly responsible for the kudus moving onto the fields, especially during the dry season. The lucerne plantations in particular were said to "attract the kudus for miles".

Perception however differed between stakeholders on whether the conflict had always existed. All landowners and one representative from the DEA contended that the kudus were not issue prior to the 1990s and that the first kudus only migrated in the Baviaanskloof around 1985-1987 from the Karoo. Some farmers believed that a period of drought and overgrazing in the Karoo would have driven the kudus to migrate. Additionally, there was no consensus amongst landowners as to whether the kudus came from the Baviaanskloof Nature Reserve or were established within the Hartland. Representatives from ECPTA contended that there was no historical data to confirm the absence of kudus in the Baviaanskloof prior to this time. One representative from the DEA said he believed the problem had always existed. Stakeholders generally agreed however that the number of kudus had increased in recent years although their description of the phenomena varied with representative from ECPTA and the DEA indicating that "it seems that they are increasing" or "it appears their numbers have gone up" and the landowners stating that ever since the arrival of the kudus in the Baviaanskloof "their numbers have just grown, out of control, they've just been up and up and up".



Landowners who believed that the number of kudus in the Baviaanskloof is too high said that they have been for 5 to 15 years depending on respondents. Prior to that, the farmers explained that there were no issues with the kudu and several mentioned that they were satisfied with the arrival of the kudu in the Baviaanskloof. Only one landowner, the one that did not experience damages from the kudu, said that he was unsure if the numbers were increasing and that data needed to be evaluated.

It was the farmers' general understanding that the kudus were able to thrive because the cultivated lands provided them with the all conditions necessary for breeding and that the Baviaanskloof was, as a result, over carrying capacity. Some landowners also pointed out that the lack of predators meant that the kudu population could continue to grow as long as the kudu could graze on the farms.

Only a few farmers mentioned the presence of water as a factor attracting the kudu on their land but it was never considered a decisive factor.

## 2. Mitigation strategies and the impact of the Conservancy

### (i) Past mitigation strategies and stakeholders expectations

Interviews and review of secondary sources revealed that the only mitigation strategy that was implemented in the past constituted in awarding the farmers who experienced losses with a special permit to hunt a defined number of kudus. The farmers were then required to use the financial profit made from the game meat to build up game fences to protect their crops and prevent further damages.

In fact, as many farmers explained, the current fencing system is inefficient as most of the farmers only dispose of stock fences of 1,4 meters height. The height of the fences means that the kudus are still able to jump over them to access the field. At the same time, the kudus can get trapped in the fences when attempting to jump and the subsequent fall has on occasion resulted in the death of the animal. Several farmers reported that they found kudu dead trapped in the fences. The current fences thus provide no protection to the crops but also present a danger to the kudu.

Game fences of 2,4 meters height (see figure 4 below) are more effective in preventing the kudus from entering the fields and there was strong contentions amongst the DEA and ECPTA that the farmers should fence in their lands to protect their crops.

The system of awarding hunting permits in exchange for the establishment of fences was not efficient and this was recognized by the DEA who initiated the programme. In fact, the cost of game fences is extremely high and the money gained from the hunting of the kudu was not enough to fence even a portion of land. This led to farmers asking for more permits and originally led to suspicions amongst the DEA that the farmers were not using the money to build fences. Additionally, the money did not compensate farmers for the loss of their crops. One representative from ECPTA also indicated that he was not in favour of this mitigation strategy "I have a problem with the principle that problem animal must pay for the damages. It is working the system".



Figure 4: Game fences in the Baviaanskloof Hartland

All stakeholders thus agreed that this system was not satisfactory and that another solution needed to be found. In that regard, all stakeholders believed that it was the responsibility of the landowners to deal with the conflict they experienced with the kudus.

From ECPTA's perspective, it is the farmers who are attracting the kudus with their crops and lucerne and they should therefore find a solution as it is "their issue".

The DEA also believed that the farmers should be responsible for dealing with the situation but also mentioned that ECPTA could play a role in finding a solution. One representative explained that ECPTA needed to either let the farmers manage the population of kudus or, if ECPTA believed the kudus belonged to the reserve, assist in finding an acceptable mitigation strategy.

All landowners stated that it was their responsibility to find a solution to the conflict with the kudus. While the reasons for this for the landowners who did not believe that the kudus came from the reserve is clear, it is less obvious for the other landowners. Informal conversations with various stakeholders indicated that perception in that respect as changed over the years. One representative from the DEA reported that landowners used to contact his office to request that ECPTA and/or the DEA came to remove the kudus out of their property ("come get your kudus or I will shoot them").

Evidence suggests that the farmers have accepted that they must find a solution to the conflict and believe that ECPTA would not be willing or able to assist them. Many farmers in fact referred to ECPTA as "useless". At the same time, the distrust between the landowners and ECPTA means that the landowners prefer to rely on themselves to deal with the situation rather than cooperate with ECPTA.

#### (ii) Impact of the Conservancy

The immediate change that was brought by the Conservancy was the establishment of specific hunting quotas for the Conservancy. A representative of DEA explained that it was a trade-off, because the farmers showed willingness to manage their land sustainably, they were allowed more flexibility to hunt the kudus.

For the farmers who suffered from damages, the hunting quota made a significant difference. The hunting season for kudus is usually open during winter and quotas determined annually for the province. From the perspective of the farmers, the hunting season did not provide opportunities to mitigate the conflict as they usually encounter problems with the kudus during the summer, time during which the hunting season is closed.

With the establishment of the Conservancy, the landowners were given individual quotas and the possibility to shoot the kudus year-round. It is important to note that the quotas given to the farmers do not allow them to shoot more kudus than they would be allowed to during the normal hunting season (the quotas is actually inferior). What is of interest for the farmers is the possibility to hunt the kudus when they are damaging their crops, to have the possibility to chase them away and as one farmer mentioned "protect our crops when they are in the most crucial stage". This flexibility has dramatically increased the possibilities for the farmers to protect their crops and while the kudus remain a concern, many stated that they are confident that the management opportunities given by the Conservancy will continue to assist them in dealing with the situation.

One farmer summarized the philosophy of the Conservancy by saying "there's a big difference between managing and shooting". Landowners in fact showed positive attitude toward of wildlife and several of them insisted on the fact that they did not want to hunt all the kudus but only wanted some sort of population management in order to protect their crops. This willingness of the farmers to manage the population of kudus was also evidenced by their behavior.

For example, while it could be expected that the farmers would prefer to shoot bulls (see figure 5 below) as they are the ones that present the most interest in terms of financial gain (notably in the context of trophy hunting), most of the farmers reported interest in shooting young cows, indicating that their interest is in population management and not making a profit out of the hunting of the kudus. The farmers explained that young cows were, in their opinion, the one responsible for the ever-growing population of kudus in the Baviaanskloof and that the removal of a few individuals could help stabilize the population at carrying capacity.



Figure 5: Male kudu (*Tragelaphus strepsiceros*)

In fact, this year the farmers shot less kudus than their quotas would have allowed them. Only one farmer reached his quota and requested an increase as he particularly exposed to damages by the kudus and continues to experience a growing number of kudus on his fields. However, rather than increasing his quota, the farmers of the Conservancy discussed possibilities to transfer part of their quota to this farmer to assist him.

Management of the kudus is the objective of the farmers and not just removal of individuals to protect their crops. In fact, many farmers mentioned that the kudus should not be referred to as problem animals because they are a resource that needs to be managed. Many pointed out that the presence of kudus of their land is an asset for tourism and also expressed their attachment to the Baviaanskloof ecosystem and their willingness to restore and protect the Baviaanskloof. One farmer who has no issues with kudus on his land and did not request a hunting quota explained that the management of the kudu population was also important from a conservation point of view and in order to make space for other species on the decline. Legacy was an important factor and several of the landowners explained that they wanted to build a future for their children in the Baviaanskloof, same as they were given by previous generations.

Another potential impact of the Conservancy on the conflict with the kudus is the possibility to attract funding or pull resources together to buy game fences or develop other mitigation methods. While individually the farmers do not have the financial means to fence in their plots, collectively they have access to more opportunities. Because the Conservancy aims at managing the land in a sustainable way and protecting

the ecosystem of the Baviaanskloof, it has the potential of attracting external investors interested in its goals. Working together as a conservancy also allow the farmers to pull their resources together and decide which land should be fenced as a priority. Several farmers mentioned that they would be in favor of removing the stock fences where possible and close up with game fences the few areas under cultivation. Many believe that the free movement of the animals would be more beneficial for the ecosystem and tourism.

### 3. Impact of the Conservancy on relationships and cooperation

In comparing the data collected during the interviews and various field trips with previous available data on the relationships between the different stakeholders, it would appear that it is still relatively early to say if the Conservancy has impacted relationships between stakeholders. We found however that the Conservancy did assist the landowners in reinforcing their ties and fostered cooperation between them.

#### (i) Relations between landowners

While the landowners constitute a heterogeneous group, it was decided in this research to treat them as a single stakeholder group as they share similar traits when it comes to relationships with the other stakeholders. However, the Conservancy had to deal with the different mindsets and interests of its members and this is still perceived as a challenge by the different stakeholder groups.

The issue surrounding the kudu was identified by all the landowners as the original aim of the Conservancy. It served as a focal point to unite the landowners in the Conservancy. Not all landowners however joined the Conservancy with the aim of managing the kudu population. One landowner and the Tchnuganoo community (a trust composed of individuals interested in sustainable living) joined the conservancy but did not request a hunting quota; and while many farmers mentioned that the issue with the kudus is what brought them together, all of them explained that their prime motivation was collective management of the Baviaanskloof as a whole.

When asked if the Conservancy improved relationships between the different landowners, most of the respondents pointed out that the sense of community was already really strong in the Baviaanskloof Hartland. We could not find any evidence at that stage that the Conservancy helped the landowners in creating stronger ties. However, the Conservancy appears to have brought further cooperation between the landowners in providing them with a platform to discuss their different interests and goals with regard to conservation and sustainability. Several farmers mentioned that although they have the farmer's union to meet and discuss issues, there is usually no place on the agenda for discussion about sustainability or conservation. Additionally, the farmer's union excludes the landowners who are not currently farming and thus does not allow for collective management of the Baviaanskloof.

Several farmers were of the view that the Conservancy only provided a legal framework to conservation activities in which they were already engaged for 10-15 years and cooperation between farmers was not something new in the Baviaanskloof. However, farmers more directed toward tourism and conservation activities felt that the Conservancy provided more opportunities for cooperation and would allow the farmers

to "inspire each other and learn from each other". Overall, the farmers expressed that the Conservancy was only a start and that it would allow them to address collectively many of the challenges they faced, both financially as well as ecologically.

#### (ii) Relations between stakeholders

The impact of the Conservancy on relationships between stakeholders is mixed. On one side, we found that tensions surrounding the problems with kudus seem to be appeased. On the other side, it is clear that a mistrust and absence of communication continue to characterize the relationships between ECPTA and the landowners.

When asked about their relationships with the landowners, representatives from ECPTA explained that communication remained difficult:

"At this stage, it's like dog fighting, trying to establish territory. We don't want to budge, they don't want to budge."

Representatives from ECPTA were doubtful about the capacity of the landowners to sustainably manage the population of kudus. From their perspective, the Conservancy is a mean for the farmer to shoot kudus to protect their crops and does not constitute an attempt of the landowners to sustainably manage the population of kudus or engage in conservation activities. One representative in particular perceived the Conservancy and the quota system only a mean to obtain compensation for damages. His position can be summed up by the following comment: "the kudus are ruining his soya business but his soya is taking care of his kudu business". It is worth noting that both ECPTA representatives seemed to have limited knowledge about the conflict. This can be explained by the fact that one was a regional officer and the second a local officer who had only recently be assigned to the post. However, the lack of knowledge also evidenced the limited exchange between the landowners and ECPTA.

From the side of the landowners, opinions toward ECPTA remain negative and there is little willingness to cooperate with them. Most of the landowners reported that the relationships with ECPTA had not changed and described them as "ups and downs" or a "roller-coaster ride". The majority of landowners did not express a desire for the situation to change as evidenced by the following quotes:

"I don't want to have anything to do with them (...) They are a government institution that does not fit with the private sector. I think that's the problem."

"Government people, you never see. There's no relationship there. There wasn't one and I don't think there will ever be."

Only 3 respondents said they believed that the Conservancy would in time help improve the relationships with ECPTA but that at the present time there remained not relationships. One farmer explained that the Conservancy would give legitimacy to the landowners and help them communicate their view with ECPTA ("If you are unorganized nobody will believe you (...) if there's some rules in place, which are acceptable to them, they won't see the farmers as this specie that is doing a lot of damage to the environment").

With regard to the DEA, several farmers mentioned that stronger ties had been developed as a result of the Conservancy and that they communicated more often than in previous times. Relationships with the local representative in particular seemed to have been strengthened with landowners indicating that although they knew the representative in the past, they had not worked together before. Only one landowner indicated having a negative image of the DEA referring to them as "useless government people".

The representatives from the DEA believed that the Conservancy had not yet improved the relationships between ECPTA and the landowners but thought that in time the Conservancy could assist the two groups in understanding each other.

Both the DEA and ECPTA reported good working relations between them although one representative from ECPTA mentioned that he struggled at time to understand the position of ECPTA toward the landowners of the Baviaanskloof.

The state of relationships between the different stakeholder groups was summarized in the following actor-linkage matrix.

	Landowners	ECPTA	DEA
Landowners	Strong ties - Cooperation	No to weak ties - Conflicts	Weak to medium ties - Cooperation
ECPTA			Medium ties - Cooperation
DEA			

Figure 6: Actor-linkage matrix showing the relationships between the different stakeholders (the blue highlights the changes brought by the Conservancy)

## Chapter 5 - Discussion

While the focus of the research was on the potential of the Conservancy to improve relationships between the local population and conservation authorities and to foster cooperation for the development of conflict mitigation strategies, we found that it was mostly too early to draw conclusions.

Stronger ties between the DEA and the landowners were formed as the result of the Conservancy, but not between ECPTA and the landowners, which was specifically the relationship under scrutiny for this research. At this stage, there appears to be no willingness or strong commitment from either the landowners or ECPTA to work together on the development of human-wildlife strategies. There remains potential for the improvement of relationships between ECPTA and the landowners, but such is not likely to intervene before several years in the view of the history of distrust that has characterized their relations. Further analysis in a few years time is necessary to complete the study.

We have however reservations on the potential of the Conservancy to durably influence relationships between the stakeholders. In fact, while a consensus was reached between stakeholders regarding hunting quotas, it is clear that Living Lands was instrumental in reaching that consensus and facilitating communication between the different stakeholder groups. At the present time, the landowners strongly rely on Living Lands to manage the Conservancy and negotiate with the DEA and ECPTA on their behalf. Many of the respondents referred to Living Lands when questioned for the purpose of the snowball sampling method. It is also Living Lands who undertook the road census to collect the data later used to negotiate the quotas. Living Lands has been involved in the Baviaanskloof since 2007 but should funding stop and Living Lands withdraw from the Baviaanskloof, there is no certainty that the landowners would have the capacity to continue to manage the Conservancy. A chairman has been designed for the Conservancy and Living Lands is slowly attempting to transfer the management to the landowners. However, the process will be difficult as members of the Conservancy are usually occupied with their own activities and lack the time to deal with matters of the Conservancy. Unless the Conservancy can attract external funding, it is also feared that the landowners will not have the financial means to continue to collect data on the kudu population.

It is also unclear what will happen to relationships if Living Lands would stop intervening as an intermediary between the different stakeholder groups. In a way, Living Lands has been acting as a mediator and it is difficult to assess if a consensus was reached because of the Conservancy or because of Living Lands as the two can hardly be dissociated at the present time.

Rather than improving relationships, we found that the Conservancy had the most impact on the human-wildlife conflict by restoring control to the landowners on the situation and giving them a sense of ownership. It is clear that the flexibility given by the Conservancy made them feel less vulnerable and improved the farmer's tolerance for the kudus. While before the Conservancy, the conflict surrounding the kudus was experienced by the farmers as something they had to go through without having much control over the situation, the Conservancy gave them tools to address the issue and



find a solution to their challenges. The fact that potential solutions originate from the Conservancy and are then approved by the DEA and not imposed on the farmers by the DEA or ECPTA led to more acceptance of the conflict by the landowners. Landowners are now more likely to support the management plan for the kudu population because they designed it and take up an active role in its implementation.

The flexibility of conservancies and the absence of necessary partnership with ECPTA also explain the success of the Conservancy when compared with stewardship agreements. Only one respondent had a stewardship with ECPTA and he explained that he entered the agreement because ECPTA is his direct neighbour and thus he needed to establish good relationships with them. Other landowners, including landowners eager for the development of conservation activities on their land, explained that discussions were initiated by ECPTA but that they did not follow up. They now indicated that they would prefer to follow the path of the Conservancy rather than engage into a stewardship agreement. Respondents often justified that decision by an unwillingness to enter a partnership with ECPTA and the belief that ECPTA could not provide them with any benefits. Conservancies thus appear to be an alternative for buffer zones when the establishment of stewardship agreements is not feasible due to lack of trust between stakeholders.

The Conservancy also resulted in the construction of social capital amongst the landowners who cooperate and exchange more than prior to the establishment of the Conservancy. While the Conservancy might not have brought the farmers together on a personal level (the sense of community being already very strong within the Baviaanskloof), it did brought the farmers together in terms of establishing and reaching common objectives. The Conservancy is already moving beyond the management of the kudu population toward the establishment of a common waste management plan for the Baviaanskloof Hartland. Control of domestic animal and land rehabilitation are also within the projects of the Conservancy.

The Conservancy has improved the adaptive capacity of the landowners as they put together their assets and decided on priority for actions. Farmers are in the difficult situation in which they need to adapt their activities to shifting economic and ecological circumstances. This is particularly evidenced by the problem the farmers faced with the lucerne. The farmers removed their livestock from the hill slopes to prevent further over-grazing and allow restoration of the land. The removal of the livestock from the hill slopes was an attempt from the farmers to reduce human-wildlife conflict with the leopard and protect the ecosystem and thus the habitat of wild species. This however meant that the cultivation of lucerne had to be intensified to feed the animals, which in turn attracted the kudus and led to a conflict with the kudus. As a Conservancy, the landowners are now more able to identify potential changes and decide on the appropriate course of action.

At the moment it is clear that the majority is deciding on the trajectory of the Conservancy and although other voices are rising, the priority has been given to the management of the kudu population. While this might be the priority for many landowners and the issue that brought the landowners together, for some, especially the non-farmers, interest in the Conservancy lies elsewhere. This is evidenced by the fact that two members of the Conservancy decided to not ask for a hunting quota on their

farm, clearly showing their divergence. The capacity of the Conservancy to effectively tackle other challenges and address the concerns of all landowners will be decisive of the Conservancy's future.

At present, a majority of landowners in the Baviaanskloof have joined the Conservancy but a few remain outside of the Conservancy. We were not able to conduct interviews with non-members of the Conservancy to gather data on their reasons not to join, however, their absence somehow threatens the capacity of the Conservancy to manage the Baviaanskloof Hartland as a whole. The Conservancy's capacity to bring every landowner on board is essential to its success. Similarly, we found that several landowners member of the Conservancy remained in marge of discussions because of their difference with other landowners. This was for example the case of the Sewefontain community even though the farming community is affected by the conflict with the kodus.

The involvement of the Sewefontain community remains at this point a challenge. Despite several attempts to obtain an interview with the current spokesman of the community, the interview could never be conducted. The spokesman was also no present at the meetings organized between the members of the Conservancy. On our last visit to the Baviaanskloof, we were informed that the spokesman had suddenly left the Baviaanskloof and could not be located by his family (alcoholism was given as a reason for departure). As a result, it is likely that the Sewefontain community will remain marginal to discussions although the community is directly concerned by the management of the Baviaanskloof and the population of kodus.

The representation of the community within the Conservancy is in fact an issue as the community does not appear to have somebody that could represent the interest of the community as a whole. It would appear that before Sewefontain can fully participate to the conservancy and have their voice heard, they would first need to get themselves organized. The representation of groups and the reliability of spokesperson to represent the views of the whole group is a recurring issue in participatory approach. Cultural differences might also be affecting the community willingness to participate to the Conservancy as the other members of the conservancy are predominantly white farmers who have shared strong ties for decades.

The Conservancy success in fostering cooperation between its members is thus tainted by its inability to involve its most marginalized members. This is something that the members will have to address if they hope to manage the Baviaanskloof as a whole.

Finally, the Conservancy presents limitations in the sense that in its current conceptualization it only allows for the involvement of landowners. While non-landowners were not included the stakeholder analysis as they are not primarily relevant for the objective of the research, they are relevant to the overall management of the Baviaanskloof. Inclusion of the remainder of the community of the Baviaanskloof Hartland appears however difficult and it is unclear how they could participate to the Conservancy. Nevertheless, such individuals have a stake in the management of the Baviaanskloof and it should be reflected on ways to include them in the discussions.

### **Conclusion**

Human-wildlife conflict remains an important challenge to both human development and the protection of wildlife worldwide and there is an urgent need for the development of successful mitigation strategies in order to reduce damages to human livelihoods as well as limit threats to wild species.

Since the 1990s, the focus has been on the involvement of the local population in the development of human-wildlife conflict mitigation strategies. This was the result of an evolution in system thinking, from ecosystems to socio-ecological system. The approach was expected to improve cooperation between the different actors usually involved in human-wildlife conflict and lead to the development of successful mitigation strategies. By allowing wildlife utilization and restoring control to the local population it was also hoped that local perception of wildlife would increase and that the vulnerability of the local population to wildlife would be lessened. The success of documented initiatives remained however limited and further research is necessary to clearly identify the factors leading to successful involvement of the local population.

The objective of this research has been to link theory with practice through the review of a case study: the establishment of a private conservancy in the Baviaanskloof, South Africa. Private conservancy are conceptualized as mean for landowners to sustainably manage the resources on their land with the aim of protecting the ecosystem without necessarily changing the current land-use. In the Baviaanskloof, the farmers saw in conservancies an opportunity to manage the population of kudu which caused damages to their crops. The research aimed at verifying whether the establishment of the conservancy resulted in the development of successful mitigation strategies. In particular, the research investigated whether the establishment of the Conservancy could improve communication between the different stakeholders and foster cooperation.

We reviewed the context of the conflict and the evolution of relationships through the use of a stakeholder analysis. Qualitative interviews were undertaken with several representatives from the three main stakeholder groups: the private landowners, the Department of Environmental Affairs and Eastern Cape Parks Tourism Agency. The data collected was compared to available historical data to establish if an evolution of the conflict and relationships had occurred.

The research found that the establishment of the Conservancy had contributed to conflict mitigation in the Baviaanskloof with regard to the situation involving the kudus. Data collected showed that the Conservancy had fostered cooperation between the different landowners and improved relationships between landowners and the Department of Environmental Affairs as well as led to more cooperation between these two stakeholder groups. However, data indicated that relationships between the landowners and Eastern Cape Parks Tourism Agency had yet to improve although it could not rule out the possibility that it would improve in the future.

While improved communication was influential in mitigating human-wildlife conflict in the Baviaanskloof, we argue that it is the restoration of some kind of control to the local population via the establishment of the Conservancy that made a significant difference. The restoration of control in turned helped with improving communication and increase wildlife tolerance amongst private landowners.

However, the lack of evidence of cooperation and communication between the landowners and ECPTA indicate that the success of the Conservancy is fragile and that expansion of the approach to more complex conflicts (such as the one involving carnivores) will be difficult.

While the research like many studies in human-wildlife conflict is strongly tied to its context, it presents nevertheless an interest for conflicts of a similar setting. In conflicts in which stakeholders are willing to flexible and potential common grounds have been identified the approach could be beneficial even in cases of tense relationships. We contend that it is not the state of relationships but rather the issue addressed that will influence the success of the initiative. Eventually, the resolution of lesser conflicts could open the door to more discussion for the resolution of more complex conflicts.

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## **Appendix A - Questionnaire for landowners**

### Personal knowledge and experience with regard to the conflict:

1. Have you personally experienced losses from kudu? (crops, fences, restoration activities...)

- What kind of crops did the kudu damage?
- What percentage of your harvest did it represent? (minimum, maximum, average)
- How often would you say it occurs?
- When would you say the problem started?
- Would you say that over the years the frequency has increased, declined or remained the same?

2. Do you know of other people in the Baviaanskloof that experienced problems with the kudus? Do you know, what problems did they experience?

3. What are in your opinion the factors contributing to the problem?

- Competition over resources?
- Expansion of farming?
- The presence of the Baviaanskloof Mega-Reserve?
- Increase in kudu population? etc.

### Mitigation strategies

4. What has been done in the past to try to solve the problem? By whom?

5. Do you think that the current strategies and measures taken are efficiently dealing with the situation?

- If not, why do you think that is and what do you think should be done?

6. Who do you think should be responsible for dealing with the situation?

7. How would you describe your relationship with the other landowners?

8. How would you describe your relationship with ECPTA?

9. How would you describe your relationship with the DEA?

10. Do you have any land that is currently under a stewardship agreement?

- What was your motivation for entering (not entering) a stewardship agreement?
- Is it something you are considering for the future?

### The Baviaanskloof Harland Conservancy

10. What was your motivation to join the Conservancy?

11. What has been your experience so far?

12. What was the original aim of the Conservancy?

- Do you think that aim will evolve in the future?
- What are your personal expectations for the Conservancy?

13. Do you think that the establishment of the conservancy has been beneficial for the area so far? Why and how?

14. Do you think it had an impact on the situation with the kudus?

15. Do you think it had an impact on the relationships between the landowners?

16. Do you think it had an impact on the relationships between the landowners and ECPTA?

17. Do you think it had an impact on the relationships between the landowners and the DEA?

18. What would you say are the successes so far of the Conservancy and what are the biggest challenges ahead?

#### Concluding questions

19. Is there anything we did not discuss that you think is important or you would like to share with me?

20. Is there anybody you think I should speak to that might be affected or involved in any way with the situation surrounding the kudus or the conservancy?

## **Appendix B - Questionnaire for DEA & ECPTA representatives**

### Preliminary questions

1. Can you explain me in what consist your work and what are your responsibilities?

- Since how long have been in that post?

2. What is your professional involvement in the Baviaanskloof? What the matters you usually deal with?

### Personal knowledge and experience with regard to the conflict:

3. Could you explain to me what is the situation in the Baviaanskloof with regard to the kudus and the landowners?

- Do you know if the kudus cause damages? Do you know what kind of damages they cause? (crops, fences, restorations activities...)

- Do you know what percentage of the farmers' harvest does it represent? (minimum, maximum, average)

- How often do you think the farmers experience that kind of issue?

- Do you know if it is a problem that they have always faced?

- Do you know if over the years the frequency has increased, declined or remained the same?

4. What are in your opinion the factors contributing to the problem?

- Competition over resources?

- Expansion of farming?

- The presence of the Baviaanskloof Mega-Reserve?

- Increase in kudu population? etc.

5. Is the population of kudu in the Baviaanskloof an ecological concern?

### Mitigation strategies

6. What has been done in the past to try to solve the problem? By whom?

7. Do you think that the current strategies and measures taken are efficiently dealing with the situation?

- If not, why do you think that is and what do you think should be done?

8. Who do you think should be responsible for dealing with the situation?

9. How would you describe your relationship with the landowners of the Baviaanskloof?

- How often do you normally interact with them? On which occasions and about which issues do you usually communicate?

10. How would you describe your relationship with ECPTA / the DEA?

- How often do you normally interact with them? On which occasions and about which issues do you usually communicate?

#### The Baviaanskloof Harland Conservancy

11. Why do you think the farmers decided to set up the Conservancy? What was their original aim?

- Do you think that aim will evolve in the future?
- What are your personal expectations for the Conservancy, if any?

12. Have you been involved in the establishment of the Conservancy?

- If yes, what has been your experience so far?

13. Do you think that the establishment of the conservancy has been beneficial for the area so far? Why and how?

14. Do you think it had an impact on the situation with the kudus?

15. Do you think it had an impact on the relationships between the landowners?

16. Do you think it had an impact on the relationships between the landowners and ECPTA?

17. Do you think it had an impact on the relationships between the landowners and the DEA?

18. Do you think it had an impact on the relationships between ECPTA and the DEA?

19. What would you say are the successes so far of the Conservancy and what are the biggest challenges ahead?

20. How do Stewardships agreement fit in with regard to the Conservancy? What can be their role in the Baviaanskloof?

#### Concluding questions

19. Is there anything we did not discuss that you think is important or you would like to share with me?

20. Is there anybody you think I should speak to that might be affected or involved in any way with the situation surrounding the kudus or the conservancy?