An analysis of human-wildlife conflict mitigation strategies: A case of Chikandakubi community in Hwange district

By

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APPROVAL FORM

Undersigned certify that they have read and recommended to the Bindura University of Science Education for acceptance as a dissertation entitled, 'An analysis of human-wildlife conflict mitigation strategies: A case of Chikandakubi community in Hwange district'.

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DECLARATION

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I, Nqobile Sibanda, declare that 'An analysis of human-wildlife conflict mitigation strategies: A case of Chikandakubi community in Hwange district' is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete reference.

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ABSTRACT

The study analysed human-wildlife conflict mitigation strategies in Chikandakubi community in Hwange district, Matabeleland North, Zimbabwe. It focused on the nature of the conflict, the strategies being used by the community and the role played by wildlife management organisations. Convenient sampling was used to select 85 respondents, 47 males and 38 females who completed a self-completed pre-coded questionnaire soliciting for information ranging from the social characteristics of the respondents, the nature of the conflict and the strategies they were using to reduce the impact of the conflict. Participants were drawn from the two villages that make up Chikandakubi community which are Mitimitema and Batanani. A total of 12 key informants were also selected to participate in this study. Results indicated that the community was making use of protective strategies. The protective strategies include construction of animal enclosures very close to the home fence, construction of high animal enclosures, setting up of fire in the enclosures at night, hanging white sacks around the animal enclosure, standing guard in the enclosure when predators are doing rounds, guarding the fields in the evenings, setting up fire in the fields in the evening, making noise, requesting for assistance from wildlife management organisations among other strategies. There were no preventive strategies in place. Wildlife management organisations were also playing pivotal roles in the mitigation processes. It was noted that the organisations were also making use of protective strategies to help the community. The strategies they brought in include Problem Animal Control, establishment of community guardians, disease control and educating the community. Three organisations were behind the implementation of these programs and these were VFWT, HRDC CAMPFIRE and ZimParks. The findings showed that the education program put in place were not as frequent as they should possibly be as there was a high number of respondents who stated that they had never been taught how to deal with wild animals. It is recommended that the frequency of the education program be improved. Moreover, reliance on protective strategies was identified as one of the reasons why the impact of the conflict was severe in the community, thus some preventive strategies like the construction of physical barriers were recommended. It was also noted that most of the members of the community were making use of strategies that can be considered traditional. Several recommendations were put forward and these included improving the frequency of the community education program and putting in place of long term strategies among others.
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DEDICATION

To my daughter, Sitholubuhle Sibanda, may this work be a source of encouragement to you in future.
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LIST OF ACRONYMS

1. HRDC – Hwange Rural District Council
2. CAMPFIRE – Communal Area Management Program for Indigenous Resources
3. VFWT – Victoria Falls Wildlife Trust
4. FAO – Food and Agriculture Organisation
5. HWC – Human Wildlife Conflict
6. ZIMPARKS – Zimbabwe Parks and Wildlife Management Authority
7. PAC – Problem Anima Control
CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1. Introduction

This research aims to analyse the strategies put in place to reduce the impact of human-wildlife conflict in Chikandakubi community. As an introduction this chapter gives the background of the study, the statement of the problem, objectives and research questions, the significance or justification of the study, description of the study area, limitations, definition of terms, the structure of the thesis and the chapter summary.

1.2. Background to the study

Human-wildlife conflict is one of the challenges faced by rural communities located not so far from protected wildlife areas. The vicinity of these rural communities to areas occupied by large populations of wild animals leads to overlapping of territories. That is, human activities and the animal territory may end up overlapping, sharing the same pieces of land and other resources leading to some form of conflict. This study will therefore seek to prove whether the human wildlife conflict being experienced in Chikandakubi is being driven by this factor.

The conflict appears to affect many communities in Zimbabwe that are located close to National parks. CAMPFIRE (2006) notes that most wildlife producing areas are those that are located near the margins of the country and most of them are close to state protected wildlife areas. Chikandakubi community which is located close to Hwange and Victoria Falls national parks is not an exception. Controlling the movement of wild animals seems to be presenting a big challenge to the community and wildlife management authorities. These animals easily move out of the national park areas and find their way to the vicinity of the community, presenting a threat to people and their assets.

The interaction between wild animals and the people of Chikandakubi community has produces a series of unpleasant negative outcomes despite efforts by the relevant stakeholders and the community itself to try and reduce the impact of the conflict. This situation leaves one wondering if the strategies being used are effective and relevant to the conflict situation. The animal populations are negatively affected by humans mainly through poaching and destruction of
habitats while people suffer setbacks in their livelihoods in the form of losing livestock and crops to wild animals. People’s lives are also threatened by this interaction.

Some wild animals destroy people’s crops during the cropping season, affecting their outputs from crop production. Elephants are known to have this effect once they stray towards crop fields in the community. Elephants appear to be difficult to control at community level. The community appears to depend mainly on the traditional method of beating drums and empty tins to try and scare them away. This method appears to be effective while the elephants are still outside the crop field. However, once they start eating the crops they do not easily give in to the noise. This therefore calls for collective efforts in controlling them as they can only be scared away by more radical means like gun shots once they get into crop fields. In this regard, one is left pondering if there is satisfactory intervention from wild life management stakeholders to help the community effectively retard elephants and help reduce the amount of crops destroyed.

According to WWF (2017), communal farmers who are often poor and economically and nutritionally vulnerable can lose their entire livelihood overnight from elephant raids. It is quite clear to this researcher from a general observation that Chikandakubi community is exposed to this kind of a risk as elephants usually wreak havoc in crop fields during the cropping season. Thus this researcher feels there is a need to analyse the strategies that are being used to retard these elephants. Elephants eat up to 450 kilograms of food per day. They also uproot and scatter as much as is eaten. Thus a single elephant can destroy a hectare of crops in a short space of time (Ndungu 2017). This implies that there has to be some stern measures in place to ensure that this problem is averted.

CAMPFIRE (2006) states that there has been a rapid increase in the population of elephants in Hwange. This is further substantiated by Agere (2015) who states that in Binga, Hwange and Tsholotsho districts, cases of human-wildlife conflict are growing as the elephant population continues to grow rapidly. He also states that the elephant population of the country stands at 83 000, a figure which is almost double the country’s carrying capacity of 45 000. These elephants are responsible for up to seventy-five percent of all wildlife related crop damage in communal areas. Crop damage is seen to be high during the wet season when most commonly grown subsistence crops which include maize, millet and sorghum are mature. In light of these rapid increases in elephant populations in the country, Chikandakubi appears to be suffering the effects
of these trends. The increases in populations of these elephants imply that the community and wildlife management stakeholders have to up their conflict mitigation strategies. However, the aspect of improving mitigation strategies with rising populations is questionable in this community.

Chief Shana in Moyana (2014), whose area of jurisdiction covers Chikandakubi community gives a hint as to the severity of the conflict, he states that there is little people are getting from harvest every year as a result of the human wildlife conflict. He also shows dissatisfaction over the contribution from Zimbabwe Parks and Wildlife Management Authority as he states that they have on countless times sought help from the authority to help by chasing away the elephants and the authority usually takes long to respond. It appears very little help comes from the authority and in cases where they respond, they get to the scene after a long time when elephants have destroyed a large section of the field.

The sharing of territories between people and wild animals also means that there begin to be some meeting points between wild and domestic animals. Forests, pastures and water sources present a platform where wild and domestic animals meet. Once some common ground is shared between domestic animals and predators, predation becomes the order of the day. Lions and hyenas appear to top the list of predators that prey on domestic animals in this community. Moyana (2014), reports that stray lions are responsible for the dwindling number of cattle in some rural communities. This also has a negative effect on crop production. Communal farmers usually rely on draught power and if their cattle are killed, they have no alternative sources of energy to support crop production.

It is not only the meeting points that expose domestic animals to wildlife attacks. In Chikandakubi community, predators sometimes encroach into the settlement at night, hunting down domestic animals to an extent of jumping into kraals, killing and preying on domestic animals. It is quit appealing to gain a deeper understanding of the methods being used by the community to fight off predators. It is an easy guess that dealing with predators in a conflict situation is a delicate process, thus one would expect wild life management stakeholders to come to the rescue of the community. From the look of things, the domestic animal-predator conflict is ever green in this community. One is left to mull over the community devised strategies as well as the involvement of other stakeholders in reducing the impact of this conflict.
Other wild animals may not present physical harm to domestic animals but are a potential threat to their health. Buffalos are some of the wild animals that do not present a physical harm to domestic animals. They may interact well with cattle for example in the grazing lands but are a potential source of diseases. Foot and mouth and anthrax are some of the diseases that are likely to be transmitted from buffalos to cattle. This research therefore seeks to understand the measures being taken by wildlife management stakeholders in ensuring that domestic animals are safe from infections emanating from wild animals and to gain an insight on the actions taken in the event that domestic animals are infected.

Besides the fact that people’s livelihoods are affected by these animals by means of crop destruction and killing of livestock, people’s lives are also at risk. Lions and elephants are known to attack people in areas affected by this form of conflict. While there have been no reports of human fatalities resulting from wildlife attacks in this community in the recent past, the lives of people are always at risk. Some measures they could be putting in place to try and retard wild animals from austerely affecting their assets could be increasing their vulnerability to wildlife attacks. These measures could also be working against the ultimate objective of getting rid of the conflict or at least reduce the impact of the conflict without fatalities on both animals and the people (Ndungu 2017). This study there sought to measure bring out some of the negative practices being used.

In light of the above discussed observations, it is crucial to dig deeper into understanding the different measures that the community makes use of as well as measures brought in by other wildlife management stakeholders. It is worthwhile for future researches to focus on the perceptions of people regarding their relationships with wild animals as well as the cervices they are getting from the Parks and Wildlife Management Authority and other stakeholders.

1.3. Statement of the problem

As Distefano (2005) puts it, case studies from countries all over the world demonstrate the severity of the human-wildlife conflict and suggest that greater in depth analysis of the conflict is needed in order to avoid overlooking the problem. Down its history lines, the community of Chikandakubi has always been rocked by the human-wildlife conflict. Households lose livestock to lions and hyenas and their crops are devastated by elephants each and every year. Thus people's safety and that of their assets is always hanging in a balance. From the look of things, getting rid of the conflict
is somewhat a big challenge but some measures could be employed to reduce its impact. From a general observation, the impact is still severe despite measures that have been taken to ensure that it is reduced to the lowest levels possible. This research therefore seeks to identify the strategies that are in place and measure their effectiveness in reducing the impact of the conflict on people and their activities since the problem persists despite the measures.

1.4. Aim of the study

The study aims at analysing the human – wildlife conflict in Chikandakubi community.

1.4.1. Research objectives

The objectives of the study are as follows:

- To examine the nature of the human-wildlife conflict in Chikandakubi community.
- To examine the strategies devised by the local people in lowering the effects of terrorising wild animals.
- To identify the role of organisations in addressing the conflict situation.

1.4.2. Research questions

1. What is the nature of the human-wildlife conflict in Chikandakubi community?
2. What are the community devised strategies to reduce the impact of the conflict?
3. What role do organisations play in reducing the impact of the conflict?

1.5. Justification

While different scholars have documented a lot of information about the human-wildlife conflict, no research work has been read by this researcher focuses on the impact of the conflict on people and their activities in Chikandakubi community. Moreover, no documented literature read by this researcher discusses the strategies put in place by the National Parks and Wildlife Authority, non-governmental organisations and the local people in reducing the conflict in Chikandakubi community.

There are a number of ways through which different communities approach the human and wildlife conflict in Zimbabwe as indeed in Africa. Some of the strategies could be working against the
ultimate objective of getting rid of the conflict or at least reduce its impact in a sustainable manner. This study will therefore scrutinise the community devised strategies and expose the strategies that are not recommended. This will ultimately help in fighting the conflict using environmentally friendly and recommended for use strategies.

The study will also help in bringing to light the nature of the relationship between the different wildlife management stakeholders, for example the bond between National Parks and Wildlife Management Authority and the community. This will inform the authorities of the grey areas in their community engagement strategies and programs.

Moreover, the drivers of the conflict and the community levels of vulnerability will be determined. This will help both the involved organisations and the local people with some knowledge of areas to focus on if the conflict is to be strategically dealt with. Strategies that expose people to risk of attacks by wild animals will be identified. Thus the study will inform the community of measures to avoid when trying to deal with the conflict.

1.6. Limitations

The study faced some limitation in achieving its objectives. Acquiring the much needed information from the wildlife authority was challenging. This could be so because the officials may not want to expose the weaknesses of the organisation in dealing with the conflict. Thus the researcher faced a situation where some valuable information was being hidden by the officials. This was address by the use of probing questions to ensure every necessary detail was acquired.

In the same vain, members of the community could possibly hide some sensitive information from the researcher. Some practices that are against the law could go unnoticed by the researcher as the interviewees may hide it with the view of protecting community secrets. In light of the above mentioned limitations, this researcher ensured that the respondents understood the purpose for carrying out the study, trust was built between the researcher and the respondents through making clear the purpose of the study. Thus the respondents became free to communicate responses with assurance that their identity will not be revealed to anyone and their ideas will not be used against them in anyway.

Some members of the community may refuse to participate as they may not fully understand the intentions of the researcher. Some may view the activity as a way of exposing the dirty deals that
could be taking place, for example poaching. The researcher will therefore ensure that trust is built with the respondent so that they become free to communicate the information with a guarantee that it will be treated with high levels of confidentiality.

1.7. Definition of terms

1.7.1 Reduce
This is to bring down in size, value or intensity of something. In this study, this term is mostly used to refer to bringing down or to lower the intensity of the human-wildlife conflict.

1.7.2 Impact
An impact can be defined as an influence or effect of something. It is used in this study to refer to the effects of the human-wildlife conflict.

1.7.3 Conflict
A conflict is an expressed struggle between at least two interdependent parties who perceive incompatible goals, scarce resources, and interference from the other party in achieving their goals. The term is used in this study to refer to the struggle between Chikandakubi community members and wildlife.

1.7.4 Human-wildlife conflict
The phrase, human-wildlife conflict is used to refer to any interaction between humans and wildlife that results in negative impacts on human social, economic or cultural life, on the conservation of wildlife populations, or on the environment (McCarthy 2015).

1.8. Thesis structure
This study is made up of a total of five chapters, this one included. This chapter gives the rationale to the study. It presents scenarios from the study area that motivated this researcher to focus on this topic. Justification of the motive behind the researcher’s bias towards the impact of the conflict on people and their activities is also given in this chapter under the background of the study sub topic. Objectives of the study as well as questions that the study seeks to answer are also a common feature of this chapter.
The second chapter involves the review of literature. In this regard, published information about the human wildlife conflict is discussed. Literature on the different forms that the conflict can take, the factors that fuel the conflict and measures that can be used to reduce the impact of the conflict will be discussed. Literature from a Zimbabwean context will be given top priority as they may address situations that are almost similar to the conflict situation in Chikandakubi community. However, perspectives from other countries will also be looked into as a way of identifying lessons that may be helpful in fighting the conflict at a local scale.

A discussion on the data collection techniques used in the study is given in chapter three. In terms of this chapter, an outline of the data collection instrument is given, reference is made to the documented literature to give a clear picture of what the chosen instruments are all about as well as the types of data they are best recommended for. Ways of best utilizing these instruments are also discussed in this chapter. It also features the justification of the selected data collection, methods and instruments.

Chapter four features the presentation of the research findings. The nature of the conflict is explored first as a way of presenting notable features of the conflict. This section is followed by a look into the strategies employed by the community at its capacity to try and reduce the impact of the conflict. Thereafter, the study looks at the role played by the Parks and Wildlife Management Authority which is the supreme body responsible for wildlife management in the country. The last item that features in this chapter is a look at the role played by other organisations whose work is inclined towards wildlife management and human wildlife conflict management.

Research findings are discussed in chapter five, which is the last chapter of the study. The discussion is a critical analysis of the strategies used to reduce the impact of the conflict in this community. Recommendations and way forward is also given. Thus this chapter is a conclusion as it sums up what the entire study discuses.

1.9. Chapter summary

This chapter has presented some fundamental information that gives a direction the study takes. The research questions and the objectives presented in this chapter set the limits to the study and serve as the guidelines for the chapters to follow. Thus this chapter gives a solid foundation to the entire study. It makes it clear that the research focuses mainly on the strategies put in place to
reduce the impact of the human wildlife conflict on people and their assets. The benefits that are likely to be gained from this study are also laid out. In this regard, both the community and wildlife management stakeholders stand to benefit from this study. From this chapter, it can be seen that the community is indeed facing a big challenge of human-wildlife conflict which suggests that new and sustainable strategies are needed in order for the problem to be addressed.
CHAPTER TWO
A REVIEW OF LITERATURE ON HUMAN-WILDLIFE CONFLICT

2.1 Introduction.

Human wildlife conflict has several components, this chapter reviews the different components of the conflict. It focuses on the classification of the conflict and the different ways through which humans can be affected by the conflict, the possible causes of the conflict as well as conflict mitigation strategies that have been developed or used elsewhere. Priority is given to conflicts happening in rural environments to make it applicable since this study is based on a rural community situation. Examples will be drawn mainly from the African and local contexts.

2.2. Theoretical framework

IUCN (2005), defines Human-wildlife conflict as a situation where wildlife requirements and interests encroach or overlap to the human requirements or interests, this situation induces some costs on both the human population and the wildlife populations. In the same vain, human-wildlife conflict can be viewed as a human-wildlife interaction that lead to some negative and unpleasant effects on the social, cultural, political and economic life of the affected community or on the conservation of wildlife (Hockings and Humle 2009).

In an effort to bring out some understanding of the word conflict itself, Peterson et al (2010), state that the term conflict appears to be more anthropomorphic. They justify this stance by arguing that the definitions for the term imply that there is some form of deliberateness on the part of the trouble causing animal. Human-wildlife conflict has existed throughout the history of mankind and most communities seem to have developed some strategies to deal with the conflict incidences. Some of the strategies devised however are constrained, as they make use of physical force which sometimes may be counterproductive on both parties (Treves et al 2006). This research therefore seeks to figure out if the strategies being implemented in Chikandakubi community are effective and within the parameters of conservation practices.

Madden (2004), observes that human-wildlife conflict is inspired by diminishing wildlife habitats and the increasing human populations which automatically triggers the expansion of the human territory at the expense of the animal territories. It is worth noting that the situation leads to some
perception of human-wildlife conflict incidents by the local people. Moreover, the ways in which the situations are dealt with are important in the resolution of the conflict to ensure that both parties are not severely affected. In Dickman et al (2011) point of view, human-wildlife conflict emanates from groups of people with differing values, for example, the community affected by the conflict and the authorities responsible for the wildlife protected areas which are sources of wildlife. In this regard, Dickman et al (2011), conclude that the problem is more of human than animal. This suggests that humans are somehow found wanting in most circumstances, hence this researcher’s focus on what the people are doing on the ground as they seek to address the situation. The research also tries to figure out whether the strategies being used by the local people and those brought in by wildlife management stakeholder are complementary and effective.

In order to effectively address the conflict situation, Bowen-Jones (2012) notes that one has to put into consideration that there are many intertwined issues, all under one umbrella term, human-wildlife conflict. These interconnected issues need to be explored independent of each other in order to fully understand all the processes. That is, there is need to have a clear picture of what the problems involved are. This makes it easy to generate possible solutions to the problem at hand. Following this outline, this research seeks to look into the overview of the conflict situation in Chikandakubi in terms of its nature. This is meant to equip the researcher with the happenings on the ground so as to make informed analysis of the strategies being implemented and make recommendation based on the same.

2.3. Typology of Human-wildlife conflict and consequences for humans.

There are different ways through which human wildlife conflict can be classified. These classifications are based mainly on the kind of interaction taking place between the human populations and wild animals. They are thus based on the effects of the interaction. Four classifications which are human death and injury, crop destruction, attacks on domestic animals and transmission of diseases which are the most prevalent forms are discussed below and their effects are also presented (FAO, 2009).

In human wildlife conflict prone areas, humans can suffer injuries and some are killed by the animals they interact with. Several scholars and organizations that are concerned with resolving the conflict point to the fact that crocodiles claim more lives as compared to other animals. In other
areas however, crocodiles are a rare species. Some communities are tormented by carnivores which are responsible for a number of attacks on people. It is also worth noting that some herbivores, for example elephants and hippos, are also involved in human deaths every year, though they rarely attack people. It has been observed that in most of the cases people are attacked by wild animals while they are protecting their crops against raiding animals. This happens usually at night. Animal attacks also result from situations where people accidentally come close to contact with wild animals or in situations where they encounter animals (FAO, 2009).

Among the carnivorous mammals that prey on people, the human-eaters, lions appear to cause more trouble in Africa as compared to other human-eaters. It has however been pointed out that lions occasionally prey on people (Skuja 2002). In Africa, countries like Ethiopia, Mozambique and Tanzania are greatly affected by lion attacks on people (Frank et al 2006). According to FAO (2009), viewed from a global scale lions come third behind tigers and leopards. This conclusion is based on a review of declared cases, of which some human deaths from animal attacks go unnoticed while some are noticed but are not declared. It remains to be identified whether Chikandakubi is facing threats to human life from predators.

Lion attacks on humans may cause very serious injuries and more often lead to the death of the attacked people. Some people are killed and preyed on while some get injured and die from the injuries sustained. Some are lucky to escape with wounds and recover. It has been observed that most animal attacks are fatal. In Uganda for example, FAO (2009), notes that between 1923 and 1994, 74, 9 percent of human attacks by lions were fatal while only 25, 1 percent led to injuries. Parker et al (2005), notes that lion attacks on people are more lethal in women and children as compared to men. Their conclusion is based on a study they carried out in Tanzania were most men than women and children survived lion attacks and they attribute this to men’s bravery and the ability to scare away lions in the event that they come close to contact with them.

According to Packer et al (2006), lion attacks on humans occurs mostly in East and Southern Africa. Tanzania, which is home to the largest lion population has the highest number of people killed by wildlife in Africa. Baldus (2004), estimates the number of people killed by wildlife to be above 200 per year in Tanzania. A third of the deaths are as a result of lion attacks, further substantiating the fact that lions are responsible for most of the attacks by mammalian carnivores.
In Zimbabwe, deaths resulting from wildlife attacks have also been noted. Gogo (2015), reports that 27 people were killed by wild animals in Zimbabwe during the first quarter of the year 2015. During the same period, 15 people are said to have sustained injuries of varying degrees. Of the human-wildlife cases reported, Gogo (2015), notes that 66 cases of lion attacks on people and settlements were reported in a space of three months which is a high figure and a cause for concern.

Another form of human-wildlife conflict is crop damage. This type of conflict is said to be the most prevalent form of human-wildlife conflict throughout the African continent and is one of the contributors to food shortages in a continent whose greater part continuously battle droughts. The frequency and the occurrences of crop destruction by wild animals is highly dependent on many different factors. These factors include the variability, availability and type of food sources available in a given area, the level of human activities in farms, as well as the type and the maturation time of crops being produced in the farms as compared to the natural sources of food. Crop destruction is mainly orchestrated by vertebrates which include birds, rodents, primates, antelopes, buffalos, hippopotamuses, bush pigs and elephants (FAO 2009). In this regard, the study seeks to identify the animals involved in crop destruction in Chikandakubi community.

Parker et al (2007), identify elephants as the biggest threat to African farmers. They state that elephants are very destructive, such that they can destroy a field in a single night raid. Preventing elephants from raiding crops is seen as a big challenge to most peasant farmers and in most cases governments do not offer compensation. While, male or female elephants raid crop fields, FAO (2009), observes that in most cases adult male elephants are the ones that are involved in crop raiding. Female herds are said to prefer to keep away from human settlements. Muruthi (2005), points out that in some parts of Zimbabwe, elephants are responsible for three-quarters of all crop damage caused by wildlife. Raiding of crops takes place mostly during the wet season when crops are ripe. Elephants can also break into storage bins during the dry season and steal grain. It would be logical, basing on the negative effects that elephants inflict on people, to classify them as one of the biggest threats to food security in Africa, mostly in areas located close to protected wildlife areas.

The killing of domestic animals by predators is another form of the human-wildlife conflict and is one of the adverse effects of the conflict in rural communities infested by wildlife. It has been
observed that the number and type of domestic animals killed by wild animals varies according to
the species, the time of the year, as well as the availability of natural prey. Attacks on domestic
animals by predators is said to be more prevalent in the savannah and grasslands. This is mainly
because pastoralism is the main source of livelihood for many people. The killing of domestic
animals present hardly significant losses at national level but they can be catastrophic for the
individual owner as one can lose the entire stoke to wild animals. Thus for a small-scale animal
producer, losses to wild animals can mean the difference between economic independence and
dire poverty (FAO 2010).

Lions have been identified as the culprits behind most of domestic animal killings in Africa.
Petterson et al (2004), in their analysis of wildlife attacks on domestic animals in Kenya discovered
that lions were responsible for 86 percent of the attacks while the rest were as a result of hyenas
and cheaters attacks. Wildlife attacks on livestock may lead to great economic losses to the affected
communities. Moreover, most communal farmers rely on draught power for crop production. Thus
this form of conflict can lead to severe food shortages if stern measures are not put in place to
reduce its impact.

Domestic animals and humans can be affected by diseases emanating from wild animals. There
are some serious diseases that are known to be transmitted from wildlife to domestic livestock and
possibly to humans. Rabies, foot and mouth, bovine tuberculosis and anthrax are some of the
diseases with a possibility of affecting both animals and the people (FAO 2009).

The African buffalo was identified as playing a key role as maintenance hosts of foot and mouth
disease. This effect was identified way back in the 1960s and today buffalos continue to maintain
and transmit foot and mouth. CIRAD (2012), states that African buffalos are reservoirs of diseases
that can be transmitted to livestock. These diseases include foot and mouth and thederia. Some
diseases that emanate from buffalos that can be transmitted to livestock and men are bovine
tuberculosis and brucellosis. Areas in the fringes of protected wildlife areas have been identified
as the ones making it possible for wildlife-domestic animal interface to take place. It is during this
interface that diseases are transmitted from wildlife to domestic animals. This interaction is said
to be high during the dry season in southern Africa when there is free movement of livestock.
These diseases have a potential to dwindle livestock populations for small holder farmers and affect people’s health (Murithi 2005).

2.4. Factors that promote human-wildlife conflict.

There are a number of factors that can lead to or perpetuate human wildlife conflict. It has been observed that the population of people has been and continues to increase rapidly in sub-Saharan Africa. According to UNEP (2002), the region has contributed immensely to the world demographic growth since 1990. This region accounted for 7 percent of the world’s population in 1950. In 2000 the contribution had increased to 11 percent and is expected to reach 14.5 percent by 2030. The increase in the population comes with a demand for development. FAO (2009), notes that development cannot be ignored in such situations as this would mean progressive impoverishment.

FAO (2009), further states that population growth has seen a demand for space. This is so because most of the people still rely on primary production for survival. People continue to occupy new space for construction of homes and for agricultural purposes. This trend puts pressure on the natural resources as people begin to invade every available landscape. This has negative effects on biodiversity. Areas occupied by wildlife are invaded, habitats are destroyed and the natural food supply base for wild animals is reduced. Thus people end up competing for the little available resources with wild animals, constituting the human-wildlife conflict. This study therefore sought to identify if he human population had anything to do with the propelling of the conflict through expanding territories.

Security risk in the form of political and food security have also been identified as some of the causes of human-wildlife conflict in Africa. FAO (2009), notes that alternating stability and instability presents a serious challenge to human-wildlife conflict mitigation attempts. Political instability usually hinders good governance. Thus stakeholders involved in wildlife management may become disorganised.

FAO (2009), identifies war as the biggest challenge with respect to political instability. It leads to the destruction of animal habitats. Proliferation of weapons for the reasons of war may also fuel the poaching of wildlife. If the natural prey for predators is heavily poached, predators may end up resorting to attacking livestock. Large movements of human populations as a result of political
instability is also seen as a root of human wildlife conflict. As people migrate to different places, chances of them interacting with and destroying habitats of wildlife increase.

FAO (2009), further notes that political instability can have some negative outcomes on the human-wildlife conflict situation. For example the funding for the Campfire in Zimbabwe, which is the custodian for wildlife in communal areas, has been seriously depleted as a result of the political crisis the country has been going through. As a result of the failure of such institutions, the affected communities are forced by the situation to take matters into their own hands and resort to the illegal hunting of the troublesome animals. Most often they make use of weapons that are not eco-friendly. Some of these weapons include agricultural pesticides and wire snares. Some of the illegally hunted animals escape with injuries and become a big threat to people they bump into as they are quick to go berserk on them.

Food security, which has also been identified as a contributor to the existence of human-wildlife conflict plays a major role in Africa. Sub-Saharan Africa is always affected by malnutrition (UNEP 2002). Food shortages in this region have encouraged poor populations to turn to wild resources. These wild resources often become over exploited. Moreover, the unstable climate conditions which are most often catastrophic in southern Africa have contributed to the reduction in natural prey for predators, thus increasing livestock losses to wildlife attacks.

According to Muruthi (2005), Drought, civil unrest, natural disasters and war are responsible for disrupting food production and food distribution. The African continent seems to be suffering as a result of these afore mentioned phenomena. One in three people in sub-Saharan Africa are said to be affected by malnutrition. This explains the increase in the number of food aid and emergency in this region (McCarthy, 2015). As a result of these conditions, rural people are forced to migrate from their areas to areas where they can obtain resources. These areas are most often animal territories. This then leads to conflict between people and wildlife as they begin to scramble for the natural resources.

FAO (2009), observes that conflict may result from people’s attitudes and perceptions. Many communities, especially rural communities see wildlife as threats to their safety and food security. This perception is said to be stronger in communities that are located closer to protected wildlife areas. It is in these areas that the presence of wildlife populations thrust upon daily costs on local
communities who are in most cases are dominated by peasant farmers. This situation affects negatively local support and tolerance. As a result, the local people may develop an undesirable disposition towards wildlife, aggravating the conflict and hindering conservation efforts.

Human populations appear to be threatening wildlife habitats. This is mainly through the converting of animal habitats to agricultural and. This situation increases the human-wildlife conflict. The occupation of land previously occupied by wildlife for anthropogenic activities is being influenced by rapid pupation growth in Africa. The increase in the population has meant more demand for space for crop production. Livestock populations have also increased as a result of increased demand. Thus some land has been converted to grazing land for domestic animals. This situation increases the chances of the occurrence of the wild-domestic animal interface and as a result the number of livestock attacked by wildlife increases (FAO, 2010).

It has also been noted that livestock predation takes place mostly during the rainy season (Woodroffe and Frank 2005). According to FAO, (2010), 74, 5 percent of livestock attacks occurred during the rainy season in Benin between 2003 and 2004. This trend has been attributed to the availability of habitats for wildlife closer to the communities. Moreover, it is said that during the rainy season, grass provides good cover for natural prey, which compared to livestock is adapted to the natural ecosystem. Thus it becomes difficult for predators to make a kill in the natural veld. As a result, they end up resorting to domestic animals for food.

2.5. Human-wildlife conflict mitigation strategies.

There are different ways through which Human-wildlife conflict can be managed. Two broad classifications of the mitigation strategies which are preventive and mitigatory strategies are discussed in detail. Prevention strategies can be made use of as a way of avoiding the conflict occurring. In implementing these preventive strategies, action is taken towards addressing the root causes of the conflict. On the other hand, protection strategies are made use of when the chances of the conflict occurring are high or when the conflict has already occurred. They aim at attempting to reduce the impact of the problem.

One of the first and most fundamental strategies, according to FAO (2009), is to raise awareness in the affected community. This can be done at different levels for effectiveness. These levels
include schools, adult education centers and community projects centers. In educating the children and the members of the community, it is important to make use of the traditional leadership structures. Thus, chiefs, headmen and village heads ought to be involved in the initiative so that the chances of the education program being effective are increased. In raising awareness, training activities can also be incorporated. These can be made in such a way that they are inclined towards cascading information on mitigation techniques, on building the capacity of the local people in conflict prevention and resolution, as well as increasing the knowledge and the community’s understanding of human-wildlife conflict.

Moreover, education programs can help the community by giving them some practical skills on how to deal with dangerous wild animals as well as safe measures they can take to defend their crops and livestock. In the long run, awareness programs may result in a change of behavior among the local populations. It may lead to the reduction of risks associated with dealing with wild animals, local livelihoods may also improve and community members’ vulnerability may also be reduced. Education and training may also promote some element of commitment towards natural resource conservation. The community may begin to appreciate the ethical and economic value of natural resources and wildlife in particular. A plot awareness campaign project carried out by in Kenya in 2003 reduced crop losses by over 70 percent around Kakum National Park area (FAO 2009).

Furthermore, communities can be compensated for the losses incurred as a result of wildlife attacks. Compensation can be in different forms which include, among others, direct, and indirect compensation schemes. In direct compensation, compensation is usually confined to the specific categories of loses incurred. The categories may include human death, livestock killed by wildlife. Conservation organization are usually found at the forefront of putting in place compensation schemes. However, in some scenarios, governments are also seen taking imperative roles in paying out compensation to the affected individuals. These compensation schemes are put in place as a way of increasing the levels of damage tolerance among the communities affected by human-wildlife conflict. The initiative also prevents the communities from taking devastating action against terrorizing wildlife through the means of hunting them down. (Muruthi, 2005).
Indirect compensation acts as an alternative way of compensating communities affected by human-wildlife conflict. This system is not linked to the losses that are induced by wildlife. It involves authority to the community members to exploit natural resources. This is formally done by issuing out licenses to people who want to venture into activities that require them to make use of the resources. This benefits may include tourism related activities, granting of hunting rights, collecting firewood, timber and mushrooms among other activities. As compared to monetary benefits, this strategy is seen as the best and a more practical solution. The fact that the community benefits from the surrounding natural resources influences their attitudes and perceptions. (Sekhar, 1998).

It has also been observed that in situations where there is alternative land and some form of incentives local communities can be voluntarily relocated to areas with better natural resources and improved opportunities for socio-economic development. This can be seen as one of the most appealing strategies in addressing the human-wildlife conflict (Madhusudan, 2003). In implementing this strategy, it is crucial to ensure that the villagers gain some benefits which may include better access to natural resources. Moreover, in relocating the people, an area of destination should have lower risks of losing property. Measures also need to be put in place to ensure that the people being relocated do not face political, social and cultural opposition (Treves and Karanth, 2003). This strategy however is a very expensive one to implement. For example, the relocation of 6 000 people from the Limpopo National Park in Mozambique costed the funders of the project approximately 16 million United States dollars (FAO 2009).

Naughton-Treves (1998), identifies vigilance as a very important part of crop and domestic animals protection and ultimately human-wildlife conflict management. It has been observed that the fear of human beings by wild animals can work in reducing the amount of damage caused. In Uganda’s Kabale National park for example, it was observed that elephants waited at the edge of the nearby forest for farmers to leave their fields before they enter. Thus, they can avoid farms were people are present (Barnes et al., 2003).

Furthermore, instilling fear on wild animals also works in the protection of domestic animals from predators. It is encouraged that people guard their herds and do what it takes to scare away the
predators. Where herdsmen are always watching over their herds, the rate of preying on domestic animals by predators becomes lower than in areas where livestock are left to range freely (Breitenmoser et al., 2005). This method is said to be common in East Africa. In this region, the herdsmen are effective in fighting off predators. They make it possible by scaring away wild animals like lions, hyenas and cheetahs through the use of weapons which include spears, axes or firearms (Patterson et al., 2004). It has however been noted that some animals show little fear for humans and thus little vigilance will not scare them away. These include baboons and other primate species.

In line with boosting human vigilance, some methods of improving vantage are recommended. Farmers can construct watchtowers in order to get good vantage from where they can view a wider area. These towers can be built in cultivated fields so as to increase the chances of farmers of being alerted when harmful animals approach and before they wreak havoc. This strategy calls for a strong cooperation among the farmers to effectively manage the watchtowers. Duty rosters can be set up as a way of keeping the watchtowers attended to. (WWF SARPO, 2005). The method also calls for cooperation in the event that one of the farmers sees wildlife approaching, they have to alert others so that they are not caught unawares if troublesome animals are spotted. (Thouless, 1994; Muruthi, 2005).

Guard animals can also be used to prevent domestic animals from being adversely affected by wildlife. They can be used to cover up the labor intensiveness and time consuming nature of looking after livestock. In order for this strategy to be successful, a strong bond has to be established between the guard animals and the animals to be guarded. The established bond will be complemented by the aggressive nature of the guard animals towards predators to make the guard animal an effective protector. Animals that can be used as guard animals include dogs and donkeys. If properly trained, dogs can protect homesteads and livestock from attacks by predators. They may not chase away the predators but they act as warning systems to alert people when danger is imminent so that they can take appropriate action (La Grange, 2005). In the case of donkeys, they have to be incorporated into the cattle herds. It has been pointed out that at least two donkeys per herd can perform the task of protecting the cattle from animal attacks. In Kenya for example, they have been used to perform this task and the contribution they make towards reducing
the number of cattle killed by lions is remarkable. Donkeys’ unique adaptations that include their high defense instincts, their alertness and awareness if predators make them better protectors of cattle against predators (Schumann, 2004; WWF SARPO, 2005).

Bengis et al (2002), note that fencing can be used to tattle the human-wildlife conflict. For them to be effective, they have to be designed in a proper manner, constructed properly and maintained regularly. This is one of the methods that if properly put I place can go a long way in reducing the interaction between people and wild animals, hence reduced conflict. Fencing can be useful in protecting people, crops and domestic animals. In the case of domestic animas they get protected from both physical attacks and transmission of diseases such as the African swine fever, theileriosis and foot and mouth disease from wildlife.

There are different forms of fences that can be put in place to reduce or get rid of the human-wildlife conflict. One of these is the use of electric fences. This is an expensive method but it is very effective and reliable in fighting the conflict. Animals have very little physical interaction with the fence and this makes it last longer and qualify to be classified as durable. Moreover, electric wires, unlike other methods of reducing the impact of the conflict that are species specific, they retard a wide range of animal species. However, Hoare, (1992), states that the cost of putting up and maintaining an electric fence if far much higher than the cost of installing and maintaining an ordinary fence. In Kenya for example, around the Aberdare National Park the cost of constructing a 3.3 meter high electric fence was around 20 000 United States Dollars per kilometer (Muruthi, 2005). In Namibia also, the construction of an electric fence costed 10 000 United States Dollars per kilometer, yet it costed 600 United States Dollars to construct the same distance using an ordinary fence. Despite the fact that electric fences are expensive to install and maintain, O’Connell-Rodwell et al., (2000), point out that they effectively protect peoples assets, thus they are viewed as cost effective to the community being protected. In a community with fully functioning agricultural activities, it is anticipated that it takes about four years for the investment returns to be realised.

Furthermore, some traditional barriers can be used as a way of fencing away wild animals. These include plant hedges. Some of the hedge species that can be used include caesalpinia decapetala,
euphorbia, opuntia and agave. This method has as some of its advantages the fact that it costs less to install and can be applicable in dealing with ungulates and carnivores. However, the method takes long for its impact to be felt since one will have to wait for the hedge to fully develop. It has also been pointed out that the method does not help in getting rid of such animals as elephants and primate. In most cases the hedge species used are not indigenous, thus the method comes with a risk of uncontrollable spreading of exotic plants. Traditional barrier method has also seen some people in Africa successfully making use of trenches. These trenches can be covered or left open. This method applies mostly in keeping elephants away from cultivated areas. Muruthi (2005), reports that some communities in AWF Virunga Heartland make use of stone walls as a way of keeping buffalos and elephants away from cultivated fields. In implementing this strategy, large, sharp rocks are used as barriers. The wall construction strategy has been implemented in some parts of Namibia, according to Hanks, (2006).

Furthermore, artificial fences can be constructed using strong material like steel wire in order to protect crops from raiding wild animals. This strategy if properly implemented by farmers can go a long way in reducing loses of crops to wildlife. The strategy however has some limitations, firstly, it is expensive for individual communal farmers to install a fence right round their crop fields. Secondly, it is expensive to maintain the fence in its good state and thus failure to maintain it will compromise its effectiveness. Thirdly, the strategy does not apply to some troublesome and more devastating animals like baboons which can climb over the fence and destroy crops (FAO, 2009).

Muruthi, (2005), states that changing the production that causes the conflict can go a long way in reducing the impact of the conflict, more so agriculture related conflicts. For this to be effective, there has to be changes on the resource that attract wildlife, in the surrounding landscape. These change have to made in such a way that they make the problem causing animal vulnerable, easier to see from a distance and less comfortable in the area.

One of the ways to achieve this is to change the crops being produced. It is said that very little research has been done as to which crops are liked by wild animals, but generally there are some crop that are less palatable to wild animals. For example there are crops that elephants avoid eating.
Therefore, areas that suffer from elephant induced setbacks in their crop outputs can change the crops they produce and produce the ones that are not eaten by elephants. Alternative crops like chili pepper and ginger can be produced for example in place of the traditionally produced crops, sold to the market for the sustenance of the families. Thus this strategy emphasizes on the shift from food crops which animals like to crop that are less likely to be affected by the conflict. Hanks (2006), notes that this strategy was implemented in Ghana were people were encouraged to grow ginger and in Zimbabwe were people affected by elephants were encouraged to produce chili for export.

Moreover, in line with changes in crop production, WWF SARPO, (2005), states that changing planting and harvesting times for some crops can help reduces the loses induced by wildlife. For this to be effective, farmers need to change the crop varieties they are producing and adopt new varieties that will significantly alter the harvesting time. For example, those who produce maize may shish to producing open pollinated maize which matures fast and thus can be harvested earlier than other varieties. This will have a positive effect on agricultural output as crop raiding tends to occur mostly towards the end of the growing season. WWF SARPO, (2005), further points out that farmers can change their attitude towards the amount of land they cultivate. Instead of them cultivating large pieces of land, they can cultivate small plots. This will require them to increase their inputs as a way of intensifying crop production. This will ultimately lead to good yields as it is much easier to control animals in a small manageable plot that on a very large farm.

Furthermore, farmers have to make sure that they do not expose their fields to risks of being raided by wildlife. That is, they should make sure that their farms are not isolated. Farms that are spacy populated have high risks of being invaded by wildlife than those that are clustered together. Moreover, these farms have to have straight fenced edges. Farmers can also clear cover and habitats for animas near the crop fields (Muruthi, 2005). La Grange, (2005), recommends the clearing of margins of about fifty meters. This helps in that some animals like pigs and baboons are not too comfortable crossing open areas. This can also help farmers see approaching animals from a distance so as to mobilise and act before they gain entry into the crop fields.
Communities located closer to wildlife areas also face a big challenge as wildlife from time to time dwindle their livestock. This situation calls for improved and better husbandry practice in order for this form of conflict to be tattled. It has been observed that most at times livestock that are affected are free ranging ones. Therefore, livestock producers can herd their cattle during the day and keep them safe during the night by enclosing them in kraals that are predator proof. Thick covers can also be removed around the animals’ enclosures. Moreover, herders should try by all means possible to void a situation where there is a meeting point between livestock and wildlife. This can be made possible by ensuring that wild and domestic animals do not share the same water holes. Avoiding interaction between domestic and wild animals will also serve as a good strategy for the reduction of chances of disease transition from wildlife to livestock. Disease such as bovine tuberculosis, canine distemper and rinderpest have been identified as some of the diseases that present a threat to domestic animals. The test and slaughter method and mass vaccination can also serve as solutions in reducing the impact of this form of conflict (Bengis et al, 2002).

FAO (2009), identify several methods which can be categorized as deterrent strategies. This method is designed in such a way that it repels animals from targeted areas. Acoustic deterrents can be used in line with this strategy. These scare away wildlife by emitting very loud noise. This method is one of the traditional methods that are widely employed in dealing with wild animals at community levels. The strategy may include beating drums, using whips, whistling and using pipe bombs.

Visual deterrents can also be applied to mitigate the conflict. These involve the use of bright colours to scare away wild animals. In this regard, cloths or plastics with bright colours may be hung from a fence at the edge of the field or kraal. Farmers can also make use of flames from fire to repel wild animals. Fires can be set in the edges of crop fields or cattle holding areas. Smoke from tyres can also be made use of as it takes long before a tyre is completely burnt. These however produce smoke that can irritate the users while causing harm to the environment (Woodroffe et al., 2005).

Another form of deterrent strategy that can be used is what FAO, (2009), calls olfactory deterrent. This involves the use of some chemical compounds to deter some wild animal species like
elephants. They perform this function by either producing very unpleasant smell or by triggering fear on the animal. Chili peppers are an example of compounds that can be used to keep animals like elephants away from crop fields.

Alternatively, farmers can make use of a more radical method which is a form of contact deterrent. This strategy mainly involves the bombarding of wild animals. In this regard, farmers can use rocks, spears, among other available weapons. These weapons are usually easy to get as some of them are picked from the environment. FAO (2009), however warns that this is a risky approach in fighting of wild animals as in involves coming closer to the animals so as to reach them with a thrown object. Thus, should the animal get too agitated and charges towards the pelting farmers, unprecedented disaster may ensue.

Trouble causing animals can also be translocated. This consists of moving some animals away from the affected communities and taking them to protected areas. This method can be seen as one of the most effective strategies as it protects both the translocated animals and the community. The animals in this case are taken away, saving them from retribution while the community benefits in that the economic loses induced by the animas will be reduced. This strategy can also work hand in hand with the selling of wild animals to private players who will translocate the animals to protected enclosures for commercial purposes (Muruthi, 2005). It remains to be seen if this strategy is being used to address the conflict.

According to Muruthi (2005), as a way of maintaining peace in communities affected by human-wildlife conflict, a lethal control measure can be taken against trouble causing animals. This method however does not target all the wild animals in a given area but the one causing problems. This strategy is not available for use by community members but has to be executed by the authority responsible for wildlife. In most cases, it has been noted that the authorities often find it difficult to get the permission to kill the animals. Conservationists have also criticized the strategy sighting that it affects negatively the biodiversity

2.6. Chapter summary
This chapter has presented some fundamental information that bring out an understanding of what human-wildlife conflict is all about. The different types or forms that the conflict may take were explored. This research therefore seeks to verify the types of human-wildlife conflict predominant in Chikandakubi. Moreover, the possible causes or propellants of the conflict presented here are crucial as they are the ones that should inform anyone interested in addressing the conflict on areas to direct much energy to. The analysis of the strategies being used in the study area are weighed against the causes of the conflict in order to make a conclusion as to their applicability in the conflict mitigation drive. Also rightly presented in this chapter is literature on the different ways of reducing the impact of the conflict, put forward by the different scholars as suggestions while some are based on case studies. Going through literature, this researcher could not come across any documented and published information presenting the strategies that are being used by the people of Chikandakubi, strategies being put in place by other organisations particularly in this community and the marrying of Chikandakubi community devised and stakeholder provided strategies. This is therefore the area this research aims to address in detail.
CHAPTER THREE
METHODOLOGY

3.1. Introduction
This chapter gives an overview of the study in terms of the approaches used to get the best and reliable results from the study. It spells out the research design used, the methods used to sample the population, data collection techniques used, ways through which the collected data was analysed and some ethical considerations considered in handling the collected data.

3.2 Description of the study area

3.2.1. Location
Chikandakubi is an entirely rural community located in the communal lands of Hwange district in Matabeleland North province, Zimbabwe. For one to get to this community, they have to travel sixty kilometers from Hwange town towards Victoria Falls or forty kilometers from Victoria Falls towards Hwange town to get to Sundijila art and craft center. The community is ten kilometers off-road towards the east through a gravel road from Sundijila art and craft center. It falls under ward five of the Hwange Rural District council which is named after it. The name of the ward is therefore Chikandakubi ward. In terms of traditional leadership, the community is under the jurisdiction of Chief Shana.

Chikandakubi community is about forty kilometers from the Victoria Falls national park boundary and less than twenty kilometers from Matetsi safari area which is directly connected to the Hwange national park. Moreover, there is a protected forestry commission area bordering the community. This forestry commission area acts as a wildlife corridor as it is connected to the Victoria Falls national park and Matetsi safari area. The conditions highlighted above make the community susceptible to wildlife invasions.
Figure 1.1: A map showing the location of Chikandakubi community in Hwange district Matabeleland North, Zimbabwe.

3.2.2. Climatic conditions

The community falls under farming region four which according to Vincent and Thomas (1960) has an annual rainfall of between 450 and 650 mm with high temperatures. Because of these factors, millet is the mostly grown crop in this community as it can grow well under region four conditions. Animal production also appears to be a viable activity in this area.

3.2.3 Major activities (livelihood)

Like most rural communities, Chikandakubi is highly dependent on agriculture for livelihoods. Crop production is the popular feature of agriculture with many people involved. Cereal crop production in the form of millet production dominates. Maize is also produced, though at a small scale as the conditions do not favor its production at a large scale. Other crops like beans, round
and ground nuts as well as melons are also produced. Moreover, people also practice animal production. Cattle, goats, donkeys, pigs and road runner chickens are kept. This sector is however crippled by shortage of drinking water for large livestock. Cattle for example are driven to Chenamisa area which is several kilometers from this community, where there is a source of drinking water for animals. Some people are forced to pump water for their animals from the few boreholes. There are only six boreholes serving two hundred and fifty three households. Thus put in terms of ration, one borehole serves forty-two households. This is a critical situation as the boreholes cannot sustain domestic uses and supply water for domestic animals. There are two nutrition gardens in the community which were meant to be irrigated using the bush pump boreholes. These gardens are not operational mainly because of the pressure on the boreholes.

3.2.4. Brief history of the community

According to the information gained from some elders in the community, Chikandakubi was established in the 1960s. The pioneers were two families who migrated from Simangani area in the same district. Thus the community was established and grew mainly as a result of in migration. Other households were established as a result of children of the native families who were seeking to establish their own homes. The community now has a total of two hundred and fifty three households. It is divided into two villages, Batanani and Mitimitema, each of these villages is divided into five minor villages, each of which is under the jurisdiction of one village head. This gives a total of ten village heads manning the community.

Of interest is what made them name the community as Chikandakubi? This name has its roots in the human wildlife conflict. Chikanda is a Nambya name for a pool and kubi is also a Nabya word that means the same as bad. There is a depression in this community which collects water during the rainy season. Though the collected water does not last for a long time, it provides drinking water for animals during the rainy season. It is said that wild animals also used to come to this pool to drink water during the early days of the community. At this pool, wild animals would meet domestic animals, hence predators would ambush domestic animals and prey on them. Thus they labelled this pool as Chikandakubi (bad pool). This name was latter used to refer to the community itself.
3.3. Research design
The research made use of the case study research design. In fulfilling this design, the study used the mixed methods approach which Creswell, (2003), views as a research design with some philosophical assumptions and methods of inquiry whose principles determine the direction of data collection and analysis in a given study. It has as its main characteristic, the combination of qualitative and quantitative approaches at different phases of the research process. It therefore ensures that the two approaches complement each other in the study (Creswell 2003). This is made possible by ensuring that both qualitative and quantitative approaches are incorporated in collecting research data in line with the research objectives. The fact that this approach does not rely on a single methodology ensures that the understanding of a research problem is improved.

Quantitative research involves the collection and analysis of closed-ended information such as information on attitudes, behavior and performance instruments (Creswell, 2003). In this regard, closed-ended questionnaires were used to collect data on the mitigation strategies that the participants in the community are using. The information collected was then analysed in such a way that the percentage of people making use of a particular strategy was calculated. On the other hand, qualitative research involves the collection of open-ended information (Creswell, 2003). In this respect, the research made use of face to face interviews at different stages of data collection. In collecting information from the community, a focus group interview was used to collect data from the village heads and the area councilor while face to face structured interviews were used to collect information from wildlife management stakeholders.

3.4. Target population
This study targeted the households of Chikandakubi community. There were 253 households in Chikandakubi community with ten village heads presiding over community matters. Participants who represented the community were selected such that all the villages were equally represented. Moreover, some key informants were also targeted, these include Chikandakubi ward (ward 5) councilor, one Victoria Falls Wildlife Trust staff, one Parks and Wildlife Management Authority staff and ten village heads. These key informants were meant to provide data on the nature of the problem and also to give details as to how they are helping the community reduce the impact of
the conflict. Village heads were meant to provide information on the nature of the conflict as well as the strategies that the community members make use of in trying to reduce the impact of the conflict.

3.5. Sampling methods
The study made use of two sampling methods which are, the purposive random sampling and the convenience sampling technique to select participants for the study. The sampling methods used are discussed in detail below.

3.5.1. Purposive random sampling
The purposive sampling method was used to select individuals and organisations to be interviewed as key informants. The organizations were identified using their human-wildlife conflict mitigation programs in the community and through the information provided by traditional leaders. These organisations were then requested to provide an individual who was in a position to represent the organisation in the interview. The councilor and the village heads were selected on the basis of them being the overseers of community programs. The researcher assumed that the village heads and the councilor had the knowledge of the nature of the conflict, what the people they lead do as a way of fighting off wild animals and the organisations that work with the community in fighting the conflict.

3.5.2. Convenience sampling
For the purposes of reducing the costs and the amount of time associated with the collection of data from a large population, this research made use of the convenience sampling method to select participants from the community. According to Given (2008), a convenience sample can be defined as a sample whereby the participants are selected based mainly on their ease of availability, readiness, willingness and ability to participate. Patton (2002), Warns that caution should be taken in interpreting data collected through the use of this sampling method as it may not fully represent the total population. In relation to this study, the researcher decided to make use of this sampling method with the understanding that most of the strategies used in the community are shared strategies, thus the results obtained can be generalized to the entire population with less chances of compromising validity. The researcher visited homesteads requesting for the participants of the occupants, those who agreed made part of the sample.
Scholars have put in place some commonly agreed standards in terms of sample sizes to be included in research in order to get information that can be generalized to the entire population. According to Sudman (1976), in a survey research it is desirable that there be at least 100 subjects in each major subgroup and 20 to 50 in each minor subgroup whose responses are to be analysed. Furthermore, Gay (1996), suggested the following some guidelines for selecting a sample size. He states that fore small populations of one hundred and below, there is little point in sampling. Thus the researcher has to include the entire population in the study. If the population size is around 500, half (50%) of the population should be sampled. If the population size is around 1500, 20% of the total population should be sampled. Beyond a certain point (for instance at approximately N= 5000), the population size is almost irrelevant, and a sample size of 400 will be adequate. Given the fact that this researcher was working on a student thesis which is limited by time and financial constraints, the researcher settled for a sample size of 85 participants from the community. These participants represented 33.6% of the households in Chikandakubi community.

3.6. Data collection instruments
The study made use of three data collection instruments which are questionnaire, focus group discussion guide and the interview guide. These instruments are discussed in detail below.

3.6.1. Questionnaire
Questionnaires were used to solicit for information from members of the community who were selected to make up the sample. These questionnaires were designed such that they were dominated by closed ended questions. According to Given (2008), a closed question can be defined as a type of question posed by researcher to the sampled participants in research projects that specifies the parameters within which participants can provide their answers. The questions typically provide the respondents with possible responses that request specific facts or information from the survey respondents. Closed questions are usually used when conducting structured interviews and spoken and written questionnaires. They assume that people’s experiences may be reduced to facts that can be coded with pre-established researcher-generated categories. An example of a closed ended question is one that requires respondents to choose between “yes” or “no”. In some questions however, space was left for the respondents to provide answers that were not captured as possible answers by the researcher.
Williman (2006), states that questionnaires enables the researcher to organise questions and receive responses without having to talk to every respondent. Moreover, questionnaires are cheap and quick to administer, thus, they can be administered to a large population within a short space of time. They can also be designed such that they assist in the analysis stage, making it possible for a researcher to have a chronological order of results that address the research questions (Williman 2006). It is for the reasons stated above that this researcher chose to make use of the Self-Completed, Pre-Coded Questionnaires. The questionnaires were issued out to the participants and the researcher was available to assist those who needed assistance.

The questionnaires used in this study carried an introductory message which outlined the purpose for carrying out the research. The main body was then divided into three sections. Section one covered the socio-demographic information of the respondents. These included the gender, age, employment status and tribe among other aspects. Section two was designed to solicit for information on the nature of the human-wildlife conflict with respect to the killing of domestic animals, information on the losses that were incurred by the respondents within the past three years was sought. The section also requested the respondents to select the strategies they were using to protect their livestock from predators. Space was provided for the respondents to add the strategies they were using which were not captured by the researcher. Section three contained questions that covered the nature of crop destruction by wildlife as well as the strategies the respondents were using to reduce the amount of crops damaged. The nature of the conflict as well as the strategies used by the community made up the questionnaire.

A total of 85 questionnaires were distributed to different households who were selected through the convenience sampling technique. The researcher took advantage of gatherings organised by village heads in their respective areas to solicit for respondents.

3.6.2. Focus group discussion guide
According to Williman (2006), focus groups are a type of group interview, which concentrates in-depth on a particular topic. In choosing this instrument, this researcher was driven by the desire to acquire in-depth data about the human-wildlife conflict in Chikandakubi community. Williman (2006), further states that the group interview gathers data mainly through interaction between the researcher and the sampled group. People who are eligible to make up a group for this data
collection instrument are often those who have particular experience or knowledge about the subject of the research and those who have a particular interest in it (Bryman 2004).

The researcher conducted a focus group discussion with the village heads and the councilor. The researcher considered them to be knowledgeable with information on the conflict situation in the community. The participants were briefed on the purpose of carrying out the research and their consent was sought before the commencement of the group interview. The aim of the interview was to discuss the nature of the conflict, to get an insight on the strategies used by the community to reduce the impact of the conflict as well as to get information on organisations working with the community in attempts to reduce the impact of the conflict.

One focus group discussion was conducted and it was comprised of eight village heads and the councilor, making up nine participants in total out of the anticipated eleven, constituting a 4.3% representation of the total number of households in Chikandakubi community. According to Williman (2006), the common size of a focus group should be made up of six to ten people so that it is manageable. In this case, a compromise was made to have eleven participants in one group interview. The reasons for having eleven people was to accommodate the area councilor and to avoid the challenges associated with grouping people for a discussion. According to Williman (2006), grouping people for a group interview is one of the main challenges faced by researchers who seek to make use of the group interview method of gathering data. In this light, an interview schedule was designed to solicit for data from the group interview. The schedule comprised of questions that covered the nature of the conflict, the strategies being used by the people to minimise the effects of the conflict in the community as well as the role of organisations in fighting the conflict. The question guide was designed such that adequate space was left below each question for the interviewer to take down notes as the respondents answered the questions. Thus the responses were recorded immediately. This was very helpful as it enabled the researcher to have a complete record for the interview.

3.6.3. Interview guide
Visits were made to the organisations working with the community. In this regard, an interview schedule designed by the researcher was used to facilitate the interviews. In designing the schedule, ideas from King (1994), were put into account. He states that when devising an interview schedule one must consider that the content of the interview involves decisions about a number of things: one has to decide on what questions to ask, how to phrase the questions, depth and breadth of topics to be included and the question sequence. The interview schedule depends mainly on the purpose and focus on the research and thus one ought not to lose sight of the objectives to be achieved through the interview. Probing and follow up questions were used in the interviews. The interview guide was designed such that adequate space was left below each question for the interviewer to take down notes as the respondents answered the questions. Thus the responses were recorded immediately and almost verbatim. This was very helpful as it enabled the researcher to have complete records for the interviews.

These interviews were designed such that they do not last for too long at the same time capturing all the necessary information. They were administered to individuals who were provided by the organisations. A total of three formal interviews were conducted, one with a Zimbabwe Parks and Wildlife Management Authority official, one with HRDC CAMPFIRE official and the other one with a Victoria Falls Wildlife Trust official.

3.7. Data analysis
To ensure that data collected from the respondents was clearly interpreted, the researcher made use of Microsoft office excel to analyse the data. Tallies were used to count the number of respondents selecting a particular choice. Tables were then created on the spreadsheet program to make it easy for the researcher to get percentages of people using a particular strategy. From the created tables, diagrammatic presentations were made, these were in the form of graphs and charts for easy analysis of the collected data.

3.8. Ethical considerations
The researcher sought permission to conduct the research in the community from Hwange Rural District Council ward five councilor, who granted the researcher permission on behalf of the local authority. A request for a face to face interview session with a ZimParks official was sought from
the organization’s Victoria Falls station manager with the help of the councilor. Another request was also made to conduct a face to face interview with one official from the Victoria Falls Wildlife Trust through the community programs officer. Permission was also sought from HRDC CAMPFIRE manager. The participants were not forced to participate in the study. They were politely requested and the researcher highlighted the purpose of the research and how it is likely to benefit them before requesting for their consent to participate. The researcher also made it clear to the respondents that they were free to stop supplying the information though they were encouraged to participate fully. Furthermore, a guarantee was given to the respondents prior to their participation that the information they will provide will be treated with high levels of confidentiality.

3.9. Validity and Reliability

Golafshani (2003) notes that researchers ought to focus on maximising the validity of their study. He further states that a study were validity was maximised is guaranteed of having reliable results. Mathison (1988) identifies the use of triangulation as one of the leading strategies that researchers can use to ensure that their findings are valid and reliable. Triangulation is useful mainly in the reduction of chances of bias in a study which is a major threat to validity and reliability. This researcher settled for the triangulation method by making use of both qualitative and quantitative research methodologies as well as varying the data collection techniques.

Moreover, the data collection instruments designed for this study focused more on the key aspects of the research, ensuring that much attention was directed towards the key variable of the study. The key variable being the human-wildlife mitigation strategies used in Chikandakubi community. The researcher further made use of sampling techniques that ensured that potential participants were given equal opportunities of being selected into the sample. The number of participants selected for the study were such that the results of the study are generalizable to the entire population of Chikandakubi.

3.10. Chapter summary
This chapter presented methods used by this researcher in selecting the participant. The sample size was also given and justified. Data collection instruments were also used to collect data were also presented and justified. Other aspects presented include data analysis, ethical considerations as well as validity and reliability. The next chapter will present, analyse and discuss the collected data.
CHAPTER FOUR
DATA PRESENTATION AND DISCUSSION

4.1. Introduction
This chapter presents, interprets and discusses the findings of the study, dwelling mainly on the main aspects of the data as they relate to the research problem and the objectives of the study. The socio-demographic characteristics of the respondents are given, starting with the characteristics of the respondents who took part in the questionnaire survey, followed by the characteristics of the key informants. The nature of the human-wildlife conflict is treated next. Data on the nature of the human-wildlife conflict was collated from the results of the questionnaire survey as well as the focus group discussion. Treated next is data on the mitigation strategies used by the community. This data was also sourced from the questionnaire survey and the focus group discussion. Presented lastly is data on the contribution of different organisations towards human-wildlife conflict mitigation in Chikandakubi community.

4.2. Socio-demographic information of the respondents.
The socio-demographic information of the respondents are summarily presented in table 4.1 below.

Table 4.1: Socio-demographic information of the respondents

<table>
<thead>
<tr>
<th>Social/demographic characteristic</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>47 (55%)</td>
</tr>
<tr>
<td>females</td>
<td>38 (45%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>5 (6%)</td>
</tr>
<tr>
<td>25-40</td>
<td>56 (66%)</td>
</tr>
<tr>
<td>40-60</td>
<td>24 (28)</td>
</tr>
<tr>
<td>Village</td>
<td></td>
</tr>
<tr>
<td>Mitimitema</td>
<td>41 (48%)</td>
</tr>
<tr>
<td>Batanani</td>
<td>44 (52%)</td>
</tr>
<tr>
<td>Educational attainment</td>
<td></td>
</tr>
<tr>
<td>Grade seven</td>
<td></td>
</tr>
<tr>
<td>60 (71%)</td>
<td></td>
</tr>
<tr>
<td>Ordinary level</td>
<td></td>
</tr>
<tr>
<td>13 (15%)</td>
<td></td>
</tr>
<tr>
<td>Advanced level</td>
<td></td>
</tr>
<tr>
<td>12 (14%)</td>
<td></td>
</tr>
<tr>
<td>Ethnic groups</td>
<td></td>
</tr>
<tr>
<td>Nambya</td>
<td>43 (51%)</td>
</tr>
<tr>
<td>Tonga</td>
<td>13 (15%)</td>
</tr>
<tr>
<td>Dombe</td>
<td>16 (19%)</td>
</tr>
<tr>
<td>Ndebele</td>
<td>13 (15%)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>70 (82%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>Never married</td>
<td>11 (13%)</td>
</tr>
<tr>
<td>Source of livelihood</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>60 (71%)</td>
</tr>
<tr>
<td>Self employed</td>
<td>20 (24%)</td>
</tr>
<tr>
<td>Formerly employed</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Primary data
The table above shows that 85 respondents to the questionnaire survey consisted of 47 males (55%) and 38 females (45%). The respondents were from the two villages that make up Chikandakubi community. These are Batanani and Mitimitema villages. There were 41 participants from Mitimitema, constituting 48% of the total number of participants. There were also 44 respondents from Batanani village, constituting 52% of the total number of participants.

In the focus group discussion, 8 village heads and the ward 5 councilor, whose area of jurisdiction covers Chikandakubi community attended. This gives a total of 9 participants for the group interview against the anticipated 11 participants. Out of those who attended, 2 (22%) were females while 7 (78%) were males.

4.3. The nature of the human-wildlife conflict in Chikandakubi community

This section will relate directly to the first objective of this study, which was to determine the nature of the human-wildlife conflict in Chikandakubi community. Data presented in this section was collected through the focus group discussion and the questionnaire survey, thus the analysis will be both qualitative and quantitative. The report seeks to establish the factors that are fueling the conflict in the community, the kinds of losses incurred by the community and the time of the year or day different forms of the conflict are witnessed.

Generally areas that are located close to protected wildlife areas are susceptible to the human-wildlife conflict (CAMPFIRE 2006). Chikandakubi community is located some few kilometers from both Hwange and Victoria Falls national parks. The community thus has high chances of receiving unwanted visitors (wild animals). Besides the issue of being close to national parks, participants in the focus group discussion stated that the protected Forestry Commission area bordering the community to the south and the western sides was responsible for saving as the habitat for some wild animals that often terrorise the community. One of the focus group discussion participants had this to say,

_Inyamazana sihlala lazo khonapha eguswini esiliqameleyo. Ziyabuya emakhaya zizohlupha zibuyele eforest. Nxa sezingale babala ukuthi sezisendaweni yazo efaneleyo [we live with wild animals in our backyards. They live in the nearby forest. They come and terrorise the community and then they go back to the forest. When they are in the forest they are considered to be in their rightful place (by wildlife management stakeholders)]_
It is worth noting that some of the homesteads are a stone throw away from the protected forest boundary. People’s fields are also dotted around the outskirts of the community and they are close to the forest. This forest appears to link the community to the three protected wildlife areas. It has also become a permanent residence for some wild animals. Though lions may not be permanent in the area, elephants and hyenas appear to have established a permanent place of residence in the forest. Given that some homesteads are a few meters away from the protected forest and that the forest borders the greater part of the community means that they are more vulnerable to the conflict. These factors are identified as some of the factors keeping the human-wildlife ever green in Chikandakubi community.

One of the popular forms of human-wildlife conflict in Chikandakubi community is the killing of domestic animals by wildlife. Two predators were identified as being responsible for the losses incurred by the farmers. Lions and hyenas are said to be responsible for the killing of domestic animals in the community. From the questionnaire survey, 22 (26%) respondents selected lions only as being responsible for the killing or domestic animals, no respondent selected hyenas only and 61 (72%) selected both lions and hyenas. 2 (2%) respondents did not select any option on the respective question. Figure 4.1 below gives a diagrammatic representation of the questionnaire respondents’ choices.

---

![Diagram](image)

**Figure 4.1:** Respondents’ selection of predators involved in domestic animal attack
Data presented above shows that both lions and hyenas are responsible for killing domestic animals in Chikandakubi community. The results also show that lions are more troublesome than hyenas. This is evidenced by the total number of selections for the lion option. A total of 83 selections were made for the lion option against 61 selections for the hyena option. This means that strategies being put in place should focus on dealing more with lions as they are the most troublesome animals.

Out of the 85 respondents in the questionnaire survey, 37 (44%) respondents stated that they have lost some domestic animals to wildlife attacks in the past three years. 48 (56%) said they did not lose any domestic animals to wildlife attacks in the past three years. The total number of domestic animals killed by predators in the past three years stood as presented in figure 4.2 below.

![Figure 4.2: Number of domestic animals lost to predation in the past three years](image)

**Source:** primary data.
The graph above shows that cattle are the most affected species, with 49 heads lost in the past three years from 37 out of 85 participants. The total number of domestic animals lost (79) may translate to a very huge lost in terms of the monetary value of the livestock lost.

The most affected domestic animal species as the results above show are cattle. On the other hand, the predator identified as contributing highly to the killing of domestic animals is the lion. This is in line with what Petterson et al (2004), observed in Kenya. In their analysis of wildlife attacks on domestic animals in Kenya, they discovered that lions were responsible for 86 percent of the attacks. Thus to ensure that the problem of attacks on domestic animals by predators is addressed, measures should focus more on protecting cattle while ensuring that the movement of lions into the vicinity of the community is minimized through every means possible. Therefore, much focus should be directed towards protecting cattle as they are the most affected domestic animal species.

Asked about the time of the year when predators kill domestic animals, respondents gave varying responses. From the focus group discussion, this researcher learnt that predators are a problem throughout the year. However, emphasis was made that the problem is at its pick during the rainy season. This is when most of the domestic animals are killed. One of the participants had this to say,

*Izilo lezi zihlupha umnyaka wonke. Kodwa ke zande ukuhlupha kakhulu ngesikhathi sezulu. Yikho lapo izifuvo ezinengi ezilune pha khona* (these predators cause trouble throughout the year, but they are most troublesome during the rainy season. That is when most of the domestic animals are attacked).

Moreover, results from the questionnaire survey show that much of the killings of domestic animals takes place during the rainy season. The results also show that though most attacks take place during the rainy season, predators are a menace throughout the year. The questionnaire survey responses are presented in table 4.2 below.

**Table 4.2: Responses showing the time of the year predation takes place**

<table>
<thead>
<tr>
<th>Time of the year</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughout the year</td>
<td>24</td>
<td>28%</td>
</tr>
</tbody>
</table>
During the dry season 1 1%
During the rainy season 60 71%
TOTAL 85 100%

Source: primary data

In as far as the destruction of crops is concerned, all the respondents stated that elephants were a major problem in the community. All the questionnaire survey respondents, 85 (100%), stated that elephants were responsible for the destruction of crop, moreover, some respondents, 23 (27%) of the 85 respondents who selected the elephant option also stated that baboons are a problem in the community. Twenty out of twenty three respondents who selected the baboon option in addition to the elephant choice were from Mitimititema village which is directly connected to the forest. No respondent identified buffalos and zebras as being involved in crop destruction. This suggests that the community is always battling elephants and to a lesser extent baboons.

In terms of the crop varieties that are often destroyed by wildlife, the respondents identified six crop varieties. These are maize, millet, groundnuts, melons, beans and sorghum. The number of times each crop variety was selected is shown in the graph below.

4.2.2. Crop varieties affected by wildlife

Figure 4.3: number of selections for crop varieties affected by wildlife
Source: primary data

The graph shows that the most affected crop varieties are maize, millet and melons. This presents a serious threat to food security in the area as Zimbabwe depends on cereal crops for staple food. Thus any disturbance in cereal crop production may present food insecurity for the affected households. One of the focus group discussion participants said.

*Izhou jimutibulaya kasa. Jinopinda muminda zumanga nenzembwe. Banu banji banosala besina kulya kunopeja igole.* (The elephants are affecting us negatively, they eat our maize and millet. People are left with little food which is not enough to cover the whole year).

As the data above show, the most affected crops are maize, millet and melons and elephants are the main culprits behind the destruction of crops in Chikandakubi community. This is in line with what Parker et al (2007), note. They identify elephants as the biggest threat to African farmers, stating that elephants are very destructive, such that they can destroy a field in a single night raid. This therefore calls for protective strategies that ensure that elephants are not given a chance to enter crop fields. Considering that Zimbabwe is highly dependent on cereal crops for staple food, it is crucial to look into the issue as a matter of agency to ensure that the community sustains itself in terms of food supply.

On the time of the day when wild animals destroy crops, the results of the study show that wildlife usually break into the fields in the evenings. However, there are some situations when they break in at any time of the day. The diagram below illustrates the number of choices by questionnaire survey respondents in relation to the time of the day wild animals break into crop fields.
4.2.3. Time of the day wild animals break into crop fields

![Bar chart showing the number of choices for the time of the day wild animals break into crop fields. The 'in the evening' option was the most selected with 83 selections, followed by the 'in the morning' option with 26 selections, the 'in the middle of the night' option with 13 selections, and the 'in the afternoon' option with 4 selections.]

**Figure 4.4:** number of choices for the time of the day wild animals break into crop fields

**Source:** primary data

The graph shows that the 'in the evening' option was the most selected one with 83 selections. This was followed by the 'in the morning option' which was selected 26 times, the 'in the middle of the night' option was selected 13 times while the 'in the afternoon' option was selected 4 times. The results show that though crop destruction may occur at any time of the day it is more prevalent in the evening.

4.4. Human-wildlife conflict mitigation strategies used by the community

This section presents the strategies put in place by the community of Chikandakubi to reduce the impact of the human-wildlife conflict on animal and crop production. Data for this section was collected through the focus group discussion and the questionnaire survey. Thus the presentation makes use of both the qualitative and the quantitative approaches. The strategies used by the community to reduce the impact of the conflict on animal production are dealt with first and the strategies used to reduce the impact of the conflict on crop production are treated lastly. The section addresses objective number two of the study.
4.4.1. Strategies used by the community to reduce the impact of the HWC on livestock production.

The analysis of the nature of the human wildlife conflict in Chikandakubi made in 4.3 above shows that the predators involved in the killing of domestic animals are the lion and the hyena. It also shows that the most affected domestic animal species are cattle. Asked whether they have been taught how to protect their livestock from wildlife attacks, 49 (58%) of the questionnaire survey respondents stated that they had been taught before while 36 (42%) stated that they have never been taught how to mitigate against predators. 4 (5%) of the respondents did not select any option to the question.

Table 4.3: Strategies used by the community to reduce the impact of the HWC on livestock production

<table>
<thead>
<tr>
<th>Mitigation strategies</th>
<th>Number of respondents using the strategy</th>
<th>Percentage of respondents using the strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of animal enclosures very close to the home fence</td>
<td>80</td>
<td>94%</td>
</tr>
<tr>
<td>Construction of high animal enclosures</td>
<td>83</td>
<td>98%</td>
</tr>
<tr>
<td>Setting up of fire in the enclosures at night</td>
<td>57</td>
<td>67%</td>
</tr>
<tr>
<td>Hanging white sacks around the animal enclosure</td>
<td>73</td>
<td>86%</td>
</tr>
<tr>
<td>Keeping dogs for warning purposes</td>
<td>43</td>
<td>49%</td>
</tr>
<tr>
<td>Standing guard in the enclosure when predators are doing rounds</td>
<td>17</td>
<td>20%</td>
</tr>
<tr>
<td>Producing noise to scare away predators</td>
<td>71</td>
<td>84%</td>
</tr>
<tr>
<td>Making sure all the animals are in the enclosure at night</td>
<td>84</td>
<td>99%</td>
</tr>
<tr>
<td>Throwing objects at predators to scare them away</td>
<td>11</td>
<td>13%</td>
</tr>
<tr>
<td>Herding animals in groups</td>
<td>24</td>
<td>28%</td>
</tr>
<tr>
<td>Seeking for assistance from organisations</td>
<td>82</td>
<td>96%</td>
</tr>
</tbody>
</table>

Source: Primary data

Some animal rearers in Chikandakubi resort to constructing animal enclosures close to the home perimeter fence. This they say enables them to scare away lions in the event they try to gain entry into enclosures at night. It is also said that some lions would find it difficult to get too close to the home as the environment is hostile to them. Thus constructing enclosures close to the home fence helps in some situations. 5 (6%) respondents stated that their enclosures were between 0 and 5
meters away from the home fence, 43 (51%) stated that their enclosures were 5 to 10 meters away from the home fence, 31 (36%) said that their enclosures were 10 to 15 meters away while 1 (1%) stated that their animal enclosures were above 15 meters away from the home perimeter fence. The diagram below shows the number of the respondents whose animal enclosures are in the range of 0 to 5, 5 to 10, 10 to 15 and 15 and above.

![Graph showing the distance of animal enclosures from the home fence](image.png)

**Figure 4.5:** distance of animal enclosures from the home fence

**Source:** primary data.

The graph shows that most farmers have animal enclosures that are between 5 to 10 meters away from the home fence. This could be a useful strategy as it retards predators from the vicinity of the enclosures. Moreover, it offers farmers an opportunity to react and ensure that they scare away the predators before they cause harm to the livestock. This shows that people’s lives are always at risk as they can be attacked while trying to protect their livestock.

In addition to constructing animal enclosures very close to their homes, the people of Chikandakubi also construct high animal enclosures. This strategy helps in two ways. Firstly, it prevents lions from jumping into the enclosure. Secondly, it prevents domestic animals from jumping out of the enclosure. It is said that cattle often try to jump out of the kraal when lions start groaning outside. Thus if the kraal is not strong and high enough they can jump out and be attacked by the lions. 83 (98%) respondents stated that they were using this strategy. 2 (2%) respondents
did not select the option. The diagram below gives a breakdown of the selected heights of animal enclosures by the questionnaire survey respondents.

Figure 4.6: Percentage of respondents selecting heights for their animal enclosures

Source: Primary data.

Figure 4.9 above shows that 26% of the respondents had animal enclosures that are between 1.5 and 2 meters, 71% had animal enclosures that are between 2 and 2.5 meters while 1% had animal enclosures that are above 2.5 meters. It can also be seen that 2% of the respondents did not select any option for the respective question. The statistics show that most of the people have animal enclosures that are between 2 and 2.5 meters high. This is a commendable strategy that any progressive animal producer in the community ought to consider putting in place. However, the strategy has some effects on the natural environment as the villagers have to gather poles from the nearby protected forest. In this regard it would be ideal to make use of diamond fences which are durable and do not require one to negatively affect the immediate environment. Considering that most people’s levels of affluence may be too low to afford them diamond fences, organisations may feature in the process and construct animal enclosures that can accommodate livestock for several homesteads.
Some people also set up fire near their animal enclosures at night. This is done mainly in summer when the lions stray towards the community. The strategy is meant to scare away the lions in the event that they roam around the community at night. Huge logs are used to set up the fire and people periodically go to the enclosure to ensure that the fire is burning all night long. 57 (67%) respondents in the questionnaire survey stated that they were making use of this strategy.

Another strategy that appears to be popular among Chikandakubi community farmers is the hanging of white sacks around animal enclosures to retard predators. They do this by hanging white sacks outside animal enclosures. The strategy works in the sense that wildlife are not used to white colours as they are rare in the natural environment, thus they get frightened if they come across one. 75 (85%) respondents said they were making use of this strategy.

Having received the signals that lions are around, some respondents stated that they quickly rush to the animal enclosures to stand guard. They get to the enclosure and ensure that the fire they set is burning brightly. 17 (20%) respondents reported that they were using this strategy. This is a very risky strategy that farmers need to consider doing away with. Animis behavior is highly unpredictable. The strategy exposes people to risk of being attacked by the predators. Farmers need to make use of other strategies available at their disposal which are not life threatening.

Most respondents stated that they were making sure that all their animals are in the enclosure every night. Of the 85 participants who took part in the questionnaire survey, 84 (99%) stated that they were making sure that all their animals are in the enclosure every night. From the focus group discussion, this researcher was told that hyenas, though they do not jump into kraals like lions, were very dangerous to livestock if they are not in the enclosure. One of the focus group discussion participants said.

_Sibalesiqiniseko sokuba izifuyo zonke zivalelwe. Ungekela ukwenza njalo zingavuka zidliwe zimpisi lezilwane. Lenhlanganiso ezicincedisayo ziyakukhuthaza kakhulu ukuvalela kwazifuyo (we make sure all our animis are in the enclosure every night. If you do not do that, you risk losing them to lions and hyenas. The organisations that assist us are always encouraging us to do that)._
Throwing objects at predators to scare them away is another strategy being used by some sections of the community. It is said that the strategy is applied mostly if a predator kills a domestic animal and is noticed by the villagers before eating all of it. The villagers team up and attack the predator with stones to scare it away. Whatever remains of the killed domestic animal is taken home where its meet is sold to other villagers. This ensures that the losing farmer gets some consolation for the loss. 11 (13%) respondents said they were using this strategy.

With respect to herding domestic animals, no respondent stated that they were herding them throughout the year. The strategy that appears to be used by some members of the community is the one that involves herding animals in groups in summer. The herdsmen combine their herds and herd in groups. It is said that they form a semi-circle ensuring that in the event that predators attack, their animals run towards the direction of the settlement. The strategy also helps in ensuring that the herdsmen can see predators approaching from almost any direction. 24 (28%) respondents reported that they were making use of this strategy. This is in line with what Breitenmoser et al., (2005), recommends. They state that in East Africa, most herdsmen would watch over their livestock and are always armed to scare away the predators. It is noted that in most situations where this strategy is applied, the rate of predation on livestock reduces. However, the results showed that in Chikandakubi the strategy is applied only during the summer season, thus in other seasons, their animals are exposed to predation.

4.4.2. Strategies used by the community to reduce the impact of the conflict on crop production.

Section 4.3 highlighted the nature of the HWC with regards to crop destruction. The section showed that the most affected crop species were maize, millet and melons. It also showed that elephants were a major cause for concern. Asked if they have ever been taught how to deal with crop raiding animals, 42 (49%) questionnaire survey respondents stated that they were taught before. 39 (46%) said they have never been taught how to control wild animals that destroy crops while 4 (5%) did not respond to the question. The table below presents the strategies used and the level of their uptake.
Table 4.4: Strategies used by the community to reduce the impact of the conflict on crop production

<table>
<thead>
<tr>
<th>Mitigation strategies</th>
<th>Number of respondents using the strategy</th>
<th>Percentage of respondents using the strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guarding the fields in the evenings</td>
<td>85</td>
<td>100%</td>
</tr>
<tr>
<td>Setting up fire in the fields in the evening</td>
<td>59</td>
<td>69%</td>
</tr>
<tr>
<td>Using glowing sticks to scare wild animals</td>
<td>16</td>
<td>19%</td>
</tr>
<tr>
<td>Making noise</td>
<td>82</td>
<td>96%</td>
</tr>
<tr>
<td>Throwing stones at the invading animals</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Forming patrol groups</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Requesting for assistance from organisations</td>
<td>83</td>
<td>98%</td>
</tr>
</tbody>
</table>

Source: Primary data

Results on the nature of the HWC show that crop destruction by wild animals occurs mostly in the evenings. All the participants in the questionnaire survey, 85 (100%) stated that they were guarding their fields in the evenings in order to scare away wild animals, mostly elephants which are the major cause for concern to farmers. This strategy is one of the strategies that can yield positive results for a community affected by elephants. Putting into consideration the suggestion by Naughton-Traves (1998), that farmers should capitalise on the fear wild animals have for humans. He observed that in Uganda around Kabale National Park, elephants were avoiding crop fields when people were still inside.

In order to complement their presence in the fields, some farmers setup fire in the fields. The fire is set on the side from which elephants come from. It is said that elephants will hardly get close to a fire. Thus they are retarded by the fire set by the farmers. 59 (69%) respondents said they were using this strategy to deal with wild animals that threaten their crops. Effective as the strategy may be, it is against sustainable resource utilisation principles considering that the natural environment is the source to wood used for the activity. In the long run, the environment may suffer
deforestation as a result of overexploitation of wood for the purpose of scaring away elephants. The strategy thus needs to be done away with.

Among several other strategies used to scare elephants is the use of glowing sticks. In this strategy, farmers capitalise on the allergy that elephants have for fire. Glowing sticks are thrown towards the raiding elephants and they get unsettled and move away. However, this strategy seems to be less popular among farmers in Chikandakubi community. 16 (19%) respondents stated that they were making use of it. In as much as the strategy could be effective in scaring away elephants, it however poses a threat to the environment and the crops being protected from elephants. In the event that the stick falls on grass or crops and they catch fire, the loss could exceed that which elephants were capable of inducing.

Another strategy that seems to be popular among farmers is the use of noise to scare away wild animals. This strategy involves the use of several objects to produce noise. These objects include empty tins, drums, trumpets among other noise producing objects. It is said that elephants get unsettled when they are in a noisy environment. Thus producing loud noise will make them move away. 82 (96%) respondents stated that they were making use of this strategy to get rid of raiding animals. However, focus group discussion participants said that the strategy works well if the farmers spot the elephants before they gain entry into the fields. Once the elephants start eating crops, it becomes difficult to scare them away using this strategy. The dominant deterrent strategy in this regard is the use of acoustic deterrents. These emit loud noise which scares away the animals. The strategy is in line with what FAO (2009), recommends. Thus to a greater extent the community is in the right track by making use of this strategy.

Throwing of stones at the invading animals is one of the less popular strategies in Chikandakubi community. Two (2%) respondents noted that they were making use of this strategy. This looks like a very risky strategy that can expose its users to wildlife attacks. People need to be discouraged from making use of such strategies as they may be attacked by wild animals. Emphasis on how to conduct oneself when dealing with crop raiding animals needs to be made in education sessions in order to ensure that life threatening strategies are done away with.
The patrol group strategy involves the grouping of people so that they move from one point to another, identifying wild animals that threaten to invade crop fields and scare them away. This strategy however appears to be less used in Chikandakubi community with 2 (2%) respondents stating that they make use of the strategy. The low number of people making use of this strategy is worrying, this is an ideal strategy that ensures that patrollers see wild animals before they gain entry into crop fields. Used together with watchtowers, this strategy could see a decline in the rate at which elephants raid crop fields. Community education programs need to emphasis on the use of this strategy as it can enhance response.

It is not always the case that the strategies used by the community to scare away animals work. Sometimes the farmers find themselves in the losing end in their battle with elephants. This compels them to request for assistance from wildlife management stakeholders. 83 (98%) respondents said that they were requesting for assistance from organisations to help deal with problem animals. Asked to give the time it takes for teams deployed by the organisations to respond to cases, participants gave varying responses. The diagram below illustrates their responses.

![Figure 4.7: Percentage of respondents selecting average time it takes for PAC teams to respond to cases.](image)

**Source:** Primary data.
Figure 4.7 above shows that most respondents selected the 30 minutes to one hour option, 51 (61%). 24 (28%) respondents selected the 20 to 30 minutes option while 9 (11%) respondents selected the more than one hour option. Given that assistance from wildlife management organisations is sought when animals have already invaded the community, the time taken by the authorities to respond to cases is too long. One would imagine how much damage a head of elephants would have done in a crop field in 30 minutes to one hour! It is thus ideal for these organisations to put in place swift, rapid response mechanisms to reduce the losses.

4.5. The role of organisations in HWC mitigation in Chikandakubi community

Wildlife management organisations appear to play a very important role in the HWC mitigation process. This study identified three organisations that are involved in HWC mitigation in Chikandakubi. These organisations are the Victoria Falls Wildlife Trust, ZimParks and Hwange Rural District Council CAMPFIRE. This section presents the role played by these organisations in the reduction of the impact of HWC. The section thus addresses the third objective of the study which was to identify the role of organisations in addressing the conflict situation. Data for this section was collected through face to face interviews with officials from the three organisations. Thus data presentation given here is entirely qualitative. The table below presents the roles played by different organisations and the challenges they face, these are discussed in detail below the table.
Table 4.5: The role of organisations in HWC mitigation in Chikandakubi community and the challenges they face

<table>
<thead>
<tr>
<th>Name of organisation</th>
<th>Role played in HWC mitigation</th>
<th>Challenges faced</th>
</tr>
</thead>
</table>
| Victoria Falls Wildlife Trust | i. Establishment of Community guardians  
ii. Disease monitoring and control  
iii. Providing transport and food supplies to PAC teams  
iv. Educating the community on HWC mitigation  
v. Raising conservation awareness among school children through sponsored trips | i. Negative attitude from community members |
| HRD CAMPFIRE | i. Problem animal control  
ii. Educating the community on HWC mitigation | i. Reluctance to use other strategies by the community when PAC teams are around  
ii. Restrictions from entering the Forestry Commission area  
iii. Negative attitude from community members |
| ZimParks | i. Problem animal control  
ii. Educating the community on HWC mitigation | No challenges mentioned |

Source: Primary data

Key among the strategies put in place by organisations is problem animal control. CAMPFIRE is at the forefront of this program. PAC teams are deployed to the community every year during the summer season. They are equipped with guns. Steps are taken to control problem animals. Firstly, they scare the animals with light guns. If need be, they drive the animals to the forest. In the event that the animals charge at the team, they use heavy caliber guns and apply the lethal method. The lethal control method also applies in the event that the animal becomes more troublesome,
portraying uncontrollable behavior or is driven away and comes back within a short space of time over and over again.

In implementing this strategy, CAMPFIRE is assisted by the Victoria Falls Wildlife Trust who provide transport for the PAC teams if there is need. They also provide food supply for the PAC teams. This makes the VFWT a major partner in problem animal control. This is also one of the areas were ZimParks features in. a key informant who represented ZimParks had this to say:

In as much as we are the custodians of wildlife management in the country, when it comes to communal areas, CAMPFIRE is at the forefront. The same applies with Chikandakubi. CAMPFIRE is always in control of the mitigation processes and we intervene when they request for assistance. That is when they are overwhelmed by problem animals.

To complement efforts made to control problem animals. The VFWT established the community guardian program. One person from the community who is a trained tracker was employed by the organization. The duties of the community guardian are to go around the community checking if there are any wild animals that moved from the forest into the community. If any suspicious prints are noticed, the community guardian makes a report and the animal is tracked to check if it is still within the vicinity of the community or it went back to the forest.

One of the threats presented by wild animals is the spread of diseases to domestic animals. The VFWT has taken it upon itself to control diseases in order to protect domestic animals and the people. If there is an outbreak of any disease in domestic animals, they quickly rush to the community to collect samples which are taken to their laboratory for testing. The community is often affected by foot and mouth. Thus the organization is always monitoring the situation and providing vaccines for the disease. The VFWT official had this to say:

The major threat to domestic animals in Chikandakubi is foot and mouth. We are always monitoring the situation. We provide vaccines for the disease and also collect samples for testing if there is an outbreak. We do this not only in Chikandakubi but in all the areas under Chief Mvuthu and Chief Shana.
Moreover, VFWT is involved in immunizing dogs in the community against rabies. This move protects the domestic animals as well as the people as the rabies virus has far reaching effects on people.

Periodically, the community is taught how to deal with wild animals. In these initiatives, the organisations partner with each other to roll out the program. In addition to being taught how to deal with troublesome wild animals, people are also taught the laws that govern wildlife management. Moreover, the VFWT community programs officer does the duty of educating the community when responding to some conflict cases. PAC teams also take time to educate the community members on how best to scare away wild animals as well as how to read their mood from the way they behave as they approach them.

4.5.1. Challenges faced by the wildlife management organisations in full filing their mandates

Hwange Rural District Council CAMPFIRE official stated that the PAC teams they deploy to Chikandakubi community often encounter negative attitudes towards the role of the problem animal controllers. The official had this to say:

> We often face a situation where we attend to HWC cases, it could be elephants in a field and everybody around expects us to kill the elephants. We have laid down procedures, steps we follow to get to the last resort which is the lethal method but they will not understand all that.

It is said that sometimes the PAC teams have had to camp in the neighboring community where the effects of elephants are less severe compared to Chikandakubi, all this as a way of escaping the anger and radical stance of the people of Chikandakubi. This then affects the time it takes for the teams to respond to cases as they will have to navigate the sandy soils. People need to appreciate the manner in which the organisations operate, the different methods and the steps followed by PAC teams when attending to conflict situation need to be made clear to them so that they know what to expect when PAC teams arrive.
With regards to this issue, the CAMPFIRE official said:

*The problem is, when PACs are deployed to the community, people relax. They do not want to use their usual strategies all they do is to call the teams. At the end of the day loses increase. They do not understand that we are here to complement each other.*

This situation is a clear indication that people are not aware that they and the PAC teams are there to complement each other. This therefore raises questions on the nature and the frequency of the education programs. People need to be taught the role of the organisations and what they can do to deal with particular situations on their own.

One of the greatest challenges faced is the restrictions put in place to protect the Forestry Commission area that borders the community. Problem animal control teams are said to be restricted from driving problem animals deep into the forest. Once the animal crosses the forest boundary, the pursuit is discontinued. The situation results in elephants wreaking havoc over and over again as they cannot be driven far away from the community.

### 4.6. Chapter summary

This chapter presented, analysed and discussed collected data. Tables and graphs were used to present the data. The nature of the HWC, the strategies used by the community as well as the role of organisations were covered, addressing all the objectives of the study. From the presented data, it can be seen that there is still a lot that needs to be done in order to reduce the impact of the conflict in this community. The next chapter gives the summary, conclusions and recommendations related to the mitigation processes as well as those related to further study.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

Drawing from chapter four above, this chapter gives a summary of the study, makes conclusions based on the results of the study and also gives the recommendations on different aspects and strategies that ought to be put in place in Chikandakubi. Recommendations for further studies are also given.

5.2. Summary

The study aimed at analysing the mitigation strategies put in place in Chikandakubi community to reduce the impact of the human-wildlife conflict. A number of issues compelled this researcher to focus on this area, which appears to be one of the challenges faced by the community of Chikandakubi.

Key among the different factors that motivated this researcher is the revelation by CAMPFIRE (2006) that most areas that are located close to protected wildlife areas tend to suffer the negative effects of human-wildlife conflict. Chikandakubi, on the basis of its vicinity to protected wildlife areas also suffers these consequences. It is worth noting that the community is one of the first victims of the animals that stray from Hwange and Victoria Falls national parks.

Despite efforts to reduce the impact of the conflict, it appears the conflict is overpowering the community and other stakeholders involved. This being testified by the series of unpleasant negative outcomes of the conflict. Animal and crop production are more of a risk to Chikandakubi farmers than an investment they should be under normal circumstances. This is so because farmers risk suffering setbacks in their farming activities as a result of the conflict.

Among other effects of the conflict is the deepening of the levels of poverty. As WWF (2017) puts it, communal farmers who are often poor and nutritionally vulnerable can lose their entire livelihood over night to wildlife. This appears to be the risk that the community of Chikandakubi is always facing in as far as crop production is concerned. The community also lives with the risk of losing domestic animas to wildlife attacks and to diseases that emanate from wild animals.

The study sought to achieve three objectives which were as follows.
i. To examine the nature of the human-wildlife conflict in Chikandakubi community.

In terms of this objective, the study looked into the nature of the conflict. The drivers of the conflict were also be discussed.

ii. To examine the strategies devised by the local people in lowering the effects of terrorising wild animals.

In this regard, the strategies used by the local people were identified and discussed. An analysis of the strategies was made to ascertain their usefulness. Issues of safety when using these strategies were also looked into.

iii. To identify the role of organisations in addressing the conflict situation.

In this regard, the study identified the measures put in place by Hwange Rural District Council CAMPFIRE, the VFWT and ZimParks in reducing the impact of the conflict. Ways through which these organisations partner the community were discussed. The challenges faced by these organisations in fulfilling their mandate and meeting their strategic targets were also looked into.

There are a number of ways through which communities and organisations approach the HWC around the world. Some of the strategies used may be opposing the principles of sustainability. Thus it becomes crucial to review the strategies in order to discommend unsustainable ones while recommending one that may be useful and environmentally friendly at the same time.

In terms of its location, Chikandakubi is located a few kilometers from both the Victoria Falls and Hwange national parks. The major activities in the community include among other, agriculture, characterised mainly by crop and animal production. Crops like millet, maize, melons and beans are produced while animals like cattle, goats, pigs and donkeys are kept. The community was established mainly as a result of in migration of people from other areas within the district.

In order to effectively achieve the study objectives, the study made use of the mixed methods approach. As pointed out by Creswell (2003), the approach combines qualitative and the quantitative approaches. It therefore ensures that the understanding of the research problem is improved. The target population for the study were households of Chikandakubi community, 10 village heads, ward five councilor and one official from the VFWT, ZIMPARKS and HRDC CAMPFIRE.
Purposive random sampling was used to select key informants to take part in the study. These key informants included the village heads, the councilor and officials from the organisations working with Chikandakubi community in HWC mitigation. For the participants from the generality of the population, the convenience sampling method was used to select the respondents. The sample size for the community representatives was 85 (33.6%). The sample size was representative of the community, thus the results obtained were generalisable to the entire population.

Data was obtained from the village heads and the councilor through a focus group discussion. From the organisations, face to face interviews were conducted with the officials that represented their organisations. For both the focus group discussion and the face to face interviews, question guides were made by the researcher to give direction to the interviews. For the members of the community, self-completed pre-coded questionnaires were used to collect data.

5.3. Conclusions

Data for this study was collected from 85 questionnaire survey respondents, 9 focus group participants and 3 face to face interview participants. Questionnaire survey participants were drawn from Batanani (52%) and Mitimitema (48%). There were 47 males and 38 females in the questionnaire survey sample. 60 (71%) respondents in the questionnaire survey had grade seven as their highest educational attainment, 13 (15%) had gone up to ordinary level while 12 (14%) did not select any option. In the focus group discussion, 8 village heads and the ward 5 councilor, whose area of jurisdiction covers Chikandakubi community attended. This gives a total of 9 participants for the group interview against the anticipated 11 participants. Out of those who attended, 2 (22%) were females while 7 (78%) were males.

Four ethnic groups were represented in the questionnaire survey sample. These were Nambya 43 (51%), Tonga 13 (15%), Dombe 16 (19%) and Ndebele 13 (15%). 70 (82%) of these respondents were married, 2 (2%) were widowed, 2 (2%) were divorced and 11 (13%) were never married. 60 (71%) had their main source of income being agriculture, the source of income for 20 (24%) was self-employment.

Two forms of the conflict that were identified were, attacks on domestic animals and destruction of crops. Lions were identified as the main culprits behind attacks on domestic animals. Hyenas
were also responsible for some of the killings. Cattle were the most effected domestic animal species with 49 killed in the past three years. A total of 79 domestic animals were reportedly killed in the past three years. The killing of domestic animals was taking place throughout the year but was at peak during the rainy season.

On crop destruction, all the respondents identified elephants as the main cause of crop damage. Baboons were also destroying crops but to a lesser extent. Crop destruction was taking place mostly in the evenings. Maize, millet and melons were the most affected crops.

49 (58%) questionnaire survey respondents were taught how to protect their animals from predators while 36 (42%) had never been taught. 93% had their animal enclosures constructed close to the home fence. 98% had high animal enclosures of above 2 meters high. 57 (67%) were setting up fire near enclosures to scare away predators at night. 75 (85%) were hanging white sacks outside anima enclosures to scare away predators. 43 (49%) were keeping dogs for warning purposes. Only 17 (20%) were standing guard in the enclosures when predators were noticed in order to scare them away.

Moreover, 71 (84%) were producing noise to scare away predators. 84 (99%) were making sure that their animals were in the enclosure every night. 11 (13%) were throwing objects at predators to scare them away. 24 (28%) were herding domestic animals in groups. 82 (96%) were seeking assistance from organisations. 28 (34%) were satisfied with the role of the organisations while 54 (66%) were not satisfied.

Forty-two 42 (49%) respondents were taught how to deal with crop raiding animals while 39 (46%) had never been taught. All the respondents (100%) were guarding their fields in the evenings. 59 (69%) were setting up fire in their fields in the evenings to scare away elephants. 16 (19%) were throwing glowing sticks at invading animals. Eighty-two82 (96%) were using noise to scare away invading animals. 2 (2%) were throwing stones at invading animals. Two (2%) had formed patrol groups. 83 (98%) were requesting for assistance from organisations. Organization representatives were taking more than 30 minutes on average to respond to cases.

Three organisations were working with the community. These were ZIMPARKS, VFWT and HRDC CAMPFIRE. VFWT and HRDC CAMPFIRE were actively involved while ZIMPARKS featured occasionally. HRDC CAMPFIRE had the PAC program in place. The VFWT was
assisting the PAC teams with transport and food supply. The VFWT had put in place community guardians to complement PAC. The VFWT was also active in disease monitoring and control. The organisations were also partnering each other in rolling out education programs to the community. Negative attitudes from community members, reluctance of the community to use other strategies when PAC teams are deployed and restrictions from entering the nearby Forestry Commission area were the challenges faced by the organisations.

5.4. Recommendations

From the results of this research some recommendations can be made. As a way of putting in place preventive measures, the dilapidated fence that separated the National Park area and the communal areas needs to be revived so as to minimize the number of wild animals that make their way into the community. Wild animals inhabiting the nearby forest also need to be driven to the National Park area as a way of relocating them from the vicinity of the community. Dealing with animals that stray from the National Park could be less difficult that dealing with animas that permanently reside within the vicinity of the community. To complement these efforts, farmers can also dig trenches around crop fields to make the environment hostile to elephants. Chili peppers can also be planted around crop fields. Elephants are allergic to chili, thus they will make the environment hostile to them. In place of using fire to repel predators from animal enclosures, farmers can place solar powered lights in the enclosures in order to save the environment from being degraded.

Education sessions offered to the community need to be conducted frequently. Conducting them every year before the rainy season can have a more positive impact. Apart from educating the community on mitigation options, wildlife management laws and the role of PAC teams ought to be incorporated. Farmers also need to be compensated for loses induced by wild animals. This ensures that their relationship with wildlife does not lead to fatalities on the side of the animals and the environment in general. Further studies can focus on people’s perceptions on the human-wild life conflict, focus can be directed towards what they wish could be done to solve the problem.
5.5. Chapter summary

This chapter summarised the study by giving brief information contained in chapter one and three. A summary of the research findings was given, ranging from socio-demographic information of the respondents to the role of organisations in HWC conflict mitigation. Recommendations relating to this study and those relating to future study were also given. Future research can focus on the perceptions of people towards wild animals as well as how these perceptions are affecting the conflict situation.
REFERENCES


FAO (2009), Human-wildlife conflict in Africa Causes, consequences and management strategies. Rome, Italy: FAO.


Appendices

Appendix 1: Questionnaire on the nature of the human-wildlife conflict and the community devised mitigation strategies.

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF GEOGRAPHY

QUESTIONNAIRE ON THE NATURE OF THE HUMAN-WILDLIFE CONFLICT AND THE COMMUNITY DEVISED MITIGATION STRATEGIES.

Introduction

Good morning/afternoon. My name is Nqobile Sibanda, I am a student of Bindura University of Science Education, under whose auspices I am conducting a study to understand the strategies you use to minimise the effects of wildlife in your community. The study is meant for academic purposes only.

PLEASE DO NOT PUT YOUR NAME ON THIS QUESTIONNAIRE.

Your responses in this questionnaire will be treated with high levels of confidentiality. The questionnaire should take you about 10 minutes to complete.

You are free to stop completing the questionnaire completely or to leave out any question if you so wish, though you are strongly encouraged to complete it in full.

Should you need clarification on any item please feel free to ask, I am at your disposal.

Thank you.

Instructions

For each question please TICK IN THE BOX PROVIDED, or fill the information in the spaces provided.

SECTION ONE: SOCIO-DEMOGRAPHIC INFORMATION

1. Gender of respondent
i. Male □
ii. Female □

2. Name of village……………………………

3. Age □ Years.

4. What is your highest educational attainment?
   i. Grade 7 □
   ii. O-Level □
   iii. A-Level □
   iv. Other (specify)

5. Which of the following would you consider your ethnic or language group?
   i. Nambya □
   ii. Tonga □
   iii. Dombe □
   iv. Ndebele □
   v. Nyanja □
   vi. Other (specify)

6. What is your marital status?
   i. Married □
   ii. Divorced □
   iii. Widowed □
   iv. Never married □

7. What is your main source of income?
   i. Formerly employed □
   ii. Self employed □
   iii. Agriculture □
SECTION TWO: STRATEGIES USED TO REDUCE ATTACKS ON DOMESTIC ANIMALS.

1. Have you lost some livestock to wildlife attacks in the past 3 years?
   Yes [ ] No [ ]

2. If your answer to the above question is yes, which animals did you lose? *Show by writing the number of animals lost in your choice in the box.*
   i. Cattle [ ]
   ii. goats [ ]
   iii. pigs [ ]
   iv. donkeys [ ]
   v. Other (specify)…………………………………………

3. Which wild animals are involved in the killing of domestic animals?
   i. Lions [ ]
   ii. Hyenas [ ]
   iii. Leopards [ ]
   iv. Other (specify)……………

4. During which time of the year do wild animals attack livestock?
   i. Throughout the year [ ]
   ii. During the dry season [ ]
   iii. During the rainy season [ ]

5. Have you ever been taught how to protect your livestock from carnivores?
   i. Yes [ ]
   ii. No [ ]

6. From the list of strategies below, which ones do you use to protect your animals from wildlife attacks?
   i. Setting up fire near the animal enclosure at night. [ ]
   ii. Constructing animal enclosures very close to the home fence [ ]

   *If this is your choice, how far is your animal enclosure from the home fence?*
   0 to 5 meters [ ]
If this is your choice, what is the approximate height of your animal enclosure?

- 1 to 1.5 meters
- 1.5 to 2 meters
- 2 to 2.5 meters
- Above 2.5 meters

If this is your choice, are you satisfied with the response from the authority?

- Yes
- No

SECTION THREE: STRATEGIES USED TO REDUCE CROP DAMAGE.
1. Which of the following animals are usually involved in crop destruction in your fields?
   i. Elephant
   ii. Baboons
   iii. Buffalos
   iv. Zebras
   v. Other (specify)…………………………….

2. At what stage of crop maturity do wild animals destroy crops?
   i. When the crops are still small
   ii. When the crop are about to reproduce
   iii. When the crops are ripe

3. At what time of the day do wild animals break into the fields?
   i. In the morning
   ii. In the afternoon
   iii. In the evening
   iv. In the middle of the night

4. Which crops are usually destroyed by wildlife?
   i. Maize
   ii. Millet
   iii. Groundnuts
   iv. Melons
   v. Other (specify)…………………………

5. Have you ever been taught how to deal with crop raiding animals?
   i. Yes
   ii. No
6. Which of the following strategies do you use to reduce crops damage by wild animals?

   i. Standing guard in the fields in the evenings
   ii. Setting up fire in the fields in the evenings
   iii. Scaring away wild animals with glowing sticks
   iv. Making noise to scare away the invading animals
   v. Throwing stones at the invading animals
   vi. Planting chili pepper around the field
   vii. Putting in place watchtowers in the fields
   viii. Forming patrol groups
   ix. Growing crops that are not liked by wild animals
   x. Requesting for assistance to chase away the animals from wildlife management stakeholders

   **If this is your choice, how long does the authority take to respond?**

   a. They don’t respond
   b. Below 20 minutes
   c. 20 to 30 minutes
   d. 30 minutes to 1 hour
   e. More than 1 hour

   THANK YOU
   GOD BLESS YOU!!
Appendix 2: Question guide for interviews with key informants (focus group discussion)

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF GEOGRAPHY

QUESTION GUIDE FOR INTERVIEWS WITH KEY INFORMANTS (FOCUS GROUP DISCUSSION)

Introduction

Good morning/afternoon. My name is Nqobile Sibanda, I am a student of Bindura University of Science Education, under whose auspices I am conducting a study to understand the strategies you use to minimize the effects of wildlife in your community. The study is meant for academic purposes only.

SECTION ONE: STRATEGIES USED TO REDUCE THE LOSS OF LIVESTOCK TO PREDATORS.

1. Which animals are involved in the killing of domestic animals in your community?

2. During which time of the year do the killings take place?

3. Based on your observations, do you think the predators live permanently in the surrounding areas or they migrate from faraway places?

4. Which domestic animals are mostly attacked by the predators?

5. What strategies do people use to reduce the loss of livestock in this community?

SECTION TWO: STRATEGIES USED TO REDUCE CROP DAMAGE.
1. Which animals are involved in the destruction of crops?

2. Which crops are mostly affected?

3. At what stage of crop maturity do wild animals begin to break into the fields?

4. During which times of the day do they break in?

5. What strategies do people use to reduce the destruction of crops?

SECTION THREE: ASSISTANCE RENDERED BY ORGANISATIONS.

1. Which organizations are assisting the community in reducing the impact of wildlife?

2. How does each organisation stated in 1 above assist the community?

3. Are you satisfied with the kind of assistance you receive from these organisations?

4. How do you think these organisations can improve their operations to better assist your community?
Appendix 3: Question guide for interviews with key informants (wildlife management stakeholders)

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF GEOGRAPHY

QUESTION GUIDE FOR INTERVIEWS WITH KEY INFORMANTS (WILDLIFE MANAGEMENT STAKEHOLDERS)

Introduction
Good morning/afternoon. My name is Nqobile Sibanda, I am a student of Bindura University of Science Education, under whose auspices I am conducting a study to understand the strategies put in pace to reduce the impact of human-wildlife conflict in Chikandakubi community. The study is meant for academic purposes only.

1. Firstly can you confirm that your organization’s programs include Chikandakubi community?

2. What is the main thrust of your organization?

3. How much area do you cover?

4. Do you keep statistics on loses induced by wildlife in the communities you are working with?

5. Talking about Chikandakubi in particular,

   i. What measures have you put in place to reduce the number of livestock killed by predators?
ii. How is your organization helping the community deal with diseases that can be transmitted from wildlife to domestic animals?

iii. How is your organization helping the community reduce the amount of crop damage by wildlife?

iv. Do you have education programs for the community, 

What is the nature of the education programs?

6. What are some of the challenges you face in meeting your objectives and targets?

7. Which other organisations do you work with?

8. How is the cooperation between yourselves and the partner organisations?