

The Political Ecology and Economy of Protected Areas and Violence: a Case Study of the Conflict of the Kivus in the Democratic Republic of Congo

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Abstract

The role that national parks play in violent conflict has rarely been discussed. Conflict literature focuses on the interaction of specific natural resources on the initiation and perpetuation of war and debate has emphasised the degree to which resource scarcity and abundance are pertinent. The role of space, particularly environmentally-significant areas, in shaping these trajectories has been subject to limited interrogation. Drawing from political economy literature, the dissertation explores the relationship between occupation of these spaces by armed groups and the desire to acquire financial and material resources. Furthermore, by situating the study sites within their historical and political context, the dissertation also investigates linkages to political ecology models which seek to explain how environmental changes shape wider political and economic processes and how they in turn shape environmental change.

This work undertakes a case study approach, focussing on two national parks in Eastern Democratic Republic of Congo that have been subject since the 1990s to the world's deadliest conflict in the post-World War II era. By mapping conflict related health data in proximity to the case study sites, comparisons between the two sites were possible due to similar geographic attributes (namely protected area status) and political context. Positive linkages between levels of violence as a result of the armed conflict were established across both sites. Higher levels of violence in proximity to the national park that lacked valuable conflict-related resources point to the relative importance of location versus the economic benefit of occupying these spaces. This is substantiated by qualitative analysis across the two sites and a household survey around one. Therefore, it is concluded that national parks influence violence by virtue of their status as state-owned entities; by their possession of valuable resources; and by the strategic value of their location. Hence, it may be argued that the role of environmentally-significant spaces in armed conflict is worthy of further empirical analysis in studies of political ecology.

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Acronyms

ACLED	Armed Conflict Location and Event Dataset
ADFL	Alliance des Forces Democratiques Pour la Liberation du Zaire
AFECOD	Association de femmes pour la conservation de la nature et le developpement durable
AIC	Association Internationale du Congo
ALIR	Armée de Libération du Rwanda
CBCA	Commuauté Baptiste au Centre de L’Afrique
CNDP	Congrés national pour la defense du people
CRN	Christian Relief Network
DDRRR	Disarmament, Demobilisation, Repatriation, Resettlement and Reintegration
DOCS	Doctors On Call For Service, Inc.
DRC	Democratic Republic of Congo
ESO	External Security Organisation
EU	European Union
FAR	Forces Armées Rwandaise
FARDC	Forces Armées de la République Démocratique du Congo
FAZ	Forces Armées Zairois
FDLR	Forces Démocratiques de Libération du Rwanda
FNL	Forces nationales de liberation
FOCA	Forces Combattants Abucunguzi
GBH	Grievous bodily harm
GDP	Gross domestic product
GESOM	Grouped’entraide et de solidarité médicale
GIS	Geographic Information Systems
GPS	Global positioning system
HiCN	Households in Conflict Network
ICRC	International Committee of the Red Cross
IGCP	International Gorilla Conservation Programme
IMC	International Medical Corps
IMF	International Monetary Fund
IPIS	International Peace Information Service
IRC	International Rescue Committee
IRC	International Rescue Committee
IUCN	International Union for the Conservation of Nature
KBNP	Kahuzi Biega National Park
MAR	Minorities at Risk
MIB	Mission d’Immigration des Banyarwanda
MLC	Mouvement pour la Liberation du Congo
MNC	Mouvenment National Congolais

MONUC	Mission de l'Organisation des Nations Unies en République démocratique du Congo
MSF	Médecins Sans Frontières
NGO	Non-governmental organizations
PARECO	Coalition of Patriotic Congolese Resistance
PNV	Parc National des Volcans
PPS	probability proportional to size
PRIO	International Peace Research Institute Oslo
PSA	Parti Solidaire Africain
RCD	Rassemblement Congolaise pour la Democratie
RCD-ML	RCD-Mouvement de Liberation
RCD-N	RCD-National
RDR	Rassemblement pour le retour des Réfugiés Rwandais
RPA	Rwandan Patriotic Army
RUD	Rally for Unity and Democracy
RUF	Revolutionary United Front of Sierra Leone
SADC	The South African Development Community
SGBV	sexual and gender-based violence
UCDP GED	Uppsala Conflict Data Program Georeferenced Events Dataset
UMHK	Union Minière du Haut-Katanga
UNEP-WCMC	The World Conservation Monitoring Centre of the United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNITA	União Nacional paraa Independência Total de Angola
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNSC	United Nations Security Council
VNP	Virunga National Park
USD	United States Dollars
WHO/EPI	World Health Organization Extended Program on Immunisation

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I therefore dedicate this thesis to the many Congolese women, children and men who live in fear everyday as well as my father, Joseph Rainer, whose gentle wisdom I miss every day.

SECTION 1: SITUATING CONSERVATION AND ARMED CONFLICT: THEORETICAL, CONTEXTUAL AND METHODOLOGICAL CONSIDERATIONS

Introduction

Over 150 rangers have been killed conserving remnants of gorilla populations in the hinterlands of dormant volcanoes in the Virunga National Park of the Albertine Rift of Central Africa. One of the most biologically diverse parts of the planet, it is a region of unparalleled natural beauty, encompassing glacier-covered mountains, active volcanoes, never ending savannahs and dense tropical forests. Its scenic diversity is surpassed by the variety of fauna and flora that includes mountain gorilla, okapi and chimpanzee amongst its residents. Once teeming with huge numbers of wildlife that included the highest population of hippopotamus in the world, these majestic animals and many others have been decimated by decades of violent conflict in the Kivu region of the Democratic Republic of Congo. The loss of lives of wildlife rangers pales in comparison to the human fatalities in the wider population and the pervasive and brutal sexual violence that has engulfed this area in what has become to be known as the deadliest conflict since World War II. Surprisingly, major debate about the way resource-rich areas are believed to drive conflict through either greed or grievance or a combination of the two does not consider areas set aside for the conservation of biodiversity, such as the national parks of the Albertine Rift.

My experience whilst working in the region to conserve critically endangered populations of mountain gorillas informed my decision to seek a deeper understanding into why that might be the case. Clearly a wider conflict was in place but why was it that at almost every regional meeting we

were informed of more deaths of more colleagues in the very national parks that we sought to manage? Were these areas relevant among the wider atrocities and human rights violations that were on-going in the region? Was there a correlation between these areas and the wider violence in the region? And were we trying to achieve the impossible in a space that was targeted and beyond our capacity to effectively conserve? My scientific background compelled me to subject these hunches to empirical test and uncover if spaces set aside for the conservation of biodiversity are a factor in one of the deadliest conflicts of recent times.

A discussion about armed conflict cannot circumvent a consideration of the possible causes and origins. Of about 50 wars and armed conflicts occurring in 2001, natural resources were strongly associated with contributing to triggering or perpetuating their continuation in approximately 25% (Renner 2002). Understanding the role that natural resources play in conflicts is clearly desirable. Within the framework of political economy, where a relationship to natural resources and onset of conflict is proposed, it has been considered to be direct, financing rebel activity (Collier and Hoeffler 2004) or indirect (Lam and Wantchekon 2003), whereby abundance in natural resources leads to a decrease in economic growth. Additional factors such as historical context, ethnicity, greed and grievance are also acknowledged. Substantial work on the location and impact of specific natural resources such as oil, diamonds and timber conducted in political ecology studies (Peluso and Watts 2001) has also been undertaken. Furthermore, the role of research at specific scales, introduced into the debate on relevant methodologies in the 2000s (Buhaug 2007; Dalby 2007; LeBillon 2007; O'Lear and Diehl 2007) informed the research design of this thesis.

Possibly, the most stark example of forest habitat destruction in the name of security was the spraying of 72,400m³ of herbicide in Vietnam by the US military, clearing 325,000 ha of land (Westing 1982 cited in McNeely 2003) resulting in significant declines in both freshwater and coastal fisheries, high diversity forests being replaced by grasslands of lower diversity and mangroves being replaced by mudflats (Nietschmann 1990 cited in McNeely 2003). Neither of the major theoretical frameworks that explore the interface of natural resources and conflict makes any reference to spaces set aside for conservation of biodiversity. This is a crucial and problematic omission. Protected areas account for almost 12% of the world's land surface and a small proportion of marine area (Chape et al. 2004a; Chape et al. 2004b). They are a primary strategy for biodiversity conservation. The importance of biological diversity and its conservation is considered critical for development and necessary for future generations. Destruction of these areas can compromise future income from ecotourism, game ranching, medicinal research and sustainable harvesting (Hayes and Burge 2003b; WCED 1987). The necessity to incorporate aspects of conservation to conflict studies is fundamental if both contributions to sustainable development and conflict resolution are to be made.

This thesis therefore asks *how space, in particular the space of a national park, a factor in the dynamics of armed conflict and what this means for the relative contribution of conservation action to conflict studies and environmental governance?* To answer this question I considered the following:

1. National parks are centres of violence in that they are sources of violence and victimization rates decline as the distance from the park increases;

2. National Parks are spaces devoid of state presence contributing to their utilization by militias as bases from which to raid and loot households in proximity to the park;
3. National Parks are utilized by militias predominantly for economic reasons, exploiting the natural resources that are available there; and
4. National Parks are predominantly located in borderlands contributing to their utilization by militias for strategic reasons to further their ideological goals.

By subjecting these research questions to empirical test, this thesis uncovers how spaces set aside for the conservation of biodiversity are relevant in a deadly conflict. A mixed approach was employed that utilized both quantitative and qualitative methods. Mapping sexual violence incident data in relation to the geography of two national parks established a link between levels of violence and distance from the parks that was positively correlated. This method also enabled comparisons between the two national parks to be made. An additional quantitative method employed a household survey around one national park to substantiate and provide a more nuanced insight between violence and parks. Qualitative methods utilized key informant interviews and focus group discussions to reveal the conditions that explain associations. Levels of violence were found to be higher in proximity to the national park, confirming a linkage between violent conflict and conservation action. Further findings demonstrate that economic drivers are a factor but grievance-derived variables are more significant. By situating the national parks within their historical and political context utilizing a political ecology theoretical framework, insights into the importance of location and tenure of protected areas in contributing to conflict dynamics are uncovered.

These findings highlight a gap in political ecological research on conflict, whereby the construction of a particular space is significant. With national parks proven to be a variable in the dynamics of the conflict, the implications for policy responses are significant. An elevation of environmental consideration in conflict resolution frameworks becomes apparent. Ultimately, this study provides an improved understanding of the factors that shape violent conflict.

Rationale of study

There are major debates that consider political economy and political ecology in the initiation and perpetuation of conflicts. This thesis ultimately explores two of them, political ecology and political economy, which, though connected, have opposing emphasis on conflict drivers. Political economy focuses on the influence of economic factors on conflict whereas political ecology acknowledges economic influences but emphasizes the role of the environment on political processes and in turn how political processes impact not only the construction of environmental issues but also tangible changes to nature. Neither of these schools of thought considers the role that protected areas, established to conserve biodiversity, have on the dynamics of armed conflict. The thesis utilizes micro-level empirical data and a novel method to bear on the subject, through a combination of qualitative and quantitative approaches. This thesis is an original theoretical contribution informed by geographic and longitudinal evidence on the relations between national parks and armed conflict.

Employing a case study approach, the geographic focus is on the Kivu region of eastern Democratic Republic of Congo (DRC). This region, in particular, has been subject to extreme violence for close to two decades. The DRC is

richly endowed in valuable natural resources and the contestation of these resources has been a key driver in the conflict. Although this aspect of the DRC conflict has been subject to academic treatment, there has been a shortage of data-driven research and a flawed understanding of the specific relationships between protected areas and armed conflict. This has major policy and programming implications with real consequences for millions of people, and women in particular. By furthering our understanding of the role of space in conflict, original contributions to conflict studies are made. And although modest, this thesis has a, nonetheless, critical contribution to make to the ongoing broader debate about violence that continues to engulf the Kivus.

Thesis structure

The objective of Chapter 1 is to present an analysis of the key theoretical frameworks that incorporate natural resources and violent conflict. It focuses on two theoretical frameworks – political economy and political ecology. The initial theoretical framework explored is political economy that argues that economic factors are central to the onset and perpetuation of conflict, and resource abundance is the driver. This section explores what is commonly referred to as the greed versus grievance dichotomy to understanding wars. It also reviews literature on rentier economies which are as a result of abundant natural resources affecting economic growth and contribute to the creation of weak states. Spatial aspects to the political economy of conflict are explored in relation to the role of borders and borderlands. Linkages are made to protected areas that are created as a result of internal borders and located in borderlands which although not explicit in border studies are presented are relevant. Critiques of methods, in particular the lack of disaggregation of different types of resources, are made to all aspects of political economy of conflict. These analytical frameworks are contrasted by

the limited research on rebels' perspectives and access to natural resources and how this influences short- and long-term gains and group cohesion as well as relevance of horizontal inequality in contributing to conflict onset and duration. Ultimately, greed and grievance are often at play in conflict contexts and this is explored in relation to borderlands.

By combining culture, power and political economy, political ecologists bring together economics, location of natural resources, geography and ideology of conflict into the debate on relevant conflict variables. They have explored the role of scarcity in contributing to conflict, as a result of state appropriation or elite capture at the expense of groups living within or in proximity to these resources. However, critiques point to overemphasis on power relations and politics, which excludes ecological considerations in environmental change. They also question the integration of two analytical spaces, political and environmental, which are not necessarily connected. The role of construction of nature in relation to conflict is also considered. It is presented in a section on the political ecology of conservation, which analyses the impact of conservation action on society, in particular the repercussions of displacement of local populations. The inclusion of this section has implications for understanding the construction of national parks within the African context.

A chapter on the historical context of the conflict is critical to understand the dynamics of actors in the region. It enables an appreciation of wider factors over the timeframe and location that this thesis focuses on. Chapter 2 not only provides wider detail on the context of conflict in the DRC but also highlights the consistent role that natural resources have played in shaping this trajectory. This chapter focuses on the role of natural resources not only

in the conflict of the 1990s but its significance subsequent governance of Zaire by the infamous despot Mobutu Sese Seko. Mobutu's tenure, within the broader global political context, further utilized the natural resource wealth of the then-named Zaire to entrench patterns of governance and management that ultimately set the stage for the conflicts of the 1990s. Further influences of Mobutu's style of governance built on administrative systems established under colonization, in particular the impact of regional political dynamics.

The role of natural resources in the perpetuation of the conflicts of the 1990s is also elaborated. Detail on not only the formation of key-armed groups but also how economic agendas shaped the changing dynamics is highlighted. Detail on the 2006 post-election factions that continued to be major players in the on-going violence in the eastern region of DRC namely the *Forces Démocratiques de Libération du Rwanda* (FDLR) and the *Congrès national pour la défense du peuple* (CNDP) is presented. The final section details the processes that lead to the creation of two national parks in the Kivus – Virunga and Kahuzi Biega National Parks. It also includes detail on the effectiveness of the protected area agency since its creation and during the 1996 and 1998 wars. The parks presented in this final section had been identified as the case studies for interrogation. Detail on the impacts of the 1996 and 1998 wars by refugees and militias on the parks in question provide a background to the documented perceptions of the use of these spaces. This chapter is not an exhaustive review of the history of the DRC and conservation movement but serves to provide detail on key aspects of its historical make-up that relate to natural resources and national parks. The narrative presented provides specific detail on historical political processes that influenced the dynamics of conflict in the Kivu region of Eastern DRC. The build-up to the 1996 and

1998 civil wars as well as detail on key actors. Further detail on the evolving dynamics of the 1996 and 1998 conflicts till the 2000s are also presented as well as the evolution of conservation with a focus on two national parks. By contextualizing the political and historical context that impacts the geographic areas of the case study, this chapter provides an important source of information that impacts the inferences made.

Chapter 3 presents detail on the research design and methodology. It initially presents the role of geography in conflict research and the advantages and relevance of this approach to informing our understanding of the dynamics and drivers of armed conflict. It subsequently presents an analysis of the emergence of conflict research methods that increasingly look to incorporate more localized methods. This is in response to macro-level analysis that has often times not ascribed causality. The academic community has responded to this through the development of numerous datasets. This chapter explores the various advantages and limitations of these datasets as well as the use of Geographic Information Systems (GIS) as an important tool in localized conflict research. The relevance of localized research for this thesis is a critical factor underpinning the choice of methods. This is supported by research at local level that has influenced understanding of conflict variables. The lack of consistency in findings and design challenges that have to be overcome to better inform analysis is discussed.

By highlighting the fact that areas of high biodiversity have received little attention in conflict research, the chapter further justifies the thesis focus and presents detail on the methods that were used. These included GIS and case studies but also a range of methods that focus on individual civilians. The individual level conflict data collection methods incorporated health data

and household data and were obtained through medical records and a household survey. The data collected from these methods were analysed primarily using quantitative tools. However, a qualitative methods component utilized informal and semi-structured interviews. This combination of qualitative and quantitative methods added robustness to findings.

The research design and methodology chapter also includes a discussion on some of the challenges of conducting research in a conflict zone. It explains how the design compensated for unanticipated events in relation to lack of access but also some of the ethical considerations that were incorporated into data collection. This was particularly pertinent in relation to the individual level conflict data and qualitative data. The final section of this chapter presents the four main research questions derived to establish if there is a relationship between national parks and armed conflict and what is driving the association. The methodology essentially builds on emerging trends in localized research and establishes new datasets that enable a little-researched variable in conflict studies to be interrogated.

Whereas part I of the thesis presents the theoretical, methodological and contextual frameworks, part II focuses entirely on the empirical aspect of the dissertation. The methodology chapter is followed by three empirical chapters that focus on establishing whether there is a linkage between armed violence and national parks in the Kivu region and what is driving this association.

The initial chapter of this section focuses on responding to whether national parks are centres of violence in that they are sources of violence and

victimization rates decline as the distance from the park increases. Its purpose is to establish whether there are any correlations between the space of a national park and the dynamics of conflict. Without clarifying this at the onset of the empirical section, subsequent research questions on the possible drivers of a linkage become redundant. Quantitative analysis utilizing civilian injury data, of which sexual violence data was found to be the most robust, was conducted to address the first research question. Chapter 4 presents detail on the data that was collected in proximity to both KBNP and VNP to establish levels of violence. Civilian injury data was utilized as a proxy ascertaining the character, intensity and organization of violence. It initially presents the findings on injury data that provides insights into gender, location of incidents, perpetrators and cause of injury. The lack of consistent record-keeping at health facilities in the region meant that statistical analysis yields little insight. However, the overlap with areas of sexual violence meant that utilizing sexual violence data was also a valid proxy. The quality of sexual violence data was much more consistent due to availability of significantly more resources to treat victims. Analysis on the gender, location of incident, environment of incident, distance from the boundary of the park and perpetrators all provide information that builds a picture of how the geography of violence plays out in relation to the mountain sector of KBNP and southern sector of VNP. As the data was collected at a resolution that was pinpointing locations down to the size of a village, it meant that the diversity in terrain across the southern sector of VNP could also be included in deductions about its relative importance on contributing to armed conflict. The role of terrain in conflict has been subject to various analyses but with mixed results and this chapter provided the opportunity to provide some clarity on its significance

The treatment of the data across both sites meant that comparison analysis could be conducted in Chapter 6 to respond to the other research questions. Following on from the focus of interrogating relationships between protected areas and armed conflict utilizing localized research, this chapter demonstrates the value of this approach in establishing linkages. Further detail of the challenges of conducting research in war zones where lack of access and consistency across the board are significant factors in how data is collected and ultimately analysed and interpreted were also presented. These challenges affected the longitudinal aspect of the time frame under analysis and choice of data to finally establish linkage.

The objective of Chapter 5 is to drill down and garner a better understanding of the perceptions and impact of national parks on households in proximity to KBNP. This chapter presents the findings from a household survey that not only investigates if there was a relationship between proximity to the national park and levels of violence but also to solicit insights of perceptions of the national park, in particular in relation to personal security and welfare during armed conflict. By investigating the impact of conflict in relation to the national park at the household level, this chapter provides local detail that further informs understanding of possible connections between civilian populations, national parks and armed conflict. The use of a household survey as the method of choice enabled comparable data that could be quantitatively analysed for any trends. However, aspects of the questionnaire allowed qualitative responses to be integrated and interrogated. Sampling was conducted along distance strata to examine the role of the protected area as well as along political boundaries that also reflect traditional boundaries (chieftaincies). This meant that differences across ethnic groups could be elicited.

Initial sections of the chapter highlight the various socio-economic contexts of the households included in the survey. Through the use of proxies, such as amount and type of ownership of items including radio, bicycle and motorbikes, relative wealth was established. This was utilized in analysis against the distance and chieftaincy variables. Findings also present the extent of landownership and use against distance from the park and within and against specific chieftaincies. The impact of the conflict on ownership of livestock, which is an important cultural and economic asset for many individuals around KBNP was also evaluated before the conflict and at the time of data collection. Households were asked about incidences of looting and the probability of this happening in relation to distance from the park and location in a particular chieftaincy was also explored. The final section of analysis looks to the qualitative data collected through the survey, which sought to capture perceptions of respondents to the protected area. It considers whether respondents perceive the national park to be a centre of violence or a space that has a different utility. Findings from this analysis were further reinforced by an interview with the Chief of Bunyakiri and a focused group discussion with women from the same location. Ultimately a range of variables was found to be factors in levels of violence but not all were clearly linked to the national park. They point to the use of the park as a base from which militias raid and loot from. These findings highlighted complexities in the dynamics of the conflict that had not been previously identified. Conclusions about the impact of these finding not only on the specific research questions derived for this study but also methodological considerations are explored in the conclusion.

The initial section of Chapter 6 presents the results from comparisons in levels of sexual violence between the two parks. This analysis provides the most significant input into understanding the relative differences in availability and value of primary commodities or conflict resources between the two parks and location on levels of violence. This was possible because the southern sector of VNP is devoid of conflict resources and located in the international border with Rwanda whilst KBNP has abundant deposits of a number of valuable commodities. This analysis supports deductions to be made that enrich debates around the relative role of greed versus grievance in conflict.

The subsequent section of this chapter presents findings of a relationship between national parks and violent conflict that respond to research questions 3 and 4. These were based on data collected on an initial visit to the region in September to October 2006. The findings from this initial site visit provided insights into how the dynamics of armed conflicts are manifesting themselves through impacts on civilians and women in particular. In addition to this, a series of semi-structured and informal discussions and interviews conducted during the main data-collecting phase in 2007–2008 are analysed. Difficulties in accessing former combatants highlight some of the challenges of conducting research in a conflict zone. These interviews and discussions confirmed indications of a relationship between national parks and levels of violence. They also informed the detail on the possible drivers for this. Interviews with conservation practitioners and former members of the FDLR were particularly insightful. Conflicting findings in the rationale behind the use of national parks during conflict were uncovered between the former combatants and conservation practitioners. This chapter teases out the reason behind these contrary findings. It presents a case for the

significance of the location of the national park close to or along international boundaries and how this supports grievance-derived drivers of the use of the national parks by militias. The findings ultimately serve to present an understanding of the purposeful use of protected areas in conflict that had not been previously considered.

1 Violent conflict, natural resources, borders and national parks

My early professional life was engaged with the practical aspects of achieving sustainable natural resource management and conservation of mountain gorillas at a local level. My background in the biological sciences had shaped my approach to addressing environmental issues, which tended to rely on scientific findings to inform action. I am somewhat reluctantly wading into new conceptual territory. I do so because armed conflicts are spilling over into the geography of biodiversity conservation not only literally but also conceptually. I have therefore had to grapple with, what is to me, an entirely new conceptual approach and in the process had to engage in often-dense debates on the causes of and perpetuation of conflict. I do so not entirely by choice but rather out of necessity. As a result, this chapter represents a hard fought engagement with the burgeoning literature of armed conflict and natural resources. It is also an acknowledgement of the necessity for a more nuanced analysis of the interactions between humans and nature, particularly in contexts where the costs to both can be devastating.

My arrival at this point is reflected in the increasing importance placed, since the beginning of the 21st century, on the environment and humanity's role in its exploitation and how that affects wealth and well-being. Nothing captures the extent of inclusion in local, national and international dialogues about the environment as much as the current debate on climate change. The influence of natural resources on the dynamics of armed conflict is one aspect of the interrelation between human well-being and the environment that has been subject to various academic treatments. This interrogation emerged in response to the changing context within which armed conflicts occur. The

end of the cold war was the defining moment although it is the changes in conceptual frameworks, rather than a change in the way conflict occurred, that is worthy of acknowledgement (Kalyvas 2001).

There is a large amount of literature on the environment and conflict that straddles a number of disciplinary traditions, encompassing economics, ecology, international relations and geography. Very broadly, this chapter presents a survey of the literature on the role of greed (political economy), grievance, borders, borderlands, and political ecology not only on armed conflict but also in relation to the social impact of national parks. The role of greed and grievance in conflict was considered an appropriate starting point for understanding the existing frameworks that consider the space of national parks either directly or indirectly in violent conflict. For the purposes of analytical clarity, the emphasis in this chapter is on two separate bodies of thought – political economy and political ecology.

This chapter details theoretical debates regarding the onset and duration of conflict (in relation to natural resources) and the factors that have been highlighted as relevant by researchers. It brings to bear the relevance of natural resources in spatial contexts that consider borders and borderlands and national parks. It concludes with a general discussion of the bewildering array of variables and definitions that span the subject. In highlighting the gaps, the necessity for further investigation of linkages between geographic space and conflict are presented.

More recent approaches have touched on the philosophical foundations regarding justification for intervention in conflict contexts specifically to protect nature (Humphreys and Smith 2011). This emerging body of work

will not be dissected due to its focus on species of wildlife and definition of war specifically related to poachers combatting the state to secure valuable wildlife resources. The use of nature and natural resources throughout this thesis refer to broader scales beyond just impacts or influence on or of individual species.

Finally, this introductory section presents details on the definition of conflict and national parks adopted for this thesis. Definitions of conflict in particular are highly contested. Conflict has for example been defined as ‘a conflict of interests between two or more parties in which – in the spirit of the Realist tradition – the constellation of game is sum zero in nature’ (Käkönen 1988: 128), whereas a war is “a prolonged or organized armed clash” (Käkönen 1988: 129) and is commonly characterized by at least 1,000 deaths (Vehnämäki 2002). Variations in this definition amongst scholars include the threshold of the number of deaths over a given period and length of time between changes in numbers of deaths to establish duration (Doyle and Sambanis 2000; Sambanis 2004; Sarkees 2000).

It is possible to detect a number of gaps in the literature on civil wars. For example, scholars typically reduce such conflicts to intra-state confrontations between an array of challengers to an incumbent government (Cederman et al. 2009) and do not consider multiple groups in conflict with each other. Further debate considers the validity of defining many post-cold war conflicts as civil or intrastate wars due to the impact of outside actors, both globally and locally (Kaldor 2009) or the role of extra territorial bases provided by weak neighbouring states that impact conflicts (Salehyan 2007). With the focus of this thesis being the interface between space and conflict,

the impact of armed groups operating within and around such spaces and how they may interact is of significance.

In order to not be confined by definitions that limit the conflict to the boundaries of a state, time-frame or interactions between a number of groups in a particular spatial context, armed conflict and violent conflict are used interchangeably throughout this thesis and are defined as *conflict, which is armed between the government of a sovereign state, and one or more groups that operate within and around national parks that are able to constitute a resistance against the government forces and others that result in civilian and military/militia fatalities and injury.*

The importance of biological diversity and its conservation is considered crucial for development (Barber et al. 2004). The full economic, ethical, aesthetic, cultural and scientific considerations of much of the world's biological diversity has not been realized and included in macro-economic frameworks (TEEB 2010). In addition to this, the importance of nature to support vital life processes through stabilization of climate, protection of watersheds and soil, preservation of nurseries and breeding grounds is also crucial for human welfare (WCED 1987). The conservation of biodiversity is

considered critical for future generations and has been highlighted as a significant factor towards achieving sustainable development¹.

The destruction of these areas can compromise future income from ecotourism, game ranching, medicinal research and sustainable harvesting (Hayes and Burge 2003b). Protected areas are considered to be the foundation for biodiversity conservation action and are described by the Convention of Biological Diversity as geographically defined areas that are 'designated or regulated and managed to achieve specific conservation objectives' (Chape et al. 2004b: 8). One hundred and eighty-seven countries have adopted this convention, with over 10% of the world's surface allocated to biodiversity conservation through the establishment of protected areas (Chape et al. 2004a; Chape et al. 2004b).

Nature protection within protected areas led to a more concise definition by the International Union for the Conservation of Nature (IUCN), in 1992 at the Fourth World Congress on National Parks and Protected Areas. It was further refined in 2007 as 'a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values' (Dudley 2008: 8).

¹ The role of conserving biodiversity for future generations was explored in the Bruntland Commission Report asserting that there are no contradictions between the goals of poverty eradication, socio-economic development and environmental protection. The report argued that the international community needed to formulate a joint strategy for a common future towards sustainable development and growth (Bruntland, Gro Harlem. 1987. *Our Common Future*. Oxford: Oxford University Press.) Loss of biodiversity has long-term negative implications for sustainable development – 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (ibid.: 43) – especially in societies that are dependent on natural resources for livelihood security (Martinussen, John. 1997. *Society, State and Market: A Guide to Competing Theories of Development*. London: Zed Books.)

The IUCN also recognizes four broad categories of governance that range from state-only owned and managed through shared or co-managed, private areas to governance by indigenous peoples and local communities (Dudley 2008).

In 1994 the IUCN described six categories of protected areas that include strict nature reserves (where no or limited human access is allowed), to managed resource protected areas where sustainable use for social or economic benefit of local communities is possible (IUCN 1994). Category II constitutes 'large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities' (Dudley 2008: 16). This category relates directly to the common understanding of national parks and is not as strict as Category I areas where no or limited human access is allowed.

Although access is enabled in the national park category, it specifically outlines that the protection of particular species and communities is a requirement. This is often translated to instituting a form of management that controls access to the national park and is enforced by rangers that have powers of arrest and seizure. In order to reflect the control of access that dominates the understanding of protected areas in the context of this thesis and the governance structure whereby ownership and management resides at the state level, national parks are defined as *a state-owned geographically defined area which is set aside to achieve specific conservation objectives through limited access enforced by state-employed rangers.*

1.1 Political economy and grievance based theory of war

The political economy of war framework is commonly referred to as the greed versus grievance dichotomy in understanding civil wars. It moves away from more traditional causes of war due to ethnic-based clashes, lack of rights, type of ruling of the state linked to ideology or poor management, to a framework that posits economic factors more centrally in the cause and perpetuation of conflict.

The availability of exploitable resources to finance conflict or 'abundant resource wars' argument would appear to support several post-cold-war conflicts, such as in the Democratic Republic of Congo, Sierra Leone, Angola and Colombia, where primary commodities that are easily and heavily taxable would be highly desirable due to their real potential to generate significant revenues. The availability of an abundance of these resources would therefore increase the risk of 'greed'-motivated conflicts and are characterized by the integration of trading in primary commodities into their economics as the conflicts shift from political to economic (Keen 1998).

However, the political economy of war school of thought has been unable to shake the significance of grievance-based theories in violent conflict. The role of identity and group formation resulting in collective violence has been ascribed to conflicts in Indonesia (Murshed & Tadjoeeddin, 2009). Whereas the notion of horizontal inequality whereby discrimination in state spending, high level of inequality in society, inequitable distribution of resource rents and economic mismanagement and recession are considered to be important causes of violent conflict (Langer & Stewart 2013) The impact of horizontal inequality is considered to have influenced the conflicts of Somalia, the DRC, Burundi, Nepal and Aceh in Indonesia (Murshed & Tadjoeeddin, 2009).

This section presents some of the keystones to the political economy and grievance-based theories of conflict that relate to natural resources. It also presents detail on the theoretical significance of internal borders lands, particularly in relation to national parks, and relevance of borderlands in violent conflict. The final section emphasizes the interplay with greed and grievance and introduces the relevance of space and linkage to national parks within conflict studies.

1.1.1 Greed and violent conflict

Literature on the political economy of conflict, places access to valuable natural resources in the centre of driving economic activities that shape large-scale conflict. It presents a nuanced treatment of the role of economic activities in relation to initiation, intensity and perpetuation of conflict, examining, for example, how access to different amounts of financial and material resources have shaped different conflicts.

It also seeks to capture the ways that economic opportunities and incentives interact with other motivations that shape the behaviour of groups involved in insurgency. There is an acknowledgment that the factors that initiate conflicts can be different to those that sustain them. Political economists also investigate the role of the failure of states in enabling violent conflict.

Early work by Paul Collier and Anke Hoeffler had a significant impact on the debate over contemporary conflicts (Fearon 2005). By utilizing the ratio of primary commodity exports to GDP as a proxy for natural resource endowment, a non-monotonic relationship was revealed. They note that with initial levels of primary commodity exports increasing the risk of war but at higher levels, this risk is reduced, possibly as a result of increased revenue to

the government, which in turn is used to strengthen the military (Collier and Hoeffler 1998).

Further studies analysed conflicts over the period 1960-1999 and 2000-2004 and found primary commodity exports significantly increased conflict risk, making rebellion attractive due to its financial feasibility (Collier and Hoeffler 2004, Collier et al, 2009). Using high primary commodity exports as a proxy does not take into consideration institutional factors. These factors may, as a result of poor governance, create closed economies that restrict trade and such economies may be more significant and exacerbate or create grievances (see next section). Further omissions in analysis include the effects of full democracy negatively impacting the probability of conflict (de Soysa 2002b).

The strong association between primary commodity exports, (using the ratio of primary exports to GDP as a proxy for natural resource abundance), and civil war onset have not always been significant. The inclusion of specific resources, such as oil, significantly affects robustness. The use of the ratio of primary exports to GDP as a proxy for natural resource abundance has been critiqued for not distinguishing between different types of resources, as it includes many resources, which have little impact on rebel financing (Lujala et al. 2005; Soysa and Neumayer 2005). Furthermore the role of renewable resource abundance indirectly influences conflict through physical and human capital (see next section) and effects economic and social progress (de Soysa 2002a).

The case of Cambodia highlights how timber, in particular, was a significant source of revenue for the Khmer Rouge. In the 1990s timber was linked to an

escalation of violence partially due to the need to increase control of forest resources due to their value for revenue (Le Billion and Springer 2007b). Furthermore, resource wealth has been found to influence the duration of certain conflicts as a result of looting of resources by rebel factions after onset. Whilst in some instances, resource wealth has contributed to shortening the conflict (Ross 2004a). Angola, for example, is a state where minerals made up a small part of the total exports and GDP at the onset of the conflict. However, dependence on resource wealth increased as the conflict continued (W.Minter cited in DiJohn 2002).

The value of understanding the role of valuable natural resources on the economics of nation states and, in turn, how this impacts conflict is still valid. The Angola case supports the theory that resource abundance does not necessarily contribute to civil war onset but to its perpetuation. Angola also highlights the importance of acknowledging the unique context of different conflicts and how resource rents impact the trajectory of shifts in governance and the wider political and economic processes. The Angola case supports findings that rebel groups that use contraband to fund their activities engage in longer wars (Fearon 2004).

Rentier economies and weak states

The relative importance to the onset of civil war of the impact of resource wealth on state capacity vis-à-vis direct financing for rebellions, provides a different framework towards understanding the role of economic returns from natural resources on conflict. The significance of weak states in conflict is explored in rentier states literature. Rentier states are characterized by high dependence on external rents. These are typically generated from the exploitation of natural resources that are produced by a small number of

actors (Lam and Wantchekon 2003). As the governments are no longer dependent on their population for revenue, the leadership becomes less accountable to their societies. This results in militarization of politics and the creation of predatory states leading to an increased risk of civil war.

An additional argument of the impact of rentier states is that it results in increased levels of corruption, which negatively affects development (DiJohn 2002). Natural resource wealth compromises state capacity, which, in turn, impacts civil war onset as opposed to the looting of resources to fund conflict (Soysa and Neumayer 2005). In essence conditions that favour the onset of civil war include weak states (Fearon 2005; Fearon and Laitin 2003; Snyder and Bhavnani 2005), and the role of significant external rents from natural resources being a factor in the way ruling elites and governments shift forms of governance that ultimately contribute to the development of such states.

The presence of specific resources, namely fossil fuel, on balance affects state capacity more significantly than mineral resources. This compromises the state's capacity to adequately respond to a rebel threat and establishes stronger linkages to conflict onset. No such associations were established with direct financing of rebel (looting) models (de Soysa and Neumayer 2007). The effectiveness of the state bureaucracy is seemingly relevant vis-à-vis the size of the government forces, which only minimally affect the outcome of the conflict but substantially affect the duration of the conflict if an early victory by the government is not achieved (DeRouen and Sobek 2004).

More recently the effect of primary commodities on state weakness has been somewhat disputed. The presence of primary commodities has in fact been

linked to positive impacts on state capacity (Brunnschweiler and Bulte 2008; Thies 2010). Disaggregating resource rents, abundance and dependence provide some insights into relevant factors for state capacity and institutional quality (Brunnschweiler and Bulte 2008). With ambiguity of the relative importance of looting verses state capacity and relation to specific commodities, it seems clear that greater understanding of the contextual drivers merits further analysis.

1.1.2 Grievance and violent conflict

The aforementioned analytical frameworks contrast significantly to the limited research into understanding the rebel's perspectives. Understanding the rebel's motivation, how they get established as sufficiently large forces to challenge national governments is clearly required. Literature on the linkages between rebel recruitment and motivation in relation to natural resources is limited with much of the literature focused on causation of conflict.

However, where there is a relative abundance of land-based resources rather than subsoil resource, ethnic conflict is more likely to be initiated (Brunnschweiler and Bulte 2009). The presence of natural resources is found to increase the rate of recruitment of individuals interested in short-term gains and therefore less likely to be committed to the long-term goals of the organization (Weinstein 2005). The lack of such incentives does not necessarily mean that successful rebellions cannot be mounted – the motivation for these rebels is based on 'promises rather than payoffs' (Weinstein 2005: 621), which are based on ideological and/or ethnic grievances and are therefore recruiting highly committed individuals. These differences are likely to have impacts on the internal structures of the group. If groups are comprised of weakly committed individuals, leaders resort to violence to prevent defections and maintain community support whereas

groups comprised of highly committed individuals are better able to maintain allegiance of their soldiers.

Whilst highly motivated individuals driven by grievances will result in committed collective behaviour, benefits are still required to prevent defections. The control of valuable natural resources can contribute to this. However, where there is political repression, ethno-heterogeneity, highly democratic or highly autocratic states linked to the onset of rebellion and/or civil war, the presence of extractable natural resources seemingly runs counter to these findings. The presence of resource wealth indicates a linkage to a decrease in civil wars although such resource wealth is likely to impact the duration of conflict (Regan and Norton 2005).

More recently the relevance of horizontal inequality in influencing conflict onset and duration has gained traction and presents a more nuanced theoretical understanding to possible grievance related drivers of conflict. Horizontal inequalities are between groups vis-à-vis individuals or households. They speak to inequalities that are present between groups and incorporate economic inequality, such as differences in ownership of assets between groups; social as a result of inequitable access to services such as health and education; political whereby inequitable access to political opportunity and power is in play; and cultural status, referring to different status ascribed to a group's cultural norms and practices (Langer & Stewart, 2013). However, proponents of the role of horizontal inequality in violence acknowledge that groups engaged in conflict may indeed be greedy and seek to control natural resources for financial gain. Furthermore, actions of individuals to acquire an unequal control and share of the revenue from natural resources can contribute to the creation of horizontal inequalities

(Langer & Stewart, 2013). The conflict in the Niger Delta of Nigeria has been ascribed to a sense of grievance due to the unequal distribution of the oil revenue to the area (Murshed & Tadjoeeddin, 2009). Indeed, whilst conflict in the West African country of Liberia may have evolved around natural resources, such as diamonds, the motivations of the rebel groups were not necessarily greed driven. The historical legacy of dual land tenure arrangements, ethnic differences and discrimination contributed to the establishment of a context where conflict became inevitable.

1.1.3 Spatial dimensions to conflict: greed, grievance and borders

The post cold war context catalyzed a renewed interest in the border lands as a result of the expansion of the European Union (EU) and concern for how these spaces engage with political economy theory (Johnson et al 2011). Borders enable connection rather than curtail movement of people and trade and do not automatically service the interests of the state (Johnson et al 2011). Often established long after the existence of human cultures and societies, they effectively divide areas of human interaction (Goodhand 2008; Jackson, 2006). The study of borders is therefore argued to enhance our understanding of 'connectivity as well as questions of identity, belonging, political conflict, and societal transformation' (Johnson et 2011: 68).

The role of space in violent conflict has been explored in literature that considers the spatial-territorial aspects of borderlands (Goodhand, 2008). National parks present a form of internal boundary whose theoretical significance is explored in this section. Furthermore, in Africa 25% of national parks are found along international boundaries increasing to 27%

within 20 km and 32% within 30 km from an international border², alluding to influences within borderlands at the edges of sovereign states.

The emphasis of political economy literature on conflict has tended to focus on specific resources or groups on conflict initiation and duration (see previous sections). Placing borderlands more centrally within the policy discourse and practice of war and peace building has merit (Goodhand 2008; Jackson, 2006). This resonates with consideration of the space of national parks in conflict. Areas defined by a border are spaces where both greed and grievance interplay. Considering the role of borders is imperative if success in conflict resolution and peacekeeping are to be obtained (Jackson, 2006). 'Internal borderlands' (Goodhand, 2008: 228; Jackson. 2006: 436) which are areas within sovereign states that are beyond the reach and control of the state are particularly relevant to this thesis. As are international boundaries, which define the sovereign jurisdiction of a particular state and the area that a state can defend and also cannot easily extend beyond (Salehyan 2007).

Internal borderlands may be due to physical inaccessibility such as mountains, forests or marshes or offer unpromising sites for state intervention due to low populations or insurrection. Although not considered in border studies on conflict, I would argue that theory on the role of internal borders in conflict include national parks. Internal borderlands are considered to be the location of the highest levels of violence, as they tend to be on the edges of competing military regimes.

² Calculated utilising National Park data from the UNEP World Conservation Monitoring Centre (WCMC) downloaded on 22 September 2013. Additional layers downloaded from <http://www.diva-gis.org/> and openstreetmap (<http://wiki.openstreetmap.org/wiki/Planet.osm>, <http://download.geofabrik.de/>). Software used to map National Parks across Africa was QuantumGIS (QGIS 2.2 Valmiera) and the operating system is Linux Ubuntu 12.04.3 LTS.

Whereas borderlands that straddle international boundaries, tend to be the least effected by state control due to their distance from the centre, and are subject to greater influences from the periphery (Goodhand, 2008). State intervention is structured dissimilarly between the centre and the edges of power, which tend to be geographically located in the frontier zones and borderlands (Ron 2003) further lending credence to the potential relevance of such spaces for violent conflict.

The role of borderlands in the initiation and duration of civil wars and armed conflict include their relevance as sites of insurrection. This has been ascribed to colonialists seeking to control their frontiers by restricting civil liberties and participation in democratic processes (Banerjee, 2001 cited in Goodhand 2008). States would respond by relocating populations within sites of resistance or moving people from the borderlands elsewhere. States would seek to restrict insurrections from becoming too powerful by utilizing local elites to extend the influence of the state or to make these areas difficult to govern. This has been ascribed as a strategy employed by Mobutu in Zaire whereby he sought to make the borderlands unmanageable (Reno, 2000). It is clear that despite the analytical emphasis on borders and borderlands, the influence (or not) of the state in these spaces is fundamental to the role they play within conflicts.

Borders and borderlands can be factors in armed conflict as a result of enabling third party intervention, facilitating illicit trade that contributes to the dynamics of conflict and finally the role of internal borders, that create different management zones such as protected areas, which may also have significance. The following sections explore the theoretical aspects of these three factors.

Third party intervention and borderlands

Direct intervention by third parties can also be a factor in initiating and perpetuating armed conflict. Interventions by third parties have been found to increase the duration of conflict (Regan, 2002). However, evidence suggests that decline in both primary commodity prices and external support to rebel groups contribute to the shortening of conflicts where there is low per capita income, high levels of inequality and degrees of ethnic diversity, all key characteristics that contribute to the duration of conflict (Collier et al. 2004). Third party intervention defines the role of the borderlands as spaces that neighbouring states utilise for their engagement. Furthermore, the ability of rebel groups to find sanctuaries in neighbouring weak states, identify influences beyond the international boundary of a particular country engaged in 'civil war'. These sanctuaries provide opportunity for rebel groups to mobilize and strengthen their negotiating power thereby influencing the dynamics of the civil war (Salehyan 2007).

The utilisation of neighbouring states for rebel groups to seek sanctuary is considered one of the most common strategies employed in rebellion (Salehyan 2007). This is often compounded when states support proxies in neighbouring states to further their strategic objectives. Examples include the ability of rebels from Afghanistan to secure resources and train in Pakistan, contributing to Pakistan's interests in Kashmir (Goodhand 2008). During the period of Vietnam's occupation of Cambodia, the Thai-Cambodian borderland hosted several rebel factions. This space was also utilised as a place within which to encourage Cambodian refugees to join the various rebel factions such as the Khmer Rouge and the Sihanoukist forces. Such utilization highlights how borderlands can become intertwined with broader

geo-strategic interests. In this case, being used as an additional strategy to weaken the Vietnamese who were also engaged in conflict with Thailand. (Grundy-Warr, 1993). Fifty-five percent of rebel groups between 1945 and 2007 have utilised some form of external base, challenging the premise that civil wars are not integrated within broader contexts that enable the conflict (Salehyan 2007).

Conversely, states encroach onto neighbouring states along their borderlands in order to secure their boundaries (Goodhand 2008). This was the justification for the initial involvement of Uganda and Rwanda in the conflict of the Democratic Republic of Congo in 1994 (see chapter 2). The implications of these findings to policy makers raise a number of challenges with regards the implementation of military or economic interference in on-going conflicts (Regan 2002). Analysis of civil wars should therefore consider broader contexts. It is clear that the impact on neighbouring states of refugees are factors that contribute to conflict duration by jeopardising relations with neighbours and thereby enabling rebel groups to maintain their insurgences.

Trade and borderlands

Whilst borderlands are considered to be on the edges and beyond state control, there is evidence of their integration into globalisation and interaction with economies that move outside these zones. Borderlands are often highly fluid zones depending on the interaction between the spheres of the state and non-state. These are negotiated across various hierarchies creating new forms of interaction between the two (Raeymaekers, 2009). The establishment of a formal boundary, that is a barrier to trans-border commerce can perversely create financial inducements, albeit primarily

illicit. Any border or boundary ultimately facilitates the creation of differences, which may be exploited for profit (Jackson, 2006).

Cited examples include the growth of the drug industry in Taliban-held territory in Afghanistan from 74 metric tonnes (MT) of opium in 1999 (prior to the invasion by NATO and allied forces) to 4200 MT in 2004. The Taliban had passed several edicts to reduce the cultivation of poppies prior to the Allied Invasion but as the regime collapsed in the wake of the attacks, farmers started cultivating more opium crop. This was partly in response to the farmers increased indebtedness, resulting from the bans imposed by the Taliban. Afghanistan effectively reverted to the control of the regional warlords who controlled the drugs trade, which in turn funded their militias. The greatest profits were made from moving opium across the borders (Goodhand, 2005). Ultimately, the conflict enabled the opium production to thrive, which in turn contributed to the war economy that sustained the conflict.

It is also within borderlands that the interplay between greed and grievance is arguably most apparent. Research in the Kivus of the DRC ascribe the populations residing in these spaces as effectively 'transborder ethnic groups' (Jackson, 2006: 438) either culturally aligned with people from neighbouring states or groups that have actually been separated by the creation of the international boundary. These connections mean that groups from the borderland are often well placed to exploit opportunities to make profits.

The Coltan rush of 1999-2001 in the Kivus was effectively militarised, with several armed groups controlling much of the digging, buying and selling.

The groups included the military from neighbouring Rwanda; the Rassemblement Congolaise pour le Democratie (RCD) rebels, a Congolese Rwandaphone group; and the Mayi Mayi who were in opposition to the former two. Existing resentment towards Congolese Rwandophones was further fuelled by anonymous pamphlets, which accused them of plundering DRC's wealth. Hate media conflated their exploitation of the mineral wealth as a slur on the foreign origin of some of the groups. The place of Rwandaphones within the Kivus as rightfully Congolese has been a significant contributing factor to the conflict in the region.

This case presents the borderland as a key factor in regional conflict formation. The connection between the border towns of Goma in DRC and Gisenyi in Rwanda was considered to be the second largest corridor for regional exports in 2005, accounting for 22% of DRC's exports (Initiative for Central Africa & United Nations Economic Commission for Africa, 2007). Criticism levelled at peacekeeping in the region points to the lack of inclusion and acknowledgement of the types of governance at the borderlands. In particular the manipulation of the international intervention by state and non-state actors which challenges assumptions about the nature of the DRC state as non functioning (Vlassenroot and Raeymeakers, 2009).

Protected areas: Internal borders and borderlands

Protected areas require the establishment of boundaries, which are essentially, formalized internal borders. The role of protected areas in conflict literature is limited. There are examples of war having contributed to mitigating exploitation of protected areas as a result of the insecurity within these areas, thus preventing exploitation of the resources. This has been referred to as a 'war zone or buffer zone phenomenon' (Martin and Szuter

1999: 38). This occurred in Malaysia along the Thai border during insurgencies from the mid-1960s to mid-1970s. Access to the Belum Forest Reserve was closed off by the Malaysian military, thereby preventing logging activity. The Malaysian government subsequently upgraded this reserve to the status of National Park, due to its richness in wildlife, which had resulted from being relatively untouched (McNeely 2003). Demilitarized zones are also cited as having similar effects, providing refuge for wildlife and migratory bird species (McNeely 2003).

However, more often than not national parks provide havens for militias and armed groups. They are essentially a space where the presence and the reach of the state are considered weak or non-existent. Although little empirical work exists on the use of national parks by militia groups, there has been a growing documentation of national reserves being utilized as strategic posts. These provided shelter and resources for plunder including timber, minerals and supplies, during conflicts in Angola, Democratic Republic of Congo, Mozambique, Sierra Leone, Burundi, Colombia, Nicaragua, Nepal and India (Hammill 2005).

This may be linked to the relative importance placed on protecting human populations vis-à-vis national parks or even the value placed on the environment in relation to other sectors. The case of the Biowas Biosphere Reserve in Nicaragua, created in 1991, has been highlighted as a factor in three armed movements over the course of the decade. The desire to acquire access and ownership of the resources in this reserve is identified as a contributing factor of all the armed movements' motives to establish rebellious factions (Kaimowitz 2002).

In Liberia, after the signing of a peace agreement in August 2003, the transitional government had no control over the natural resource sector. Former rebel fighters had occupied Liberia's only national park, Sapo, where they engaged in hunting and mining and threatened to destabilize the transitional process (Global Witness 2004a). Similar impacts on biodiversity have been documented in Borneo, following the 1960s conflict between Malaysia and Indonesia (McNeeley 2007). Post-conflict contexts are a particularly vulnerable time for the environment as countries normally lack an effective government and institutional oversight.

The location of national parks along international boundaries that are mountainous is common in many countries, and this combination of location and terrain may be a factor that contributes to the use of these areas as sanctuaries for militia groups particularly in civil wars and guerilla wars (McNeely 2003) and is confirmed by work done on location and type of resources in relation to civil war onset and duration (Buhaug and Rød 2006). The location of national parks along international borders would fall into the category of borderlands, located on the edge of state control both politically and militarily (Goodhand, 2008). The use of national parks by militias and rebel groups has also been associated with a challenge to state authority. Examples include the use of Volcanoes National Park by the Rwandan Patriotic Front guerrillas in 1994 to attack Rwanda from Uganda. Murchison Falls (Uganda) and Garamba (Democratic Republic of Congo) National Parks were used by the Lords Resistance Army (Dunn 2009). National parks therefore produce contested spaces where state authority is challenged by local communities, militias, rebel groups and even agents of the state (see section 1.2.3).

On balance, the causes of conflict and influences on the duration of the unrest comprise a combination of greed and grievance drivers. Changing relations between the economic and political dynamics will affect duration of conflict and highlight the complexity of ascribing one factor over another as the dominant course of a conflict (Cater 2003). However, the effects of a weak state and inadequate governance structures are also a critical aspect of providing the context within which violent conflict can erupt.

An overemphasis on the greed narrative has distracted from the inclusion of other grievance-based factors. The emphasis of work by Collier and colleagues on the function of economic drivers over grievance directs responses to interventions, such as trade bans and export diversification, as opposed to military support and tends to criminalize the rebel factions who may have a legitimate political and ideological agenda (de Koning 2007). It also distracts from responses that seek to address horizontal inequalities such as progressive taxation, proportional representation and minority language and education (Langer & Stewart, 2013).

Furthermore, the effect of internal borders and borderlands on conflict ultimately points to their inclusion more dominantly in understanding the dynamics of conflict. By virtue of enabling a place for third party intervention and potential for occupying a space that becomes the flash point to a particular conflict already renders these spaces critical for further study. This urgency is further compounded when such areas consist of further boundary demarcation in the form of national parks. These are spaces where state control is weak and in those areas rich in valuable natural resources, they become vulnerable to exploitation or to provide sanctuary for armed groups.

1.2 Political ecology of violence

Political ecology combines cultural ecology with political economy and is interdisciplinary in nature (Neumann 2009). Political ecology is (albeit not exhaustively) concerned with understanding the impact of environmental change on political processes and movements. By analysing the interactions of various variables at a number of scales, political ecologists seek to explain how environmental changes can shape wider political and economic processes and how they in turn can shape environmental change.

Political ecologists acknowledge and often make explicit linkages to materialism and how this interacts with environmental systems. Political Ecology engages with political economy with dominant assertions that focus on economic interactions rooted in social and cultural relationships between people and environmental systems; considers the impact of extractive industries that are unsustainable on the environment and social tensions and finally, the role that production for global markets has on inconsistencies and over-reliance (Robbins 2004). Political ecology has been critiqued for its privileged emphasis on power relations and politics, ignoring ecological considerations that may influence environmental change (Vayda and Walters 1999) or the inability to make political or environmental inferences by linking the two in analysis (Forsyth 2008).

Political ecologists have explored linkages to resource scarcity as a factor in conflict. However, it is at the interface of scarcity as a result of state appropriation or elite capture of key resources at the expense of other groups that may be living within or in proximity to these resources (Robbins 2004). This has been highlighted in the insurgency and counter-insurgency in Indonesia, Malaysia and Thailand over the latter part of the 20th century.

These actions shaped the transformation in forestry by strengthening the legal and institutional processes that the state used to rearrange property rights, land use zones, vegetative cover and human settlements. Counter-insurgency strategies were evicting people from forests. They created strong connections between governments, in particular militaries and industry dependent on extraction of natural resources and foresters. This relationship, arguably, shaped the use of forests in those contexts (Peluso and Vandergeest 2011). The political economy and grievance-based schools of thought do not consider the socially constructed nature of resources and, (as indicated by the lack of consensus on the roles of these perspectives on conflict), fail to sufficiently explain causality or perpetuation.

The social construction of nature is also an aspect of political ecology's analysis of conservation. This strand of research tends to focus on the way protected areas have become the dominant conservation strategy and the impact that has had on society. Historical processes, therefore, are significant in shaping the trajectory of conservation practice. In addition to this the location and easy of lootability of resources are also significant factors in how rebels are able to obtain and control resource revenues.

'The political economy, materiality and geography of resources can thus significantly influence the likelihood and course of armed conflicts....It is in this way we can speak of the political ecology of war' (LeBillon 2001: 566)

The political ecology of violence, therefore, perhaps best brings together aspects of economics, location of natural resources and ideology of conflicts. Political ecologists' analytical starting points are at the convergence of culture, power and political economy and, thereby, attempt to integrate

discourse within historical contexts (Peluso and Watts 2001). Political ecologists recognize the causal powers of nature itself and acknowledge that analysis must not only focus on the forces that capital, state or technology inflict on society (Peluso and Watts 2001). Work on the 'political ecology of violence' (Peluso and Watts 2001) perhaps comes the closest to incorporating all aspects of nature in conflicts.

Specific resource environments and environmental processes are both constituted and in part constitute the political economy of access to and control over resources, and it is not so much about how much of a resource exists but who has access to its benefits. It also acknowledges that the dynamics of a conflict are linked to changes in power bases in relation to the environment (Jong et al. 2005; Peluso and Watts 2001). The political ecology framework has been applied to explore the role of livelihood activities in the dynamics of conflict. It argues that environmental change as a result of armed conflict impacts livelihood activities, reconfiguring processes of inclusion and exclusion to resources and contributing to the political landscape of the conflict (Bohle and Fünfgeld 2007).

This section further explores aspects of political ecology research that focus on the location and classification of resources and this relationship to armed conflict. With subsequent sections of this review focusing on the impact of geography and natural resources on both civil war onset and duration. The final section will assess the political ecology research applied to conservation of biodiversity and protected area creation and management in particular.

1.2.1 Location, classification and type of resources

Since the turn of the 21st century, the issue of type and location of resources and their role on conflict has been receiving increasing attention in the

academic community. Inconsistencies in the literature on the variables connected with both civil war onset and duration maybe due to the relative impact of different types of resources (Buhaug et al. 2005). By establishing the specific characteristics of different resources on the dynamics of conflict, analysis of their impact on different variables such as onset of conflict, duration of conflict or economic growth is possible (Lujala 2003, 2005). Categorizing different resources is not new to conflict research. The Project on Environment, Population and Security by Thomas Homer Dixon and colleagues classifies natural resources along the lines of renewable versus non-renewable and argue that the exploitation of renewable natural resources, resulting in their scarcity, is a significant factor which drives conflict (Homer-Dixon and Blitt 1998).

Resources have been classified between point (i.e. minerals that occur in small areas such as oil and minerals) and diffuse (i.e. resources which are more widely dispersed, such as timber or coca plantations). The type of resource and its location in relation to the capital city has been shown to be significant in civil war onset. Analysis has established that point resources near capital cities are associated with coups d'état, whilst point resources farther away motivate secessionist conflicts. Similarly, diffuse resources in proximity to the capital city are associated with riots and further away with warlordism and civil war (LeBillon 2001). Inadequacies in these classifications are shown by the extensive nature of oil fields; further weakness relate to the fact that different types of minerals such as diamonds can fall into variations of these classifications (Lujala 2003).

The ease with which resources can be exploited and transported has also been considered with alluvial diamonds, agricultural products and timber, defined as 'lootable' (Ross 2003: 47), resources. 'Unlootable' (Ross 2003: 47)

resources require significant investment and skilled labour prior to extraction and transportation. These include deep shaft minerals, oil and gas. Different types of resources have differing effects on secessionist and governmental conflicts. Diamonds, particularly alluvial diamonds, and production of coca and opium show strong associations with civil war. Unlootable resources have been found to be more likely to be associated with secessionist conflicts and lootable resources with non-secessionist conflicts (Ross 2004b). In addition to this, lootable secondary diamonds are significantly more prone to be linked with civil war, whereas the relationship with unlootable primary diamonds is not significant. The strength of this relationship is affected by the levels of ethnic fractionalization, with lootable diamonds more likely to contribute to conflict duration in ethnically heterogeneous countries. (Lujala et al. 2005).

Analysis on lootable (alluvial) diamonds, sought to understand how some diamond producing countries degenerate into civil war and others do not. With the majority of these countries having not experienced civil war since the end of the cold war in 1990, the ratio of lootable versus unlootable resources within a country was found to be a contributing factor to state collapse. Lootable resources are harder to tax and thereby provide less opportunity for state wealth. Modes of extraction also factor into this deduction with artisanal methods harder to tax. Additional variables such as the states' capacity to utilize revenue from resources, strengthening the military and provision of social services contributes to the degree of susceptibility of a country to degenerate into civil war. Lootable resources can be causally linked to the onset of civil war, but this is in relation to how the state utilizes these types of resources, which enables the relevant

conditions for significant conflict to arise through state collapse (Snyder and Bhavnani 2005).

Further work has emphasized the impact that different resources have had on the number of casualties from combat, specifically battle deaths. Specific resources, such as oil and gas, were found to increase conflict severity compared to gemstone mining or drug cultivation. In fact, drug cultivation was found to be associated with declines in conflict intensity. Other factors included proximity to border, ethnic fractionalization and levels of democracy prior to the conflict. Controlling oil and gas reserves results in significant revenue and, due to the nature of the resource, requires outright victory or an intense offensive (on both sides) in order to strengthen negotiating positions or protect resource sites. Examples of conflict where oil was a major factor are the Biafra conflict of Nigeria in the 1960s and the 21 year Southern Sudanese Civil war that was initiated in 1983 (Lujala 2009).

Economic factors have been identified as playing a significant role in determining the behaviour of the various actors, the type and location of the resources, which will affect the occurrence and severity of the war. It stands to reason that the amount, type and availability of valuable natural resources can reduce the levels of peaceful behaviour and contribute to the duration of conflict (Addison et al. 2003). The effect of location of specific resources impacts rebel organizations rather than the revenue which flows from these resources on economy, political institutions and state capacity (Buhaug et al. 2005). In particular the presence of natural resources within rebel-held areas impact duration of conflict significantly, with production not necessary. The implication is that control of resource-rich territory affects rebel behaviour (Lujala 2010). Presenting an alternative framework of the impacts of resource

rents on state capacity is explored by literature on Dutch Disease and Rentier states. Other variables include changes in levels of belligerency, foreign aid and costs of peaceful behaviour (Addison et al. 2003).

The concept of 'low-intensity conflict' (Addison et al. 2003: 365) versus total war or peace is also a factor. It may be preferable for both belligerents and government forces to maintain a low level of conflict in order to access benefits not necessarily accessible during peacetime (Addison et al. 2003). This finding has been contested due to varying effects of different resources, such as oil and gas, on conflict severity but is supported by the case of drug cultivation (Lujala 2009). In fact, it appears that the role of financing rebels via natural resources is more robustly associated with contributing to duration of conflict rather than civil war onset (Hegre 2004; Ross 2004a; Ross 2004b) and the type and location of the resources play varying roles in contributing to this (Ross 2003).

1.2.2 Geography and civil war

The absence of geography in contemporary conflict research has been linked to the focus of datasets that generally lack local information on conflicts. In addition, contributing factors (e.g. economic, political, cultural, demographic) are analysed on a national level, bypassing any interpretation for localized effects, and null cases (i.e. areas with no conflict) are omitted from much of the research. Impacts of distance from capital city and proximity to international boundaries, local population densities, extent of local road networks (proxy for development), local extent of rough terrain, proximity to natural resources and dominance of minority language affect conflict onset. Both succession and governmental conflict onsets across the African continent reveal that secessionist conflicts tend to occur in remote and sparsely populated regions whereas governmental conflicts occur in

densely populated regions near capital cities and easily lootable resources (Buhaug and Rød 2006; Le Billion 2002).

Further reinforcement of the role of geography on conflict confirmed the importance of location with proximity to international borders, distance from the capital, presence of gemstones and petroleum production and the relative strength of a rebel group affecting duration (Buhaug et al. 2009). Counter-intuitively, the relative importance of terrain has been queried, negative associations were found between terrain and secessionist wars. This maybe due to poor data, highlighting the importance of interpreting with caution due to the unique nature of Africa's terrain, compared to other parts of the world. Terrain continued to fail to exert any influence on duration of conflict leading to speculation about its relative importance. Until rebel groups have a more secure base, terrain may not be a factor but further analysis utilizing the location of rebel base headquarters would likely yield insights into its relative importance (Buhaug et al. 2009).

Emerging research on localized impacts of conflict and datasets to investigate sub-national influences have been developed. Land degradation and high levels of water scarcity have been linked to conflict with dense human populations. A likely explanation is the pressure exerted by dense populations on land and water as the opportunity to secure financial support and mobilize supporters presents itself (Raleigh and Urdal 2007). Twenty-five percent of conflict incidents from 1960 to 1999 occurred in mountainous areas compared to 15% during peace periods although no difference was discerned for forest cover (Collier and Hoeffler 2004). A similar relationship, with countries that have a high percentage of mountainous terrain significantly related to increased war (Fearon and Laitin 2003), and raised the

importance of terrain in conflict. Empirical work on the relationship between forested terrain and the onset and duration of civil war has been unable to find any significant relationship (DeRouen and Sobek 2004; Lujala 2010). Assumptions that forest cover would increase duration of conflict as a result of the effects of climatic conditions such as the rainy seasons enabling rebel groups to regroup as the weather conditions temporarily reduced levels of combat were disproved as results showed that forest cover led to a decrease in duration (Lujala 2010).

Subsequent research found that increasing forest cover by country reduced likelihood of conflict initiation and resulted in shorter conflicts with more forest (Rustad et al. 2008). Although forests have not been found to have a significant effect on conflict duration, distance to the coast in relation to location of conflict zones in areas with large amounts of forest were found to be significant, although this was as a result of the inclusion of four conflicts in Myanmar, Independent State of Papua New Guinea, Senegal and Bangladesh. Similarly further analysis that sought to disaggregate woodland from forests found that this type of forest was significant but if Ethiopia was removed from the analysis then significance disappeared (Rustad et al. 2008). It appears that the influence of location and type of forested area is significant in specific contexts.

Other factors such as the availability or lack of other valuable natural resources, such as diamonds or oil, would increase or decrease the length of the conflict respectively with once again specific conflicts driving the results (Rustad et al. 2008). The lack of statistical significance of terrain (namely in relation to mountains and forests) may also be due to lack of sufficient data. Precise information regarding to what extent the conflict zones are

mountainous and/or forested is limited (Buhaug and Gates 2002). However, the size of a country, location of conflict in relation to the capital city, geographical size of the conflict and type of resource was established to be significant and worthy of additional investigation (Buhaug et al. 2005).

Although the role of forests in influencing onset and duration of conflict has resulted in conflicting findings, possible linkages between resource-rich terrain and motivations of rebel recruitment and enlistment could be inferred from the conflict in Sierra Leone in the 1990s. Initially the main belligerent group against the Sierra Leone government, the Revolutionary United Front of Sierra Leone (RUF) led by Foday Sankoh, was traditional in its tactics, moving along roads and working to acquire territory but once they had been beaten back into the forests, the strategy changed to guerilla warfare which is arguably suited to forested terrain.

In addition to this, the RUF initially rounded up young diamond diggers and school children in the heavily forested areas and inducted them in to their rebellion and aimed to enlist unemployed youth, especially those who had been excluded from wider society as a result of the diamond mining industry. The ability of the RUF to maintain its offensive was heavily influenced by its ability to exploit diamond mines within dense forests with camps that were off the beaten track. The diamonds would be traded for arms and uniforms, which in turn were used to carry out raids on the local populations. Camps would spring up instantly if diamonds were found, conditions for diggers were harsh and leaders used violence to ensure diamonds were not stolen and desertion levels were kept low (Richards 2001).

Literature has focused on the predominantly economic benefits of exploiting forest resources. However, how the militia leadership exploited and manipulated social values and developed hierarchies within these forest enclaves was significant in ensuring that they were able to maintain their rebellion. This in combination with the nature of the terrain the RUF inhabited further influenced the type of warfare they engaged in (Richards 2001). This reinforces findings on rebel motivation in relation to natural resources (Weinstein 2005) indicating that the type of resources base impacts the way the groups are managed by their leaders.

In fact, the role of geography in relation to ethnic homogeneity, ideology and economic motivations are relevant in rebel recruitment and cohesion. Rebel groups recruit over varying grades of geographical areas based on degrees of ethnic and/or ideological homogeneity and the levels to which functional and solidarity rewards can be distributed (Gates 2002). The relative importance of territory versus geography in understanding whether rebel groups are driven by motivation (for territory) or opportunity (as a result of favorable geographical conditions) has been analysed. Findings indicate that where groups are concentrated, an opportunity-driven mechanism is a factor in conflict (Weidmann 2009).

The majority of academic research has focused on the specific geographical location of certain resource conflicts and more recently literature has emerged on forests as political entities (Peluso and Vandergeest 2011) relevant to further understanding political violence. This emergent strand points to an acknowledgement of particular spaces as relevant for academic treatment.

1.2.3 Political ecology and protected areas

Political ecologists argue that the establishment of protected areas is a form of enclosure. Their creation has historically removed ownership and use of biodiversity-rich areas from local communities, transferring ownership to states. This body of work strikes at the core of political ecology methods to understand the relationship between nature and society (Neumann 2009) and subjects a key strategy for conservation to academic treatment. The modern day conservation movement has been described as a 'discursive invention of recent origin' (Escobar 1998: 53) signifying a recent connection between society and nature that encompasses science, economics and culture, resulting in a group of institutions that contest and negotiate the construction of this discourse (Escobar 1998). This is consolidated in the creation of the IUCN categorization system of protected areas, which restructures specific spaces to fit into externally derived categories that do not necessarily take into consideration the local or national treatment of these areas (West et al, 2006)

The protected area model in Sub-Saharan Africa and other parts of the tropics was created during colonial rule. With the establishment of the first national park in the USA, Yellowstone, (despite displacing indigenous groups and settlers) to create the idea that nature was pristine and a wilderness with limited influence from humans. In order to prevent encroachment of Yellowstone by indigenous populations, the US Army had to be enlisted. Subsequent marketing of the park as the quintessential American wilderness was to make Yellowstone a model for preservation efforts globally (West et al, 2006).

It was transported to colonial Africa where the initial creation of many protected areas was to be strictly for the use of game hunters and travelers (Adams and Hutton 2007) mirroring the invented separation of nature and culture from North America (West et al, 2006). The ecological or biodiversity value of an area seldom was a consideration in the establishment of these areas (Leader-Williams et al. 1990). For example the creation of Virunga National Park by the Belgium colonialists sought to confine the border populations to the mountains, restricting their access to the fertile lands of the Semiliki River basin as part of a strategy to control cross border trade with the then British protectorate of Uganda (Raeymaekers, 2009) (See chapter 2). The US model also brought with it a military style of management whereby the state maintained control of the protected area through the use of rangers that were (often) armed and had powers of arrest and seizure and in some cases the authority to shoot and kill poachers.

This fortress model where access is restricted to ensure the survival of species of fauna and flora was to become the dominant model for protected areas. Strategies employed by states include forcible displacement of individuals residing in these spaces. This is considered to be the most significant effect of protected areas on society, especially in relation to indigenous groups and forest dwellers (Colechester 1994). There was no consensus on the numbers of people who were displaced (Adams and Hutton 2007) but estimates suggested that between 1 to 16 million people in Africa could be displaced from protected areas (West et al, 2006).

The effectiveness of such strategies to achieve conservation results has been challenged. In the Arabian Peninsula, the creation of protected areas to conserve the oryx, changed the land tenure system, effectively dispossessing

pastorals groups from access to grazing lands. This put the Harasiss people in a position where poaching became an option for survival (West et al, 2006). Political authority of protected areas is often challenged and is far from absolute. The encroachment of Queen Elizabeth National Park in Uganda in 2006 by pastoralists with approximately 200,000 head of cattle resulted in the army being mobilized to remove them. This was partly due to the lack of consensus amongst government officials as to how to deal with the encroachment with some supporting the pastoralists desire to access arable land. It transpired that some of the squatters were members of the military further exposing divisions within the state of the role of national parks (Dunn 2009).

Communities remaining on the boundaries are therefore opposed to the creation of the protected area and may find themselves in conflict with the wildlife that trespasses on their agricultural lands and destroys their crops. These communities can also be subject to corruption from park rangers who utilize their positions to extort bribes for minor infractions against the integrity of the national park (Adams and Hutton 2007). This is further compounded when members of these park boundary communities, such as the Harasiss from the Arabian Peninsula, trespass, hunt and remove resources from the protected areas. Killing by rangers of locals who are engaging in illegal activities within a protected area is not uncommon (Neumann 2004) and the example of the Kenyan Wildlife Services highlights this. Their shoot-to-kill policy initially had success in reducing elephant poaching (Gibbson 1999) but ultimately elephant numbers across Africa continued to decline at alarming rates (Maisels et al. 2013; Sire 2013). This has led to conclusions that the creation of protected areas is not only fundamentally violent but also enables violence (Neumann 2001).

Conservation has not proven adept at responding to the changing social, political and economic needs of communities or indeed nations and is essentially a strategy of preservation with seemingly no room for change (West et al, 2006).

In response to criticism of conservation action that did not consider the local communities and indigenous groups' rights, a shift occurred in the 1980s. Conservationists increasingly acknowledged the necessity of reconciling conservation with local development. This new approach emphasized benefit sharing and more extensive participation (Neumann 1998) and by the 1990s links between the roles that biodiversity conservation could have on poverty emerged. However the connection between poverty and conservation is still under debate (Dilys and Elliott 2004; Roe Dilys et al. 2012; Sanderson and Redford 2003) and has sidetracked research from addressing wider drivers of biodiversity loss and poverty (Adams 2012). Additional critiques of the shift of conservation action to focus on community participation and poverty alleviation are resulting in a continuance of state control and surveillance of lands and resources, reinforcing the arguments of elite and state capture of the benefits of natural resources (Neumann 2001).

Perhaps the clearest example of elite and state capture can be found in the tourism revenue derived from national parks. Nature-based tourism is a key source of foreign revenue for many Sub-Saharan countries (Neumann 1998). Nature-based tourism and wildlife tourism is generally developed to contribute to poverty alleviation and compensate local communities for the costs of conservation as well as to contribute to national economic development (Adams and Infield 2003). However, the disbursement of revenue to local communities is often subject to elite capture (Adams and

Infield 2003; Ahebwa et al. 2012) and rarely reflects the significant amount of revenue generated (Hatfield and Malleret-King 2003).

Nature-based tourism is also associated with changes in land use rights and has been demonstrated to create conflict within communities. The disparities in socio-economic situations of different communities depending on whether they engage in ecotourism or not has been documented in Nepal and Indonesia. Similar disruption to social relations have been documented in Bonaire (West et al, 2006). The commoditization of a protected area based on the value attributed by tourism distorts historic interactions between humans and the plants and wildlife in a specific landscape. This can potentially lead to conflict as local people reject the high cost they might have to pay for killing wildlife (Seeland, 2000). The ascribed economic importance of national parks can thereby influence levels of violence as states seek to secure the foreign revenue that this industry generates (Neumann 2001).

Conservation practice has evolved from a predominantly fortress model to one that attempts to incorporate local communities and indigenous rights. However, the extent to which these models are present is locally specific. National parks that are state owned and managed by para-military type organizations continue to dominate conservation practice in Sub-Saharan Africa. However, these spaces are continually contested and the state's control and authority is often far from absolute. It is this form of conservation action that is linked to violence as states and elites attempt to capture control of the resources resulting in the economic benefits being challenged.

1.3 Conclusion

Whilst extensive work on understanding type and location of resources on conflict has been conducted (LeBillon 2001; Lujala 2003; Lujala et al. 2005), no reference has been made to protected areas. Arguably the relationship between politics and space is most apparent at borders with borderlands recognized as spaces in their own right (Johnson et al 2011). Favouring the border as the conceptual lens through which analysis occurs would shift emphasis away from the state and enable conceptualization of a range of actors and sites at this interface. Studies in this domain have also failed to consider the space of national parks as spaces created as a result of internal borders or as spaces that occupy portions of the borderlands.

The political ecology of war literature acknowledges systems of resource development, including conservation, as contributing to existing local tensions, but the dialogue revolves around access to benefits and conservation as a form of surveillance and compliance being utilized to enforce this control (Peluso and Watts 2001). Political ecology research in relation to conservation has tended to focus on the construction of nature and how this in turn has influenced environmental struggle and change (Robbins 2004). In addition to this, although the political economy school considers disincentives for violence (e.g. coercive action, assistance and rhetorical measures), it also rarely discusses the role (real or potential) of natural resources located in national parks in perpetuating conflict.

This review has highlighted a cross-section of variables that have been identified to contribute to both the initiation and perpetuation of conflict. These have alternated between levels of democracy, state control and ethnicity to abundance of natural resources and the conditions, terrain and

location where actual violence occurs. There is an acknowledgement that the motivation for conflict is not neatly categorized as being driven by greed or grievance specifically but varies between contexts and over the duration of a conflict. Several scholars have highlighted physical qualities and geographical location of resources as the key factors in influencing conflict (Ross 2004b). However, it is important to note the wider context where states that are dependent on natural resources also suffer from other factors linked to the resource curse. A more sophisticated understanding of the multiple incentives that render violence a preferred solution can contribute to ending – or at least reducing – the consequences of conflict (Keen 1998).

The variances and inconsistencies highlighted in the proffered literature can be attributed to methodology differences, including how wars are coded, the use of national proxies versus localized, the use of different datasets and also the lack of consensus on definitions, relevant variables or indeed the possible lack of establishment of key variables that impact violent conflict onset and duration. The emergence of natural resources in conflict research is an indication of the increasing importance ascribed to this aspect of conflict but the field is still beset with having to resolve both conceptual and methodological considerations.

It is therefore not only justified but imperative that exploration of additional variables that have received little or no attention in the field of conflict research occurs. Whereas types of terrain have been considered (e.g. mountains, forests), areas set aside for specific land use are rarely considered. This is not only the case for national parks, but also the role of urban areas; agricultural lands and regional complexes are poorly understood. Where specific scales have been researched, such as with shared

water resources, the findings are inconsistent and focus on interstate conflict (Furlong and Gleditsch 2003; Gleditsch and Hammer 2001; Tose et al. 2000).

Literature on the role of borders and borderlands in conflict, point to an emerging strand of academic treatment that is considering space in conflict more explicitly. By incorporating the role of national parks into conflict research, an essential contribution will be made to research that considers the role of types and location of resources and terrain in conflicts (LeBillon 2001; Lujala 2005; Ross 2004a) and borders and borderlands (Goodhand, 2008).

Further consideration of the value of mapping local effects is related to this, and acknowledges sub-national drivers that should be, and increasingly are, considered in order to understand local effects (Buhaug and Rød 2006; Lujala et al. 2005). Additional research on conflict and national parks, utilizing geographic information systems, case studies and wider empirical analysis are likely to yield a better understanding of the influences of scales, spaces and location and composition of those areas, and also how these interact.

The possibility of contributing to policy development in relation to conflict resolution and increasing awareness of the importance of conservation areas in both sustainable development and armed conflicts is therefore valid. Some advocacy organizations have encouraged the inclusion of natural resource extraction as a key component in peace processes (Oxfam 2002). Thus far, there has been little discussion of the advantages (or not) of protecting natural resources within national parks, during armed conflict. Greater understanding of the role of space, in particular the space of a national park, as a factor in the dynamics of armed conflict needs to be deliberated. By using a refined political ecology of violence that explores how violence

against humans is linked to national parks will provide an analytical framework that has not been considered.

2 The History of national parks and armed conflict in the Kivus of Eastern DRC

'I couldn't help asking him once what he meant by coming here at all.

'To make money of course. What do you think?' he said scornfully.'

Joseph Conrad, *Heart of Darkness*, Part 1

The Democratic Republic of Congo has been relentlessly exploited for its natural wealth since it was colonized. This exploitation has been an integral aspect of its historical make-up and a key issue explored in this chapter, which will be presenting the context to the conflicts of 1996 and 1998.

Hosting the majority of the world's second largest forest block, (after the Amazon), the DRC has been an important country for global conservation efforts. It is the home of Africa's first national park as well as a number of protected areas that have been accorded World Heritage Status, owing to their significance.

By examining the context of the conflict, with an emphasis on the Kivu provinces, we can witness how the regional dynamics have played a significant role in the evolution of armed violence in the east. This thesis, in its focus on national parks, will present case studies which give access to the evolution of conservation within the DRC. By integrating this presentation of the historical context in this thesis, critical and influential mechanisms on the conflicts in the DRC are exposed (Østerud 2008).

This chapter explores, albeit not exhaustively, the wider political and social processes that were significant in shaping the context to the conflicts of the late 1990s. These include the evolvement of a weak state, regionalization of the conflict and the presence of Kinyarwanda speakers within the eastern

provinces of North and South Kivu. Further detail of the formation of militia groups in response to the Rwandan genocide and subsequent 1996 and 1998 wars are elaborated on, especially in relation to the Kivus and groups that were known to operate within and around the national parks. The role of natural resources in violence and the political dynamics of this region are also examined. This chapter provides the context for the initiation of 'Africa's World War' (Global Witness 2004b; Prunier 2009) and provides the background for the case study sites of Virunga and Kahuzi Biega National Parks.

2.1 The creation of the weak state of Zaire

The creation of the fragile post-colonial state of Zaire has been linked to the high dependence on external rents that have resulted from less accountability from the leadership, a typical characteristic of rentier economies. In the context of Zaire, this was further compounded by the creation of an informal economy that was established under colonial, Belgium.

The imposition of administrative edicts in relation to labour and agricultural taxation resulted in the creation of an informal economy, as people utilized pre-colonial trade routes. Commodities such as ivory, cloth, copper, salt and beads would be traded with neighbouring countries, such as Angola (Global Witness 2004b).

Mobutu Sese Seko, Zaire's second president had usurped Patrice Lumumba as premier in a USA and Belgium backed military coup in 1965. The backdrop of the cold war provided Western states with the specious justification to interfere directly in the affairs of Congo, which created an

environment conducive to the entrenchment of Mobutu's powerbase, as an ally of the West.

In 1966, Mobutu set about nationalizing foreign-owned companies, a strategy that initially proved successful. The late 1960s and early 1970s saw significant economic growth as a result of high copper prices, with annual revenues of the state owned mining company, *Gécamines*, peaking at USD 900 million (Wrong cited in Renton et al. 2007). However, a rapid decline in the global price of copper in the mid-1970s and an increase in the amount of revenue siphoned off by Mobutu and his cronies, resulted in the bankrupting of the Zairian state by 1977 (Renton et al. 2007). Mobutu diverted state funds from the provision of public services and exploited the natural resources for the benefit of his family and friends (Global Witness 2004b; Nest 2006).

Mobutu's strategy of divide and rule to prevent any co-ordinated resistance to his position only served to strengthen the informal economy and ultimately to entrench corrupt mismanagement of government institutions. Eventually leading to economic collapse and the failure of the state in the mid to late 1980s.

The growing reliance of the Zairians on the informal economy was significant and by the mid-1980s, only 25% of household incomes came from wages (MacGaffey et al. 1991). Living standards continued to decline through the 1980s with state workers and the military poorly paid and student opposition to the government increasing. The USA had been a strong supporter of Mobutu but with the collapse of the Eastern Bloc and the Soviet Union, Zaire began to lose the strategic importance it had once held. In

November 1990 the USA ceased all military and economic aid. By the end of the year, Zaire's external debt was over USD 10 billion (Renton et al. 2007).

By the end of Mobutu's rule, Zaire was barely functioning. The government institutions were poorly, if at all resourced, with civil servants utilizing their positions to extract bribes. The state debt was overwhelming and the informal economy was the key factor that citizens could utilize to secure their livelihoods. The absence of strong rule of law was to be a factor that enabled militias to locate, initiate and thrive in Zaire during the subsequent decades.

2.2 Regionalization of the conflict

The conflict, initiated in 1998, officially ended with the signing of the peace accord in Sun City, South Africa in 2002. However, this did not result in an end to the violence, particularly in the Eastern regions where the fighting escalated. This section presents the dynamics of conflict in two time periods – from 1994 to 2002 and the transitional government phase from 2002 to 2006. The transitional phase was an outcome of the peace agreement of 2002. This section highlights the role of external actors in the dynamics that not only initiated the 1996 and 1998 wars but encouraged subsequent armed violence which has continued to occur into the second decade of the 21st century.

2.2.1 The 'civil war' in Zaire and the 'international war' in the Democratic Republic of Congo

The classification of the 1996 and 1998 conflicts in DRC as civil wars is challenging. Although a majority of the violent clashes occurred on Congolese soil, these clashing parties were supported by foreign troops, and at different stages of the conflict it has been difficult to determine whether the fighters were primarily foreign or national (Vehnämäki 2002).

In addition, vast amounts of mineral and agricultural wealth were transferred into neighbouring countries across porous borders (Turner 2007). International organizations have struggled with this issue, with the World Bank defining the conflict as a civil war and the United Nations emphasizing the involvement of other countries and external factors (Bannon and Collier 2003).

The Great Lakes conflict illustrates how many 'civil wars' are influenced by a host of external factors or conditions (Kaldor 2009). This section presents an analysis of the role of neighbouring states in the violence in Eastern DRC and in the entire nation of DRC. Engagement by numerous African states in the DRC conflict has emphasized the role of mineral wealth and economic interests. It concludes by focusing on Rwanda's continued engagement, following the signing of a peace agreement that effectively ended the 'civil war'.

The Rwandan genocide ignited in the wake of the deaths of Rwandan President Habyarimana and Burundian President Ntaryamira on 6th April 1994. Both died in a plane that was carrying them from a peace conference in Arusha and was to be the singular event that would significantly shape the evolution of conflict in the DRC.

The Rwandan genocide caused two million Rwandans to flee across the border into camps in Zaire. This mass movement enabled the *interhamwe* (the militias associated with the genocide) and the members of the Rwandan army, the *Forces Armées Rwandaise* (FAR), to find sanctuary outside Rwanda. The massive refugee camps provided a space for the *interhamwe* to regroup

and initiate attacks against Rwanda and against the Banyamulenge of South Kivu. In response, the Banyamulenge and Kagame's RPF, who had overthrown the government of President Habyarimana, joined forces and began to retaliate by attacking the refugee camps, the Zairian army, as well as forces of the *interhamwe* (Dunn 2003).

Disparities of opinion on who initiated the first Congolese war exist, with blame placed on Rwanda (Dunn 2003; Reyntjens 2005; Turner 2007) or a combination of Rwanda and Uganda (Nest 2006). Uganda's engagement in Zaire was initiated in 1996 and has been ascribed and endorsed as the necessity to topple Mobutu due to his failure to prevent opposition groups from launching attacks from Zairian soil into Uganda (Nest 2006). Uganda's involvement was also seen as an acknowledgement to the necessity of maintaining regional stability, by ensuring Rwanda's security was consolidated (Clark 2003b).

As Museveni's regime was a close ally of Rwanda, it presented a natural partnership, which resulted in the creation of the ADFL in October 1995. A partnership cemented by the exchanges of fire and mounting tension between Rwanda and Zaire. Although the ADFL consisted of Congolese resistance groups, (including Banyamulenge of South Kivu and the Banyarwanda of North Kivu), initial incidents in eastern DRC were committed by foreigners (Turner 2007).

The Congolese forces of the ADFL comprised of four key resistance movements namely, the *Parti de la Révolution Populaire*, *Conseil de la Résistance pour la Démocratie*, the *Mouvement Révolutionnaire pour la Libération du Zaire*, and the *Alliance Démocratique des Peuples*. Angola also provided additional

military support in the interests of compromising the rebellion of *União Nacional para a Independência Total de Angola* (UNITA) (Turner 2003). Over the course of the ADFL campaigns, Kabila became the spokesperson for the movement (Dunn 2003). The 1996 war launched by the ADFL and the ensuing rebellion was able to raise revenue for its efforts through the sale of 'booty futures' (Nest 2006: 23). Essentially selling future production rights for valuable minerals to foreign companies. The ADFL easily defeated Mobutu as he had fled the country and was critically ill. The ADFL captured the capital in May 1997 and Laurent Kabila was installed as the new leader of a country that was renamed the Democratic Republic of Congo (DRC). However, just over a year a new conflict was initiated, once again from the east, but this time between the new regime in Kinshasa, Congo's capital city, and its former allies, Uganda and Rwanda.

The renewed conflict is often referred to as the 'second war' (Hayes and Burges, 2003, Global Witness, 2004). It began as a result of the Ugandan and Rwandan governments claiming that the new Congolese government was not only failing to prevent, but also possibly supporting, incursions by rebels into their countries from Congolese soil (Hayes and Burge 2003a).

Kabila had begun to distance himself from his former allies due to increasing criticism by powerful Congolese who saw the new regime as nothing but a foreign puppet (Dunn 2003). In response, Rwanda and Uganda supported a new rebel movement called the *Rassemblement Congolaise pour la Democratie* (RCD), which would have almost certainly overthrown Kabila's government had it not been for the intervention of Zimbabwe, Angola, Namibia and Chad. The intervention of member states of the South African Development Community (SADC) was as a result of appeals by Kabila. This support, in

turn, made the conflict one of the most complex wars, which, to all intents and purposes, was international and become known as 'Africa's first World War' (Global Witness 2004b). Kabila also began to seek support from former FAR/*interhamwe* in his conflict with his old allies Rwanda and Uganda (Reyntjens 2005). The increasing cost of the war and pressure by Kabila's external backers led him to sign the Lusaka Accord on 10 July 1999. The accord aimed to establish withdrawal of combatants from the front line and a ceasefire but shortly after signing, Kabila claimed that the deal was flawed and unacceptable and a stalemate ensued (Dunn 2003).

By early 1999, the RCD controlled over a third of the DRC and later in the year, fractures within the Rwandan/Ugandan alliance resulted in a splitting of the rebel groups. Uganda supported a number of rebel groups known as RCD-*Mouvement de Liberation* (RCD-ML), *Mouvement pour la Liberation du Congo* (MLC) and RCD-National (RCD-N). The Rwandan government supported a faction of RCD known as RCD-Goma, which occupied areas of North and South Kivu in Eastern DRC, along the border of Rwanda (Global Witness 2004b).

Although resource exploitation for economic gain was widespread, Ugandan commanders utilized their presence in the DRC to enrich themselves personally, whilst for Rwanda, it was construed as part of the government policy to finance their war effort (Prunier 2009; United Nations Security Council 2002).

Estimates indicate that over the period 1997–1999, Rwanda's balance of payment from export of minerals such as coltan, cobalt and gold, increased from 26 million USD to 51.5 million USD. (Renton et al. 2007; Reyntjens

2005). Evidence of the importance of this income to the Rwandan state was illustrated by the establishment of the Congo Desk within the External Security Organisation (ESO) (Reyntjens 2005; United Nations Security Council 2002). Rwanda was also considered to be a primary route for movement of commodities, particularly minerals, from the DRC to international markets (Department for International Development 2007). This indicates the linkages of DRC minerals into the global markets and, (although the role of globalization on the perpetuation and cause of conflict is beyond the scope of this thesis), global economic processes outside the regional context of the Great Lakes were factors (Nhema and Tiyambe 2008).

2.2.2 The end of 'civil war' and the transition

In January 2001, Laurent Desire Kabila was assassinated by his bodyguard, and his son and appointed successor, Joseph Kabila re-instigated the peace process. Joseph courted international and regional leaders with his commitment to reinstating the peace process and promises of economic reforms (Dunn 2003) and subsequent negotiations in Sun City, Pretoria, South Africa resulted in the signing of the 'Global and Inclusive Agreement on Transition in The Democratic Republic of Congo' by the RCD, MLC, RCD-ML, RCD-N, the Mayi-Mayi (Congolese-based militias) and the government. The agreement spelt out the creation of a new integrated national army, the organization of national elections and the reunification and reconstruction of the country to be implemented during a transitional phase (DRC 2002).

Although a peace agreement had been signed, the conflict was far from over. In the eastern provinces, the conflict had deteriorated. The eventual withdrawal of Rwandan troops from DRC in October 2002 did not indicate an end to their engagement. With their former 'surrogate' (Prunier 2009: 294), RCD-Goma, now part of the national government, Rwanda continued its

involvement through proxies, headed by the Governor of North Kivu, Eugène Serufuli and a smaller militia group in South Kivu, headed by Xavier Chirhibanya (Prunier 2009).

In North Kivu, the *Forces Démocratiques de Libération du Rwanda* (FDLR) which had evolved from militias formed by the *interhamwe* (see section 2.4.1) were the target of Rwandan troops who re-entered the DRC in 2004. This was in response to a massacre of Tutsis in a refugee camp on Gatumba, northwest Burundi by anti-Tutsi elements consisting of Congolese Mayi-Mayi, FDLR and *Forces nationales de liberation* (FNL) Burundian Hutu guerrillas.

The Rwandans were supported by Nkunda, a North Kivu Tutsi from Rutshuru, who had fought with the RPF, and was a commander in RCD-Goma. He had not integrated, or was prevented from integrating (Prunier 2009) his troops into the new national Congolese military, the *Forces Armées de la République Démocratique du Congo* (FARDC). Nkunda was to become a major participant in the evolution of the armed violence in the post-election period (see section 2.4.2).

Since this incursion by Rwanda threatened to destroy the peace agreement, South Africa intervened (at the highest levels) resulting in Rwanda's withdrawal. Suddenly, the reality of achieving national elections at the end of the transitional government became increasingly tangible (Prunier 2009).

On 31 July 2006, 72% of registered voters went to the polling stations to vote in the first national elections since independence in 1960. The peacekeeping mission, *Mission de l'Organisation des Nations Unies en République démocratique du Congo* (MONUC) and a European Union (EU) auxiliary military force

were primarily responsible for securing the logistics and security in the vast country.

Kabila won a run-off election with 58% of the vote, and the pattern of voting demonstrated a clear east–west split. The majority of Kabila’s support was from the east where the electorate rejected previous groups that had occupied these areas (namely RCD and MLC) (Prunier 2009; Turner 2007).

The decision by the various African states to engage in the conflict of the DRC was motivated by a variety of interests. Links have been established between the exploitation of natural resources for financial gain for individual army commanders (Uganda), as part of a strategy to finance a war effort (Rwanda) and as an opportunity to secure sorely needed revenue and exert influence in SADC (Zimbabwe) (Clark 2003a; Reyntjens 2005). Other motivations for African states to engage in conflict included, the protection of borders (Rwanda, Angola), expansion of political influence (Uganda) and entrenchment of a political and ideological power base (Rwanda).

The dynamics of eastern DRC had created a situation where Rwanda’s adversaries (former *interhamwe* and FAR) were apparently thriving. With the root cause of violence in eastern DRC based on historic, ethnic, economic, political and regional geographies, Rwanda was compelled to maintain a strong direct link within the DRC. When that ceased to be politically viable, Rwanda continued to influence events, in the eastern regions, through the use of proxies.

2.3 The Kivus, Kinyarwandans and land

This section presents the historical context to the conflicts of 1996 and 1998 through the lens of the Kivu provinces. These provinces are the location of

the two national parks identified as the case studies in this thesis. By presenting a background to the broader political dynamics of the region, further insight into the roles of specific spaces in these conflicts, can be elucidated.

The dynamic of the Kinyarwandans in the Kivus has been significant in the evolution of the political discourse, since colonisation but also in influencing the conflicts of 1996 and 1998. Access and control over land has dominated the political and economic dynamics of the Kivus since pre-colonial times. This section presents the relationship between each province separately in relation to land and the Kinyarwandans.

2.3.1 The History of Kinyarwandans in South Kivu

The Banyamulenge, Tutsi pastoralists who speak Kinyarwanda³, arrived in DRC in the nineteenth century and settled in the plains of Uvira territory in South Kivu. The establishment of the arrival date of the Banyamulenge as being prior to the proclamation of the Congo Free State in 1885 is crucial, as Congolese nationality law is based on settlement in DRC prior to this period.

Under Belgian rule, the Banyamulenge were initially ignored or considered to be foreigners (Lemarchand 2009; Turner 2007) and the administrative set-up, established under the colonizers proved to be a significant factor in the role of all Kinyarwandans in the political dynamics of the Kivu region. Prior to independence in 1960, a major change to the administrative system was implemented, which established the structure of prefectures. The country was divided into provinces, districts and *territories*, each with an administrative head appointed from central office.

³ Also referred to as Banyarwanda, a people of Rwandan origin (Lemarchand, René. 2009. *The Dynamics of Violence in Central Africa*. Philadelphia: University of Pennsylvania Press.)

Throughout the Kivus, the Belgians remodelled administrative units along ethnic lines, with more notice given to larger groups. The Banyamulenge, a smaller community, were consequently divided between the *territoires* of Fizi, Uvira and Mwenga and by the end of the colonial period, they were still under the rule of others (Lemarchand 2009; Turner 2007). After independence, the Banyamulenge sought recognition of their own *territoire* and sub-units of *territoires* known as *collectivity*. However, their relationship with the Furiiru was resentful and the Banyamulenge were not only isolated geographically but politically and culturally as well with intermarriage a rarity.

In 1964, South Kivu became the base from which the Lumumbist revolt was initiated but the Banyamulenge did not feel attracted to the ideology. The Lumumbist revolt in South Kivu managed to integrate former leaders of the Simba rebellion following their heavy defeat in 1964. The implications of the egalitarian principles of the Lumumbist movement meant that cattle would be distributed to the insurgents but the cultural significance of cattle to the Banyamulenge ran counter to this socialist programme. Upon defeat in the Ruzizi Plain and at Uvira, the rebels from the Furirru, Bemba and Vira ethnic groups retreated to the Haut Plateau where they taxed the Banyamulenge or raided their cattle (Turner 2007). The Banyamulenge responded by allying with the Congolese army against the Simba rebellion. This was partly to ensure safe passage for Banyamulenges trapped in the Ruzizi Plain and Baraka. Their involvement was effective in pushing back the Simba rebels and earned them compensation from Kinshasa in the form of employment, education and other social services (Vlassenroot 2002), which contributed to this awareness of the Banyamulenge as political actors (Prunier 2009).

This favouritism resulted in resentment from the Bembe and other tribes. Changes in the law, regarding nationality, resulted in attempts to include the Banyamulenge with other Kinyarwanda-speaking groups that were intended to be excluded from Congolese nationality⁴. Resentment continued to increase towards the Banyamulenge throughout the 1980s and 1990s, with many fleeing to Rwanda and joining the Rwandan Patriotic Army (RPA), which would form the bulk of the subsequent ADFL rebel group. Others formed their own militia in the mid-1990s and reports of fighting between the Banyamulenge militias and the Zairian troops led to further expulsions and movement of the Banyamulenge into Rwanda and Burundi (Prunier 1995 cited in Dunn 2003; Nest 2006; Turner 2007).

2.3.2 The History of Kinyarwandans in North Kivu

In North Kivu, the establishment of Kinyarwanda speakers followed a different historical path. There had been Kinyarwanda speakers present in this province for many centuries and they were divided into many small communities.

In 1937 the authorities created the *Mission d'Immigration des Banyarwanda* (MIB) to facilitate the migration and settlement of Rwandans into North Kivu, to work on the European plantations. As a result of this Belgian

⁴ The law of 5th January 1972 granted Zairian nationality to individuals who were descended from ethnic groups that were within the national limits from 15th November 1908. The law further stipulated that people from Ruanda-Urundi (colonial name for Rwanda) who had been living in the Kivu from 1960 were also entitled to Zairian nationality. On 29th June 1981 the law was changed to only recognize descendants from ethnic groups that had been living in Congo before August 1885 (Turner, Thomas. 2007. *The Congo wars: conflict, myth and reality*. New York: Zed Books Ltd.)

administrative decision, during the two settlement periods, (1937 to 1945 and 1949 to 1955), 25,000 and 60,000 Rwandans were moved into North Kivu (Prunier 2009a; Turner 2007). Some Banyarwanda were sent to Katanga province to work in the mines but the majority of them settled in the Walikali and Masisi *territoires* of North Kivu. The Rwandans brought in to labour under the MIB were both Hutus and Tutsis (Prunier 2009).

The introduction of a dual system of tenure introduced by the Belgians was to have a significant influence on the dynamic between the Kinyrwandans and other ethnic groups in North Kivu. The new system gave ownership of vacant land to the state, whilst land already under customary tenure would remain but ownership could not be extended. In Masisi, North Kivu this meant that customary tenure under the Hunde was maintained and although the migration of Rwandans into the Kivus under the MIB caused tensions in other communities, the Hunde initially welcomed them as they provided a source of income from the rent paid.

Eventually the Kinyrwandans who had been settled under the MIB programme began to assert residential claims to land but this raised concerns amongst the traditional authorities, who denied them access. The Kinyrwandans utilized the system of land ownership initiated by Belgium and began to purchase land, eventually acquiring significant sections of land in Masisi. This only contributed to raising tensions as the Hunde still expected rent for their customary lands (Vlassenroot 2004).

The violence in Rwanda that led to the exiling of the monarch in 1961, also resulted in many Tutsi fleeing into neighbouring countries and further afield. Tutsi refugees in North Kivu were given access to land by the Hunde tribe

under pressure from the United Nations High Commissioner for Refugees (UNHCR). Eventually, resulting in revolt in 1963 as the Kinyarwandans felt they owned the land they were cultivating and did not feel the need to pay further rent or royalties to the Hunde (Turner 2007).

An alliance evolved between Hunde and Nande ethnic groups against the Hutus and Tutsis of North Kivu, with another indigenous ethnic group, the Bashi, generally supportive of the Banyarwandans. This resulted in clashes that culminated in large-scale massacres (Lemarchand 2009). The conflict in 1963 which was referred to as the 'Kanyarwanda War' (Lemarchand 2009: 13; Turner 2007: 117), lasted for two years and was linked to the change in administrators, post-independence, from primarily Hutu to Hunde. Further influxes of Tutsis from massacres in Rwanda between December 1963 and January 1964 placed the Banyarwanda in an increasingly difficult position, which Mobutu utilized (Prunier 2009; Vlassenroot 2004).

In 1973 Mobutu introduced a law declaring that all land was the property of the state. Mobutu carelessly eroded customary tenure and distributed land as part of his system of patronage. At the time, the Kinyarwandans benefited due to their alliance with the President. But by the end of the 1980s, increasing demographic pressure was furthering dire conditions for conflict.

In 1993 violence was triggered by a speech by the governor of North Kivu when he requested security forces to support groups such as the Nande, Hunde and Nyanga and to kill Kinyarwandans in order to exclude them (Vlassenroot 2004). The ensuing animosity resulted in the mobilization of local youths and culminated in the killing of several people in a local market in Ntoto. This act caused Hunde and Nande militias to attack Banyarwanda

in the Masisi region, and with help from the Zairian army, resulted in the death of between 6,000 and 10,000 individuals and the displacement of 250,000 (Vlassenroot and Acker 2001) in Rwanda and South Kivu (Prunier 1995; Dunn 2003).

The politicization of ethnicity in eastern Congo was measured to be strongest in North Kivu and resulted in the abandonment of democratization in favour of militarization. Tutsis from North Kivu joined the Rwandan Patriotic Front (RPF) and subsequently ADFL (Turner 2007). The subsequent influx of Hutus from the Rwandan genocide in 1994 into both North and South Kivu, contributed to the existing tensions.

2.4 Post election factions in the Kivus

Eastern DRC and the Kivus in particular, continued to engage in cyclical violence, not only during the transitional government when much of the country was settling down to peace but also following the elections. This section presents in detail the key factions that continued to operate in eastern DRC following the elections of 2006.

Although many factions had been operational prior to the election, the Kivus' relevance in the post-election era is particularly pertinent, with regards to the timeframe and the empirical focus on this particular geographical area of this study.

This section presents detail on the formation of two key groups, namely the FDLR (including the Coalition of Patriotic Congolese Resistance (PARECO) and *Congrès national pour la défense du peuple* (CNDP) and how these groups interacted with both the national army and the main foreign protagonist in this region of Rwanda.

2.4.1 Formation of the Forces Démocratiques de Libération du Rwanda

Although the FDLR had been a major protagonist in the dynamics of the conflict in Eastern DRC, they were not included in the peace negotiations of the early 2000s. This group, perhaps most evidently, illustrates the significance of events in Rwanda in shaping the violence in eastern DRC. This section presents a summation of the FDLR's formation and traces the group's origins to developments initiated under Belgian colonial rule to their existence under modern-day Rwanda. It presents the background of the formation of the FDLR into two geographically specific phases, Rwanda from colonization to the 1994 genocide and then FDLR's Congolese phase from the end of the genocide in 1994 to the early part of the 21st century.

Colonization to the Rwandan genocide

The creation of the *interhamwe* lies in events that were perpetuated during colonial rule of Rwanda and lead to the creation of an environment that caused the Rwandan genocide of 1994. Although a detailed analysis of the events that led to the genocide is beyond the scope of this thesis, several key historical aspects are worth highlighting to provide the background to the creation of the *interhamwe* and in part the subsequent creation of the FDLR.

Over the period of 1894 to the end of World War I, Rwanda and Burundi (Ruanda-Urundi) were colonised by Germany, who used the existing Tutsi monarchy to rule on their behalf and annexed the Hutu kingdoms in the North West. The European colonialists perceived the status of the Tutsis as an indication of their superiority and claimed that Tutsis were unlikely to have descended from common Africans but from the ancient Egyptians. The colonialists reinforced this by letting the the Hutu and Twa, (forest dwellers

who made up 1% of the population), know of their inferiority to the Tutsi (Des Forges 1999). When Belgian took over rule of Ruanda-Urundi in 1924, they continued to favour the Tutsi. The Belgians replaced Hutu chiefs with Tutsi, and the Tutsis implemented brutal work regimes on the Hutus as part of a number of agricultural and infrastructure programs of colonial investment that further entrenched hostilities.

The introduction of an identity card system by the Belgians based on a census served to allocate clear ethnic identities to all Rwandans. Belgian, in an effort to maintain influence in the post-independent region, began to favour the Hutus due to their overwhelming majority (85%) of the population. To redress the Hutu's political and economic marginalisation of the last century, a Hutu manifesto was created by nine intellectuals. The manifesto categorised Tutsis as foreigners and called for the maintenance of the identity card system introduced by the Belgians.

In the run up to independence in 1962, the pro-Hutu Paremhutu party had revolted and succeeded in removing the Tutsi monarchy, causing within a year of independence, 130,000 Tutsis to flee to neighbouring countries. Rwanda's first post-independence president, Kayibanda presided over a turbulent period, with Tutsi refugees launching attacks into Rwanda that were met with brutal retaliation by his troops. There was also increased repression and killing of Tutsis still living in Rwanda.

The situation was compounded by the repression of Hutus in Burundi, which led to mass killings and the migration of many Hutus to Rwanda. A change in leadership through a military coup to Major-General Juvènal Habyarimana in Rwanda signalled an initial desire to end the discrimination

against Tutsis. But as attacks from Uganda by the Rwandan Patriotic Front (RPF) and an economic crisis ensued, Habyarimana's position in support of non-discrimination disappeared and he refused the return of over a million and half refugees (Des Forges 1999; Magnarella 2005).

In the early 1990s, Rwandan refugees were committed to returning to Rwanda and formed a robust rebellion to Habyarimana's rule with the support of Uganda. Meanwhile, the more extreme political elements within Rwanda initiated the co-ordination of the 1994 genocide. Habyarimana entered into peace negotiations with the Rwandan Patriotic Front, with a final accord signed on 3 August 1993. Shortly afterwards a private radio station in Rwanda began to broadcast anti-Tutsi propaganda against the accord but Habyarimana had agreed to implement the accord, despite the increasing hostilities towards Tutsis. He paid with his life, killed by a missile hitting his plane on returning from Arusha, Tanzania, where he had signed the peace accord. Habyarimana's death triggered the genocide.

The main actors were the *interhamwe*, Hutu militiamen who had been trained by the presidential guard. They swung into action with the same presidential guard and set about assassinating opposition politicians, human rights activists and Tutsis.

The Rwandan Patriotic Front, under Paul Kagame, began incursions into Rwanda in April to stop the genocide. As the RPF gained territory the FAR and *interhamwe* retreated, with a massive civilian population, into neighbouring Zaire (Magnarella 2005). It is estimated that approximately 500,000 to 800,000 Tutsis and up to 30,000 Hutus were killed over a 100-day period. It had not been just the militia and military taking part but large

swathes of the civilian population participated in the massacre of their fellow Rwandans. The RPF also embarked on retaliatory killings with massacres documented and estimated in the hundreds of thousands of victims over the period of April 1994 to August 1995 (Des Forges 1999).

Creation of a new rebellion in the DRC

With the influx of refugees from the Rwandan genocide in 1994, the former FAR and *interahamwe* brought with them to North Kivu, the ideology that the elimination of Tutsis would contribute to solving the ethnic problems in the region. With the history of ethnic conflict, it was not difficult for the ex-FAR and *interahamwe* to gain support. The ex-FAR and *interahamwe* were able to kill many Tutsis refugees as they were fleeing into Rwanda (see previous section).

The regrouping of the ex-FAR and *interahamwe* in the refugee camps of eastern DRC resulted in the creation of a Rwandan government in exile and in March 1995 the *Rassemblement pour le retour des Réfugiés Rwandais* (RDR) was created. The aim of RDR was to restore Hutu rule to Rwanda and to distance themselves from the more extreme *génocidaires* who had fled to third countries (Veenhoop 2007). The RDR launched offensive operations against Rwanda over the period of 1995–1996. They also recruited young men from within Rwanda and the refugee camps in DRC, training them in the camps that were being protected by the *Forces Armées Zairois* (FAZ) and supported by the United Nations High Commissioner for Refugees (UNHCR) and other humanitarian agencies.

In mid-1996 the camps were attacked and disbanded by the Rwandan Patriotic Army (RPA), with the ADFL. This resulted in approximately one million Rwandan refugees returning to Rwanda, whilst 200,000 refugees fled further into Zaire accompanied by part of the militia (Veenhoop 2007).

In 1997, the RDR forces that had scattered throughout the country and also into neighbouring Angola and the Republic of Congo re-established co-ordination which led to the creation of the *Armée de Libération du Rwanda* (ALIR), with the group that was operational in eastern DRC known as ALIR-I and the group operational in western DRC, Angola and Republic of Congo known as ALIR-II. The FDLR were a subset of the western group and was established in May 2000 in Lumbumbashi. The ALIR changed their structure when the military and civilian branches of FDLR separated in September 2003 with the creation of *Forces Combattants Abucunguzi* (FOCA) as the armed side (Veenhoop 2007). The FDLR were excluded from the negotiations of the peace agreement of 2002 on the pretext that they were a foreign combatant group.

The FDLR are believed to have initially secured resources through raiding and looting as well as cultivation of their own crops. Initially, the FDLR did not exploit minerals or other natural resources as it was considered to be distracting based on their observations of how other rebel groups had been affected (Veenhoop 2007). It is likely that the splintering of RCD due to a conflict between Ugandan and Rwandan forces over access to minerals in Kisangani in August 1999 (Reyntjens 2005) would have been the type of incident the FDLR were using to discourage engaging in the lucrative commodities sector. However, by 2002 the FDLR had changed their policy regarding participation in economic activities as an upshot of three factors,

the withdrawal of the Rwandan troops, diminishing funding from external sources and the integration of FDLR fighters from Western DRC, who had been exploiting minerals.

This shift in policy incorporated mining and trading in minerals, levying taxes, growing marihuana, controlling river crossings, smuggling, hostage taking and seeking ransoms, animal husbandry and agriculture. The FDLR also continued to maintain raiding and looting as an economic strategy (Veenhoop 2007). By 2008 the illegal trade of mineral resources was considered to be the principle source of funding for the FDLR. They controlled the majority of the artisanal mining sites in South Kivu and gold mining pits in North Kivu (United Nations Security Council 2008).

Rastas, Rally for Unity and Democracy and the FDLR

An armed band of Kinyarwanda speakers known as the 'Rastas' were responsible for a series of particularly brutal and violent crimes against populations in the Nindja and Kanyola areas of South Kivu in 2007 and 2008. Their association with the FDLR was alluded to and MONUC considered them to be no different. However, the negative impact of this group on the local populations caused the FDLR to publically distance themselves from the Rastas. Since the FDLR were often dependent on the co-operation of host communities and conscious of maintaining this relationship, the actions of the Rastas would compromise their standing within the local populations as well as the broader national and international arenas, requiring the FDLR to responded to this by clarifying the lack of a connection (Spittaels and Hilgert 2008).

Some success in demobilizing FDLR elements were achieved with the Rally for Unity and Democracy (RUD) – Urunana which was founded by the former First Vice President of FDLR, Jean Marier-Vianney Higiroy in 2004. It represented a dissident group, considered not to exceed 500 combatants. The RUD operated in the border areas of Lubero and Walikali in North Kivu, with headquarters in Mashuta in Lubero territory. Colonel Musare headed its military wing and in August 2008, 67 RUD combatants were reported to have disarmed as part of a disarmament roadmap supported by the Congolese government and MONUC (Spittaels and Hilgert 2008; Feeley and Thomas-Jensen 2008; IRIN 2008). However, other factions of the FDLR continued to be operational throughout the Kivus and were thought to number approximately 6,000 to 7,000 combatants in the Kivu provinces in 2007 (Cuvelier 2010).

2.4.2 Rwanda, Nkunda and the Congrès national pour la défense du peuple

The integration of armed groups, known as *brassage*, established in the Global and All Inclusive Accords of 2002 (Human Rights Watch 2007) was to be implemented through the creation of a new national force known as the FARDC during the transitional government. The process was under resourced, poorly managed and contributed to violence both before and after the national elections (Marriage 2007; Turner 2007).

Laurant Nkunda, a commander of the 81st and 83rd RCD-Goma brigades based in Masisi, a general in the new army of 2004, refused to report to Kinshasha for *brassage*, not believing that the peace accords supported the cause of the Tutsis (Turner 2007). Fearing that Tutsis would be killed as a result of the integration (Human Rights Watch 2007) led to the bulk of his men re-joining their RCD units in North Kivu.

In May 2004, RCD troops stationed in Bukavu in South Kivu mutinied against joining the integrated army. The subsequent military response by the national army targeted Banyamulenge civilians. In response, Laurent Nkunda, in collaboration with Jules Mutebutsi, took over the town of Bukavu and held it for a brief period, ostensibly to protect the Kinyarwandans. Nkunda's troops were forced to retreat to North Kivu whilst Mutebutsi retreated into Rwanda (DRC 2002; Human Rights Watch 2007). In early 2006 Nkunda's troops fought with the FARDC. Nkunda then allowed the national elections to proceed in areas under his control in July 2006 but clashed again with the FARDC in August 2006 and November 2006 after the run-off elections (Human Rights Watch 2007; Turner 2007).

Nkunda launched his own movement in 2006 called the CNDP. Its December 2006 political manifesto consisted of eight objectives including the removal of foreign armed groups from the DRC, the return of Congolese refugees, federalization of DRC and a different process for integration of armed combatants into a national force (Spittaels and Hilgert 2008). Negotiations between CNDP and the Congolese government in December 2006 and January 2007 resulted in agreement about the gradual integration of Nkunda's troops so as to assure their security. This limited process of integration was referred to as '*mixage*' (Human Rights Watch 2007: 16).

Although the terms were not put in writing, issues regarding the return of Congolese refugees from Rwanda were included as well as military operations against the FDLR (Human Rights Watch 2007). The arrangement failed after several months and left Nkunda in a stronger military and political position than he had been in 2006. As a result of *mixage*, Nkunda's

brigades increased from two to five and included demobilized Rwandan soldiers. By early 2007 he had expanded his territory through large areas of Masisi and Rutshuru, extending to the country's borders with both Uganda and Rwanda (Human Rights Watch 2007). CNDP's financing of their efforts has been linked to mineral-exporting companies, transport companies, fuel businesses and taxation on the transit of goods through their territory (United Nations Security Council 2008).

CNDP and Rwanda

Throughout the conflict in the DRC and particularly in the Kivus, the role of Rwanda has been a consistent factor. It had been alleged that Nkunda had received support from both Rwanda and RCD-Goma for his attack on Bukavu in 2004 (Reyntjens 2005; Turner 2007; Vlassenroot and Raeymaekers 2009). Rwanda was implicated in supporting the recruitment of soldiers, provision of military equipment as well as providing military expertise by deploying RDF officers and units and acting as a 'rear base' (United Nations Security Council 2008: 18). Numerous former combatants that were repatriated to Rwanda by MONUC had been recruited by CNDP within Rwanda (United Nations Security Council 2008). Rwanda had also been the key moderator in the verbal agreement between the Congolese government and Nkunda in December 2006 and January 2007.

The Congolese military attempted to thwart CNDP, and when a large-scale military operation resulted in defeat by Nkunda's troops in late 2007, it not only highlighted the ineffectiveness of the FARDC but also enabled an agreement between DRC and Rwanda towards securing peace in the east. The governments of Rwanda and DRC developed a framework to address the problem of the FDLR and in January 2008 a 'Conference on Peace,

Security and Development in the Kivus' was held in Goma, the capital of North Kivu.

Although a comprehensive peace plan was developed and agreed on, the security situation did not improve. This has been ascribed to the inclusion of an additional 22 Congolese Kivu-based armed groups, in addition to CNDP, who were invited to attend the Goma conference. Numerous groups increased their ranks in order to maximize benefits from the demobilization kits and other resources. Other contributing factors included the delay in the implementation of the peace plan, named the Amani process, as a result of limited financial resources and the lack of clarity around the process of *brassage*. In July 2008, clashes between the CNDP and FARDC resumed resulting in large-scale attacks in Masisi and Rutshuru the following month. CNDP made significant advances over this period and came within a few kilometres of the provincial capital, Goma. The worsening humanitarian situation and continued engagement of CNDP with FDLR and PARECO resulted in several international initiatives and a strengthening of the MONUC forces, with an additional 3,000 troops to be deployed in Spring 2009 (Vlassenroot and Raeymaekers 2009).

In January 2009, 4,000 Rwandan troops entered the DRC in an unexpected offensive against the FDLR. Rwanda and the DRC had agreed (in Nairobi) to engage in a joint military operation in November 2008 and whilst this operation seemed to be targeting the FDLR, it redeployed and changed the leadership of CNDP.

In January 2009, the International Criminal Court indicted John Bosco Ntaganda, who had been the Chief of Staff in CNDP. Nkunda was arrested

in Rwanda on 22 January 2009 and agreement was reached on the rapid integration of CNDP groups into the FARDC. Various Mayi-Mayi groups and PARECO declared an end to their hostilities and CNDP transitioned into a political entity (Vlassenroot and Raeymaekers 2009).

2.5 Communities, conflict and conservation in the DRC: the creation of Virunga and Kahuzi Biega national parks

The precursor to the current institution mandated to manage DRC's protected area estate was created by Royal Decree in November 1934. The Institute of National Parks of Belgian Congo, within its provisions, delineated how the expulsion of local people to create these reserves would be possible. The Royal Decree explained how the displaced people would still be able to access lands of similar size and quality, which would be situated in the same district or neighbouring territory. These provisions highlighted the ignorance of the Belgians to the relevance of ancestral lands and the impact to families and traditional social units once forced to relocate (Nzanbandora, 2011).

The current iteration of the parks agency is the *Institute Conglaise Pour le Conservation du Nature* (ICCN) which was established in 1978 replacing the *Institut National Pour la Conservation de la Nature* (INCN) which had been created in 1969. The specific mandate of the ICCN is to 'ensure, in natural reserves....the protection of nature, the promotion of scientific research and in so far as compatible with nature conservation, the promotion of tourism' (cited in Barume, 2000: 67). This mandate therefore extends to maintaining the integrity of approximately 9% of the total surface area of the country within designated protected areas (Inogwabini, Ilambu et al. 2005). The institution utilises equipped personnel to physically patrol, protect and manage the designated areas.

However, the declining numbers of wildlife and encroachment of many national parks indicates that the institution is failing to implement its conservation objectives (Inogwabini, Ilambu et al. 2005). By 2007 the institution was heavily understaffed, poorly resourced and even during periods of national economic growth (1984-1987), investment in conservation dropped (Inogwabini, Ilambu et al. 2005) and reached all-time lows at the turn of the century.

This pattern was also repeated for other sectors with GDP contributions to health and education decreasing to zero by 1994 (Reno 2000). Whilst contributions from both multi and bilateral donors and nongovernmental organisations (NGOs) towards specific protected areas resulted in some conservation achievements (Inogwabini, Ilambu et al. 2005), this support was targeted at specific sites that donors had particular interests in and not at the institution as a whole, with no backing of the national conservation goals. The ICCN is a hierarchical institution loosely based on military institutions. Although the objectives of the institution are clearly spelt out within the legislation of the country, its weakened effectiveness as a result of lack of sufficient resources means that these cannot be achieved.

In retrospect, it appears that neither during the colonial period or post independence, that the various iterations of the protected area agency were ever able to effectively manage the parks. National Parks were often in conflict with the local communities that had been displaced by their creation and this was further compounded by the creation of a weak state under Mobutu.

The following sections present the history of the creation of two national parks in the Kivus. It also includes details of the impact of the conflicts and militias during the 1990s and 2000s. The two parks presented here are Kahuzi Biega and Virunga National Parks, which had been identified as the case study for further empirical analysis in this thesis (see chapter 3).

2.5.1 Virunga National Park – creation of Africa’s first park and impacts of conflict

Virunga National Park’s most famous inhabitant, the mountain gorilla, is one of the main reasons that the area was gazetted for protection. Created by Belgium Royal decree in April 1925, VNP is the oldest national park in Africa and considered to be the most biologically diverse protected area in the world.

The Belgium king bought into the concept that protected areas would not only protect wildlife and landscapes but also contribute to scientific endeavour. It was therefore put under the management of an autonomous scientific institution (Adams, 2004). The 50,000-hectare park initially covered the area of the volcanoes and north to Rwindi. But the boundaries of the park were to go through a further four successive extensions into North Kivu and into present day Rwanda between 1929 and 1950 before its current area was realized. The establishment of the boundaries required the displacement of scores of people. Initially the Belgians allowed the local communities to continue to exercise their rights of hunting, fishing, raising cattle and food crops whilst they negotiated the terms of compensation, which meant finalising alternative land (Nzanbadora, 2011).

There was a Royal decree in 1929 to expand the reserve by up to 200,000 hectares but the Belgium commissioner of the Kibali Ituri District and the

Curator of the Park delimited an additional 150,000 hectares of 'annex-territories' (Nzanbandora 2011: 17) in the Southeast of Rutshuru territory. The annex-territories were inhabited and utilised in accordance with customary land legislation (Nzanbandora, 1984). The residents in these so-called annexes were however evacuated by force between 1933 and 1934 and local communities that were still residing in the boundaries of the reserve were also evacuated, under the pretext of a sleeping sickness outbreak, which although present resulted in healthy individuals also being removed from the reserve.

This manoeuvre of extending the nature reserve as a contribution to public health, under the pretext of a sleeping sickness epidemic, was also used in the creation of Upemba reserve in Katanga. The Belgians also tried to convince the British to create a contiguous park to Virunga on the Ugandan side of the border, all in the interests of public health (Nzanbandora, 2011).

These evacuations removed over 4,000 families from the initial reserve which resulted in conflict with communities already residing outside the reserve. The displacements destroyed traditional social units, socioeconomic opportunity, they disrupted spiritual and religious life and relegated traditional leaders to the status of asylum seekers. In Bwisha Chefferie located in Rutshuru territory, the expulsions brought Hutu agriculturalist farmers into conflict with the Tutsi pastoralists. The Belgian administrators utilised tenuous notions to undermine the propriety rights of the Tutsi pastoralists, by declaring that they were foreigners and hence their land could be given to the Hutu farmers (Nzanbandora, 2011).

From 1935, farmers re-established their villages in the Nyamulagira and Mikenno sector. Support from the Governor General of the Belgian Congo resulted in a judicial ruling that declared that the Royal Degree of 1929 did not apply to the Albert National Park which meant that the entire nature reserve was considered as indigenous land. Since the various annexations of the park were the result of different decrees, when the Governor General of Belgian Congo recommended the de-gazetting of 200,000 hectares, to permit communities to settle onto portions of land around Lake Edward and Semiliki, it only served to further entrench the public health argument and reinforce measures to declare the disputed lands infected with sleeping sickness. Families were once again displaced from the entire reserve, resulting in a backlash that targeted wildlife (Nzanbandora, 2011) throughout the colonial period and post independence.

Displaced families would engage in hunting (and grazing of livestock), within the reserve and reserve-guards who were not complicit in the poaching would be attacked by the displaced hunters/poachers. The Bayanda Twa and the Tutsis were identified as the groups that attacked reserve-guards the most. Restrictions were imposed by the reserve management, on the Yanda Twa, which went against all the decrees which had insisted that Yanda must be considered an integral part of the park's natural resources and for whom the reserve was also created so that they too could be 'conserved'. These restrictions sparked two major revolts against the guards, which further weakened the integrity of the park. (Nzanbandora, 2011).

In October and November of 1994, Nande farmers encroached into the central sectors of the Virunga National Park and cleared the forest and established fields to farm. They erected huts and fisheries in reaction to the

decisions of local and national park managers, to sell off forest reserves in 1979, as well as fishing enclaves to businessmen from North Kivu (which became protected areas in 1995), and for the shelling from urban centres near the central sectors of Virunga National Park in 1996 (Nzanbandora, 2011; Nzanbandora, 1984).

The park's 784,368 hectares extend about 300 kms north to south and average 23 kms east to west. In 1979 the park was elevated to the status of a World Heritage Site owing to the diversity of fauna and flora, with over 3000 known species, of which over 300 are endemic (Languy and De Merode 2009).

Impact of the conflicts of 1990s and 2000s and use of the park by militias

Dramatic changes in the composition of wildlife over the period from the early 1990s through to 2009 have been observed in VNP and have been ascribed to the instability caused by armed conflict. The decline in large mammals and large-scale deforestation has affected the ecology of the park.

The use of the southern sector of VNP in the guerrilla war of Rwanda in the early 1990s, was the onset of a sustained period of usage of the park by refugees and differing armed groups. In July 1994, over 700,000 people from Rwanda crossed into (previously named) Zaire, fleeing the genocide and offensive of Kagame's Rwandan Patriotic Front. Refugee camps were set up on the edge of the park. VNP became a major supplier of resources for the refugee population; deforestation being the most visible effect as humanitarian agencies did not provide fuel for the refugees to cook their rations. An estimated 105km² of forest was affected in the first two years after the arrival of the refugees. Other impacts of the refugees included an increase

in poaching, primarily of bushbuck and duikers, dumping of medical waste by health organisations and other negative impacts on the ecosystems as refugees transited through the park from Rwanda into Zaire (Kalpers and Mushenzi 2009).

The subsequent two civil wars from 1996 to 2003 continued to have a direct and dramatic impact on VNP. Poaching and deforestation by rebel groups and their foreign allies as well as by government forces was common. Growing of non-indigenous crops such as potatoes, tobacco, wheat and hemp (Rutagrama 1999 cited in Kalpers and Mushenzi 2009) occurred in the Mikeno sector of the park. In addition to this, deforestation by the RCD of the Mwaro corridor for strategic purposes had an impact on the migration of animal populations from the volcano regions to other parts of the park (pers. communication Annette Lanjouw). Additional activities including the resettling of 6,000 Kinyarwanda Congolese refugees between April and June 2004 on 1,500 hectares of Montane forest, within the boundaries of VNP and allude to the historical conflicts over land tenure in this region (Vlassenroot 2005).

Although several mountain gorillas were killed over this period, the impact on the ape population was limited. Park staffs were affected, with many losing their lives or being wounded by armed groups or poachers. The presence of armed groups in the park restricted conservation activities and limited access by the rangers (Kalpers and Mushenzi 2009), preventing effective protection and monitoring of wildlife populations, although broader institutional failings would probably have also been a factor.

The impact on large mammal populations has perhaps been the most dramatic. In 1959 there were approximately 26,530 hippos and 8,000 elephants in the park. By 2005 these had dropped to 887 hippos and fewer than 400 elephants. This dramatic reduction in hippopotamus numbers has been attributed to the presence of military camps in the park feeding the market for hippo teeth curios and protein (Languy 2009; Languy and De Merode 2009). Although many animals are likely to have migrated to neighbouring Uganda, the largest decline is considered to have occurred over the period of 1990 – 2005.

During the period of analysis (January 2006- June 2007) both CNDP and FDLR were known to be operating in VNP. Over the period from May 2007 to January 2009, CNDP controlled much of the Mikeno sector and park headquarters at Rumangabo (Gorilla CD 2007). The FDLR were known to have important troop concentrations at the border of the VNP, in the South Masisi region and at the southern edge of the Tayna Nature Reserves in eastern Walikali (Spittaels & Hilgert, 2008).

2.5.2 Context and creation of Kahuzi Biega National Park

Whereas VNP was gazetted to protect species of gorillas, specifically eastern lowland gorillas (*Gorilla beringei graueri*, KBNP was first gazetted as a forest reserve in 1937 (Barume, 2000). This initial status meant that people inhabiting the lands could not be evicted and in 1954 the Kings of Kabare, Ninja and Kalonge were paid customary dues in accordance with local tradition for access to the land (Mutimanwa, 2001).

However, the change in status to a national park in 1970 meant that human habitation was prohibited. The removal of the forest dwelling tribes of the

Bambutu was initiated as early as 1967, despite being technically illegal, and completed in 1975. Political vulnerability of the Bambutu meant that they had an extremely weak position in the traditional society and they were neither compensated nor provided with provisions during their expulsion from the protected area. Due to their traditional hunter-gatherer existence, the expulsions were particularly devastating for this ethnic group, who have continued to have difficulty integrating into the agrarian communities living outside the park (Barume, 2000).

Initially an area of approximately 60,000 hectares of mountain forest covering a range in altitude from 1800m to 3300m was placed under protection. This region is commonly referred to as the mountain sector and hosts Mount Kahuzi, after which the park is named. In 1975 an additional 540,000 hectares of lowland forest were added to the park. This area varies in altitude from 600m to 1200m and consists of equatorial rain forest. It is connected to the original mountain sector of KBNP by a narrow forested corridor that is approximately 6km wide at Nindja, and located in the Kabare and Walungu territories.

In addition to lowland gorillas, other species of fauna and flora are endemic to the park and in 1980 KBNP was inscribed as a World Heritage Site by UNESCO. A variety of different tribes are found in proximity to KBNP. These are primarily the Bashi, Barega Rongeronge, Tembo, Havu and the Bambutu. The 1975 extension affected more than 13,000 settled people of the Bashi, Tembo and Barega tribes. Many refused to leave the park, where they engaged in agriculture, cattle grazing, mining and limited hunting and fishing. Their settlements along the corridor that connects the highland to the lowland sectors are considered to be the greatest threat to conservation as

they restrict the movement of large mammals and further fragment the forest (Barume, 2000).

Impact of conflict of 1990s and 2000s and use of the park by militias

Over the period from 1996 – 2006 due to the insecurity, much of the mountain sector and virtually the entire lowland sector of KBNP were inaccessible by the park rangers (The Durban Process 2006). Large areas of the corridor linking the highland to the lowland sectors were being deforested and turned into agricultural lands.

In 1994 approximately 450,000 refugees settled in camps in proximity to KBNP. As a result of the increased demand for fuel wood, (similar effects of refugees on deforestation of the park as observed in VNP) were being seen in KBNP. There was also an increase in the cultivation of crops within the park. Most of the refugees returned to Rwanda with the invasion of the ADFL in 1996 (Yamagiwa 2003).

The impact of the conflict on large mammal populations in KBNP were equally dramatic to VNP. Unlike VNP, the gorilla populations were targeted and this was linked to the demand for gorilla meat in the local bush meat markets. A census of lowland gorillas in the mountain sector of KBNP counted 223 individuals, which increased to 258-284 in 1990 (Steinhauer-Burkart, Mühlenberg et al. 1995). A third census in 1996 found 245 gorillas and indicated that the gorilla populations had been stable for approximately 20 years. However, this figure dropped to 130 in 2000 but increased to 168 in 2004 (Hart and Liengola 2005). The decline from 1990 to 2004 represents a 68% drop in observed numbers of gorillas in this sector.

With the departure of the refugees, an increase in poaching levels of elephant for ivory was noted and linked to the local communities' compromised socio-economic situation. The first reliable count of elephants in the mountain sector was conducted in 1996 and found 910 individuals (Yamagiwa 2003). Subsequent scarce evidence of elephants from the early 2000s lead zoologists to conclude that 95% of the population had been killed since the early 1990s (Yamagiwa 2003).

Lack of sufficient protection of the national park as a result of the conflict in the region was cited as the main reason for increased levels in poaching to support the bush meat industry and provide economic options for both militia groups and local communities (Yamagiwa 2003). Surveys in only two sectors of the lowland sector conducted between 2004 and 2007 established that gorilla populations had further declined by about 18%, elephant had been completely eliminated and evidence of hunting and artisanal mining was widespread (Hart et Al, 2007; Hart et Liengola, 2005).

KBNP has an abundance of economically viable deposits of gold, coltan (columbite-tantalite) and cassiterite (tin ore). Mining within KBNP is conducted by artisanal miners with an estimated 9,000 to 12,000 miners residing in the park in 2006 (The Durban Process 2006). Coltan is the conflict mineral most associated with the DRC. It is used in electronic equipment and is found in mobile phones, laptop computers and variety of other electronic devices. This link was first highlighted in early 2000 when unprecedented demand and speculation regarding deposits, resulted in a price spike from an average of USD 40 to USD 500 per pound of tantalum ore. RCD- Goma indicated that an anticipated revenue of approximately USD 1 million per month was likely to be generated from the sale of 100-150 tons of coltan in

2000 (Vick, 2001 cited in Hayes and Burge 2003). Over this period, KBNP was within the territory controlled by RCD – Goma and the price spike resulted in an influx of miners and their families, who did not bring in any livestock but were supported by professional hunters, who hunted the wildlife to provide protein to the miners (Astill and McKie cited in Hayes and Burge 2003).

Furthermore, evidence obtained by a UN expert panel (United Nations Security Council 2008) documents the exploitation of minerals (namely cassiterite and coltan) from within KBNP by FDLR to finance their activities. The panel placed the revenue of the FDLR from exploitation of minerals in several locations across the Kivus including KBNP, as their primary source of financing (United Nations Security Council 2008).

The key militia groups that were utilising KBNP over the period of interest were the Rastas and FDLR. The FDLR were known to be using the park as a key route to move equipment and personnel between North and South Kivu. Their positions were also linked to the presence of natural resources where they exploited a number of mining sites either through taxation or through organising the dig themselves (Spittaels & Hilgert, 2008).

2.6 Conclusion

The function of natural resources, global geopolitical events (such as the Cold War), and the influence of regional dynamics are all factors that contributed to the resultant weak state of the country.

Whilst deductions around the motivations for various groups engaged in the DRC conflicts of 1996 and 1998 have been subject to different interpretations,

three themes dominate. These are the exploitation of natural resources for economic gain by all agents involved; the international and regional nature of the conflict, which engulfed at one stage, seven African countries, with interventions by the international community through the UN and individual states; and the impact of the absence of robust government institutions at any stage of the post-colonial history.

The significance of valuable natural resources, including land, to the dynamics of the conflict and colonization of DRC are undisputed. The exploitation of the valuable natural resources were central to the establishment of a system of rule that was to provide the space for the perpetuation of numerous Congo wars but, ironically, not for the wars' initiation. The economic aspects of the conflict, realized through the exploitation of natural resources, are essentially a 'function of the conflict' (Nest 2006) and not necessarily more dominant than other contributing factors.

The root causes of the 1996 conflict stem from political processes, which had been established under Belgium colonization and which could not be circumvented by an immature post-independent political movement, for a more appropriate form of governance. The conflict of the mid to late 1990s in the DRC can be reduced to a conflict between two neighbouring states, Rwanda and Congo (Prunier 2009). Although the engagement of Uganda (in particular), and six other African states was also significant, Rwanda remained the most vulnerable to insecurity due to the genocide and due to the ability of the *interhamwe* and former FAR to regroup and thrive in the DRC.

In addition to the security threats posed by these groups to Rwanda's security, the economic incentives were also significant as they provided revenue to the state to fund its war effort and as a source of wealth for elites. Although the economic benefits were an incentive for continued engagement, this aspect of the conflict is unlikely to have been the main motivation in the initial engagement of Kagame's regime in the DRC.

The creation of the parks, ironically, increased the threats to wildlife, as the forfeiture of land demanded revenge. Since the creation of protected areas was achieved through the brutal displacement of large numbers of ethnic groups, the created spaces became prime targets for the displaced people, in bids to regain their former lands.

The use of the parks' resources and space, by large numbers of refugees and later by various armed groups, significantly affected large mammal populations and their areas of habitat. Even though the state was responsible for ensuring that these areas were not exploited, as defined in national law, the level of protection provided by the park authorities was wholly inadequate compared to the scale (and frequency) of the human migrations and the might of the armed groups.

Several decades of misrule by Mobutu, meant that the state institutions were not only poorly equipped to deal with the fall out of the conflict but were unable to exploit any opportunities to secure sections of the park, due to lack of sufficient resources, expertise and capacity to respond.

This chapter has provided insight into the significance of ethno-political dimensions and natural resources (including land and the national parks),

the affect of regionalization on a conflict (in particular, with the engagement of Rwanda) and how the presence of a weak state with inadequate institutions provides derisory resistance to the conflicts under study.

3 Research design and methodology

Scholars advocate a shift in methodological approaches to highlight relevant factors influencing armed conflict. A combination of large sample size studies, in-depth case studies and disaggregating the variables in particular situations in combination with mapping the spatial dimensions, results in multi-level models to highlight impacts at different scales (Buhaug 2007; O'Lear and Diehl 2007). The impact of varying scales has been largely ignored by studies in conflicts linked to natural resources, indicated by the large-N studies, which only utilize national level statistics, although this partly as a result of the availability of such data. Dimensions of place, space, environmental condition, actors and the relationship between them and the natural resources that are significant need to be identified. This will result in contributions in identifying appropriate conflict resolution strategies (LeBillon 2007; O'Lear and Diehl 2007).

A more in-depth understanding of the role of both resource types, location of resources and specific scales could be realized by focusing on protected areas. Further insights into some of the causal elements that impact duration and onset of armed conflict are likely outcomes of this approach. Protected areas can be considered to be a different 'scale' that has not been included in both empirically rigorous conflict research and case studies. Research in this direction would establish if such spaces have an impact on the dynamics of conflict considering that on balance conflict negatively affects biodiversity.

Research on the onset, duration and termination of war and conflict has tended to draw on macro-level data. Since the 1970s and the 1980s, the field has been dominated by political scientists seeking to measure structural factors shaping conflicts and, since the 1990s, the conditions under which this

research was relevant ceased as a result of the end of the cold war. Much of the research has failed to acknowledge the underlying motives shaping armed groups to begin with. Until the 1990s and 2000s, there was virtually no consideration of micro-level data generated through multidisciplinary field-based techniques. The rise of new technologies, such as microchips (Goodchild et al. 2000), and emerging analysis tools such as geographic information systems (GIS) have paved the way for a new generation of researchers.

This thesis is at the forefront of this new type of research that brings together political science and geography. Since the late 1990s, datasets that disaggregated conflict data emerged and pioneered the use of visual tools. Its arrival in the early 2000s was demonstrated through increasing peer-reviewed articles on the merits of local research and analysis utilizing datasets that focus on sub-national factors. These approaches have potentially revolutionary effects on social science study of conflict across a number of disciplines. It is not just about visualizing the data but changing the way we think about correlation analysis. It is a new and fast moving sub-field, with researchers still learning the tools of trade and refining datasets as technological advances enable finer grain perspectives. Owing to the limitations in existing research, new and original data was generated for this thesis, further evidence of the recentness of this approach. This chapter highlights the changes in conflict research and relevance for this thesis that echo the transition from macro to micro in the post-cold war era.

The methodology employed in this thesis is primarily positivist in its approach. Although the main methods are quantitative in nature, some data was collected qualitatively. A number of research questions were developed

which were subjected to robust study. This chapter presents types of analysis and rationale for the use of particular strategies that utilized household surveys, examined incident data, undertook semi-structured interviews, conducted some participant observation and explored historical records through secondary research. A case study approach offered the opportunity to probe critical questions in depth and the majority of data was collected on site. This approach was adopted because of the gaps in existing literature and datasets.

In order to analyse the proposed research questions, the focus was on the localization of violence as a way to explore relationships between conflict and protected areas. The case studies were two national parks and their immediate environs. The bulk of the data was collected in proximity to the parks, primarily at administrative capitals. In order to establish links between protected areas and violent conflict, the research focused on exploring location and intensity of violence within, between and around the national parks. Further understanding of the spatial distribution and relevance of the lootability of resources between the national parks; types and location of violence; and strategic use of protected areas by armed groups to achieve ideological goals were also explored.

Further discussion of the constraints of conducting research in conflict zones and subsequent mitigation is also included. In addition to understand the dynamics of armed conflict, this chapter highlights the increasing role of geography. The approach considers not only a particular space, connected to neighbouring spaces of similar scale, but also the unique characteristics of a particular location that consider the 'cultural-political' (O'Loughlin and Raleigh 2007: 4) context, applied across a number of scales from global to

local (O'Loughlin and Raleigh 2007). It argues for multidisciplinary approach that incorporates history, epidemiology, political geography, international relations and political economy (Buhaug et al. 2009; Goodchild et al. 2000). Although methods that dominate political ecology research, such as ethnography were not utilized in this study, the interdisciplinary approach is fundamental to this field of study (Paulson and Gezon 2005).

Personal experience has drawn me to examine the relationship between violent conflict and national parks. My biases about the value of the environment and conservation propelled me to expose its importance in major societal challenges such as armed conflict. This influenced the emphasis in the research design on establishing a linkage between conservation and violence. However, my desire to contribute to further understanding resource drivers in conflict is not only driven by my professional experience but also by having grown up in Kampala during the Ugandan civil war. My personal connection to the region has meant that impacts of the subsequent Rwandan genocide directly impacted acquaintances and relations. This background not only influenced the location of the case study but also the topic for interrogation.

3.1 Emergence of localized research in conflict studies

Initial quantitative methods that researched the role of natural resources on conflicts in the post-cold war era tended to be concerned with national impacts of commodities. These impacts were analysed in relation to their economic role in the conflict and commodity chain within a specific historical context. This research intends to build on the 'political ecology of war' (Le Billion, 2001; Peluso and Watts, 2001) school of thought by focusing on a variable that has received little attention, that of protected areas. It also intends to further build on research that promotes methods that incorporate

local attributes versus aggregated national studies to inform insights into the dynamics of armed conflict (Buhuag and Rod 2006). Political ecology of war research focuses on the political economy, spatial distribution and lootability of resources and how they in turn influence the likelihood and duration of armed conflicts. With shifts in the literature of conflict research to develop studies that incorporate analysis of local effects, this combination of theory and method was explored in this thesis.

Where quantitative data has been used to analyse civil wars, the focus has been on macro-level proxies to tease out the variables that affect onset and duration. Findings using exports of primary commodities in relation to GDP lead to the initial conclusions about the significance of natural resources in initiating and perpetuating conflict (Collier and Hoeffler 1998; Collier et al. 2004). Further work found that the statistical association ascribed by analysis concerned with aggregated national level data weakened depending on which primary commodities were included in the analysis (Fearon 2005). In fact, the use of the ratio of primary exports to GDP as a proxy for natural resource abundance has been criticized for not distinguishing between different types of resources. It includes many resources which have little impact on rebel financing (Lujala et al. 2005; Soysa and Neumayer 2005). Limitations of the methods of econometric studies on civil war onset have been highlighted in literature that links rentier states to civil war onset. The findings from research that utilize disaggregated sub-national data support criticisms of national-level conflict analysis, lending credence to significance of sub-national impetuses to civil war and armed conflict.

The conflicts in Myanmar (Kachin) (International Crisis Group 2013) and the early 2000s in Sri Lanka (Muggah 2008) are based on certain groups seeking

to secede from a particular country. Conflict only occurs in particular regions within the state. Understanding the dynamics of the conflict in these contexts therefore requires a sub-national analysis (Raleigh et al. 2010). Disaggregating data and, in particular, case study research has been highlighted as a valid approach to uncovering drivers of armed conflict. A combination of factors at micro and macro levels are considered to constitute a civil war. By understanding the linkages across these levels through the use of case studies, additional variables and mechanisms that can feed into conflict studies can be identified (Sambanis 2004). Tools such as GIS and focus on case studies, which emphasize location of conflict, are relevant if further insights into causal pathways are to be made (Buhaug and Lujala 2005; Raleigh and Hegre 2005; Sambanis 2004). Ultimately, it is the local context within which active conflict occurs that should be the focus of conflict studies. Tools such as GIS and utilizing spatial approaches to analysis enable additional insights (Buhaug and Lujala 2005).

3.1.1 Development and value of sub-national datasets

Datasets that disaggregated conflict data began to emerge in the 1990s and include the Correlates of War dataset, the Armed Conflict Location and Event Dataset (ACLED) and International Military Dispute Dataset (see Figure 3.2). These datasets code specific conflict-related events within the local context and often locate them utilizing GIS. Not all sub-national datasets locate data within specific geographic regions utilizing GIS. An example of this is the Minorities at Risk (MAR) project which collects data on ethno-political organizations (Centre for International Development and Conflict Management 2007). The shift towards localized analysis, however, still focused on use of large multi-country level datasets. Different layers of assumed significant variables would be overlaid during analysis. Research that incorporates ethnicity, population density, type and location of

resources, poverty, terrain, distance from capital cities as well as type of conflict, i.e. secessionist or territorial (Raleigh and Hegre 2009) have utilized these sub-national datasets.

As all datasets are developed with particular purpose, there are always limitations of the extent to which analysis can be conducted. One can conduct regional analysis but *only* in relation to international interventions with the International Military Intervention Dataset (Pickering and Kisangani 2009). The source of the data can present limiting factors such as a sole focus on battle deaths at the expense of other impacts of conflicts that do not necessarily occur during an armed clash. Whilst the ACLED dataset enables researchers to conduct analysis of sub-national conflict related events on civilians, the data is collated from media reports that may be biased due to information from only accessible areas being reported (Raleigh and Hegre 2009).

Different datasets establish conflict events in different ways. The Uppsala Conflict Data Program Georeferenced Events Dataset (UCDP GED) lists events that result in actual fatalities whilst ACLED includes a range of events that include non-fatal and non-violent. ACLED gives each event the same weighting regardless of the extent of the numbers of fatalities hence establishing intensity of violence is not possible. ACLED also does not distinguish between different actors, which could enable one to map the activities of a particular group. The UCDP GED dataset on the other hand provides details on actors and the severity of an event but only provides information on violent events that result in at least one fatality (US Securities and Exchange Commission 2013). Data quality can vary across datasets depending on the knowledge of coders and extent of quality control (US

Securities and Exchange Commission 2013). Despite the limitations of disaggregated datasets, their development provides a valuable resource for conflict research. The quality, coverage and extent of these datasets will no doubt improve over time and as both technology and techniques for capturing and strengthening data evolve.

3.1.2 Challenges of identifying relevant variables to analyse and defining local

Identifying *relevant variables to analyse* and a meaningful definition of *local* is part of the challenge that contributes to establishing significant variables in armed conflict. Whilst much of the empirical work on civil wars did not take into consideration the local effects of conflicts, disaggregated studies have shown, for example, that distance from the capital cities is relevant to onset and duration of conflict (Buhaug and Lujala 2005; Raleigh and Hegre 2009). Although, significant relationships between other variables such as mountainous terrain and forested areas in relation to duration and onset of civil war have not consistently been demonstrated (Buhaug and Lujala 2005), this does not detract from the importance of understanding local conditions. The inability of scholars to find a relationship between different types of terrain and habitat is, I would argue, linked to the challenge of defining the relevant unit that enables the role of local conditions on armed conflict to be extracted. This is compounded by a lack of comprehensive data at that resolution.

To demonstrate some of the limitations of existing research, analysis of the variables of mountainous terrain and forested areas by Buhaug and Lujala (2005) used information from the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC). This was provided in 10 km by 10 km grids for mountainous terrain. Forest

information was obtained from the Food and Agricultural Organization of the United Nations, which has forest data per 1 km² and is coded as: 1) closed, 2) open and fragmented, 3) other wooded land or 4) other land (Buhaug and Lujala 2005). It is likely that smaller units of analysis for mountainous regions and coding of forest along temperate and tropical boundaries would yield significant findings. Incorporating analyses that consider the role of altitude could be useful, as the combination of mountainous and diverse areas of fauna and flora are likely to be high in lootable minerals and timber.

There is a lack of clarity around what constitutes local. Researchers that focus on the household level argue for understanding 'micro' dynamics as a significant unit to analyse if further insights of drivers of conflict are to be found (Justino 2009b). The ACLED has been developed to enable 'micro-level' analysis (Raleigh et al. 2010: 652). The fundamental difference between the Households in Conflict Network (HiCN) constituents approach and the ACLED is in how data is established. The HiCN relies on collecting primary data directly from household in conflict zones, whilst the ACLED is compiled from media and organizations' reports that operate within conflict zones. Both seek to uncover drivers to violence as a result of armed conflict and the HiCN also explores impacts at the household level. The use of the word 'micro' by both these groups has different meanings and highlights the infancy of this field where definitions are still being clarified.

Establishing which unit to analyse is further compounded by the fact that there is limited primary data from conflict areas (US Securities and Exchange Commission 2013). Data is still inadequate as levels of geographic coding and disaggregation of conflict data is still limited (O'Loughlin and Raleigh

2007). This restricts analysis of various variables at different scales (O'Loughlin and Raleigh 2007). To resolve contradictions in the role of terrain and habitat on conflict, additional mapping of rebel movements or other proxies of violence may be required. In essence, existing data is not necessarily available at the relevant level of unit one wishes to analyse, such as income level, infant mortality or attacks on civilians (Restrepo et al. 2006), which may be available at the sub-national administrative units of a country (Buhaug and Lujala 2005). In addition to this, datasets do not indicate the relative impact of violence to civilians at varying scales, omitting a variable that provides a more accurate representation of the extent and pattern of violence. Deciding the unit of analysis therefore becomes a major challenge in furthering conflict research (Buhaug and Lujala 2005) and is hampered by lack of data at different scales.

Theoretical discussions in previous chapters show that natural resources are linked to the onset and perpetuation of civil war. Lack of sufficient data, differing datasets and methodologies have resulted in inconsistencies in establishing relevant variables. Despite these limitations, studies that focus on understanding localized drivers have furthered understanding around assumptions made in relation to ethnicity, borderlands, valuable primary commodities and distance from capital cities (Lujala et al. 2005; Buhaug et al. 2005; LeBillon 2001). The impact of conflicts at the household level is also increasingly being tested so as to inform appropriate policy responses to the increasing numbers of civilian casualties. This thesis utilized the conceptual approach of localized research but also generated new data. This was in response to lack of sufficient information at an appropriate scale. A focus on a little-tested variable in conflict studies, that of areas of high biodiversity,

further strengthened the value of this research to conflict and environmental studies.

3.2 Methods for research

This section presents the justification for the methods used in this thesis. Further detail on sampling, data collection and analysis are provided in the empirical chapters. The methods expanded on in this section reflect the trends in conflict research that promote analysis utilizing localized level data.

In acknowledgment of the limitations presented by existing datasets for conducting analysis at certain units, a majority of the data for this study had to be generated originally. This is in part due to the small amount of empirical work that exists on the use of protected areas by militia groups. There is limited documentation on the use of protected areas by armed groups. However, the literature points to their use as strategic posts, providing shelter, resources for plunder, for example, timber, minerals and supplies during conflict. Militias have been known to use protected areas in the conflicts of Angola, DRC, Mozambique, , Sierra Leone, Burundi, Colombia, Nicaragua, Nepal and India (Hammill 2005), it therefore stands to reason that incidents of violence would be higher in areas in proximity to protected areas.

In order to establish linkages between protected areas and armed conflict quantitative and qualitative strategies were used as well as GIS. Quantitative strategies focused on the analysis of data collected via a household survey and health data. Qualitative strategies focused on informal and semi-structured interviews with a range of individuals and a focus group discussion. Three main data collection strategies were used for case studies. The first focused on the mapping of health data of civilian victims of violence

in relation to distance from the national parks. The second utilized a household survey to establish the impact of violence on property prior to the initiation of the conflict and at the time of the survey. The household survey also attempted to distil interviewees' perceptions of the impacts on their livelihoods of protected areas prior to and during the conflict. The third consisted of a number of qualitative interviews with former militia group members, conservation practitioners, local leaders and UN officials. One focus group discussion was also held with a group of women at one of the case study sites.

3.2.1 Qualitative data collection

The main method of qualitative data collection was the use of informal and semi-structured interviews. This form of research has often been dismissed for producing information that is not systematically obtained and therefore lacking in reliability and validity (Crawford and Bernstein 2008). However, the interactions of qualitative and quantitative methods are common within the social sciences (Kvale 1996) and, in this case, the qualitative approaches were used to prepare for more quantitative-based research. In addition to this, information from qualitative data collected via the household survey provided additional insights into drivers of violence within the context of this study (see Chapter 5).

Subsequent informal and semi-formal interviews as well as one focus group discussion were held with conservation practitioners, former militia group members, local women, local leaders and humanitarian practitioners. These were incorporated into the study design to seek insights into observed phenomena. The results establish additional insights into linkages between protected areas and armed conflict. Through these interactions insights into patterns of violence were gained which fed into further refinement of the

study design. This method is key in providing additional insight not exposed through quantitative methods.

3.2.2 Case studies

Using a case study model enables analysis of causal linkages in a real setting (Yin 1994). The main critique leveled against this approach has been its inability to take findings and apply them to broader contexts due to the generally small number of units analysed (Tellis 1997). Establishing a link has to be the initial step in understanding the dynamic of national parks within conflict and this only needs to be demonstrated in one case. This thesis is therefore exploratory in its approach (Yin 1984 cited in Zainal 2007). As case study analysis allows a focus on a particular unit or issue (Noor 2008) and considering the desire to analyse a unit of space under protection of biodiversity conservation, national parks were then identified for investigation. The use of a case study is appropriate and is valued as an approach in conflict studies to provide insights into causal pathways of conflict (Sambanis 2004).

The first step in identifying the case study site was to consider areas that were engaged in or recently subject to violent conflict or civil war. This was to ensure that data collected would still be relevant to the conflict situation. Further to this, the area needed to comprise of national parks. The DRC was identified and chosen over other countries due to my previous knowledge and existing networks in the east of the country. Considering the difficulties of conducting research in a conflict or post-conflict context, pre-existing familiarity with the region not only ensured a greater level of safety and security but enabled data to be collected that would have required a much longer lead in time as I familiarized myself with the context and actors. Two national parks were identified to allow a comparative analysis and establish

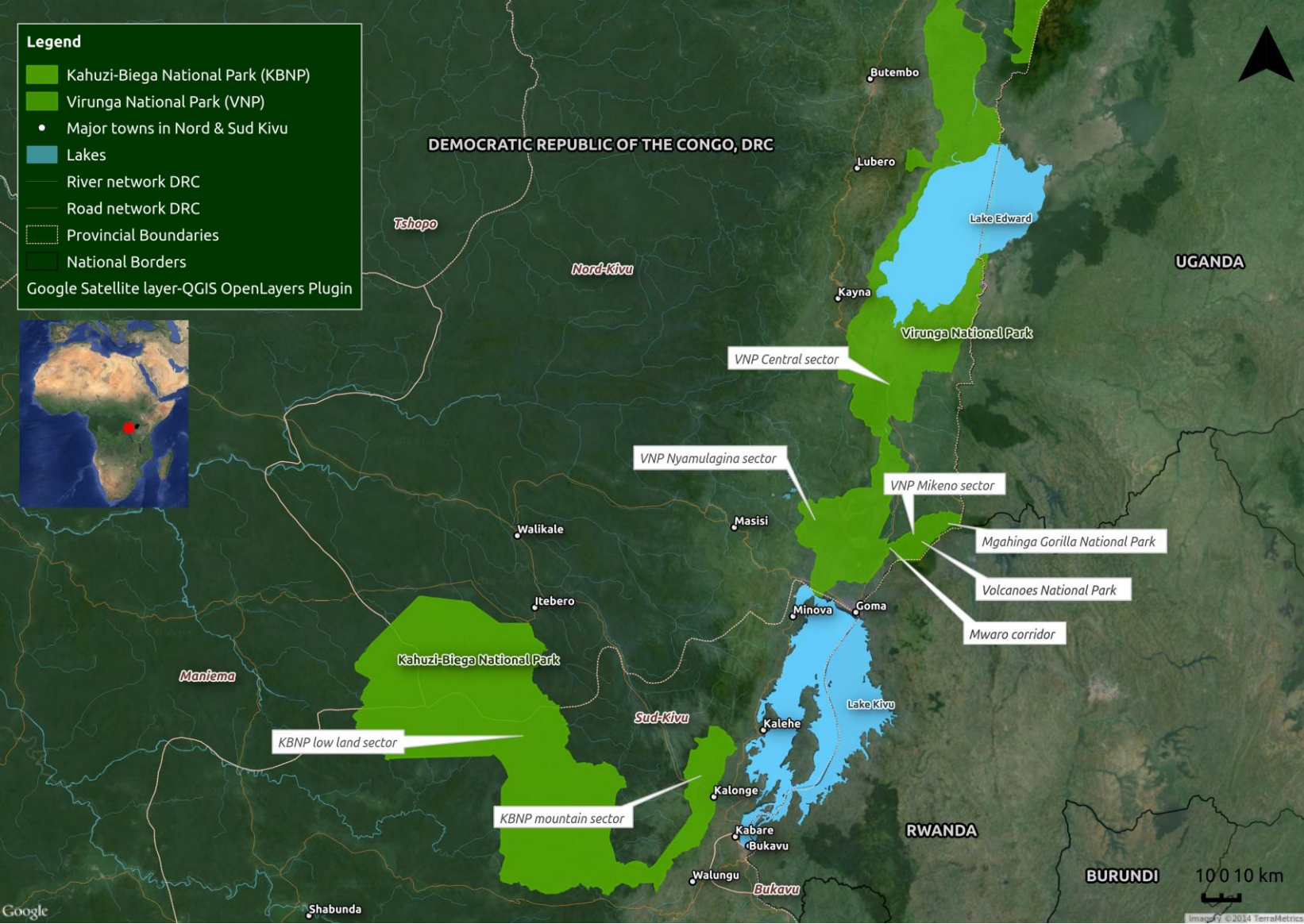
if the findings are replicable to add robustness to results (Noor 2008): Kahuzi Biega National Park (KBNP) and Virunga National Park (VNP) (see

Figure 3.1) in the Kivu region of Eastern DRC. In particular, the mountain sector of KBNP and central and southern sectors of VNP. The southern sectors of VNP comprise of the Nyamulagira and Mikeno sectors specifically.

The protected areas identified for the case study are located in areas that were formerly controlled by the *Rassemblement Congolaise pour la Democratie – Goma* (RCD-Goma), which included large sections of the provinces of North and South Kivu. RCD-Goma held these areas prior to the peace process and during the transitional government but ceased to control this region after the national elections held at the end of 2007 that established Laurent Kabila as the president of DRC. Despite backing Kabila in the run off election, RCD representation in the subsequent government of Kabila was limited. As well as the Congolese military (FARDC), several other armed groups, not included in the peace process and subsequent national elections, were operating in the area at the time of data collection. The armed groups were the *Force Democratique du Liberation Rwanda* (FDLR), Rastas, Mayi-Mayi, *Congrès national pour la défense du peuple* (CNDP) and PARECO.

Within the two provinces of North and South Kivu, numerous protected areas have been established in recognition of the large areas of high biodiversity. Both KBNP and VNP are World Heritage Sites due to the fact that they provide protection to key areas of the last remaining habitats for the eastern lowland gorilla and mountain gorilla populations, as well as a host of other endangered and endemic species of fauna and flora. Comparisons between the sites were possible due to their similar geographical attributes (namely protected areas of the same status) and political context. These similarities were intended to control for political differences that could influence the levels of violence from one area to another.

Figure 3.1: Central and Southern Sectors of Virunga National Park and Kahuzi Biega National Park in Eastern DRC



3.2.3 Geographic information systems

The increasing use and application of GIS since the early 2000s has had an impact beyond the field of geography (Goodchild et al. 2000). GIS enables the analysis of data that is linked to a particular location. Within conflict research, various datasets have been developed that code conflict-related incidents geographically for analysis to understand drivers. GIS fits neatly in responding to the call for more localized analysis of conflict. It facilitates integration with other location specific information such as terrain, ethnicity and location of valuable commodities. The use of geo-referenced data has demonstrated dynamics of armed conflict that were previously unknown due to the wider (normally national level) scale of research (Raleigh et al. 2010). Factors such as terrain, distance from capital cities, relative strength of rebel groups, external actors, mobilization of elites, location of battles, movement of small arms, support of local populations at micro levels, ethnicity and national identity have impacts on armed conflicts (Buhaug et al. 2009; Cederman et al. 2009; Raleigh et al. 2010).

The ACLED dataset, for example, geo-references individual events but does not incorporate levels of fatalities or other injuries as a result of armed conflict (e.g. sexual violence, gunshot injury). This exclusion has been ascribed to the lack of accurate data obtained (Raleigh et al. 2010). Further to this, whilst non-violent events such as looting, destruction of property and recruitment rallies are also incorporated, the dataset does not include the severity of these events. This demonstrates a limitation to the dataset, as relative patterns of violence cannot be established. Information on the levels of violence in different areas can provide insights into the geography of the conflict and enable deductions about sources of violence. This thesis combines GIS methods with individual data on injuries as a result of conflict

to establish patterns of violence beyond the scale of 8.6 km by 8.6 km grids used in other studies (Raleigh and Hegre 2009). This level of detail is necessary to establish if a national park is in an area that is politically dynamic. Teasing out a relationship therefore requires data at a fine resolution that allows relative levels of violence to be established. The use of GIS is critical to this process.

3.2.4 Individual level conflict data collection methods

The research framework relied on establishing patterns of violence within or in proximity to national parks to establish connections. Whilst datasets exist that geo-reference events linked to conflict, these data sets focus on more traditional conflict events such as clashes with armed groups, armed intervention by international forces and detail on specific politically active ethno-political groups (see Figure 3.2). For the purposes of this research, an alternative measure of violence was identified. With micro-level analysis ascribed different meanings within conflict research, a definition for data that focused on impact of conflict on individual civilians was devised. In the context of this thesis, *individual level conflict analysis* refers to *results deduced from data that relates to any negative impact of armed conflict to individual civilians and their personal property*. Two main strategies were used - one focused on health data from medical facilities on injuries sustained by the civilian population and the second on the impact of conflict at the household level in proximity to national parks.

Health data

Following on from methods developed at the International Peace Research Institute Oslo (PRIO) and International Peace Information Service (IPIS), attempts to access information on specific clashes or casualties in North and South Kivu was limited. The UN Department of Peacekeeping did not allow

access by researchers to the daily military situational reports that are completed at a number of observational posts throughout the region (email communication, Christopher O'Donnell, 2007). This meant that an alternative proxy for patterns of violence had to be found. The International Rescue Committee (IRC) was able to conduct (the only) systematic review of the impact on civilians of the DRC conflicts over the periods of 2000–2004 and 2006–2007 (Ben Coghlan et al. 2004; Coghlan et al. 2008). These surveys established the extent of mortality as a result of both direct and indirect impacts. They garnered insight on the national impact of the conflict on civilians and informed the use of injury to civilians as a valid proxy to establish patterns of violence as a result of armed conflict for this thesis.

Building on the premise that information on an individual's health would provide information on the extent of violence, injury data from health facilities and health non-governmental organizations (NGOs) was collected that could be linked to armed conflict. The location of an incident where a civilian was a victim of the conflict or the location of the residence of the victim was geo-referenced and mapped. The difference in the health data collected for this thesis versus that collected by the IRC was its focus on any form of injury sustained as a result of the conflict. Some information on mortality was collected during a household survey but ultimately the focus was on data linked to injury. The findings sought to expose any linkages between levels of violence in civilian populations and national parks and establish patterns of armed conflict.

Details in local media are not exhaustive and focus on major clashes between opposing factions. Data collection therefore focused on the number, type, location and perpetrators of acts of violence. The data was collected for

mapping in relation to the case study sites and information on location was critical. By mapping the location of incidents, patterns of violence in relation to the national parks began to emerge. By understanding who the perpetrators of violence were, links to violent conflict could be made. The study utilized existing medical administrative boundaries to define the geographic areas for data collection. The DRC system of health care consisted of 11 regions nationally. Each region was then further divided into *zones de santé* (health zones). These health zones are the basic unit of primary health care delivery. Each health zone would, on average, contain one referral hospital, one to three reference health centres and 15–25 standard health centres. Health zones served a population of between 100,000 and 150,000 (Cholerafe, 2008). Data was collected in the health zones that were in proximity to the central and southern sectors of VNP and the mountain sector of KBNP as well as the provincial capitals of North and South Kivu, Goma and Bukavu respectively.

In the process of exploring the use of injury data, the prevalence of sexual violence resulted in this data dominating analysis on the relationship between conflict-related violence and the national parks. Initially, only information on gunshot injury was to be collected but after a preliminary site visit from September to October 2006, the inclusion of data on victims of sexual violence was found to be equally relevant. Towards the end of the 1990s women and, to a much lesser extent, men in the Kivus became victims of increasing levels of sexual violence from militia groups operating in the area. These include forces of the former RCD-Goma, Mayi-Mayi rebels, *Forces Armées de la République Démocratique du Congo* (FARDC) and Burundian and Rwandan Hutu armed groups. These types of atrocities are not only confined to this area of DRC but also occurred further afield including the Ituri and

Equateur regions. In South Kivu alone, an estimated 25,000 victims of rape were reported for 2004 (Human Rights Watch 2005b). Sexual violence data therefore became a key way of understanding the patterns of violence as they relate to the national parks of the Kivus.

Household survey/micro-level research

The significance of low incomes to initiation and perpetuation of civil war has been explored by numerous scholars and argued to be a significant variable in conflict (Collier et al. 2004). Whilst the importance of income is generally considered to be a factor, the application of understanding how this is relevant at a localized level and particularly a household level has only recently been considered within conflict research. The initiation of the HiCN in the 2000s has not only focused on understanding the 'micro' dynamics of income on conflict but also the impact of conflict at this level and how this affects the wider dynamics (Justino 2009b).

Household surveys are considered to be an important strategy in the collection of socio-economic data. In particular, they have become a primary form of data collection in developing countries and are used in conflict contexts to establish victimization and the impact of a conflict on household structures and health (International Rescue Committee 2004; Roberts et al. 2004; United Nations 2005). In this case a household survey was designed to explore the relationship during conflict of a protected area and the households in its vicinity. The household survey provided the opportunity to establish location-specific data from civilian populations living in proximity to KBNP and detail on perceptions towards these areas was also gathered.

Questions were included regarding the use of the national park and how proximity to the park might affect the respondent's life. Initially, a similar survey had been proposed around the central and southern sectors of VNP but this was not possible due to the increasing insecurity and mass displacement of the population over this period. As a result of the mass displacements of populations, households had been abandoned and the active presence of militia groups in the proposed survey areas further compromised any possibility for conducting household based data collection (Baaz and Stern 2010).

Initial drafts of the questionnaire were based on two surveys: 1) a socio-economic survey conducted in 2001 by a consortium of conservation organizations around protected areas in the region, i.e. in DRC, Uganda and Rwanda (Plumptre et al. 2004) and 2) a household survey completed by the Human Security Baseline Assessment for Sudan and Southern Sudan to establish victimization (HSBA 2007). Questions related to establishing the socio-economic situation of the respondents were based on the first survey and questions in relation to violence and victimization were based on the survey conducted in Sudan. Further refinement of the questionnaire was made through comment and input from a range of practitioners working in the context of conservation in the Kivu region. Finally, during the training of the data collectors, the questionnaire was piloted amongst them and poorly worded questions were modified to be culturally and contextually appropriate.

The survey was conducted between September and October 2007 around the mountain sector of KBNP. This is an area that was initially gazetted as a forest reserve in 1937 and represents approximately 60,000 hectares. It ranges

in altitude from 1800 to 3300 m and comprises two extinct volcanoes. The park was named after one of them – Mount Kahuzi which peaks at 3300 m. Interviewers visited randomly selected households and interviewed a total of 965 individuals for approximately one hour each. Training of interviewers and finalization of the sampling framework had been initiated in the last week of September 2007, and fieldwork was completed by 26th October 2007.

3.3 Challenges of collecting data from conflict areas

Field research in an area besieged with armed conflict is, unsurprisingly, challenging. Due to the frequent absence of clear rule of law, collecting robust information is often complex. Lack of objective, unbiased or consistent reporting by media and organizations working in the area, local and national government administrations and population movements all contribute to the challenges that need to be overcome when conducting field research in such contexts (Wood 2006).

This study considered these constraints in several ways. Methods were not finalized until a few weeks before actual collection was initiated in order to use the most current information regarding levels of insecurity in areas of interest. Ethical considerations to follow the 'do no harm' premise were included with regard to the development and design of questionnaires. Emphasis was on allowing respondents to maintain anonymity and the right to refuse to answer any questions. In the health data no identifiable information was gathered and data was presented at a resolution so as to not be able to pinpoint exact locations of victims and thus preclude the possibility of identifying them. During semi-structured interviews, questions were avoided that could elicit a response which might have incriminated the respondent or others due to the absence of legal representation. Data collected often included sensitive personal information such as location of

sexual violence and none of the information collected on or from individuals recorded their identity, and their consent to be interviewed was always sought at the onset of any discussion or interview. This was particularly relevant for the collection of the health data, household survey respondents and interviews conducted with former militia group members.

In order to collect individual health data and complete the household survey, research assistants were recruited and trained. Data collectors for the household survey were students from the University of Bukavu. Three additional research assistants were also recruited who collected the health data and two also acted as supervisors to the households data collectors. The advantages of this were that it allowed large amounts of data to be collected in a relatively short period of time. Further more, the data collectors for the household surveys were from the areas where data was collected and were able to translate the questionnaire into the local language. Their input during the questionnaire development also ensured that locally relevant contexts were considered. The household survey supervisors always accompanied teams of data collectors to the villages where they would embark on conducting the household interviews. However, it was not possible to provide close supervision of the implementation of the household survey due to the difficulty of accessing many areas. Not only was insecurity a factor but also the lack of cheap and easily accessible transport made this challenging. The presence of an outsider would also have introduced possible bias into responses but also potentially put the interviewers at added security risk. This was brought home to me when travelling with a health NGO. Our vehicle broke down in a village on the border of KBNP. The military detachment leader in the area requested that we ensure we

vacated the village by the end of the day, otherwise it would be a target by militias in the area due to our presence.

3.4 Main research questions and methods used

The primary objective of this thesis was to test if there is a relationship between national parks and armed conflict, what might be the drivers of any linkage and evaluate whether the findings are consistent with political economy or political ecology theories of natural-resource-related conflicts. The following research questions were therefore devised.

Research question 1: National parks are centres of violence in that they are sources of violence and victimization rates decline as the distance from the park increases.

Initial research focused on establishing whether linkages exist by hypothesizing that national parks will be positively associated with violence. The presence of relatively higher levels of violence as a result of the war in proximity to national parks, would arguably point to a relationship between the space and the armed conflict. Patterns of violence in civilian populations were utilized as a proxy for intensity of conflict. By establishing an association between the two it is assumed that there is a connection. The initial research question on whether national parks are centres of violence sought to establish this utilising quantitative methods through individual level conflict analysis based on health data and the household survey.

Research question 2: National parks are spaces devoid of state presence contributing to the utilization by militias as bases from which to raid and loot households in proximity to the park

This research question was developed to capture the use of the park as a military base. If militias are controlling areas of national parks within which to set up military camps, then it stands to reason that they have encountered limited resistance and are therefore able to secure the space of a park as a place from which to raid and loot from. It therefore stands to reason that incidents of raiding and looting within households in proximity to the park would be higher. Militias would still require supplies from the agricultural communities as well as labor and new recruits. This research question was developed to further substantiate an association between conservation action and armed conflict as well as inform whether these spaces are occupied by a militia group. The main method was through understanding the impact of proximity to the park at the household level through the household survey conducted around the mountain sector of KBNP.

Research question 3: National parks are utilized by militias predominantly for economic reasons, exploiting natural resources available there.

Whilst there is acknowledgement that both greed and grievance are factors to varying degrees in armed conflict, the subsequent research question was developed to establish whether one is relatively more significant than the other. The third research question therefore focused on establishing whether greed could be a motivator for the use of national parks in armed conflict by exploring any association with valuable primary commodities. With lootable commodities associated with greed-derived motivations for conflict, this research question therefore looked to whether the availability of such resources within national parks is associated with location of violence. Health data was utilized to respond to this. Comparisons were then made between the two sites as they differed in their lootable commodities composition and proximity to Rwanda. However, the qualitative research

findings were also used to provide insight into any patterns or relationships that were uncovered.

Research question 4: National parks are predominantly located in borderlands contributing to their utilization by militias for strategic reasons to further their ideological goals.

The final research question focused on whether grievance-derived drivers could be underpinning the use of national parks during armed conflict. It focused on responding to the research question that rebels utilize protected areas for strategic reasons in order to achieve an ideological goal versus an economic one. It sought to explain if this was influenced by location in relation to borderlands. Analysis of data collected through the use of qualitative methods, namely semi-formal and informal interviews with conservation practitioners, humanitarian professionals and former militia group members was conducted to provide insights in response to this research question.

3.5 Conclusion

The variances and inconsistencies highlighted in the literature of drivers of conflict have been attributed to methodological differences, use of different datasets and a lack of consensus on definitions, relevant variables or indeed establishment of all the relevant variables that impact civil war onset and duration. The recent emergence of natural resources in conflict research and ever expanding literature is an indication of the increasing attention this aspect of conflict generates. However, it is still grappling with establishing relevant factors and methodologies. It also mirrors the shift in the debate of armed conflict as the post-cold war period opened a different conceptual space around drivers of armed conflict (Raleigh and Hegre 2009).

This thesis is based on the premise that focusing on localized research will yield significant insights into linkages between violence as a result of armed conflict and national parks. The thesis, however, rejects the use of existing datasets due to their limited scope to analyze these linkages and incorporates both primary and secondary data collection. In this case, detail generated is at the level of individual civilians and is referred to as *individual level conflict research*. The premise is that further insights into patterns of violence can be achieved through an analysis of the impact on civilians at the individual level. This thesis essentially subscribes to the emerging trends that disaggregating data is a necessary step. It reduces it to its most basic level – that of the impact of conflict on the individual civilian. By acknowledging the limitations of extracting comprehensive data from a conflict context, a multidisciplinary approach that combines both qualitative and quantitative methods mitigates against this.

Figure 3.2: Main methods of data collection and limitations of a selection of conflict datasets

Name of dataset	Method/type of data collection	Limitations
Armed Conflict Location and Event Dataset (ACLED)	Disaggregates conflict by a different singular event within a civil war context e.g. battles with no change of territory, establishment of rebel base. Data collected from media reports, books, periodicals, humanitarian reports. Data collected by country.	May exclude other low level acts of violence linked to the conflict due to non-reporting in media. No information on severity, level of fatalities or other injuries as a result of a particular event Reporting bias as media tend to report events from accessible areas. (Raleigh and Hegre 2009)
Correlates of War	Records a minimum of 1000 battle-related deaths per year to qualify as war. Indications are based on interactions between government forces and rebel/non-state groups. Although non-state groups are considered to be participants if they have committed a minimum of 100 personnel or 25 battle-related deaths (Sarkees and Wayman 2010)	No record of type of force used. (Pickering and Kisangani 2009) High battle death minimums exclude conflicts with lower numbers of casualties.
Militarized Interstate Dispute Location Dataset (MIDLOC)	Provides detail of location of a conflict incident between non-member states that have been observed. Also includes non-violent actions such as the threat to use force. The incidents are based on data collected from the Military Interstate Dispute (MID) dataset. Covers the period of 1816–2001 but from 1993–2001 the data includes additional detail on location of additional incidents beyond onset (Braithwaite 2010).	Incidents are limited to cases of conflict or threat of conflict between two states and exclude non-state actors and impacts to civilians. Initially only provides location data on incidents linked to onset.
International Military Intervention Dataset	Documents cases of military intervention across international borders by armed forces of independent states or a part of a multi-national effort from media reports, books and region specific academic research	Excludes data on impact of non-state actors such as terrorist groups, rebel groups, civilians (Pickering and Kisangani 2009).

Name of dataset	Method/type of data collection	Limitations
UCDP/PRIO Armed conflict Dataset	<p>Data collected on a specific conflict event such as a clash between warring factions.</p> <p>Records an annual indication of war where at least 25 people have been killed in battle. Indications are based on interaction between government groups and rebels only.</p> <p>Contains data on the location (country) of the conflict and the names of the opposing groups/organizations (Gleditsch et al. 2002).</p>	<p>Location grids are relatively large 100 by 100 km.</p> <p>Location data does not record changes over time and changes at the centre of the conflict.</p> <p>No information on the extent of the conflict as data is presented on the entire impact in the conflict zone with no distinguishing between the different types of events.</p> <p>Includes no information on the impacts to civilian and location data is only by country. It does not include information on characteristics of opposing groups e.g. ethnicity, ideology, religious background, geographical base.</p>
UCDP/GED	<p>Data collected on a specific event where the use of force by armed actors against civilians or other armed actors is established</p> <p>If the event results in one death then it is recorded (US Securities and Exchange Commission 2013)</p>	<p>Excludes violent events where there are no fatalities.</p> <p>Excludes non-violent events such as troop movements, transfer of weapons (US Securities and Exchange Commission 2013)</p>
Minorities at Risk	<p>Data collected from mainstream media, journals and academic texts that specify ethno-political groups that were defined as at risk.</p> <p>Includes a qualitative and quantitative component.</p> <p>Provides an analysis of the groups of interest and quantitative data that codes for groups characteristics such as country of origin, population, language, religion; group status including group organization and representation, history, type of grievance; external support including foreign state and state-led support; group conflict behaviour including types of protest and types of rebellion (Centre for International Development and Conflict Management 2007)</p>	<p>Emphasis is on ethnicity.</p>

SECTION 2: ESTABLISHING AND UNDERSTANDING THE RELATIONSHIP BETWEEN NATIONAL PARKS AND ARMED CONFLICT IN THE KIVUS OF THE DEMOCRATIC REPUBLIC OF CONGO

4 National parks and levels of violence: The case of Kahuzi Biega and Virunga National Parks

Little is known about the role of national parks in armed conflict. Established to protect biodiversity, they are a created space where limited extraction of resources is allowed. Conservationists have demonstrated the impact of conflict on national parks (Dudley et al. 2002; Kalpers and Mushenzi 2009; Yamagiwa 2003), but limited analysis has been done to understand the relationship in the opposite direction. An analysis around this type of space will render a more in depth understanding of armed conflict and space. In particular how these spaces affect patterns of violence and what the drivers of this might be. Part II of this thesis looks beyond previously limited and anecdotally based deductions about the role of national parks during armed conflict. The focus in this chapter is to respond to the research question that considers whether *national parks are centres of violence in that they are sources of violence and victimization rates decline as the distance from the park increases.*

Whilst the emphasis in this chapter is on linkages between national parks and patterns of violence, the two protected areas chosen for this study provided an opportunity to also explore the role of various types of terrain. The case study sites comprise of tropical forest, savannah and mountains. The methods used expand on the increasing importance being placed on localized research and the use of geo-referenced information (Buhaug et al. 2005; Buhaug and Lujala 2005). Previous studies have, with mixed success,

utilized geo-referenced location of battles, specific resources, levels of ethnicity and types of terrain to explore synergies and relationships in relation to the initiation and perpetuation of violent conflict (Buhaug and Gates 2002; Buhaug et al. 2005; Collier and Hoeffler 2004; Fearon and Laitin 2003). Where these studies and this thesis connect is through the premise that by establishing the role of local contexts on initiation and durations of civil wars (Raleigh and Hegre 2005), further insights into the relevant variables will be made. However, no analyses have gathered together, reconstructed and parsed apart the type of data utilized in this chapter.

In order to establish the character, intensity and organization of violence, injury data collected from hospitals, health centres and NGOs was collated and mapped. Two types of health-related data was collected, one focused on injuries sustained as result of conflict and the other focused on sexual violence. Data collection focused on the number, type (in the case of non-sexual related data), location and perpetrators of acts of violence. Injury data was collected directly from referral hospitals in six health zones of North Kivu and eight hospitals in Goma (see Figure 4.1). In South Kivu injury data was collected from the referral hospitals of 15 health zones and two hospitals in Bukavu (see Figure 4.17). Sexual violence data was primarily available from Health NGOs based in Goma and Bukavu (see Figure 4.1 and Figure 4.17). Data was collected for the period January 2004 to June 2007 and the health zones that the data covered bordered or were in proximity (no more than 25 miles) to the Central and Southern sectors of VNP and mountain sector of KBNP.

The data was cleaned and coded in Excel and collated to establish if it represented violence as a result of armed conflict through cause of injury and perpetrators. This was in order to establish if utilizing civilian health data as

a proxy for establishing patterns of violence was a valid approach. Then, correlations between location and count of incidents between injury and sexual violence data were calculated using SPSS to check validity. Finally, utilizing GIS, counts of violent events in relation to distance from the national parks were obtained and mapped. Victim rate was established by dividing the number of incidents per mile distance from the national park by the entire population in the mile-wide area. Population data per health zone was obtained from provincial health offices. Regression analysis was then performed to establish if there was a relationship between levels of violence and distance from the park.

Findings demonstrate that firstly, there are common features in the nature of injuries as a result of armed conflict and sexual violence around KBNP and VNP. Secondly, there are higher victims rates closer to the edge of both parks, which drops rapidly as distance from the boundary increases. In particular higher levels of sexual violence closer to the boundary and within the park were exposed. Finally, the parks are acting as centres of violence and this is the case regardless of the type of terrain.

This detail in the initial section of this chapter explains how data was identified and collated and highlights challenges and constraints to collection and documentation of the health datasets. Subsequent sections of the chapter present the validity of utilizing health data and findings from the correlation analysis. The results for each park are presented separately. Data was treated in the same manner so that comparisons between the two parks could be made in response to the research question on whether national parks are utilized by militias predominantly for economic reasons, exploiting natural resources available there. The results from those comparisons are presented in Section 6.1. The concluding section of this chapter discusses the

implications of terrain within the national parks, the relevance of the space of a national park in armed conflict and the value of localized research in investigating these linkages. The final section elaborates on the implications of these findings in relation to political ecology literature. Ultimately this chapter approaches the subject of natural resources in conflict from a perspective of the role of national parks in conflict and whether different types of terrain act as the driver of their use by armed groups.

4.1 Sexual violence and conflict related injury data collection methods and challenges

No attempt to access data from military health institutions and UN health clinics was made, as it was unlikely that permission would have been granted. Requests to access UN situation reports had already been rejected and access to leading FARDC commanders to obtain the necessary permissions was not attempted due to time and resource constraints. Permission obtained from the Health Chief of the Province for both North and South Kivu enabled access to the medical records of victims of injury in all health centres. Only information on injuries that were specifically related to an act of violence was recorded on the data sheets. This resulted in injury data being collected primarily on wounds as a result of gunshots and to a much lesser extent victims of grievous bodily harm (GBH) and/or torture, shrapnel and machete/knife wounds. Gunshot victims are normally sent to the referral hospitals because of the lack of sufficient resources and capacity of rural health centres to cope with such cases. To establish the type of information collected from a health facility, the referral hospital in Goma was visited and the initial conflict related injury data sheet was developed (see Appendix 1). Data, where available, focused on establishing the location of the incident and the residential village of the victim. Additional information on the sex, age, profession, month of admittance, transfer details (where

relevant), type of injury, cause of injury, date of injury and perpetrators was also collected.

In contrast, medical data in relation to sexual violence was primarily available from health NGOs who had provided increasing support to victims through separate health programmes. Differences in implementation vary between provinces and partnering NGOs. Specific health centres and hospitals treat victims of sexual violence and depending on the severity of injury, victims are referred to the main towns for surgical treatment. A limited number of hospitals provide surgical treatment and those were located in the towns of Goma, Bukavu and Rutshuru. NGOs, such as International Rescue Committee (IRC), *Médecins Sans Frontières* (MSF), Malteser, Christian Relief Network (CRN), *Communauté Baptiste au Centre de L'Afrique* (CBCA), *Groupe d'entraide et de solidarité médicale* (GESOM), International Committee of the Red Cross (ICRC) and International Medical Corps (IMC), were providing and supporting the delivery of health care to victims of sexual violence in the research area. Data was forthcoming from all the NGOs and health institutions except for ICRC who did not allow access of their health records to any third parties (personal communication, Head ICRC Bukavu, 2006). The sexual violence datasheet focused on obtaining information on the residence of the victim as often date and location of incident was not specified. Additional information on the month of incident and admittance to health centre, age, sex, number of aggressors, identity of aggressors and setting of incident (e.g. forest, field) was also collected where available (see Appendix 2).

Fewer than 10% of incidents of sexual violence in non-refugee contexts are reported (Steiner et al. 2009). This means that it was not possible to establish the full extent of sexual violence in the area of interest. Victims may not seek

medical attention due to the associated stigma and psychological trauma experienced as a result of being violated. This is more pronounced with male victims of sexual violence, who are less likely than women to report an incident (Médecins Sans Frontières 2009). In response to the psychosocial effects of being violated, a large number of organizations provided additional support beyond medical care in the form of counselling and socio-economic development. This information is rarely collated and to ensure that there was no double counting only data on victims who sought medical attention at a health centre was collected. Information regarding referrals between health centres is shared by the medical institutions as patients move between them and it was therefore possible to remove any records of patients who had been transferred to any of the referral hospitals. Further constraints to the quality of the data may reside in the information provided by the victim. Victims may not always be honest about where incidences occur for fear of reprisal and likelihood of being ostracized by their families. By collecting a large number of records over a significant period of time, the dataset is assumed to be robust enough to reveal relevant trends.

One of the main challenges for the reliable analysis of the quantitative data was acquiring adequate population data. Both demographics of the population and numbers at the village level were not available to collect from many areas. Detailed population information was available at the chieftaincy level but due to the high levels of insecurity it was not possible to access all these areas. Population data was therefore collected from the medical offices in the provincial capitals (Bukavu and Goma). The provincial health office was able to provide population data by health zones as this is collected annually. It was possible to utilize this unit of population data, as the relevant GIS information was also available. Although new health zone boundaries were developed in 2008 and population data for North Kivu was

only available for 2007, it meant that all subsequent analysis for this province utilized the pre 2008 health zone boundaries. In South Kivu population data for 2008 was available and the latest health zone boundaries were therefore used. Any analysis of populations for 2006 (in North Kivu) and 2007 (in South Kivu) were based on a 3.208% reduction per year obtained from the population growth rate estimate of 2008/9 (Central Intelligence Agency 2009).

The lack of comprehensive GIS information meant that some location points were generated manually. Initial mapping, with North Kivu data, utilized shapefiles provided by the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) and the International Gorilla Conservation Programme (IGCP). Initially, only 20% of the dataset on sexual violence in North Kivu could be mapped. It was not possible to access many of the areas due to insecurity. This would have enabled accurate Global Positioning System (GPS) point coordinates to be obtained. Subsequent follow-up with counsellors who work in the areas of interest was conducted in Goma to pinpoint villages on printed maps; this resulted in 60% of records in 2006 and 72% in 2007 being mapped. The same exercise was also conducted with counsellors working in South Kivu, resulting in 66% of records in 2006 and 62% in 2007 being mapped. Although this approach provided approximate locations, the large numbers of records added robustness to the analysis and were considered sufficient for the purposes of this research. The identified locations were then incorporated into shapefiles and run against the datasets in order to establish numbers of incidents per village. Both Arc View 3.2, Manifold version 8.0.28.0, QGIS (Quantum GIS) 1.8.0 Lisboa, GRSS GIS 6.4.3 software were utilized for this purpose. Additional datasets were downloaded from <http://www.diva-gis.org/>, <http://www.mapmakerdata.co.uk.s3-website-eu-west1.amazonaws.com/library/stacks/Africa/Democratic%20Republic%20of>

[%20Congo/index.htm](#), UNEP WCMC and DRC Health Zone shapefiles provided by UNOCHA DRC. The use of GIS enabled the victim rate in relation to distance to be established and also provided a way to present the data visually.

4.2 Sexual violence, conflict related injury and parks: the case of the Central and Southern sectors of Virunga National Park

Virunga National Park ranges in altitude from 680 m at the confluence of the Semiliki and Puemba rivers to 5,119 m at the Margherita Peak in the Ruwenzori, the third highest point in Africa. This range in altitude results in a diverse range of habitats including lowland rainforests, glaciers on the Ruwenzori mountains, grassland savannah, lake ecosystems in Lake Edward and sclerophyllous⁵ forests on the slopes of active and extinct volcanoes (Languy and De Merode 2009). Data collection around the Central and Southern sectors of Virunga National Park enabled the impact of both mountain and savannah terrain on victimization to be explored in this chapter (see Figure 3.1).

The health zones that data was collected from around VNP were Rutshuru, Binza, Karisimbi/Nyiragongo, Rwanguba, Kayna, Mweso, Masisi, Birambizo and Goma (see Figure 4.1 and Figure 4.2). As injury data was primarily available at health centres, a research assistant travelled to the referral hospitals of each health zone to collect the data directly from the medical records. Due to insecurity at the time of data collection (August 2007–March

⁵ In the region of interest for this study, the sclerophyllous forest is dominated by wild olive (*Olea europaea*) in the southern most portion of the central sector and a mixture of olive and fig species in the southern sectors (Languy, Marc and Emmanuel De Merode. 2009. "A brief overview of Virunga National Park." In *Virunga: The Survival of Africa's First National Park*, eds. Marc Languy and Emmanuel De Merode. Tiel: Lannoo.)

2008), the research assistant was unable to visit the referral hospitals in the health zones of Binza, Mweso, Masisi and Birambizo. Data was therefore only collected from the referral hospitals of Rutshuru, Karisimbi/Nyiragongo, Rwanguba and Kayna (see Figure 4.1). Health centres in Goma, particularly Goma General Hospital and Heal Africa, received patients from all over the province. Rutshuru, Goma General Hospital and Heal Africa had the highest number of victims of conflict-related injury over the period of study: 538, 437 and 410 respectively. A small number of injury victims were also recorded from the other health centres in Goma but these numbers were extremely low. Betesta received 14 victims, Le Charity five and GESOM only two. A total of 1,668 records were collected over this period. The information recorded varied from centre to centre but most information was collected from the admittance book that recorded each patient who arrived at the health centre.

Figure 4.1: Health zones and extent of injury and sexual violence data collection around the Central and Southern sectors of Virunga National Park

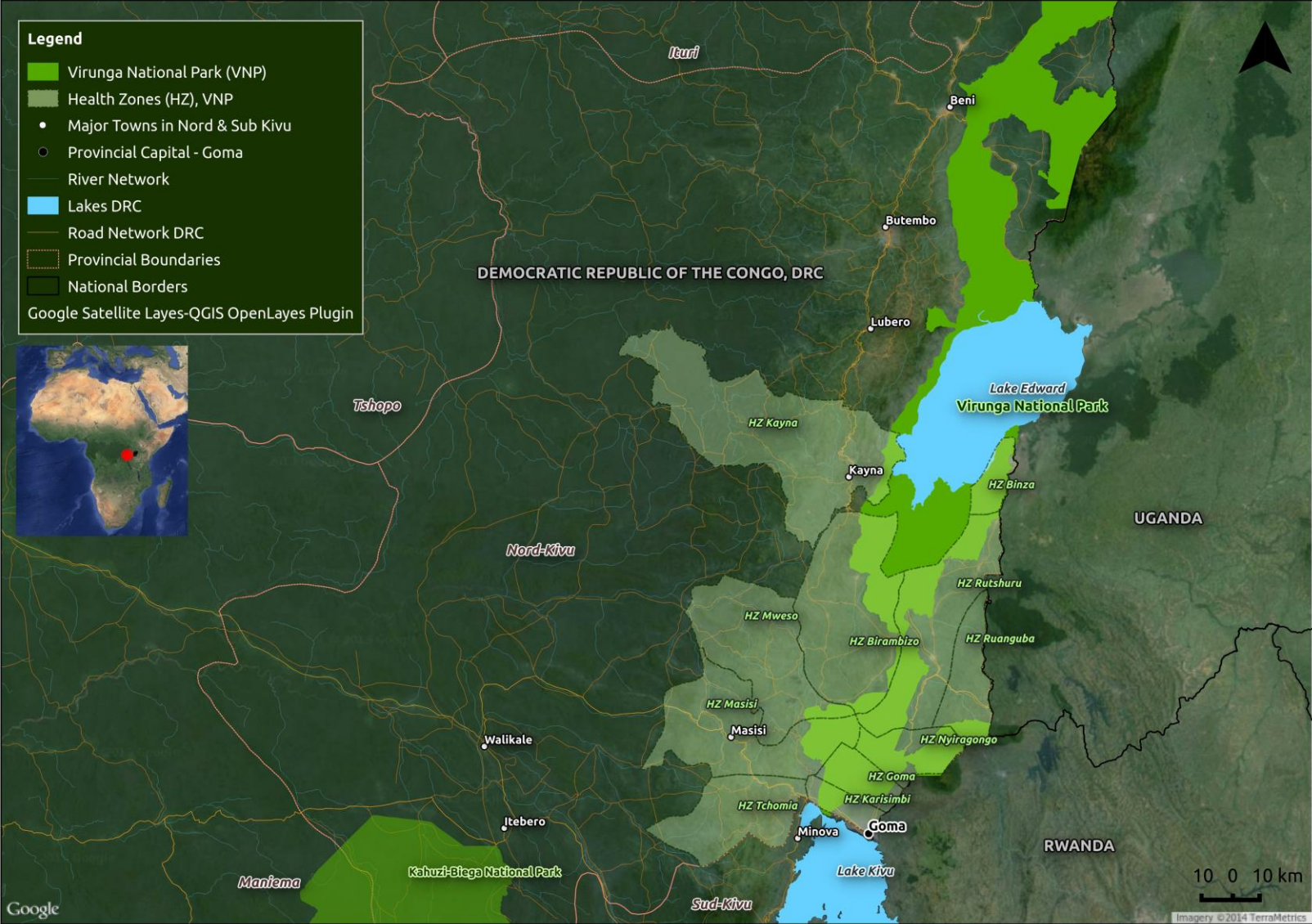
Health zone	Facility from which injury data was collected	Extent of injury data collection	Facility or NGO from which sexual violence data was collected	Extent of sexual violence data collection
Rutshuru	Rutshuru General Hospital	COMPLETED	Rutshuru General Hospital (from MSF-France in Goma) CBCA	COMPLETED
Binza		Not collected due to insecurity		Not collected due to insecurity
Karisimbi/Nyiragongo	Virunga General Hospital**	COMPLETED	Heal Africa Hospital	COMPLETED
Rwanguba	Rwanguba Health Centre **	COMPLETED	Heal Africa Hospital Rwanguba General Hospital	COMPLETED
Alimbongo	Alimbongo Health Centre Kayna General Hospital**	COMPLETED	Kayna General Hospital (from MSF-France in Goma) CBCA (Kanyabayonga Health Centre)	COMPLETED
Mweso		Not collected due to insecurity	CRN	COMPLETED

**referral hospital

Health zone	Facility from which injury data was collected	Extent of injury data collection	Facility or NGO from which sexual violence data was collected	Extent of sexual violence data collection
Masisi		Not collected due to insecurity	CRN	COMPLETED
Tchomia		Not collected due to insecurity	CRN	COMPLETED
Birambizo		Not collected due to insecurity	CRN Rutshuru General Hospital (from MSF-France in Goma)	COMPLETED
Goma	Goma General Hospital	COMPLETED	Goma General Hospital	No sexual violence related patients
	Heal Africa Hospital (formerly DOCS*)	COMPLETED	Heal Africa Hospital (formerly DOCS)	COMPLETED
	GESOM General Hospital	COMPLETED	GESOM General Hospital	COMPLETED
	Kechero General Hospital (CRN)	No injury patients	Kechero General Hospital (CRN)	COMPLETED
	CBCA	No injury patients	CBCA	COMPLETED
	Le Charity	COMPLETED	Le Charity	COMPLETED
	Betesta	COMPLETED	Betesta	COMPLETED

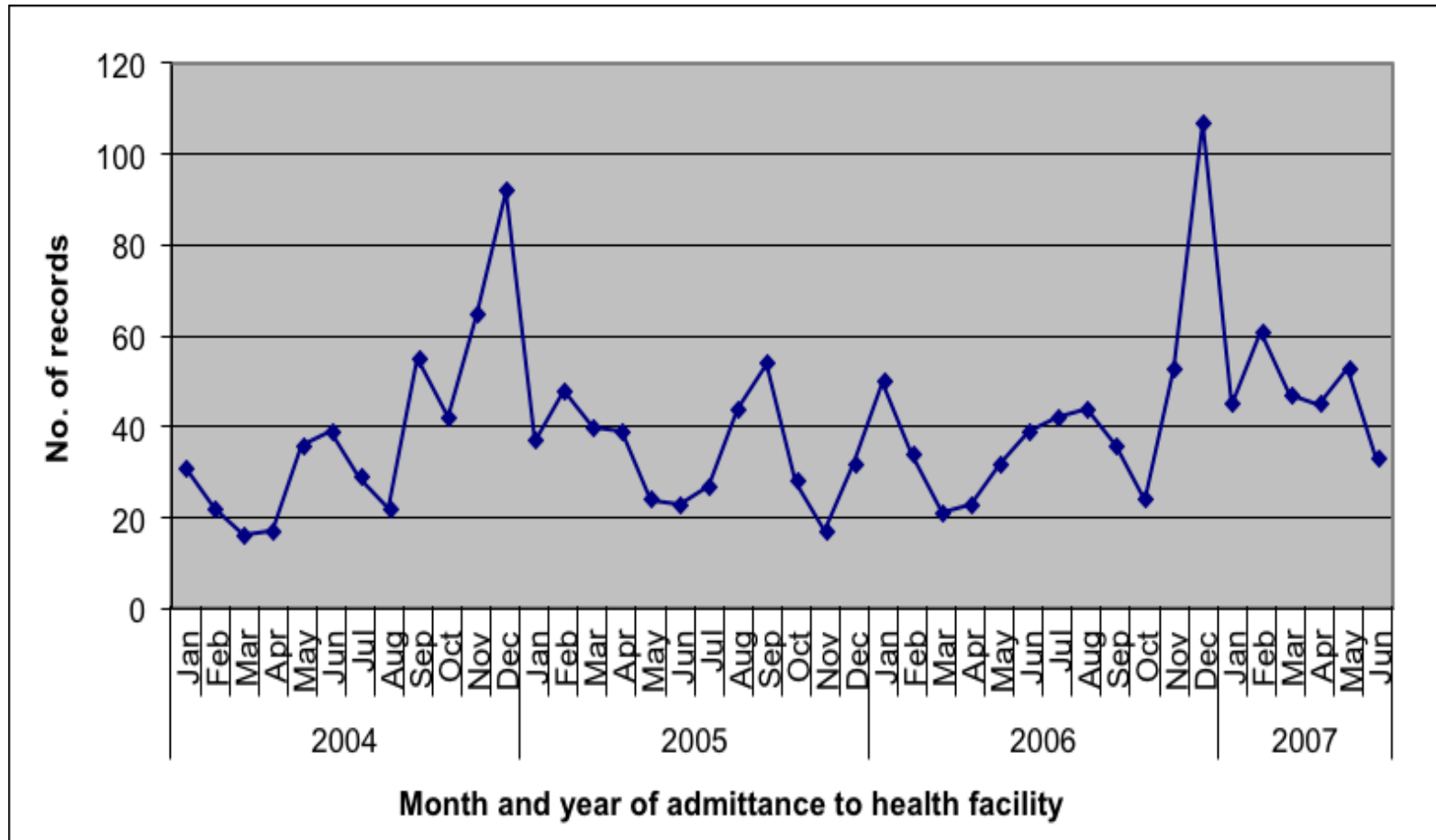
*DOCS – Doctors On Call For Service, Inc.

Figure 4.2: Health Zones in proximity to the Central and Southern sectors of VNP



Numbers of victims of conflict related injuries rarely exceed 60 or dropped below 20 in any given month between January 2004 to June 2007 (see Figure 4.3). Two spikes in December 2004 and December 2006 are discernible. In December 2004, fighting between units of the FARDC loyal to RCD-Goma and other units of the same army erupted in Kanyabayonga and led to a series of further clashes between other FARDC, RCD-Goma and Mayi-Mayi groups. The failure of the integration of belligerent parties, as part of the Sun City agreement of 2002 was cited as the reason for units of the same army engaging in violent clashes (Human Rights Watch 2005a). The spike in December 2007 is likely linked to fighting between Nkunda's forces and the FARDC in Rutshuru province as a result of failed attempts to integrate Nkunda's troops into the national army (International Crisis Group 2007). It is difficult to draw conclusions about levels of violence in the respective health zones over this period, as the dataset does not include information from military and UN health facilities. In addition to this, as demonstrated in subsequent sections, more medical support from health NGOs was directed to victims of sexual violence. This not only had an impact on the numbers of victims of sexual violence that reported to health centres but also on the rigour of record keeping as implementing agencies and institutions were obliged to provide detailed reports back to their respective donors.

Figure 4.3: Number of records of victims of conflict related injury from selected health facilities* in North Kivu from January 2004 to June 2007.



*Alimbongo Health Centre, Betesda Hospital, Le Charity Hospital, Heal Africa, GESOM Hospital, Goma General Hospital, Kayna General Hospital, Rutshuru General Hospital, Rwanguba Health Centre, Virunga General Hospital

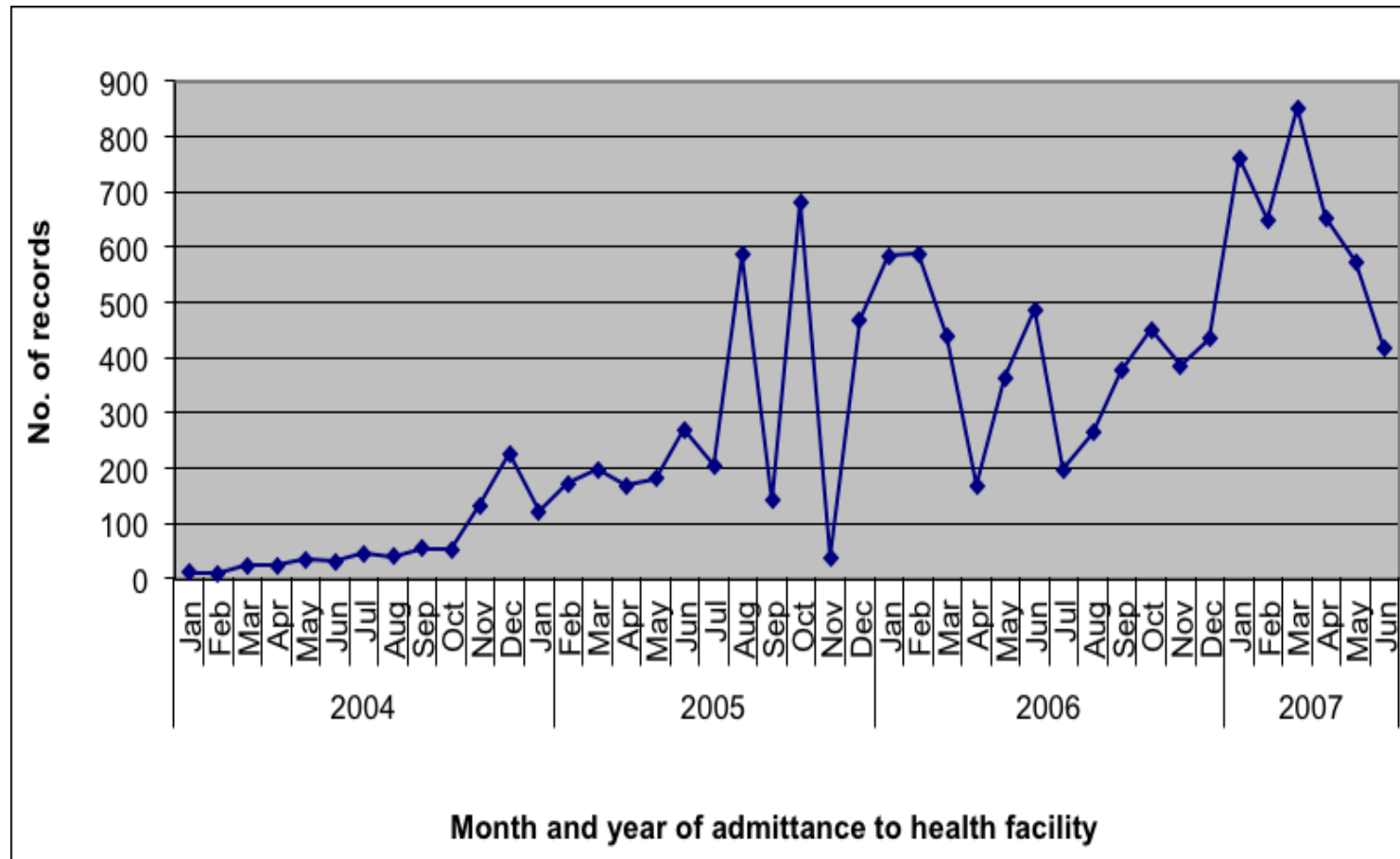
Despite sexual violence data being collected primarily from the provincial capital the coverage of this information compared to the injury records was much greater. A total of 12,644 records were collected from the following NGOs and health facilities covering the period of January 2004 to June 2007: Alimbongo Health Centre, Le Charity Hospital, CRN (Kechero Hospital in Goma, Behanguee, Kasangwa, Bunugu, Kilirowe, Busumba, Bukama, Nyobiudie Health Centres in Masisi territory, Nyanzale and Birambizo Health Centres in Rutshuru territory and Inhonee Health Centre near Lake Edward), GESOM Hospital, MSF France (Kayna, Nyanzala and Rutshuru Hospitals), Virunga General Hospital, Rwanguba General Hospital, CBCA (Rutshuru and Kanyabayonga Hospital).

There had been increasing awareness and availability of both medical and psychosocial support for victims of sexual violence since the start of the civil war in 1996. Support from NGOs to victims of sexual violence not only included all medical expenses but also additional support in relation to their socio-economic development. As resources towards supporting victims of sexual violence increased, so too did the number of victims that brought themselves forward for treatment (see Figure 4.4). An increasing number of recorded victims of sexual violence at health facilities does not therefore indicate an increase in victimization. Some sexual and gender-based violence (SGBV) projects did not start until the end of 2004. This is seen by the operations of CRN, Heal Africa, MSF France and CBCA who initiated support to victims of sexual violence in October 2004, September 2004, October 2005 and April 2007 respectively.

Over time the health institutions had also improved their documentation of patient information. A representative of CRN indicated that their records over the period of 2003–2004 were ‘patchy’ but had greatly improved from 2005 to

2007. Further improvements in the amount and type of information collected from patients at CRN-supported facilities were made in March 2007 (personal communication, Salome Ntububa, 2007). Coverage of data was also compounded by the lack of available data from Rutshuru, Kayna and Kanyabayonga over the period of October 2005 to December 2005 and the whole of 2006 for Rutshuru and Kayna. These records had been sent to MSF France in Paris and were difficult to access. Only information that totalled victimization across the entire territory was available for these periods and was too general for detailed mapping. This is a sizable gap in the records as the total number of patients treated in 2006 in Rutshuru and Kayna was 7,779 and 4,506 respectively (Médecins Sans Frontières - France 2006). However some information on victims from these areas was collected if they went or were transferred to the larger hospitals in Goma town (i.e. Heal Africa, Kechero-CRN and GESOM).

Figure 4.4: Number of records of victims of sexual violence from selected health facilities and for which periods of time * within January 2004–June 2007.



* Alimbongo Health Centre (Jan 2006–June 2007), Betesda Hospital (Feb 2006 –June 2007), Le Charity Hospital (Jan 2004–June 2007), Heal Africa Hospital (Sept 2004 –June 2007), Gesom Hospital (Jan 2004–June 2007), Kayna General Hospital (Jan 2006–June 2007), Rutshuru General Hospital (2007 only), CRN Health Centres in Goma (Kechero), Behanguee, Kasangwa, Bunugu, Kilirowe, Busumba, Bukama, Nyobiudie in Masisi territory, Nyanzale and Birambizo in Rutshuru territory and Inhonee near Lake Edward (October 2004–June 2007)

Although data was collected (where available) from January 2004, analysis was performed only during the period of 2006 and 2007 as they were considered to be the most representative of violence. For 2006 and the first six months of 2007, this totalled 3,974 and 2,749 respectively. Where the date of incident was not available, then the date of admission into the medical facility was used. The 2006 records are considered to be representative of victims of sexual violence who sought medical assistance in Birambizo, Goma, Masisi, Mweso, Rwanguba and Tchomia health zones. The 2007 records are considered to be representative of victims of sexual violence who present themselves to health facilities of Birambizo, Goma, Masisi, Mweso, Rwanguba, Tchomia, Rutshuru and Kayna Health Zones.

Correlations between the location and number of incidents between the injury and sexual violence datasets were run for 2006 (Spearman's $\rho=0.047$, $p=0.852$ [2-tailed]) and 2007 (Spearman's $\rho=0.459$, $p=0.012$ [2-tailed]). With poor coverage of data in 2006 for both injury and sexual violence the lack of a statistically significant correlation is not surprising. The improved dataset for 2007 reports a positive significant correlation between the two datasets, indicating that sexual violence and conflict-related injuries occur in the same place. This further supports the use of sexual violence data to establish patterns of conflict-related violence in relation to VNP. Mapping and regression analysis was not performed with the injury dataset due to the small number of records, The lack of military and UN health data and poor quality of recording keeping at state health facilities contributed to this. Further analysis of the conflict injury datasets and sexual violence datasets are presented in the following sub-sections. The datasets are treated and presented separately.

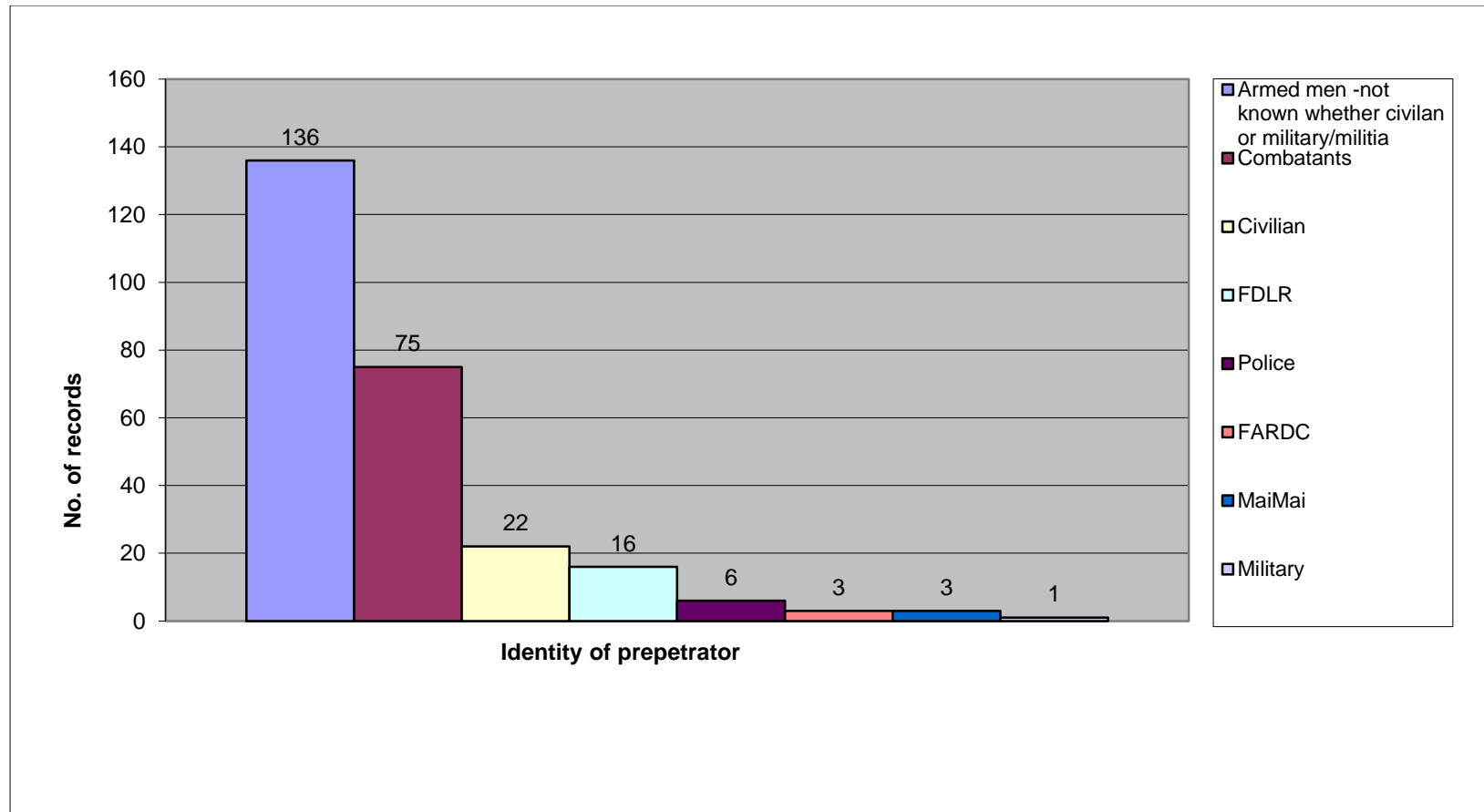
4.2.1 Results of Injury data from the Central and Southern sectors of VNP

Gunshot wounds were the conflict-related injury that dominated the dataset. Eight-five per cent of the records indicated this type of injury, followed by 8% for injuries related to GBH and/or torture. Four per cent of the records showed injuries resulting from machetes and/or knives. The remaining records indicate injuries linked to guns and shrapnel from explosive devices specifically from explosives (2%) and combination of gunshot and splinters/shrapnel from explosives (0.4%).

Where possible, information regarding the identity of the aggressor was collected. However, this level of detail was infrequently captured, being incorporated in only 17% of the records (see Figure 4.5). Two main groups were identified as gunmen or combatants, highlighting links between the cause of injury and violent conflict. Out of a total 1,668 records that ascribed the injury to conflict, 83% were male and 16% were female. The disproportionate number of male victims identifies a gender aspect to victims of injury as a result of the conflict but further analysis of this aspect is beyond the scope of this research.

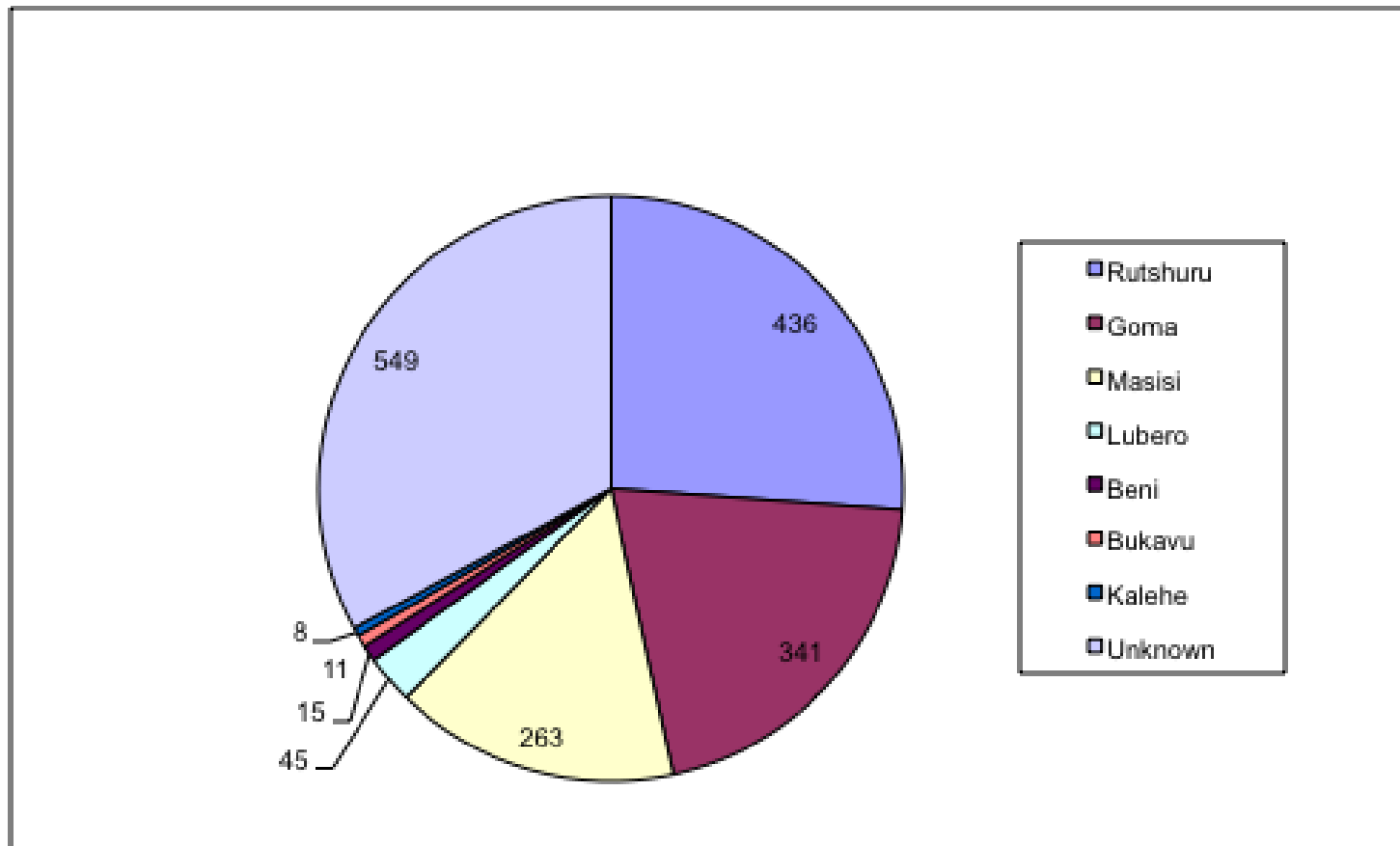
It was difficult to discern patterns of violence in relation to location due to lack of sufficient information in a large number of the records. The poor quality of documentation is apparent when assessing information regarding residence of the patient and location of incident. A total of 33% of the records did not indicate the territory of residence of the victim with only 19% of the records indicating the location of incident and often with no specific information, e.g. on the road from Sake to Kitchanga. Where information was available on the location of residence of the patient, the data indicated that 26% were residents in Rutshuru territory, 20% in Goma and 16% in Masisi territory (see Figure 4.6).

Figure 4.5: Identity of perpetrators of conflict-related injuries from medical records of selected health facilities* in North Kivu from January 2004 to June 2007



* Alimbongo Health Centre, Betesda Hospital, Le Charity Hospital, Heal Africa, GESOM Hospital, Goma General Hospital, Kayna General Hospital, Rutshuru General Hospital, Rwanguba health Centre, Virunga General Hospital

Figure 4.6: Territory of residence of patients of conflict-related injury from selected health facilities* in North Kivu from January 2004 to June 2007

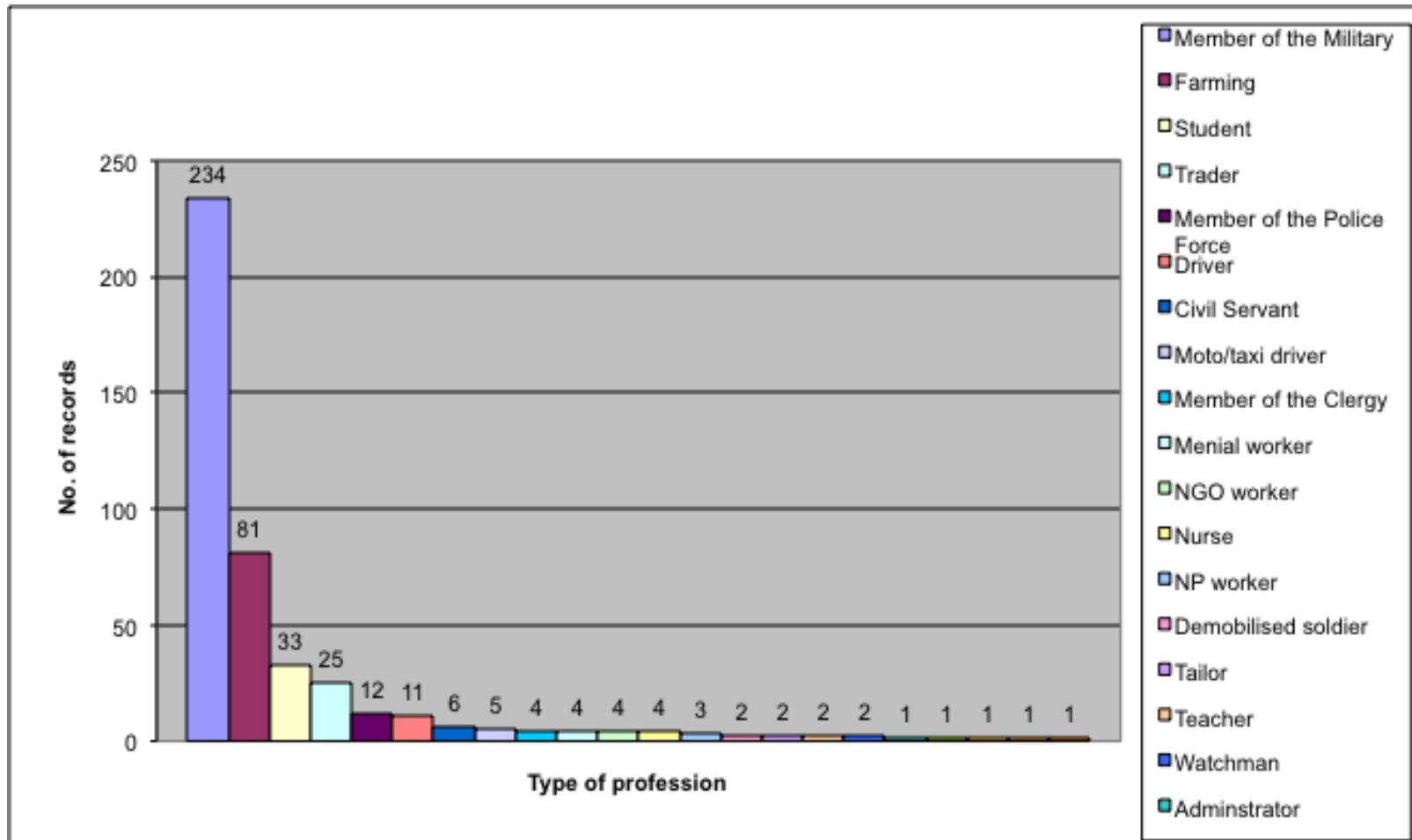


* Alimbongo Health Centre, Betesda Hospital, Le Charity Hospital, Heal Africa, GESOM Hospital, Goma General Hospital, Kayna General Hospital, Rutshuru General Hospital, Rwanguba health Centre, Virunga General Hospital

Information on the setting of the location (e.g. field, residence, market) was only available in 8% of the records, totally 138. Where the information was available, 112 records indicated that the incident occurred at their residence with 11 incidents occurring on the road to or from a trip.

Little understanding of who uses state health facilities, why and where they sustained their injuries could be acquired. A linear regression between victim rate of injury from January 2004 to June 2007 with distance from VNP for Rutshuru, Rwanguba and Kayna Health zones was run. The results were not significant ($p=0.538$, $F=0.383$, adjusted $R^2=-0.01$, $B=-0.063$, standard error = 0.102, degrees of freedom=65) but this was anticipated once the quality and coverage of the data became apparent. The context within which the injury was inflicted was poorly captured, with only 8% of the records providing some level of detail in this respect. Fifty-seven records indicated that the cause of the injury was as a result of looting/robbery, followed by 41 records, which indicated injuries caused during armed clashes. However, whilst only 14% of the records indicated the profession of the patient; surprisingly, the military constituted the highest number (see Figure 4.7). As the majority of the records did not include information on the status of the patient and the exact context the injury was inflicted, this meant that no interpretation could be made regarding where conflicts occur.

Figure 4.7: Profession of injury patients from records of selected health facilities* in North Kivu from January 2004 to June 2007



The findings from the conflict-related injury dataset of North Kivu showed that weapons cause the majority of injuries. A high proportion of the records indicated that the patients reside in proximity to VNP, i.e. in Rutshuru and Goma. However, the data is not sufficiently robust to be able to ascertain whether there is a relationship between levels of violence and proximity to VNP due to lack of adequate detail within the records and in accessibility to several health centres in proximity to the park. Despite extensive efforts to use health information directly attributable to violent conflict, the quality and level of record keeping made meaningful interpretations in relation to VNP difficult.

4.2.2 Results of sexual violence data from Central and Southern sectors of VNP

Overall, the majority of aggressors were associated with a militarized group, further reinforcing the conflict as a factor in sexual violence. However, in 2006, 36% of the records included information on the identity of the aggressors. Only 2% records identified the aggressor as a civilian (either known or unknown to the victim) with the remainder of the aggressors associated either with gunmen or some form of militarised person. In the first six months of 2007, the number of victims who did identify their aggressors increased to 73%. This is linked to improved record keeping by health providers. Combatants continued to constitute the highest recorded identity of aggressors, accounting for 53% of the records with the number of civilian aggressors at 14% (see Figure 4.8). All the recorded victims in 2006 and 99% in 2007 were female, highlighting gender dimensions to patterns of violence that were beyond the scope of this dissertation to analyse.

Figure 4.8: Identity of aggressors of victims of sexual violence in 2006 and the first six months of 2007 for selected health zones* in North Kivu

Identity of aggressors (see Appendix 3 for detailed notes on coding of dataset)	Jan–Dec 2006 (%)*	Jan–June 2007 (%)**
<i>Civilian</i> –either known or unknown to the victim	2	14
<i>Combatant</i> – individual in military fatigues either known or unknown the victim	22	53
<i>FDLR</i> –member(s) of the FDLR militia group	7	3
<i>Gunman</i> –any armed man, not clear whether civilian or combatant and gunshots were heard	5	2
<i>Mayi-Mayi</i> – member(s) of the Mayi-Mayi militia group	<0.5	<0.5
<i>Military</i> – member(s) of the FARDC	<0.5	<0.5
<i>Not available</i>	64	27
<i>Police</i> – member of the police force	<0.5	<0.5

* Birambizo, Goma, Masisi, Mweso, Rwanguba, Tchomia Health Zones

** Birambizo, Goma, Masisi, Mweso, Rwanguba, Tchomia/Kirotshe, Rutshuru, Kayna and Kanyabayonga Health Zones.

It was considered sufficient to map the location of the residence, when location of the incident was not available, as this was often provided. To assess the relationship between victimization as a result of sexual violence and proximity to VNP, the data was analysed statistically. Where possible, the location of the incident was used. Otherwise, the residence of the victim was recorded, mapped and counted in relation to the distance from VNP. The setting of the incident was used to gain additional information on approximate locations of sexual violence, as details on the exact location were not always available (6% in 2006 and 3% in 2007). In records for 2006, only 28% indicated the setting in which the incident occurred. The two main settings that were recorded were in the field (11%) and at the residence (7%). In 2007, the percentage of records with information on the setting of the incident increased to 67%, with the field representing the highest percentage (33%) followed by the incident occurring at the residence (14%). Although more records from 2007 indicate the setting of the incident, the order remained the same as 2006 (see Figure 4.9). As fields tended not to be a great distance from residences, the location of residences was utilized where the location of the incident was not available.

Figure 4.9: Environments of victims of sexual violence in 2006 and first six months of 2007 in selected health zones* for North Kivu

Place of incident	Jan–Dec 06 (%)	Jan–June 07 (%)
Bush/forest	<0.5	7
Field	11.37	33
Forest	2.04	1
Hiding place	1	<0.5
Kidnapped and raped in forest	<0.5	-
Kidnapped from residence	<0.5	-
Market	4	1
Residence	6.89	14
River	<0.5	<0.5
Road	2	6
Running away	<0.5	-
School	1	<0.5
Aggressor's residence	-	1
Military camp	-	1
Not available	72	35

Initial mapping of location of incidence or residence of victims of sexual violence did not discern any clear pattern in relation to the national park for both 2006 and 2007 (see Figure 4.10 and Figure 4.11). Results from regressions indicate that there was no statistical relationship between distance from the park and victim rate in 2006 (see Figure 4.12) but in 2007 there was a significant negative relationship between distance and victim rate. This indicated that higher levels of sexual violence occur closer to VNP (see Figures 4.13 and 4.14). The lack of significance observed in 2006 is due to the lack of sufficient data around the park, as the analysis did not include Rutshuru and Kayna. Rutshuru is a key territory that VNP runs through the middle of (see Figure 4.2). The results from the 2007 data show the relationship to be a negatively skewed distribution, indicating that there are higher victim rates closer to the edge of the park which drop rapidly as distance from the boundary increases.

Figure 4.10: Numbers of victims of sexual violence by location around the Central and Southern sectors of VNP in 2006 from Birambizo, Goma, Masisi, Mweso, Ruanguba and Tchomia health zone

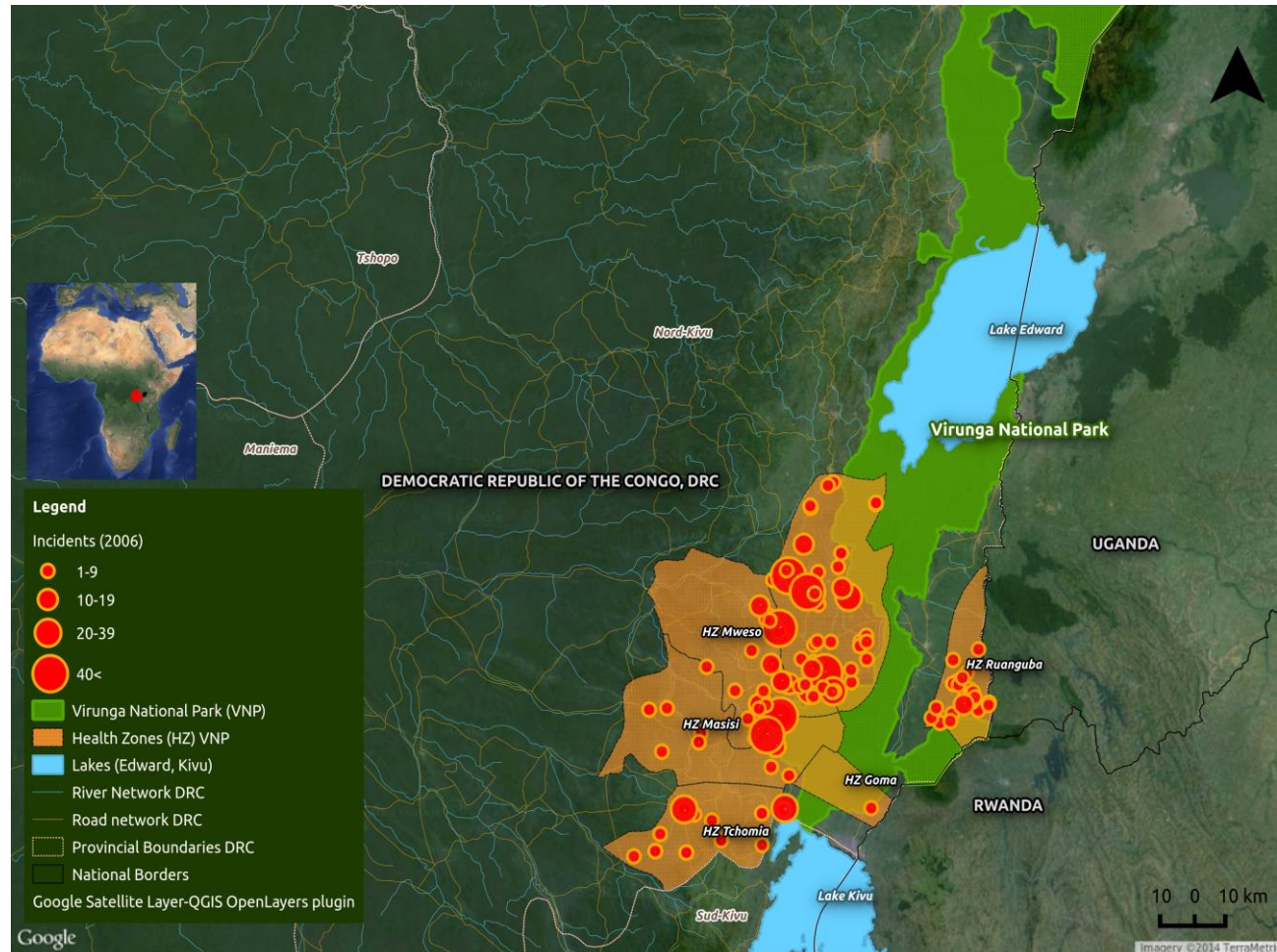


Figure 4.11: Number of victims of sexual violence by location around the Central and Southern sectors of VNP from January to June 2007 from Birambizo, Goma, Kayna, Masisi, Mweso, Ruanguba, Rutshuru and Tchomia health zones

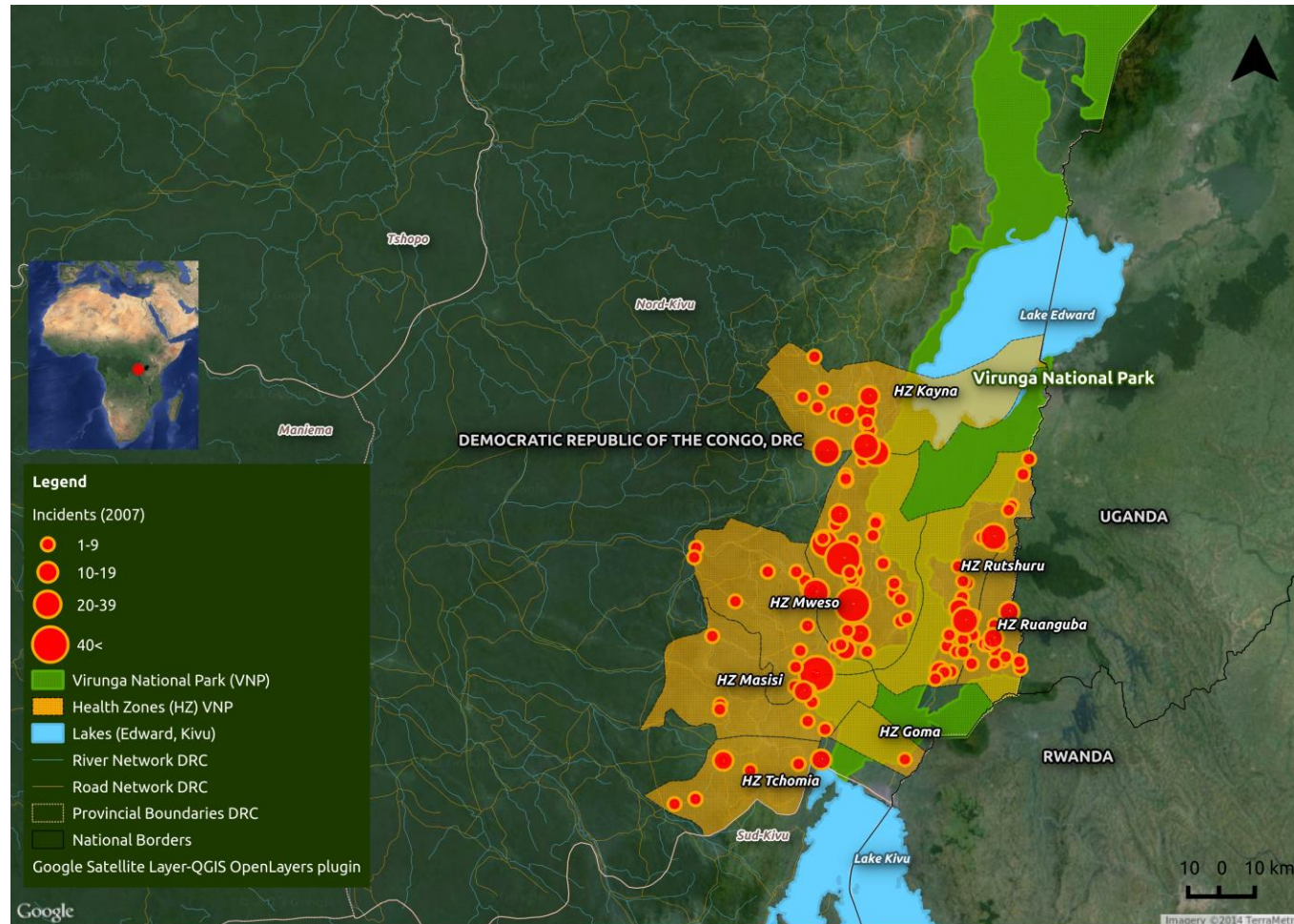


Figure 4.12: Victim rate from sexual violence for Birambizo, Goma, Masisi, Mweso, Ruanguba and Tchomia Health Zones by distance, log (distance) and distance² in 2006

	2006 victim rate		
Distance	-0.031 (0.031)		
Log (distance)		-0.280 (0.326)	
Distance			0.090 (0.126)
Distance ²			-0.004 (0.004)
<i>Observations</i>	128	128	128
<i>Intercept</i>	1.955*** (0.524)	2.175** (0.816)	1.329 (0.824)
<i>F-test</i>	0.993	0.738	0.982
<i>R²</i>	0.008	0.006	0.015
<i>Adjusted R²</i>	0.000	-0.002	0.000

Standard errors are in parentheses. *p<0.05, **p<0.01, ***p<0.001.

Figure 4.13: Graph of victim rate by distance from Virunga National Park from January to June 2007 for Birambizo, Goma, Kayna, Masisi, Mweso, Ruanguba, Rutshuru and Tchomia Health Zones

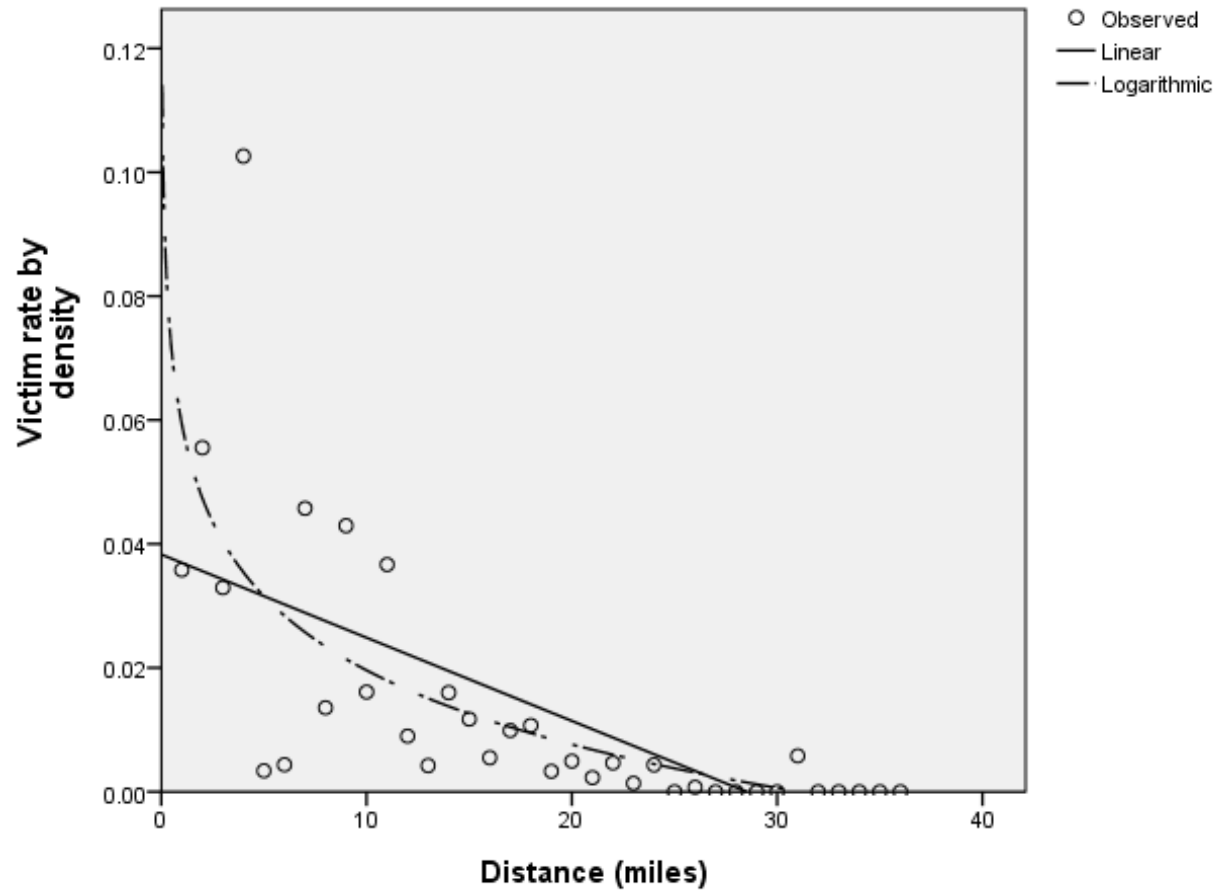


Figure 4.14: Victim rate from sexual violence for Birambizo, Goma, Kayna, Masisi, Mweso, Ruanguba, Rutshuru and Tchomia Health Zones by distance, log (distance) and distance² from January to June 2007

	2007 victim rate		
Distance	-0.047*** (0.013)		
Log (distance)	-0.526*** (0.133)		
Distance			-0.103* (0.052)
Distance ²			0.002 (0.002)
<i>Observations</i>	160	160	160
<i>Intercept</i>	1.294*** (0.215)	1.858*** (0.326)	1.571*** (0.331)
<i>F-test</i>	12.776***	15.748***	7.005**
<i>R²</i>	0.075	0.091	0.082
<i>Adjusted R²</i>	0.069	0.085	0.070

Standard errors are in parentheses. *p<0.05, **p<0.01, ***p<0.001

These findings demonstrate that sexual violence data can be a useful way to establish patterns of violence. In the context of Eastern DRC the availability of better quality information as a result of improved recording keeping by health care providers meant that this could be used to investigate if any linkages between conflict and VNP existed. As the number of victims of sexual violence presenting themselves to health facilities increased and the quality of documentation improved, the possibility for establishing patterns of sexual violence in relation to VNP became apparent. The significant relationships established between levels of violence, differing landscapes and VNP indicate that the protected area rather than the availability of mountainous terrain is a variable driving violence in the region. Bearing in mind that the data on sexual violence has been established to be sufficiently robust to reflect violence as a result of the conflict, results from analysis of the 2007 data show a significant relationship between distance from the park and levels of victimization. They indicate that there are higher levels of sexual violence closer to the boundary and within the park. The findings also indicate that violence is emanating from both the savannah and mountainous landscapes of VNP (see Figure 4.10 and Figure 4.11). The northern sections of Rutshuru and Birambizo health zones are along savannah landscapes as is the entire eastern border of Kayna Health zone. These findings therefore support the premise that the park is acting as a centre of violence and this is the case regardless of the type of terrain.

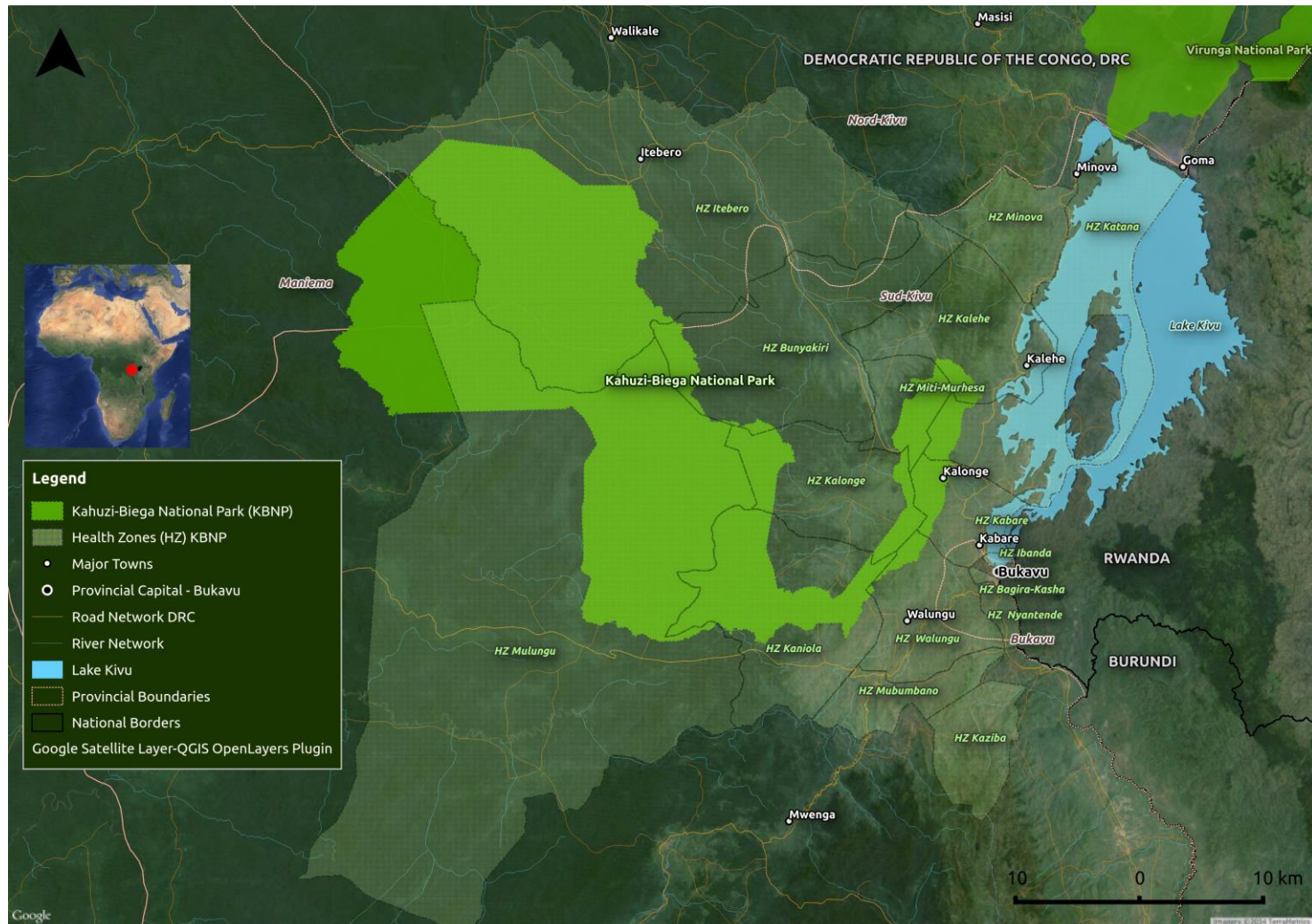
4.3 Sexual violence, injury and parks: the case of Kahuzi Biega National Park

Whereas the similarities between the gazettement of KBNP and VNP were the desire to protect species of gorillas, specifically eastern lowland gorillas (*Gorilla beringei graueri*) in the former, little else in terms of their history, ecology and geology is similar. Unlike VNP, the gazettement of KBNP was first as a forest reserve in 1937. Initially an area of approximately 60,000 hectares of mountain forest covering a range in altitude from 1,800 to 3,300 m was placed under

protection. This region is commonly referred to as the mountain sector and hosts Mount Kahuzi, after which the park is named. In 1975 an additional 540,000 hectares of lowland forest were added to the park. This area varies in altitude from 600 to 1,200 m and consists of equatorial rain forest and is connected to the original mountain sector of KBNP by a narrow, forested corridor, approximately 6 km wide at Nindja located in Kabare and Walungu territories. In addition to lowland gorillas, other species of fauna and flora are endemic to the park and in 1980 KBNP was listed as a World Heritage Site by UNESCO (see Figure 3.1). Research focused on the mountain sector of KBNP, which consists of mountain forest throughout. This meant that no deduction about the role of terrain on violence was possible.

This section presents results from analysis of both the injury data and sexual violence data in relation to the KBNP. As with VNP, data collection focused on health zones in proximity to the mountain sector of KBNP. These health zones are Katana, Kaziba, Walungu, Kaniola, Mubumbano, Kalonge, Bunjakiri, Itebero, Minova, Miti Murhesa, Kalehe, Kabare, Mulungu and Bukavu (see Figure 4.15 and Figure 4.17)

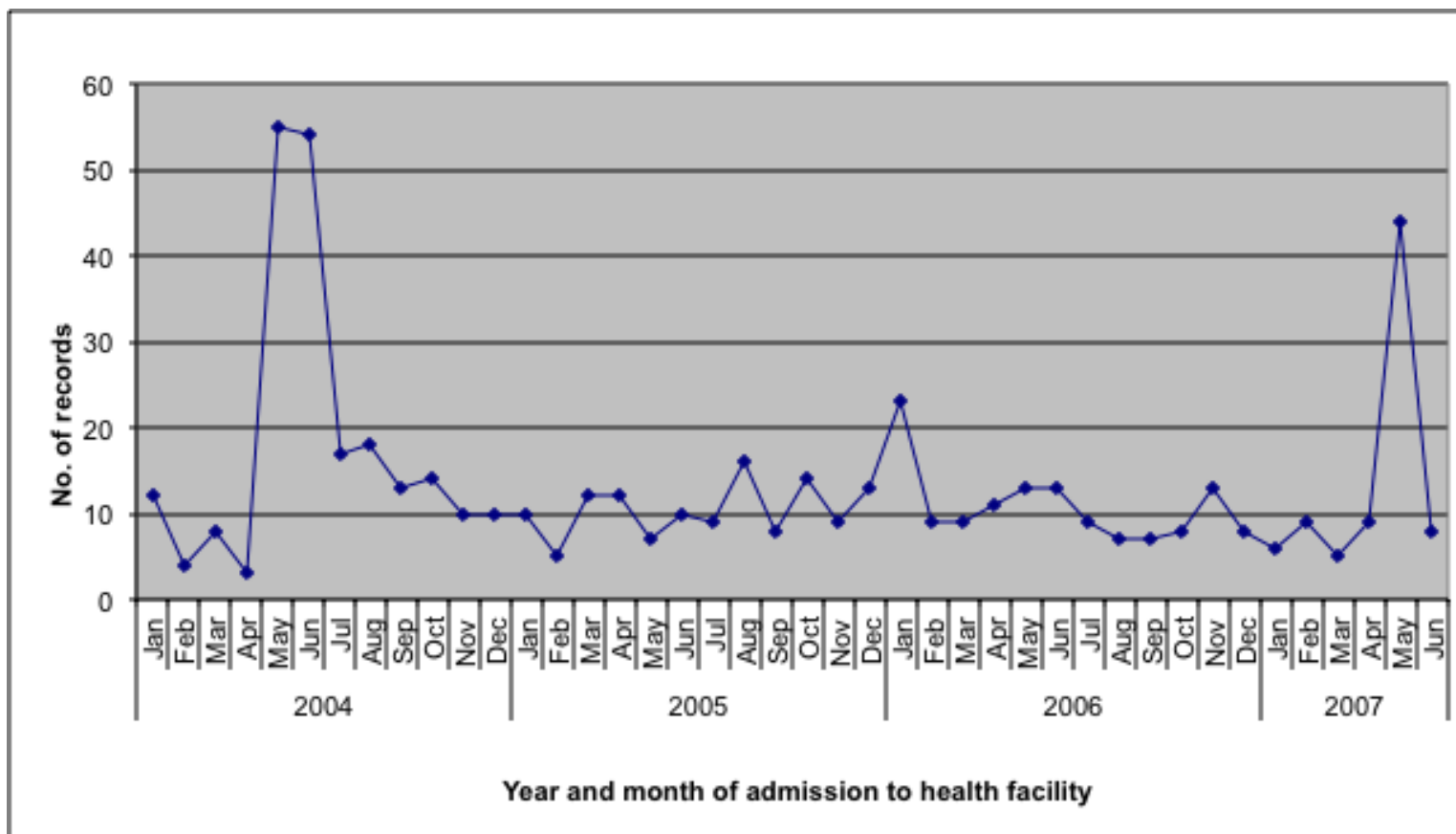
Figure 4.15: Health zones of the mountain sector of Kahuzi Biega National Park



Due to insecurity, collection of conflict-related injury data was not possible from Cambuca and Mulungu referral hospitals, whilst at Formulac Hospital in Katana health zone, officials refused to allow the research assistant access the records, despite clearance from the Provincial Medical Inspector and several visits by the data collector. In addition to this, access to data on conflict-related injuries from Panzi hospital, in the provincial capital of Bukavu, was not permitted due to the ICRC's policy of non-disclosure regarding the sharing of medical information. ICRC was supporting treatment of conflict-related injuries in Panzi over the period of data collection and held ownership of the medical information. Panzi is a major health facility, providing services to patients from throughout the province of South Kivu. A total of 558 conflict-related injuries were recorded from selected health facilities in some of the aforementioned health zones over the period from January 2004 to June 2007 (see Figure 4.17).

Trends in reporting of conflict-related injuries from the selected health facilities spiked in April/May–June 2004 and May 2007 (see Figure 4.17). The increase in conflict-related injuries in 2004 coincided with major clashes that began in April 2004 in Bukavu between the FARDC and former RCD-Goma troops, who asserted that they were defending Banyamulenge civilians. This was further compounded by the engagement of Nkunda's troops (also in defence of the Banyamulenge community) with 2,500 troops at the end of May 2004. Once victorious, Nkunda withdrew from the fighting on June 4 2004 (Prunier 2009) and a decrease in conflict-related injuries was observed in July 2004 in the areas where data was collected (see Figure 4.16). The second spike in May 2007 reflects the impact of clashes between FARDC and FDLR around Gungu in the North Eastern part of the province (IRIN 2007).

Figure 4.16: Conflict related injuries from medical records of selected health facilities* in South Kivu from January 2004 – June 2007



*Katana General Hospital, Kaziba Hospital, Walungu Hospital, Kaniola Hospital, Mubumbano Hospital, Cifunzi/Fendula Hospital, Bunyakiri Hospital, Minova Referral Hospital, Kalehe/Katana referral Hospital, Kabare Referral Hospital, Bukavu General Hospital, Kadutu General Hospital, Ciriri General Hospital and Bagira General Hospital.

Figure 4.17: Health zones and extent of injury and sexual violence data collection around the mountain sector of KBNP

Health zone	Facility from which injury data was collected	Extent of injury data collection	Facility of NGO from which sexual violence data was collected	Extent of sexual violence data collection
Katana	General hospital	COMPLETED	General hospital	COMPLETED
	FORMULAC Hospital	Unable to collect data due to officials	FORMULAC Hospital	Unable to collect data due to officials
Kaziba	Kaziba Hospital	COMPLETED	Malteser- Bukavu	COMPLETED (2005 not available)
Walungu	Walungu Hospital	COMPLETED	Malteser-Bukavu	COMPLETED (2005 not available)
Kaniola	Kaniola Hospital	COMPLETED	Malteser-Bukavu	COMPLETED (2005 not available)
Mubumbano	Muhumbano Hospital	COMPLETED	Malteser-Bukavu	COMPLETED (2005 not available)
Kalonge	Cifunzi/Fendula Hospital***	COMPLETED	IMC- Bukavu	COMPLETED (except 2004/5)
Bunjakiri	Bunyakiri Hospital***	COMPLETED	IMC-Bukavu	COMPLETED (except 2004/5)
Itebero	Referral Hospital	Not collected due to insecurity	IMC-Bukavu	COMPLETED (except 2004/5)
Minova	Referral Hospital	COMPLETED	Kalere referral hospital (IRC supported)	COMPLETED
Kalehe (transferred to Katana)	Referral Hospital	COMPLETED	Kalehe referral hospital (IRC supported)	COMPLETED
Kabare	Referral Hospital	COMPLETED	Mukongola referral hospital (IRC supported)	COMPLETED
Mulungu	Referral Hospital	Not collected due to insecurity	Referral Hospital (IRC supported)	Not collected due to insecurity
Miti Murhesa	Katana General Hospital	COMPLETED		COMPLETED
Bukavu Health Centres and environs				
	Bukavu General Hospital	COMPLETED	Bukavu General Hospital	COMPLETED
	Ciriri General Hospital	COMPLETED	Ciriri General Hospital	COMPLETED
Kadutu Health Zone	Kadutu General Hospital	COMPLETED	Kadutu General Hospital	COMPLETED
Bagira Health Zone	Bagira General Hospital	COMPLETED	Bagira General Hospital	COMPLETED
Ibanda Health Zone	Panzi General Hospital*	No access to data**	Panzi General Hospital*	COMPLETED

*Used different data sheet and removed referrals from IMC, Malteser and IRC supported health centres to avoid double counting (Annex 3).

** Unable to access PANZI conflict related injuries records as supported by ICRC.ICRC does not share medical information. (personal communication from Dr Mukeywe).

*** referral hospital

Once again the level of coverage and quality of data for victims of sexual violence who had sought medical care in the health zones of interest around KBNP was superior to the conflict-related injury data for the same area. As per the methods used for North Kivu, where the date of the incident was not available, the date of admittance to the health facility was used. Three agencies provide medical assistance to victims of sexual violence in the health zones of interest around KBNP; these were Malteser, IMC and IRC. Data from Malteser and IMC was collected from their offices in the city of Bukavu, whereas data from IRC was obtained from the referral hospital of the health zones they support. The referral hospital tended to be the main recipient of support from IRC in relation to sexual violence (see Figure 4.17).

The quality of record keeping in South Kivu was more comprehensive than in North Kivu and both IMC and Malteser had records with the relevant information available electronically. In North Kivu this was only the case for MSF-France. Sexual violence in the health zones of South Kivu receives prioritized support from the international humanitarian health community as it does in North Kivu. Whilst the agencies maybe different, the type of support is similar with a significant amount of resources available to provide medical care to victims of sexual violence as well as socio-economic and psychological care within communities. All the sexual violence data was collected entirely from health NGOs that support the medical services in different health zones. The NGOs provide support to entire health zones and programmes are co-ordinated so no two agencies are providing medical assistance in the same zone.

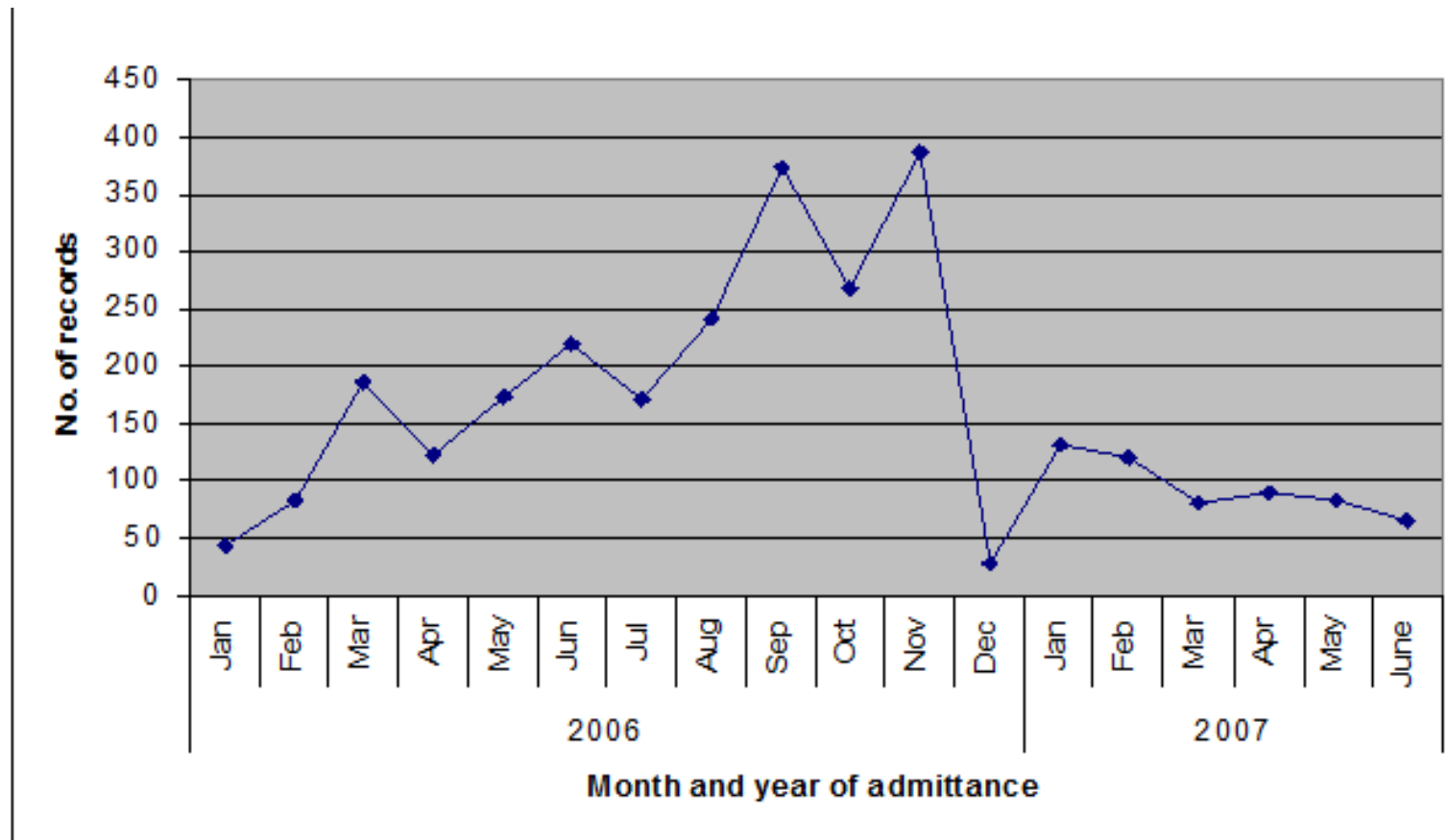
Malteser was unable to provide data for the entire year of 2005 and IMC was unable to provide information for the years 2004 and 2005 (see Figure 4.17). A total of 9,758 records were collected. Due to the gaps in the data for 2004 and 2005, trends in admittance to health facilities were therefore collated for the period January 2006 to June 2007 only (see

Figure 4.18). A total of 3,680 records were therefore collected from medical records over the period January 2006 to June 2007 of which 2,869 had either been sexually assaulted or admitted into a health facility in 2006. The figure for January to June 2007 was 809. To avoid double counting, patients referred to Panzi by IMC, IRC or Malteser were removed. This data is considered to be representative of victimization as a result of sexual violence in Bukavu, Kaziba, Walungu, Kaniola, Mubumbano, Bunyakiri, Cambuca, Minova, Kalehe and Kabare health zones. The first six months of 2007 indicate a drop in the number of victims compared to the same period in 2006. The first six months of 2007 also show a decline in number of victims coming to health facilities since a high in January 2007. This may indicate a reduction in violence although the number of victims is above 100 in January and February 2007, dropping to from 50 to 100 from March through to June 2007. This trend has also been attributed to a reduction in ' "old" ' (Steiner et al. 2009: 10) cases of sexual violence coming forward for treatment. Services may not have been available or access constrained by insecurity, resulting in victims of sexual violence not seeking medical assistance months or even years after the incident (Steiner et al. 2009).

Around the mountain sector of KBNP, a comparison between sexual violence and injury data was only possible for villages in Kabare, Walungu and Kalehe territories. The village of residence was used as only 8 of 81 conflict-related injury records in 2007 and 13 of 130 records in 2006 recorded the place of incident. No significant correlation between residences of victims of conflict and residences of victims of sexual violence was observed in 2006 (Spearman's $\rho=0.278$, $p=0.178$ [2-tailed]) and 2007 (Spearman's $\rho=0.027$, $p=0.936$ [2-tailed]). The lack of significance can be attributed to the poor quality and coverage of the conflict-related injury dataset and whilst a correlation would have further substantiated the value of utilizing sexual violence data to establish patterns of victimization, the findings from North Kivu and other

sources of research point to the linkages (Baaz and Stern 2009; Steiner et al. 2009).

Figure 4.18: Number of records of victims of sexual violence from selected health facilities and NGOs* in South Kivu from January 2006 to June 2007



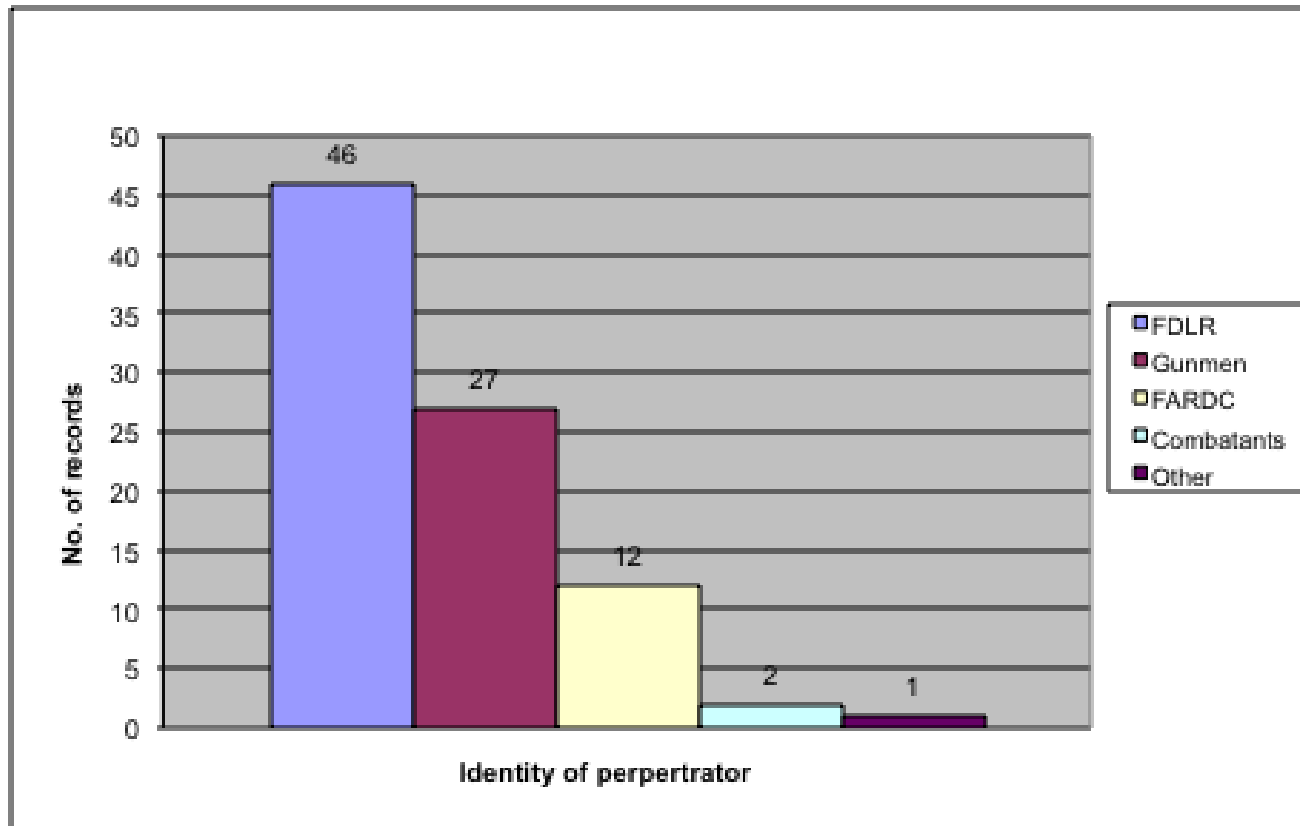
*Records from Malteser, IMC and IRC supported health programmes of Kaziba, Walungu, Kaniola, Mumuhubano, Kalonge, Bunyakiri, Itebero, Minova, Kalehe, Kabahre, Miti Murhesa and Bukavu Health Zones from January 2006 to June 2007

4.3.1 Results of South Kivu injury data

Although the identity of the perpetrator was poorly captured (16%), the link to the conflict in the region as the primary cause of the injuries is assumed. Of those recorded, the most cited perpetrator of injuries around the mountain sector of KBNP was the FDLR (8%) followed by unidentified gunmen (5%) and the Congolese military (FARDC) in 2% of the records (see Figure 4.19). Of the 558 conflict-related injury records, 75% were male and 79% of the records indicate that a weapon caused the injury. This was followed by 16% of the records indicating that injuries were as a result of machetes and/or knives. A further 3% of the records indicated that the injury was as a result of trauma, likely linked to weapons but this was not clearly defined in the records and 2% of the records indicated that injury was as a result of grievous bodily harm and/or torture. A very small proportion (0.36%) were linked to burns as a result of a conflict-related incident.

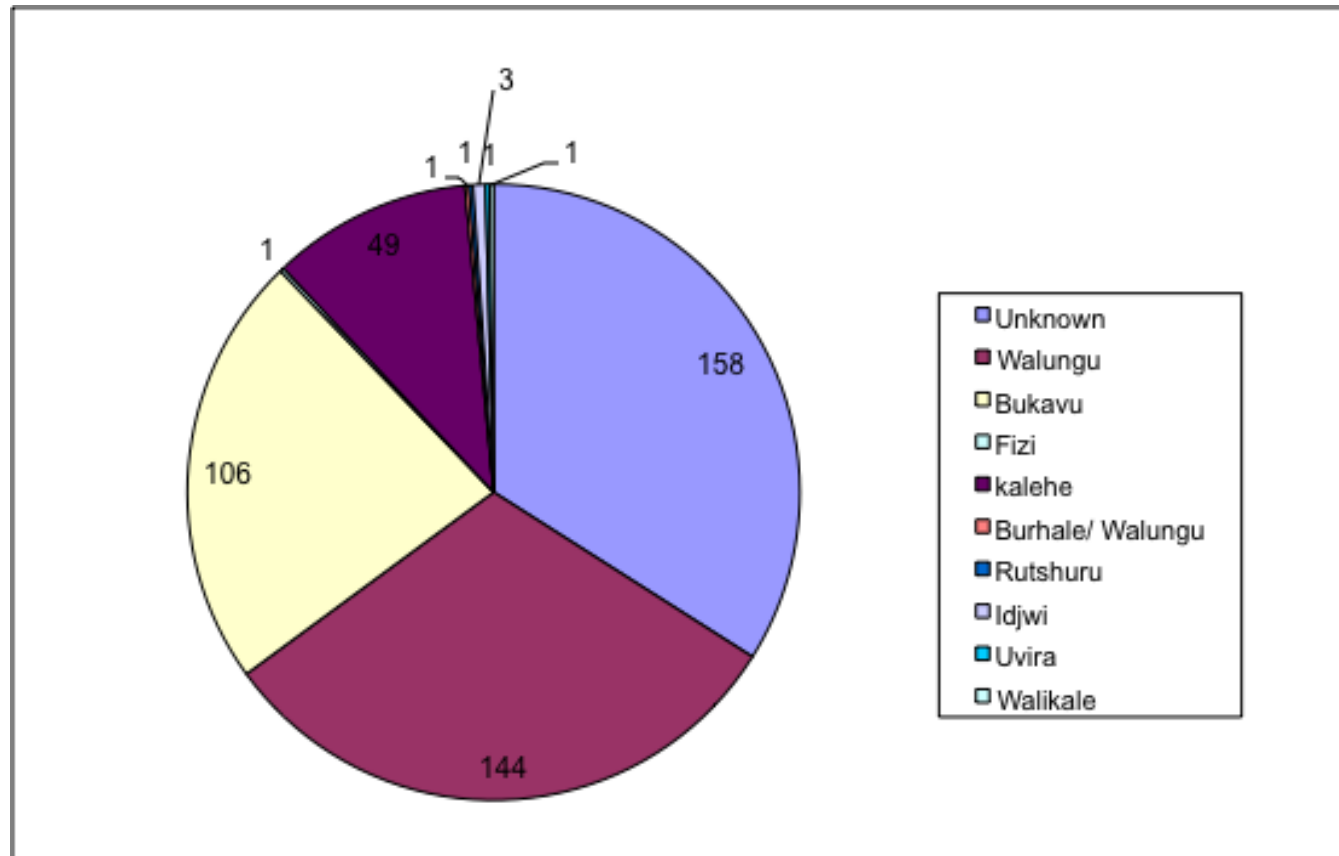
Records documented the territory of residence of the victim in almost three-quarters (72%) of the cases. Walungu was the most cited territory of residence (26%), followed by Bukavu (19%), Kabare (11%), Kalehe (9%) and Mwenga (4%). Other territories cited were beyond those of the selected health zones of interest and may be linked to individuals who had travelled from other regions prior to sustaining injuries in the selected locations. Whilst these territories border KBNP, the data is collated across a large area and therefore it is not possible to discern any relationship to the protected area (see Figure 4.20). Information on the setting of the incident that led to the conflict-related injury was only recorded in 9% of the records and in each case the location was cited as the residence. This low number of records makes it difficult to ascertain whether the location of a majority of incidents occur within a victim's residence. The cause of injury was only available in 17% of the records, totalling 18, with looting cited the most (13%).

Figure 4.19: Identity of perpetrators of conflict related injuries from medical records of selected health facilities* in South Kivu from January 2004 - June 2007



*General Hospital, Kaziba Hospital, Walungu Hospital, Kaniola Hospital, Mubumbano Hospital, Cifunzi/Fendula Hospital, Bunyakiri Hospital, Minova Referral Hospital, Kalehe/Katana referral Hospital, Kabare Referral Hospital, Bukavu General Hospital, Kadutu General Hospital, Ciriri General Hospital and Bagira General Hospital in South Kivu from January 2004 to June 2007

Figure 4.20: Territory of residence of patients of conflict related injuries from selected health facilities* in South Kivu from January 2004 - June 2007



* Katana General Hospital, Kaziba Hospital, Walungu Hospital, Kaniola Hospital, Mubumbano Hospital, Cifunzi/Fendula Hospital, Bunyakiri Hospital, Minova Referral Hospital, Kalehe/Katana referral Hospital, Kabare Referral Hospital, Bukavu General Hospital, Kadutu General Hospital, Ciriri General Hospital and Bagira General Hospital.

Whilst the conflict-related injury data did not yield any insights into a relationship between victimization and the protected areas, it established similar patterns in relation to the cause of the injury (by weapons) and the gender of the victims (primarily male) to the results from North Kivu. As the data is not considered to be sufficiently robust to establish a relationship between distance from the park boundary and levels of conflict-related injuries, no statistical analysis were conducted. The poor quality documentation and inability to access all the sites due to insecurity highlight some of challenges of collecting secondary data in conflict zones.

4.3.2 Sexual violence around Kahuzi Biega National Park

Aggressors of sexual violence were overwhelmingly associated with militarized personnel. The primary aggressors were the FDLR (39%) or a combatant (43%). Other aggressors were identified as from the FARDC (7%), civilian (8%), member of the Mayi-Mayi militia group (1%) and the police (0.07%). Whilst it is impossible to know the extent to which the victim is accurately providing information on the aggressors, the overwhelming majority were members of an armed group. A similar grouping of aggressors was also revealed in the first six months of 2007 in which 6% of the records did not identify the aggressor. The FDLR constituted the most commonly recorded group, accounting for 49% of the records. In 38% of the records the aggressor was identified as a combatant and the remainder of the records identified civilian (3%), FARDC (3%) and Mayi-Mayi (0.5%) (see Figure 4.21). Similar patterns to North Kivu in relation to the gender of victims of sexual violence and aggressors were also seen in the South Kivu records. In 2006 and 2007, 95% and 96 % respectively of the victims were female. Throughout the period of analysis, detail on the identity of the aggressor was well captured. In 2006, 99.5% of the records included information on the identity of the aggressor. This finding supports the premise that the majority of victims of sexual violence are as a result of the conflict and further analysis of this data can provide insights into patterns of violent conflict.

Figure 4.21: Identity of aggressors of victims of sexual violence from Jan 2006 to June 2007 from Malteser, IMC and IRC supported health programs of Kaziba, Walungu, Kaniola, Mumuhubano, Kalonge, Bunyakiri, Itebero, Minova, Kalehe, Kabahre, Miti Murhesa and Bukavu Health Zones.

Identity of aggressors	Jan–Dec 2006 (%)	Jan–Jun 2007 (%)
Civilian	8.	3
Combatant	44	38
FARDC	7	3
FDLR	39	49
Mayi-Mayi	1	<0.5
Police	<0.5	0
Not available	<0.5	6

Understanding the setting in which the incident occurred can provide insights into the role of different locations in perpetuating violence. Over 99% (99.4%) of the 2006 records indicated the setting in which the incident occurred. Over this period, the two main cited locations were in forest (48%) and at the residence of the victim (29%). Incidents in the victim’s field was cited in 15% of the cases and 6% of the records indicated that the incident happened on the road. Similar patterns were reflected in the first six months of 2007 although a higher percentage of records did not include the information (8%). Over this period, 47% of the records indicated that the incident occurred in the forest and 25% of the records indicated that the incident happened at the residence, 14% of the incidents occurred in the victim’s field and 3% highlighted the road as the location (see Figure 4.22). With a majority of incidents occurring in the forest, the setting of the incident is plausibly significant; where a forested area is available, this is where sexual violence is likely to occur. This gives credence to literature that ascribes links between violent conflict and forests (De Jong et al. 2007). In North Kivu, by establishing that a majority of incidents occurred in the field and residence, analysis utilizing residence of the victim became a

reasonable way to establish patterns of violence. Similarly, in South Kivu, where detail in records was more widespread, the same conclusions were reached.

Figure 4.22: Percentage breakdown of settings of incidences of sexual violence from Jan 2006 to June 2007 from Malteser, IMC and IRC supported health programmes of Kaziba, Walungu, Kaniola, Mumuhubano, Kalonge, Bunyakiri, Itebero, Minova, Kalehe, Kabahre, Miti Murhesa and Bukavu Health Zones.

Place of incident	Jan–Dec 2006 (%)	Jan–June 2007 (%)
Field	14.67	14.09
Forest	48.07	47.22
Home and road	0.07	0
Kidnapped & raped in forest	0.59	1.11
Kidnapped from residence	0.1	0
Market	0.31	0.37
Residence	28.51	25.46
River	0.84	0.37
Road	6.2	2.97
School	0.03	0
Not available	0.59	8.41

Initial regressions between victim rate and distance for 2006 and 2007 showed no significant relationship between the two. Furthermore, initial mapping of location of incidence or residence of victims of sexual violence did not discern any clear pattern in relation to the national park for both 2006 and 2007 (see Figure 4.23 and Figure 4.24). As militia groups are based throughout Bunyakiri (see Chapter 5), this had the effect of negating the impact of proximity to the

park on victim rate. Subsequent analysis removed any location of incidents from Bunyakiri health zone and in both 2006 (see Figure 4.25 and Figure 4.26) and 2007 (see Figure 4.27 and Figure 4.28) a significant negative statistical relationship between distance from the park and victim rate was observed. In 2007 this relationship was weaker due to the drop in numbers of victims compared to 2006 (see Figure 4.18). This analysis focused on Bunyakiri, Miti Murhesa, Kalonge, Kaniola, Walungu, Kahele, Mubumbano and Kabare health zones. The health zones of Nyangezi and Minova were excluded due to their distance from KBNP as were the health zones of Ibanda, Bagira Kasha and Kadutu as they are part of the provincial capital Bukavu and unlikely to reflect incidences as a result of the conflict due to the presence of the UN peacekeeping troops and FARDC. Nyatende health zone was also removed from the analysis as only one incident of sexual violence was reported; this is probably due to its proximity to Bukavu. Katana health zone was also removed from subsequent analysis due to the lack of data from the main hospital, Formulac (see Introduction to Section 4.3) and the small number of cases collected from Katana General Hospital (four) was insufficient to establish any pattern of victimization.

Figure 4.23: Number of victims of sexual violence by location around the mountain sector of Kahuzi Biega National Park from January to December 2006

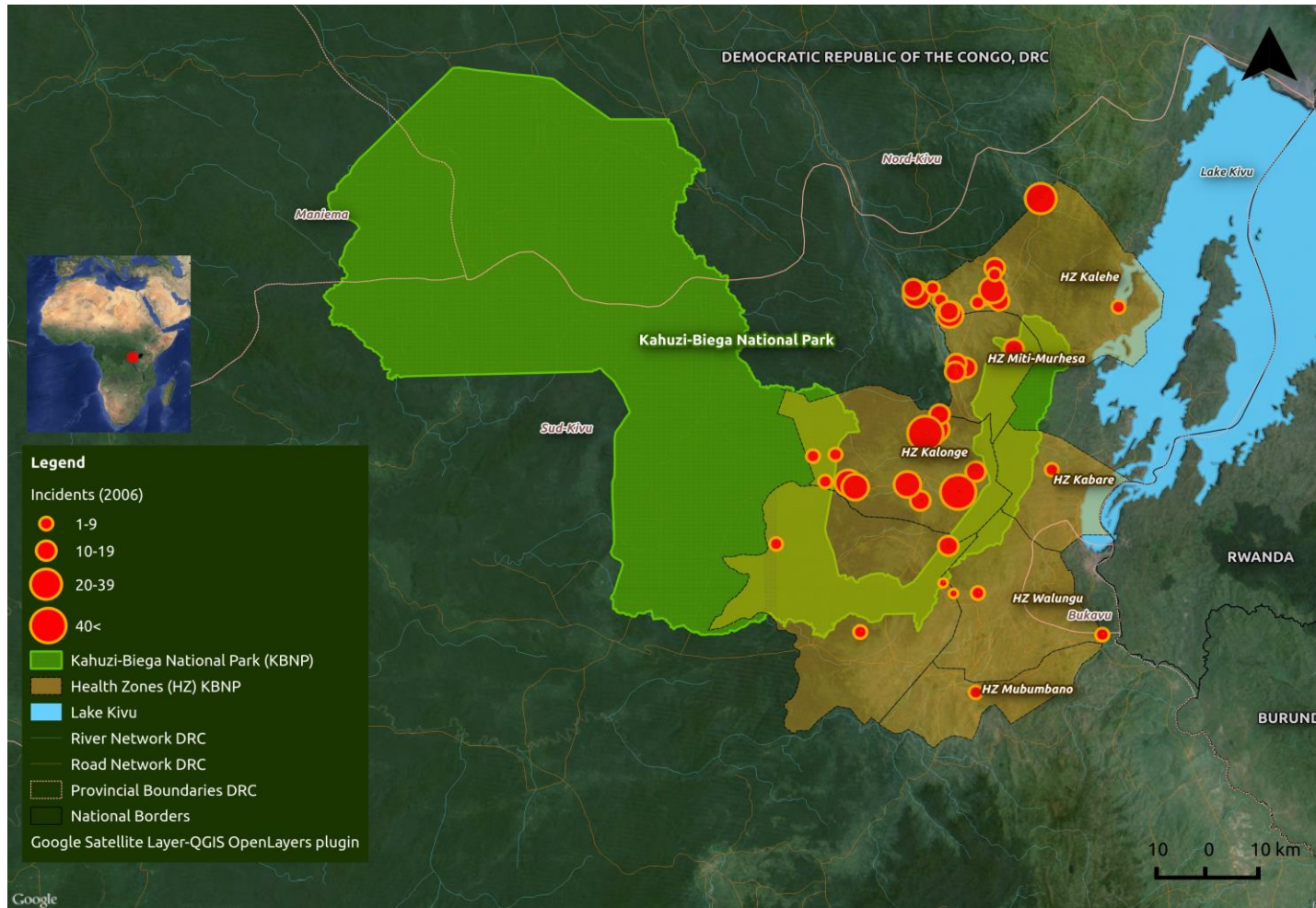


Figure 4.24: Number of victims of sexual violence around the mountain sector of Kahuzi Biega National Park from January to June 2007

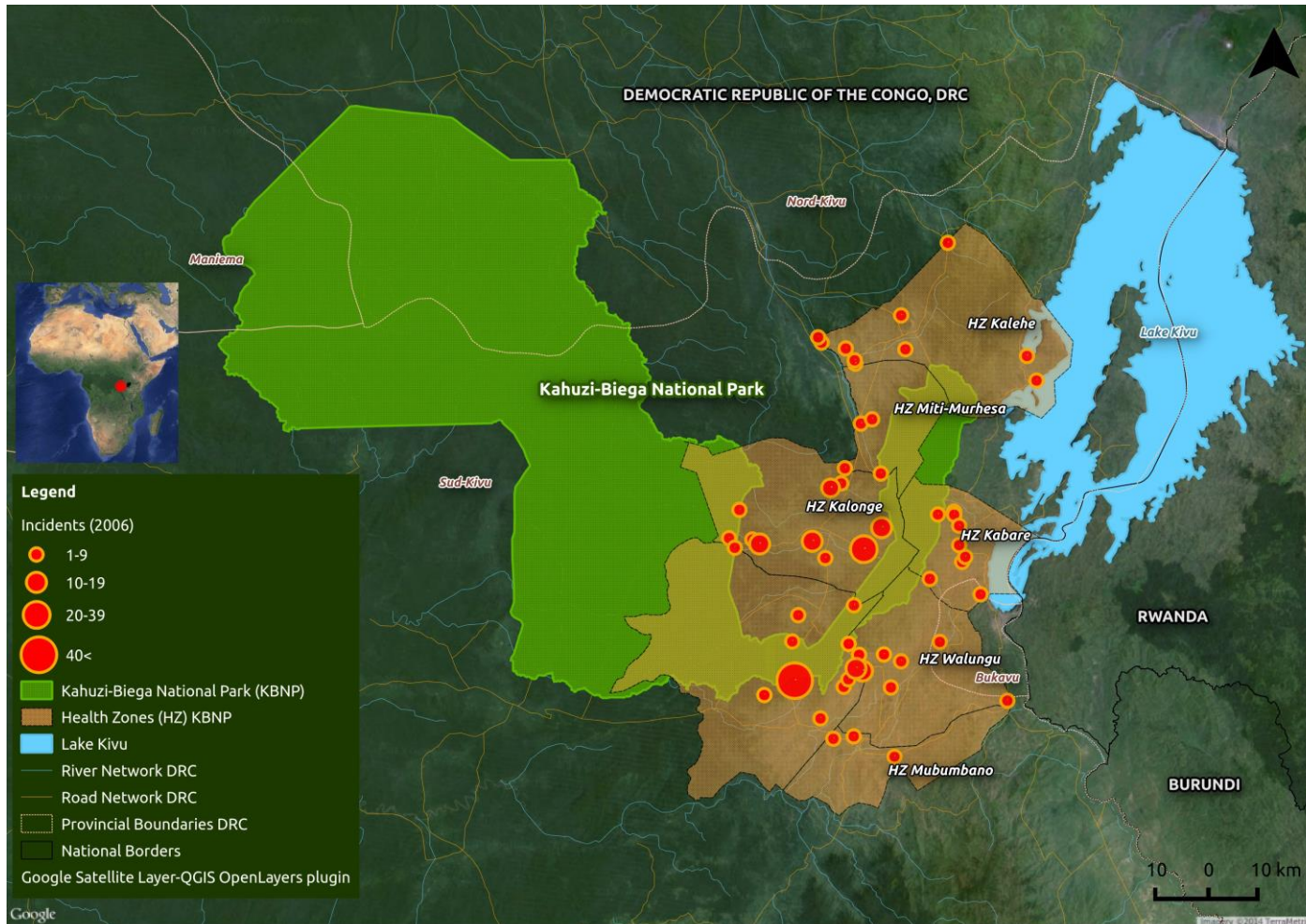


Figure 4.25: Victim rate from sexual violence from selected health zones* around the mountain sector of KBNP with and without Bunyakiri included by distance, log (distance) and distance² in 2006

	2006 victim rate			2006 victim rate (less Bunyakiri)		
Distance	0.028			-0.111**		
	(0.05)			(0.03)		
Log (distance)	0.112			-0.711**		
	(0.37)			(0.205)		
Distance		0.107			-0.244	
		(0.188)			(0.135)	
Distance ²		-0.004			0.008	
		(0.009)			(0.008)	
<i>Observations</i>	106	106	106	83	83	83
<i>Intercept</i>	1.185*	1.214	0.895	1.761***	2.187***	2.165***
	(0.56)	(0.78)	(0.868)	(0.31)	(0.403)	(0.505)
<i>F-test</i>	0.262	0.090	0.228	10.182**	12.007**	5.614**
<i>R²</i>	0.002	0.001	0.004	0.112	0.129	0.123
<i>Adjusted R²</i>	-0.007	-0.009	-0.015	0.101	0.118	0.101

Standard errors are in parentheses. *p<0.05, **p<0.01, ***p<0.001

*Kabare, Kahele, Kalonge, Kaniola, Miti Murhesa, Mumbumbano and Walungu

Figure 4.26: Victim rate by distance from KBNP from January to December 2006 for Kabare, Kahele, Kalonge, Kaniola, Miti Murhesa, Mumbumbano and Walungu Health Zones

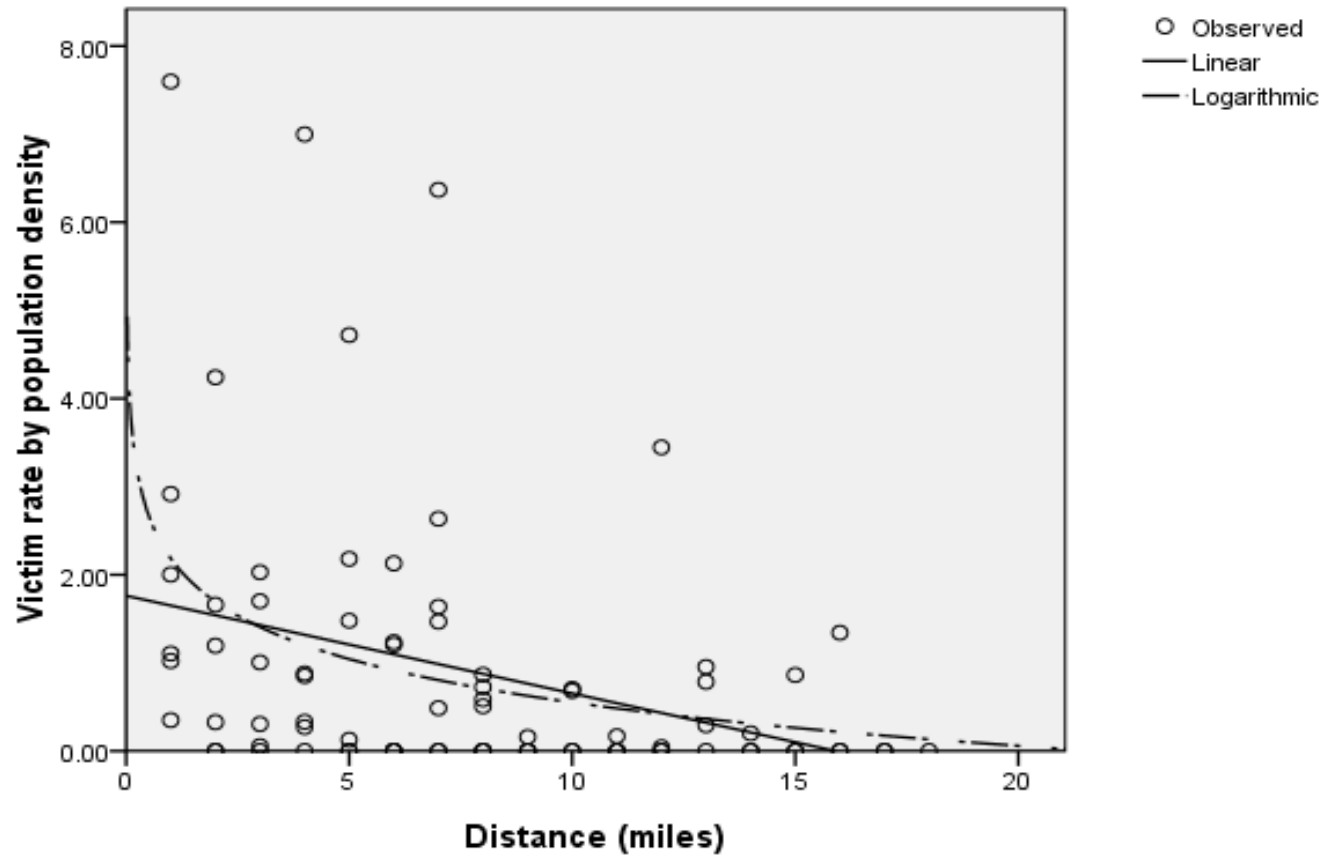


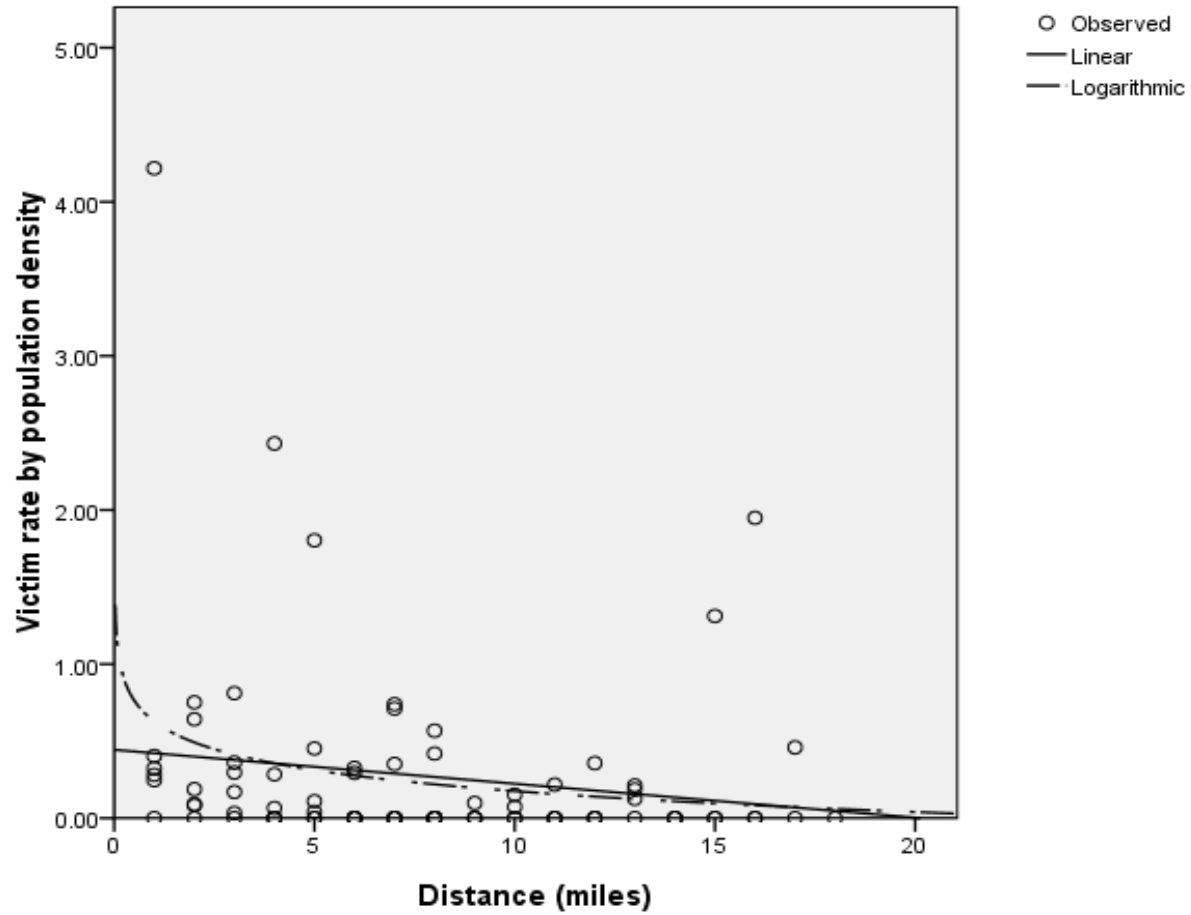
Figure 4.27: Victim rate from sexual violence from selected health zones* around the mountain sector of KBNP with and without Bunyakiri included by distance, log (distance) and distance² from January to June 2007

	2007 victim rate			2007 victim rate (less Bunyakiri)		
Distance	-0.010 (0.010)			-0.022 (0.015)		
Log (distance)		-0.107 (0.070)			-0.196* (0.085)	
Distance			-0.034 (0.036)			-0.141* (0.055)
Distance ²			0.001 (0.002)			0.007* (0.003)
<i>Observations</i>	106	106	106	83	83	83
<i>Intercept</i>	0.384*** (0.107)	0.504** (0.146)	0.473** (0.164)	0.444 ** (0.132)	0.628*** (0.168)	0.805*** (0.207)
<i>F-test</i>	0.911	2.332	0.709	2.283	5.276*	3.665*
<i>R²</i>	0.009	0.022	0.013	0.027	0.061	0.084
<i>Adjusted R²</i>	0.000	0.012	-0.006	0.015	0.050	0.061

Standard errors are in parentheses. *p<0.05, **p<0.01, ***p<0.001

*Kabare, Kahele, Kalonge, Kaniola, Miti Murhesa, Mumbumbano and Walungu

Figure 4.28: Victim rate by distance from KBNP from January to June 2007 for Kabare, Kahele, Kalonge, Kaniola, Miti Murhesa, Mumbumbano and Walungu Health Zones



A significant correlation was established using sexual violence data when the data from Bunyakiri was removed. Further detail on the spread of violence in Bunyakiri is expanded on in Chapter 5 and demonstrates the pervasive presence of armed groups throughout the territory. By removing Bunyakiri, a relationship to the park become discernible and was similar to findings in North Kivu where a higher victim rate was encountered closer to the boundary of the park. As in North Kivu, the results obtained in this section indicate that the conflict-related injury data was not sufficiently robust to establish links to the protected area, but the sexual violence data established the mountain sector of KBNP as a centre of violence. With the highest number of reported perpetrators being members of a militia group or the Congolese army, the association between parks and conflict is implied. In addition to this, the positive significant correlation in data from 2007 in North Kivu between locations of conflict-related injury and victims of sexual violence indicates that locations of sexual violence are also locations of conflict. This result further confirms the use of sexual violence data to establish patterns of violent conflict.

4.4 Conclusion

Localised research methods made it possible to understand the effect of the national park and terrain on violence in this analysis. In lieu of the lack of access to MONUC's information and other armed groups medical records, collecting both injury and sexual violence data from civilian health facilities was utilized instead. By subjecting it to collating and mapping, patterns of violence in relation to the Central and Southern sectors of VNP and mountain sector of KBNP were discerned. The local scale of investigation made it possible to incorporate variations in terrain and therefore obtain insights into how this may be a factor.

The challenges of obtaining meaningful data from a region of high insecurity were highlighted by the lack of access to certain areas by data collectors, quality

of documentation, record keeping and access to data from certain agencies. It was therefore necessary, if quantitative analysis was to be conducted, to obtain large datasets in order to establish any meaningful trends.

Collection of data over a substantial period of time and across a wide geographic area, further mitigated the impact of patchy data. Lack of detailed satellite location information and the difficulty of accessing areas to obtain GPS point coordinates meant that utilizing paper maps, manually locating villages and digitizing written information significantly increased the mapping of locations of violence. Data collection and obtaining sufficient detail for analysis had to be flexible to respond to the difficulty of obtaining information and acknowledges the tentative nature of the findings.

The initial focus had been on analysis of health data that was intrinsically linked to conflict, i.e. injury data. Although the conflict-related injury data was not sufficiently detailed to obtain any insights into links with the protected areas, it was able to show that the areas in proximity to the parks experienced violence in a similar way, namely men were the primary victims of gunshot injury in both sites. Furthermore, correlations between the injury and sexual violence data in North Kivu meant that the latter could justifiably be used as a proxy for conflict-related violence. The similarities between VNP and KBNP meant that subsequent comparisons were valid. Findings from analysis utilizing sexual violence data were then used to make inferences about patterns of conflict in relation to national parks. Focusing on addressing the health consequences of sexual violence in the region, not only enabled this but also brought to the fore a new dimension in links between violent conflict, gender and protected areas. Whilst sexual violence is acknowledged to be a part of violent conflict (Baaz and Stern 2009), it is rarely used to establish patterns and drivers of conflicts and this study is unique in this respect. Researchers tend to focus on more intuitive connections to establish drivers of conflict such as

presence of weapons, incidents of clashes between opposing factions and reports in the media of insecurity (Braithwaite 2010; Pickering and Kisangani 2009; Raleigh and Hegre 2009).

Around both VNP and KBNP correlations between levels of sexual violence and proximity to the park were obtained. However, as violence was also occurring across a range of terrains, the significance of one type of landscape over another was not found to be a factor contributing to the dynamics of conflict in this context. This finding therefore points to a relationship between the space of a national park, which is acting as a centre of violence and the dynamics of the armed conflict in the region as oppose to the terrain found within the national park. It raises questions about the control and use of the national parks by armed groups. Political ecologists argue that the amount of resources is not significant but rather who has access and controls its benefits. Distilling what the 'benefits' are of access and control are key questions that are addressed moving forward. Fundamentally, this chapter confirms that the space of a national park is a variable in armed conflict although the driver of this is not discerned from the analysis presented here. It also reinforces the value of utilizing localized methods and validity of civilian data to gain insights into conflict dynamics.

5 Micro-dynamics of violence around the mountain sector of Kahuzi Biega National Park.

'We were looted and many difficulties and problems we are facing are coming from the Park.'

Household Survey respondent from Ngweshe chieftaincy

Eighteen months after the invasion of Iraq by coalition forces in March 2003, the estimate of civilian mortality from a household survey conducted there by a team of American and Iraqi epidemiologists was 20 times higher than US government figures and 10 times higher than findings from the British-based Iraq Body Count Project (Brown 2006). The British and US governments dismissed the figure of 655,000 excess deaths greater than their estimate and attributed what they saw as a gross overestimation to weaknesses in the survey methodology. The study by the epidemiologists had employed a cluster-based household survey methodology which was subsequently found to be sufficiently robust and the estimates to be reflective of the increase in civilian mortality since the end of Saddam Hussein's regime (Roberts et al. 2004; Steele and Goldenberg 2008). A cluster based household survey is the method utilized in this chapter to present results that responds initially to the following research question of whether *national parks are centres of violence in that they are sources of violence and victimization rates decline as the distance from the park increases*. It also seeks to clarify *national parks are spaces devoid of state presence contributing to their utilization by militias as bases from which to raid and loot households in proximity to the park*.

Although utilizing sexual violence data in the previous chapter enabled correlations between levels of violence and proximity to the park to be established, this chapter seeks to substantiate these finding and also generate more disaggregated subjective/objective data to further inform the context of the linkage. Utilizing different data and method meant that it was possible to

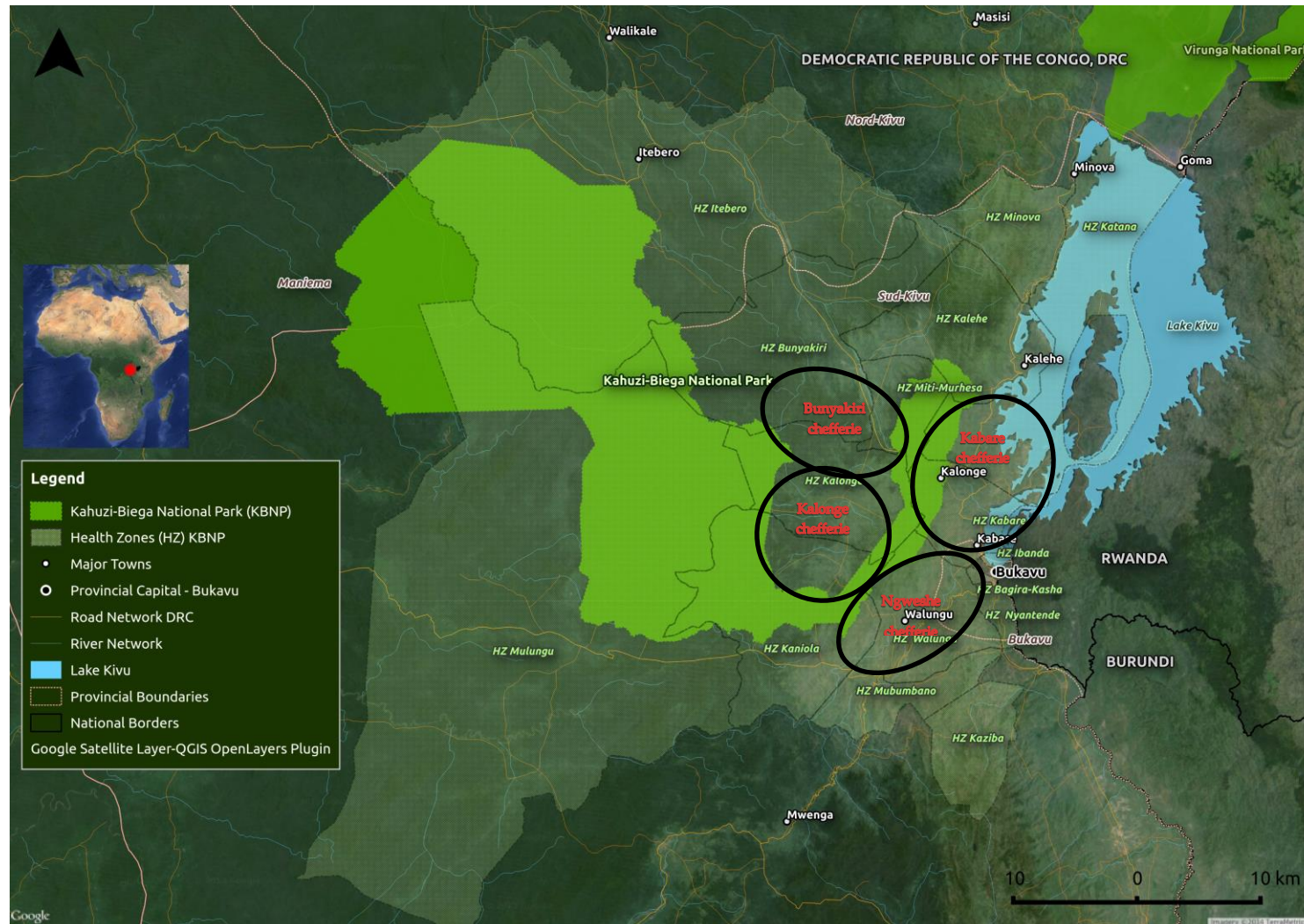
control for more variables. For this reason, I designed and administered a household survey utilizing probability proportional to size (PPS) sampling methodology and SPSS. A total of 965 questionnaires were completed. The focus of the data collected via the household survey was primarily to establish information on demographic profiles, household location, livelihoods and real and perceived victimization. It sought to establish if differences in households in proximity to the national park had specific attributes, including location in specific chieftaincies, that attracted increased violence. The uses of such household surveys are increasingly becoming a valuable methodology to help understand the impact of conflict on civilians and inform analyses of drivers of conflict. This attention to micro-level data is gaining credence (Justino 2009). This chapter therefore primarily presents the results and interpretation of a household survey conducted around the mountain sector of Kahuzi Biega National Park (KBNP), adding robustness to linkages between violence and garnering insights into possible drivers.

Ultimately I wanted to explore in more specific detail whether a household's location, not only in relation to distance from the park but within different administrative boundaries (chieftaincies) was correlated to levels of violence. As distance from the national park was found to already be a factor to levels of violence in Chapter 4, it was assumed that similar findings would be replicated here. However, given the limitations of the incident data as well as a desire to understand more thoroughly what was going on, the household survey offered a method not only of confirming the linkage and but also of drilling deeper. In order to establish the relationship between distance from the park and violence, sampling was conducted along two distance strata: households located between the boundary of the park and 5 km from the park and households beyond 10 km of the boundary of the park. The first level of sampling within each stratum was the identification of four chieftaincies that border KBNP. Chieftaincies are administrative boundaries that have both cultural and political status. The four

chieftancies identified for the household survey were Kalonge (located in the nexus between the mountain and lowland sectors of KBNP), Bunyakire (located on the western edge of the mountain sector of KBNP), and Ngweshe and Kabare (both located on the eastern side of the mountain sector of KBNP) (see Figure 5.1). This level of sampling enabled a more refined analysis of the relative importance of location and controlled for bias in relation to ethnicity.

The findings support the premise that protected areas can be a variable in violent conflict. Close to half (47.4%) of the households surveyed predominantly associated insecurity with KBNP and this included attacks from militia groups using the park and pillaging and sexual violence against women. The findings from this chapter also highlighted other factors that influence violent events inflicted at the household level. Distance from KBNP, household size, value of livestock wealth prior to 1994 and location within certain chieftancies significantly impacted on the probability of a respondent's household being looted. The geographic location of the chieftancy in relation to KBNP was significant. Kalonge is located in the nexus of the mountain and lowland sector of KBNP. This was a factor in the lack of discernible differences between the distance strata (generally) being identified. This is as a result of militias occupying both the mountain and lowland sectors of the park. Similarly in Bunyakiri, the presence of militia groups based throughout the chieftancy also resulted in no discernible patterns emerging between the two distance strata in relation to the aforementioned variables. Households closer to the boundary of KBNP owned fewer assets and livestock indicating less wealth. Whilst this is not necessarily ascribed to the conflict, it does indicate increased vulnerability of these households to forced recruitment and providing services to armed groups. Furthermore, households within 5 km of the boundary of KBNP had on average more different types of livestock pre 1994 and in 2007 than households beyond 10 km of the boundary of KBNP, increasing the likelihood of raiding events by armed groups.

Figure 5.1: Map of approximate locations of the chiefdoms of Bunyakiri, Ngweshe, Kalonge and Kabare in South Kivu



However, a number of the factors presented mixed results. There were no clear patterns in relation to the impact of insecurity on the non-use of owned land between the distance strata of Kabare; no discernible pattern in relation to distance from KBNP and changes in livestock ownership, although the economic situation of the households sampled worsened over the period of 1994 to 2007; relative differences in the value of materials used to construct households yielded no insight into a possible role of the national park; and household type. Whilst these results did not consistently relate changes at the household level to effects associated with KBNP, they did show the variety of impacts that the conflict in the region has had on the socio-economic situation of local populations.

This chapter initially presents details of data collection and analysis, including relevant aspects of the sampling and challenges to collecting data in a politically dynamic context. The subsequent sections on the data collected break down the findings along the socio-economic situation of households in relation to distance from the park and chieftaincy of residence, patterns of looting on individual households and finally, how the household respondents perceive victimization in relation to the national park. Throughout the analysis, the question of whether KBNP is a significant factor is explored through the relationship of distance. The value of the method of a household survey to establish linkages is explored in the discussion.

5.1 Questionnaire and implementation of the survey

The area to be surveyed around the mountain sector of KBNP was divided into two distance-related strata in order to establish differences in victimization and wealth in relation to the protected area. These distance strata were the area within 5 km of the boundary of the park and the area beyond 10 km of the boundary of the park. The difference in strata was based on discussion with

park staff in relation to their experience of distance militias travel from its boundary to their base in the park. Verbal estimates did not exceed 5 km and this was then used as the boundary for households in proximity to the national park. In order to control for outcomes in relation to ethnicity, culture and language, the boundary for households further away from the park could not move beyond certain administrative and cultural boundaries. A distance of 10 km was considered to be sufficient so as to ensure that the households away from the park were not placed out of context to households in proximity to the park.

Each stratum was then surveyed using a three-stage, household-based cluster sampling technique. In the first stage, four *groupments* that border the mountain section of KBNP were selected: Kabare, Ngweshe, Kalonge and Bunyakiri. *Groupments* or chieftaincies represent the third administrative layer after provinces and territories (see Figure 5.1). They are administrative boundaries that have both cultural and political status. Under their cultural system they are referred to as *chefferies*, translatable as chieftaincies, are headed by traditional leaders. *Localities*, 'villages' in English and referred to as such from here on, represent the next administrative layer after chieftaincies and the second stage of sampling. All the villages within a 5 km distance and beyond a 10 km distance of the park were identified for each chieftaincy. In this second stage, at least a minimum of 10% of villages was randomly selected from each chieftaincy. In Kabare and Kalonge the number of randomly selected villages within the two strata represented 25% of the total, in Bunyakiri it was 50% and in Ngweshe 10%. The percentage differences were based on logistical constraints, i.e. because the Ngweshe chieftaincy covers such a large geographical area, the minimum of 10% was utilized (see Figure 5.3).

The questionnaire sought to establish the wealth of respondents by acquiring information on the type and amount of assets owned at the time of the survey.

The impact of conflict on the wealth of households was analysed through information collected on the type and amount of assets prior to the initiation of the conflict in 1994. From these data relative differences in victimization based on the differing loss of assets in relation to distance from the national park were analysed. Assets included livestock, land and material assets, such as a radio or motorbike. Additional questions to establish levels of victimization focused on the episodes of looting that households had suffered and the reasons for the demise or absence of members of the household. An additional section of the questionnaire was designed to gather data on the presence and type of weapons in the household and the evidence of weapon shots and their frequency. Finally, respondents were asked about their perceptions of the protected area, how they interacted with the national park and if this had changed with the influx of Rwandan refugees in 1994⁶. This information was collected in six sections of the questionnaire and a seventh section focused on the quality of the interview from the perspective of the interviewer (see Appendix 4, Figure 5.2).

⁶Over the period from 1996 to 2006 due to the insecurity, much of the mountain sector and virtually the entire lowland sector of KBNP were inaccessible by the park rangers (The Durban Process. 2006. "Campaign Report June 2006.") Large areas of the corridor linking the highland to the lowland sector were being deforested and turned to agricultural lands. In 1994 approximately 450,000 refugees settled in camps in proximity to KBNP. As a result of the increased demand for fuel wood, similar effects of refugees on deforestation of the park to what had been observed in VNP were seen in KBNP. There was also an increase in the cultivation of crops within the park. Most of the refugees returned to Rwanda with the invasion of the ADFL in 1996 (Yamagiwa, Juichi. 2003. "Bushmeat poaching and the Conservation Crisis in Kahuzi Biega National Park, Democratic Republic of Congo." *Journal of Sustainable Forestry* 16(3/4):115-135.)

Figure 5.2: Outline of section headings and details sought by questionnaire

	Section heading	Section notes with details inserted of the particular focus
1	Interviewer's information	Information about the date and location of the interview and the interviewer's details. .
2	Household roster	Details about the current residents of the household including whether current and previous residents have migrated into or away from the household as a result of the conflict.
3	Socio-economic situation	A comparison between the household's current socio-economic situation and how it had changed since the Rwandan genocide in 1994. Current sources of income. Information on livestock and land use prior to the conflict and at the time of the survey.
4	Satisfaction with home area	To estimate level of insecurity in the area and presence and type of arms.
5	Deaths and other missing members of the family	Details on any deaths or abduction of household members since the start of the conflict in 1996.
6	Relationship with national parks and conservation	Insights into the respondents' perceptions of the impact of the park in relation to the conflict and how its use might have changed since the Rwandan genocide in 1994.
7	Additional information	The interviewer's assessment of the quality of the responses given.

Figure 5.3: Sampling details of household survey around the mountain sector of Kahuzi Biega National Park

Chieftaincy (showing confidence interval at 95% confidence level)	Ethnic group	% of villages selected from within the chieftaincy	Name of villages selected ≤ 5 km	Population	Total number of households ¹ (7.2 individuals per household ⁴)	No. of households to be interviewed	Actual number of households interviewed	Name of villages selected ≥10km	Population	Total no. of households per village	No. of households to be interviewed	Actual number of households interviewed			
Kabare (6.54%)	Shi	25	Kabushusa	5,921	822	27	28	Mbonabono	6,494	902	30	31			
			Mumoshho					1,385					192	6	8
			Ludaha					12,636					1755	57	57
			Irambira Sud					11,333					1574	52	55
			Kadjuchu					8,454					1174	38	38
			Kakondo ²					422					59	2	0
<i>Subtotal</i>				<i>5,921</i>	<i>822</i>	<i>27</i>	<i>28</i>		<i>40,724</i>	<i>5656</i>	<i>185</i>	<i>189</i>			
Ngweshe (4.9%)	Shi	10	Chagala	2,264	314	63	63	Chazi	569	79	16	16			
			Mbuba					2,123					295	59	59
			Cisimba					1,172					163	32	31
<i>Subtotal</i>				<i>5,559</i>	<i>772</i>	<i>154</i>	<i>153</i>		<i>6,101</i>	<i>847</i>	<i>169</i>	<i>168</i>			

Chieftaincy (showing confidence interval at 95% confidence level)	Ethnic group	% of villages selected from within the chieftaincy	Name of villages selected ≤ 5 km	Population	Total number of households ¹ (7.2 individuals per household ⁴)	No. of households to be interviewed	Actual number of households interviewed	Name of villages selected ≥10km	Population	Total no. of households per village	No. of households to be interviewed	Actual number of households interviewed
Kalonge (8.39%)	Shi	25	Bumoga	2,300	319	29	29	Muhumba	1,716	238	22	20
			Kakunda	2,167	301	28	28	Misinga	837	116	11	11
								Mushadu	2,815	391	36	36
<i>Subtotal</i>				4,467	620	57	57		5,368	746	69	67
Bunyakiri ³ (5.53%)	Tembo	50	Mulonge	2,997	416	15	15	Bitobolo	9,025	1253	46	46
			Mushunguti	3,310	460	17	16	Katshiri	5,440	756	27	28
			Bagana	4,744	659	24	23	Makuta 2	3,728	518	19	19
			Maibano	3,510	488	18	18	Lwana	4,995	694	25	26
								Mingazi 1/2	6,658	925	34	33
								Irangi	6,870	954	35	35
								Mihanda	4,290	596	22	24
								Ciriba	3,935	547	20	20
<i>Subtotal</i>				14,561	2022	74	72		44,941	6,242	228	231
TOTALS: (3.07% confidence interval at 95% confidence level)				30,508	4,237	312	310		97,134	13,491	651	655

¹ Population estimates from each village were obtained from the office of the Chief of the selected chieftaincies. Population information is collected on a quarterly basis by this office.

² No survey work was completed here due to the low number of households to be interviewed.

³ Population estimates for Bunyakiri were obtained from the Referral Hospital, which had conducted a census in early 2007. The office of the chief did not have the relevant information.

⁴ Household size from IRC mortality survey (Ben Coghlan et al. 2004)

The availability of detailed maps of the proposed survey area was limited as was availability of information on the population of individual villages. The lack of detailed population data at the provincial capital, Bukavu, meant that it had to be collected from the office of the chief (except for Bunyakiri⁷) before the villages to be surveyed could be selected. The office of the chief collects population information, namely the total number and gender of residents in a village, on a regular basis for the purposes of local tax revenue collection. In order to establish which villages were within 5 km and which were beyond 10 km of KBNP, individuals who knew the areas well and were from these chieftaincies identified the villages from the lists provided by the office of the chief. In addition to this, the sampling relied on the accuracy of the population data from the office of the chief. This was considered to be the most reliable population data at the time. Due to the pervasive insecurity and financial resource constraints it was not possible to visit the villages and establish the number of households directly from village chiefs and local leaders prior to embarking on the data collection. Furthermore, villages that were known to be particularly dangerous were removed from the lists prior to random selection.

The number of households to be interviewed per village was proportional to the estimated size of the population and the total number of questionnaires that could be completed given the logistical and financial constraints (see Figure 5.3). Interviewers selected households, the final and third stage of sampling, by starting at the centre of a village, choosing a random direction and estimating the total number of houses in that direction (n). The first household to be surveyed was then randomly selected by choosing a number between 1 and the total number of houses (n) in that direction. Subsequent households were then

⁷ Population data per village was collected from Bunyakiri Hospital. The hospital had conducted a census of villages in order to be able to develop their health programme earlier in the year (2007). Bunyakiri chieftaincy had recently been created by the RCD-Goma.

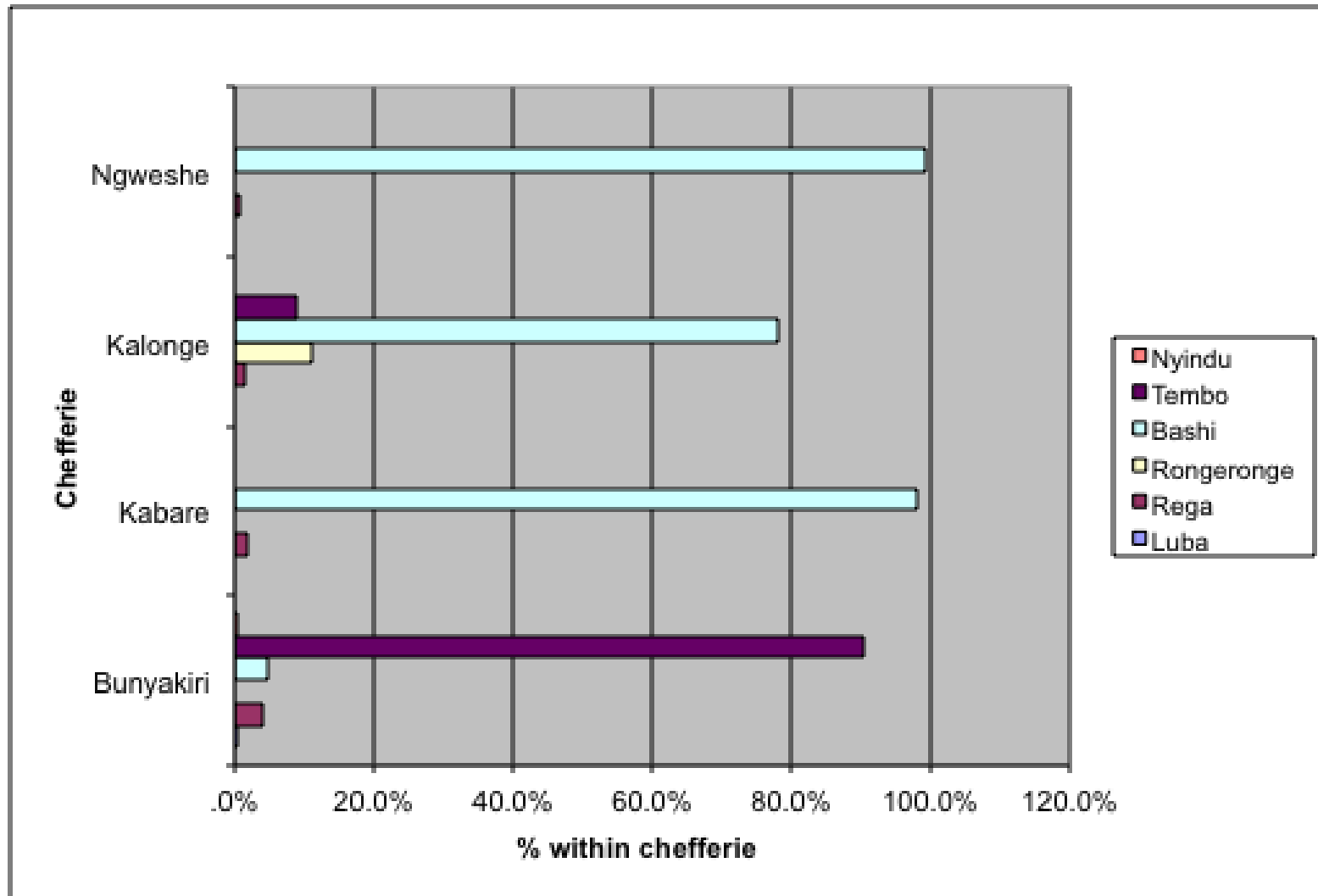
selected by proximity until the number of households interviewed equalled the number that had been calculated as a proportion of the estimated size of the population. This is based on the method of the World Health Organization Extended Program on Immunization (WHO/EPI) that was used to establish levels of mortality in DRC (Ben Coghlan et al. 2004). Figure 5.3 shows the percentage of villages within each chieftaincy that were randomly selected for sampling, the names of the villages selected, the total number of households in the village and the number of households to be interviewed within each village. Of the 965 households visited, 310 households were interviewed within 5 km of the boundary of the park and 655 households were interviewed beyond 10 km of the park.

Two supervisors managed a team of 16 interviewers. Once initial training was completed, only restricted access to the teams in the field was possible due to insecurity. No contact with the team in Bunyakiri throughout their time in the survey area was made, even by mobile. One site visit was made to the team in Ngweshe due to their proximity to Bukavu. It was not possible to supervise any actual interviewing in the villages primarily due to the difficulty of accessing the areas due to the insecurity and their remoteness. Teams of interviewers would stay within or near villages where they were conducting the interviews. The presence of a foreigner during interviews would also likely have introduced biases into the responses and potentially compromised the safety of the interviewers and their supervisors. The establishment of the centre of the villages and the monitoring of the interviewers moving reliably to different households was entirely managed by two Congolese supervisors recruited for the job. Although this increased the possibility of weak interviewing, the size of the sample is assumed to be robust enough to give an indication of trends despite the unavailability of additional supervision during data collection. Interviews were conducted with the household head where possible, otherwise

with the most senior member of the household present. The head of the household was available in 82% of the households visited. The remainder of the respondents were either a spouse to the household head (10%), child to the household head (4%), parent (2%), sibling (1%) or in-law/grandparent/aunt/uncle(<0.5%). Interviewers also informed respondents at the onset of the interview that their name would not be recorded. Households with no residents were bypassed and not revisited and the interviewers would move to the next household until the assigned number of households for interviewing in a particular village was reached.

The main ethnic groups that border this area of the park are Bashi, Rongeronge and Tembo. The questionnaire was translated into French and the interviewers would further translate the questions into the local languages of Tembo or Bashi depending on which chieftaincy they were in. Each interviewer spoke French and one of the local languages fluently. Interviewers from the Bashi and Rongeronge tribes spoke Mashi, and 11 interviewers were recruited to conduct the survey in these areas. Five Batembo speakers were recruited to conduct interviews in the Tembo areas. Sampling for the questionnaire along chieftaincy boundaries enabled ethnicity to be controlled as most chieftaincies sampled were ethnically relatively homogenous. The predominant tribe in Bunyakiri were the Tembo tribe whilst the Shi (Bashi) were the most common ethnic group in the other three chieftaincies (see Figure 5.15). Two chieftaincies that border this section of the park were not included. These were Nindja, due to insecurity, and Kalahe as it incorporates a small area bordering the park that is inhabited by the Havu ethnic group, it was beyond the resources available to include a further ethnic group into the survey.

Figure 5.4: Ethnicity of sampled households by chieftaincy.



Data was initially recorded on Excel spreadsheets before incorporation into SPSS Version 16.02 for statistical and descriptive analysis. Qualitative responses were collated (see Appendix 5) and cross-tabulations were run with a section of the data set whilst data entry was ongoing. These results were presented to a cross-section of humanitarian and conservation practitioners at the UNOCHA office in Goma to solicit initial reactions to the preliminary findings. Subsequent cross-tabulations with the entire dataset established which aspects should be further analysed. Many of the parameters in the community survey are in nominal and ordinal scale; non-parametric tests were the main approach utilized to establish associations. Much of the initial analysis utilized contingency tables with the data divided along the distance strata and geographic area of the particular chieftaincy. The chi-square significance tests were used to investigate various relationships and associations as well as binary and linear regressions (see Figure 5.5). Different indexes developed for violence were based on the Penal Code of Uganda as this was easy to obtain and was regionally relevant as Uganda borders the Democratic Republic of Congo to the east. Wealth indexes were developed using the United States Dollars (USD) value in 1994 and at the time of the questionnaire of different assets e.g. motorbike, radio. This was then combined to give a representative value of owned assets. The USD values currently and historically were obtained from individuals living in the various areas sampled.

Figure 5.5: Variables analysed with KBNP household survey dataset

Explanatory variables	Response variables
Distance from KBNP	Whether a household had been looted
Wealth	Differing indexes of violence
Household size	Migration to/from the household
Gender of the respondent	
Age of the respondent	
Gender of the household head	
Distance from militarised base	

5.2 Socio-economic situation of respondents

This subsection attempts to establish if linkages exist between changes in household structures as a result of the conflict and the proximity to an area of high biodiversity. It seeks to establish if there are any differences at the household level in relation to distance from the park and the socio-economic situation of respondents. The analysis in this sub-section focuses on four aspects that were used to identify and establish the socio-economic situation of respondents: the number and composition of household residents; ownership and use of assets; structure of house; and numerical changes in ownership of livestock. Only the last three provided any evidence of influence of the protected area.

5.2.1 Use of owned land and insecurity

Shifts in the ability to maintain livelihood strategies as a result of conflict are likely to be due to changes in household structure. It was therefore considered relevant for the survey to investigate the impact of conflict on wealth. As the majority of the population were subsistence farmers with little formal employment, establishing wealth of a particular household was based on the household type and amount of assets owned. Assets included land and material objects such as a motorbike, radio and livestock; and the household type consisted of data on the construction materials of a respondent's home. This sub-section on ownership and value of property and assets presents comparisons in the number and type of assets across and within chieftaincies against the distance strata from KBNP. The difference in numbers and types of livestock prior to the initiation of the conflict (1994) and then at the time of the survey was also collected and analysed in relation to distance from the park, within and across different chieftaincies.

Differences in the distance strata in relation to non-use of owned land is only observed in Ngweshe and Kalonge. Insecurity further away from the park was cited in Kalonge, unlike Ngweshe where it was more often cited by households closer to the park. The impact of insecurity on non-use of land was not discernible in Kabare, whereas in Bunyakiri insecurity was cited as high, both close to and away from KBNP. No clear differences or discernible patterns in the size of land owned and rented by chieftaincy and distance from KBNP emerge beyond the initial analysis (see Figure 5.6).

Figure 5.6: Average size of owned fields by chieftaincy within 5 km and beyond 10 km of KBNP

Chieftaincy	Within 5km of KBNP			Beyond 10km of KBNP		
	Mean (ha)*	<i>n</i>	Standard Deviation	Mean (ha)*	<i>n</i>	Standard Deviation
Bunyakiri	3.08	48	2.778	5.90	143	7.850
Kabare	2.06	27	2.054	3.06	118	10.723
Kalonge	6.43	37	8.924	1.80	49	2.118
Ngweshe	1.85	86	2.252	3.43	92	10.963

*One outliers – one household which owned 500 ha was excluded from the analysis as it was considered not to be representative and substantially above the average acreage. The average acreage owned by households is 3.68 ha.

However, reasons for non-use of land begin to reveal impacts of conflict. Of the households that owned land, 67.5% surveyed did not utilize all their land. Of the 268 households that reported reasons for not utilizing rented land, insecurity was the most cited, followed by poverty. When this is broken down by chieftaincy and distance from the park boundary, a different pattern to the collated results per distance stratum emerges. Considering the impact of the conflict in the region, insecurity is not mentioned as a reason for owned land not being utilized in Kabare, whilst it is the main reason throughout Bunyakiri (77% within 5 km of KBNP and 82% beyond 10 km). In Ngweshe, insecurity was given as a reason in 24% of the responses regarding non-use of owned land

within 5 km of KBNP but less so for households beyond 10 km of the park with only 7% of the responses citing it. In Kalonge, this trend was reversed, with 16% of responses within 5 km of KBNP citing insecurity, as a reason for not utilizing owned land compared to 40% of households beyond 10 km of KBNP (see Figure 5.7). In conclusion, the relative location of each chieftaincy presented a different pattern, although insecurity was a common factor in the non-use of owned land.

Figure 5.7: Households' reasons for not utilizing all their owned land as a percentage of the total responses from households surveyed within 5 km and beyond 10 km of KBNP in Ngweshe, Kalonge, Kabare and Bunyakiri

		Within 5 km of KBNP (%)	Beyond 10 km of KBNP (%)
Ngweshe	Poverty	51	70
	Other	0	3
	Left fallow	24	20
	Lack of available workers	11	23
	Insecurity	24	7
Kalonge	Poverty	21	40
	Other	0	3
	Left fallow	63	37
	Lack of available workers	0	7
	Insecurity	16	40
Kabare	Poverty	50	67
	Left fallow	50	27
	Lack of available workers	17	13
Bunyakiri	Poverty	31	22
	Other	4	3
	Left fallow	12	10
	Lack of available workers	4	3
	Insecurity	77	82

5.2.2 Ownership and type and use of property and assets

When ownership of assets was collated within the two distance strata, households closer to KBNP owned less, indicating a lower wealth. Whilst this is not clearly linked to the conflict and may have been the case prior to the onset of the war, it indicates a higher vulnerability of these households. These households are likely to be more affected by conflict due to their poorer status. In addition to this, Bunyakiri is distinct from the other chieftaincies due to the consistently higher levels of ownership of different assets.

The information on the type of assets owned was considered an indication of wealth. Households were asked whether they owned a local bicycle (wooden), Chinese-made bicycle, motorbike and radio. This next two paragraphs present the findings in relation to distance from KBNP and by chieftaincy. The average number of items across the sample was low, highlighting the high levels of poverty pervasive in the region. On average households would have 1.14 wooden bicycles ($n=21$, $SD=0.359$), 1.14 Chinese bicycles ($n=58$, $SD=0.348$), 1.25 motorbikes ($n=16$, $SD=0.447$) and 1.6 radios ($n=419$, $SD=1.011$). A consistently lower percentage of households closer to the boundary of KBNP owned a particular asset. Only 0.6% of the households sampled within 5 km of the boundary of the park owned at least one motorbike compared to 2.6% of households sampled beyond 10 km of the park. The percentage of households that owned at least one wooden bicycle, Chinese bicycle and radio within 5km of the boundary of the park were 1.9%, 4.8% and 39.4% respectively compared to 2.6%, 7.3% and 47.6% of households beyond 10 km of the park that owned these items. The relationship between ownership of assets and distance from the park was found to be statistical significant for households that owned at least one radio ($n=964$, $X^2=29.828$, $p<0.0001$, McNemar test), wooden bicycle ($n=963$, $X^2=254.816$, $p<0.0001$, McNemar test), Chinese bicycle ($n=965$, $X^2=176.431$, $p<0.0001$, McNemar test) and motorbike ($n=963$, $X^2=258.769$,

$p < 0.0001$, McNemar test). These results indicate that households closer to the park have a significantly lower amount of material assets.

The chieftaincy with the highest percentage of households with ownership of wooden bicycles, Chinese bicycles and radios is Bunyakiri. Bunyakiri stands very much on its own regarding ownership of assets. Radios are the most commonly owned asset with 55.8% of the households surveyed in Bunyakiri owning at least one radio compared to 48% in Kabare, 44% in Kalonge and 33% in Ngweshe. In Bunyakiri 15% of households surveyed owned at least one Chinese bicycle compared to 5% in Kalonge, 5% in Kabare and a lowly $< 0.5\%$ in Ngweshe. The relationship between location per chieftaincy and ownership of Chinese bicycles was significant $X^2 (3, n=965) = 59.4, p < 0.0001$, as was the relationship between location per chieftaincy and ownership of radios $X^2 (3, n=964) = 32.15, p < 0.0001$, indicating that different chieftaincies were materially wealthier than others. Insufficient sample size (Agresti and Finlay 1997) meant that similar statistical tests could not be carried out with motorbikes and wooden bicycles as only two households owned wooden bicycles in Kalonge and only one household owned a motorbike in Kalonge and Ngweshe. Households within 5 km of the park in Ngweshe chieftaincy had the lowest percentage ownership of all the assets within that distance stratum, with none of the households interviewed owning a Chinese bicycles or motorbike. The percentage difference of households that owned assets in Bunyakiri both near to and further away from KBNP was not greatly different, indicating that households throughout this chieftaincy have a similar distribution of material assets. This was also the case in Kalonge. In Kabare no discernable difference in ownership of assets between the two distance strata was observed except in relation to ownership of motorbikes, with 7% of the households surveyed within 5 km of KBNP in Kabare owning at least one motorbike compared to 4% of the households surveyed beyond 10 km of KBNP. However, it should be

noted that ownership of motorbikes was extremely low throughout the sampled area, as only 16 households indicated that they owned at least one motorbike (see Figure 5.8).

Figure 5.8: Households that own at least one wooden bicycles, Chinese bicycles, motorbike or radio as a percentage of the total within 5 km and beyond 10 km of KBNP in Bunyakiri, Kabare, Kalonge and Ngweshe

Distance from KBNP	Chieftaincy	Wooden bike	Motorbike	Radio	Chinese bike
Within 5 km of KBNP	Bunyakiri	4	0	57	15
	Kabare	4	7	61	4
	Kalonge	2	0	47	5
	Ngweshe	1	0	24	0
Beyond 10km of KBNP	Bunyakiri	4	4	55	15
	Kabare	2	4	46	5
	Kalonge	2	2	40	5
	Ngweshe	2	1	42	1

The results from this sub-section give an indication of relative wealth and link increased vulnerability with proximity to the park. This increased vulnerability would affect a household's ability to resist forced recruitment into militias or provide services such as portering to such groups. The relative impact of the conflict to those households is therefore greater and more devastating.

5.2.3 Household type

A greater percentage of households beyond 10 km in Kabare tend to be constructed from materials of higher value whereas a greater percentage of homes within 5 km of the park in Kalonge tend to be constructed from materials of lower value (see Figure 5.9 and Figure 5.10). Household type distribution between Kabare and Bunyakiri is more similar than that between Kalonge and Ngweshe. Similar findings to asset ownership were expressed in relation to household type where the construction materials of households were used as indicators of wealth.

Figure 5.9: Household type (walls and roof) as a percentage of the total within 5 km of KBNP in Bunyakiri, Kabare, Kalonge and Ngweshe chieftaincies

Chieftaincy	Walls of household	Roof of household					
		Grass	Corrugated iron	Tarpaulin	Other	Corrugated iron and tarpaulin	Grass and corrugated iron
Bunyakiri	Mud	58	33				2.8
	Earth bricks		3				
	Planks		3				
Kabare	Mud	56	7				
	Cement bricks		4				
	Planks	4	26				
	Locally fired bricks		4				
Kalonge	Mud	35	14		4		
	Planks		14				
	Grass	30					
	Locally fired bricks		4				
Ngweshe	Mud	60	10		3		
	Planks	1	6				
	Iron sheets		1				
	Grass	19					
	Locally fired bricks		1				
	Other	1					

Figure 5.10: Household type (walls and roof) as a percentage of the total beyond 10 km of KBNP in Bunyakiri, Kabare, Kalonge and Ngweshe chieftaincies

Chieftaincy	Walls of household	Roof of household					
		Grass	Corrugated iron	Tarpaulin	Other	Corrugated iron and tarpaulin	Grass and corrugated iron
Bunyakiri	Mud	50	37	2	1	1	4
	Planks		<0.5				
	Grass			<0.5	<0.5		
	Locally fired bricks		3				
	Other						<0.5
Kabare	Mud	35	37		1	1	1
	Planks	1	12	1			
	Iron sheets		1				
	Grass	9	1				
	Locally fired bricks		1				
	Other		1				
Kalonge	Mud	57	13	2	5		
	Planks		3				
	Mud and grass	21					
Ngweshe	Mud	50	21		1	1	
	Earth bricks		2				
	Planks	2	10				
	Grass	10					
	Locally fired bricks		2				
	Other		2				

The most commonly reported type of household structure consisted of mud walls and a grass roof; 50% of the households had this combination of roof and wall, followed by mud walls and corrugated iron roofs in 26% households, with 7% of the homes constructed from wooden plank walls and corrugated iron roofs. Kabare and Bunyakiri have a higher percentage of households with a combination of corrugated iron roofs and mud walls 33% and 36% respectively, compared with 14% for Kalonge and 16% for Ngweshe. When broken down by chieftaincy and distance from the park in all strata, except Kalonge within 5 km of the park and Kabare beyond 10 km of the park, at least 50% of the homes have mud walls and grass roofs. In Kalonge, within 5 km of the park mud-walled and grass-roofed homes only comprise 35%, followed by 30% of homes with grass walls and grass roofs. In Kabare in the stratum beyond 10 km, 37% of household types are of mud walls and corrugated iron roofs, followed by 35% built with mud walls and grass roofs and 12% built with wooden walls and corrugated iron roofs. These results indicate a difference in relative wealth between households within 5 km and beyond 10 km although no clear pattern is discernible.

5.2.4 Changes in numbers of livestock owned

On average households within 5 km of the boundary of KBNP had a higher number of different types of livestock pre 1994 and in 2007 than households beyond 10 km of the boundary of KBNP (see Figure 5.11). This would have increased the likelihood of raiding events by armed groups. However, no discernible pattern in relation to distance from the park and changes in livestock ownership was established. The results do indicate there was a reduction in the ownership of livestock from 1994 to 2007. This drop is likely due to the conflict that erupted shortly after the influx of refugees from Rwanda. Overall, these findings indicate that the economic situation for the households sampled worsened over this period. The assumption is that armed

groups raided and killed most of the livestock but the exact cause or causes were not established. For the Bashi tribe, livestock, especially cattle, are not only important economically but also in regulating social relations. For example, cattle were offered in marriage contracts. The destruction of the cattle populations not only made the Bashi tribe members more vulnerable to economic shocks but also disturbed social relations (Vlassenroot 2005). This dramatic decline in livestock numbers since the start of the 1996 conflict is reflected in the survey findings where the percentage of households that owned livestock prior to 1994 and 2007 dropped by 29% from 878 to 599. Without exception the average number of the different types of livestock per household dropped between 1994 and 2007. The average number of cows reduced from 3.96 ($n=353$, $SD=5.497$) to 1.96 ($n=131$, $SD=1.526$). The largest drop in numbers of livestock was for guinea pigs from a mean of 23.72 ($n=644$, $SD=23.618$) per household to 8.63 ($n=354$, $SD=7.931$) from 1994 to 2007. Although information was collected on turkeys, it is not tabulated, as they are not widely kept. Only seven households had turkeys prior to 1994 (mean=4.29, $SD=2.138$) and none in 2007 (see Figure 5.12).

Figure 5.11: Average numbers and types of livestock per household within 5 km and beyond 10 km of the boundary of KBNP within the chieftaincies of Ngweshe, Kalonge, Kabare and Bunyakiri in 1994 and 2007

Distance from KBNP		Cows before 1994	Cows in 2007	Goats before 1994	Goats in 2007	Sheep before 1994	Sheep in 2007	Pigs before 1994	Pigs in 2007	Chickens before 1994	Chickens in 2007
Within 5 km	Mean	4.28	2.22	8.25	2.91	4.77	2.67	3.10	1.92	13.50	3.67
	<i>n</i>	161	36	253	112	99	27	144	52	254	141
	Std. Deviation	6.101	1.929	10.772	2.700	5.219	2.270	4.687	1.341	18.915	3.217
Beyond 10 km	Mean	3.69	1.86	6.70	2.47	3.97	1.92	3.00	1.74	11.85	3.71
	<i>n</i>	192	95	493	223	172	66	329	115	513	270
	Std. Deviation	4.934	1.342	14.719	2.090	6.954	1.232	3.545	1.883	12.864	3.673

Distance from KBNP		Ducks before 1994	Ducks in 2007	Guineafowl before 1996	Guineafowl in 2007	Guineapigs before 1994	Guineapigs in 2007	Rabbits before 1994	Rabbits in 2007
Within 5 km	Mean	9.69	3.25	13.36	3.00	24.86	84.24	378.16	3.79
	<i>n</i>	48	12	14	2	219	116	217	82
	Std. Deviation	28.808	1.712	12.093	1.414	30.766	824.552	1774.314	4.189
Beyond 5km	Mean	6.76	3.00	16.17	4.67	23.12	191.03	149.79	4.49
	<i>n</i>	169	38	6	3	425	244	317	158
	Std. Deviation	6.786	2.394	15.484	1.528	18.927	1260.534	1107.999	7.259

Figure 5.12: Average number of livestock per household pre 1994 and October 2007

Type of livestock	Average number per household pre 1994	Average number per household in October 2007
Cows	Mean=3.96, <i>n</i> =353, SD=5.497	Mean=1.06, <i>n</i> =131, SD=1.526
Goats	Mean=7.23, <i>n</i> =746, SD=13.523	Mean=2.62, <i>n</i> =335, SD=2.317
Sheep	Mean=4.26, <i>n</i> =271, SD=6.377	Mean=2.14, <i>n</i> =93, SD=1.626
Pigs	Mean=3.03, <i>n</i> =473, SD=3.923	Mean=1.80, <i>n</i> =167, SD=1.730
Chickens	Mean=12.39, <i>n</i> =767, SD=15.146	Mean=3.70, <i>n</i> =411, SD=3.519
Ducks	Mean=7.41, <i>n</i> =217, SD=14.761	Mean=3.06, <i>n</i> =50, SD=2.235
Guineafowl	Mean=14.20, <i>n</i> =20, SD=12.842	Mean=4.00, <i>n</i> =5, SD=1.581
Guineapigs	Mean=23.72, <i>n</i> =644, SD=23.618	Mean=8.63, <i>n</i> =354, SD=7.931
Rabbits	Mean=9.83, <i>n</i> =320, SD=13.447	Mean=4.25, <i>n</i> =240, SD=6.378

Whilst it was not possible to identify a definite pattern in differences in use of land, ownership and type of assets, household type and ownership of livestock in relation to KBNP, certain chieftaincies exhibit intuitive differences depending on the asset, if the role of the park in conflict is being considered. For example, in Ngweshe a higher percentage of households closer to the park cited insecurity as the dominant reason for non-use of owned land. Kalonge, however, exhibits counter-intuitive results, e.g. higher percentage of households beyond 10 km are constructed with more expensive materials. The results from the ownership of assets in relation to KBNP indicate that distance from the park affects the amount of assets a household has as well as location of residence within a particular chieftaincy. In particular a higher percentage of Bunyakiri residents owned motorbikes, Chinese bicycle and radios, suggesting a wealthier population compared to the other chieftaincies. In conclusion, this section throws up the difficulty of finding a pattern of the effects of violence in relation to the protected area whilst using wealth indicators. This is likely a result of the ubiquitous effects of violence throughout the surveyed area, therefore making the contribution of the presence of the park difficult to discern. The results highlight the changing circumstances within all distance strata and all chieftaincies during the course of the conflict and indicate the pervasive nature of insecurity throughout the entire sampled area.

5.3 Looting of households and Kahuzi Biega National Park

Household size, value of livestock wealth prior to 1994, distance from KBNP and location within certain chieftaincies significantly impacted the probability of a respondent's household being looted (see Figure 5.13). This section presents results from the statistical analysis of the variables that affect the probabilities of households being looted. All respondents were asked if the household had been looted since the start of the conflict in 1996. Initial models for analysis combined all the different insecurity variables that had been developed in the questionnaire. These were presence of weapons, migrations into and out of households, cause of mortality of household's residents and abductions from households. The results from these analyses yielded no clear pattern in relation to KBNP and are likely due to the lack of clear geographic specificity in the questions. For example, respondents were asked if they had seen weapons in the last month but the questionnaire did not establish the location where weapons had been observed.

The results indicate that the predicted probability of a household having been being looted since 1996 was lowest beyond 10 km of the park in Ngweshe (0.4) and highest within 5 km of the park in Bunyakiri and Kalonge (0.96) when controlling for household size and value of livestock prior to 1996. The probability of a household being looted, if located within 5 km of the park is consistently higher in each chieftaincy, with Bunyakiri and Kalonge as the most likely places in which a household would be looted, followed by Kabare and finally Ngweshe. Increases in household size and value of livestock prior to 1996 also increases the probability of the household being looted between 1996 and 2007, with similar patterns in relation to distance from the park and chieftaincy. These results indicate that a majority of households throughout the sample area had experienced some form of victimization as a result of the conflict, with probabilities within the 90 percentile in all areas of Kalonge and Bunyakiri. These findings also demonstrate the high levels of violence

throughout the sample area. Such multidimensional variables highlight the difficulty of establishing the relative significance of different drivers of violence within a conflict context (see Figure 5.14 and Figure 5.15).

Figure 5.13: Binary logistic regression of probability of households being looted since 1996 in relation to household size, livestock wealth prior to 1994, distance from KBNP and location within Ngweshe, Kabare, Kalonge and Bunyakiri chieftaincies

Dependent variable: has the household been looted since 1996?	Binary logistical regression
Household size	0.099*** (0.028)
Livestock wealth prior 1994	0.407** (0.151)
Distance from KBNP	-1.104*** (0.232)
Ngweshe chefferie [§]	
Kabare chieftaincy	-1.239*** (0.224)
Kalonge chieftaincy	1.378** (0.405)
Bunyakiri chieftaincy	1.376*** (0.263)
Observations	802
Intercept	0.718* (0.289)
Hosmer and Lemeshow Test	
Chi square	11.409
Degrees of freedom	8
Significance	0.810
- 2 log likelihood	710.075

Standard errors are in parentheses: *p<0.05, **p<0.01, ***p<0.001.

[§]Reference category for chieftaincies

Whilst these results show a statistically significant negative relationship between distance from the park and the probability of a household being

looted, it also highlights other variables that may contribute to the targeting of particular households for looting. The statistically significant positive relationship between household size and livestock wealth prior to 1994 are two variables that emerge from this analysis, alongside residence in a specific chieftaincy. The results indicate that the chances of a households being looted are greater in Bunyakiri and Kalonge, but lower in Ngweshe, with Kabare chieftaincy exhibiting the lowest probabilities.

Further analysis focuses on impacts at the chieftaincy level in relation to distance from the park. No significance in Bunyakiri and Kalonge in relation to distance from the park was observed. However, in Kabare and Ngweshe a statistically significant negative relationship between distance from the park and probability of household being looted was observed. The results suggest that the further away from KBNP one resides in Kabare and Ngweshe, the less likely are households to be looted. This is unlike Bunyakiri and Kalonge, where distance from the park is not a statistically significant determinant of households being looted (see Figure 5.16).

Figure 5.14: Fitted probabilities of differing household size with livestock wealth 1000USD

Household size	Ngweshe		Kabare		Kalonge		Bunjakiri	
	>10 km	<5 km	>10 km	<5 km	>10 km	<5 km	>10 km	<5 km
1	0.40	0.67	0.70	0.87	0.90	0.97	0.90	0.97
2	0.42	0.70	0.72	0.88	0.91	0.97	0.91	0.97
5	0.50	0.75	0.77	0.91	0.93	0.98	0.93	0.98
8	0.57	0.80	0.82	0.93	0.95	0.98	0.95	0.98

Figure 5.15: Fitted probabilities of differing livestock wealth with household size 8 and between the different distance strata

Livestock wealth (USD)	Ngweshe		Kabare		Kalonge		Bunjakiri	
	>10 km	<5 km	>10 km	<5 km	>10 km	<5 km	>10 km	<5 km
50	0.486	0.73	0.76	0.90	0.93	0.97	0.93	0.97
500	0.52	0.77	0.79	0.92	0.94	0.98	0.94	0.98
1000	0.57	0.80	0.82	0.93	0.95	0.98	0.94	0.98
5000	0.87	0.95	0.96	0.99	0.99	0.996	0.99	0.996

Figure 5.16: Binary logistic regression of probability of household being looted in relation to distance from the park, household size, gender of household head and livestock wealth prior to 1994 in Bunyakiri, Kabare, Ngweshe and Kalonge chieftaincies

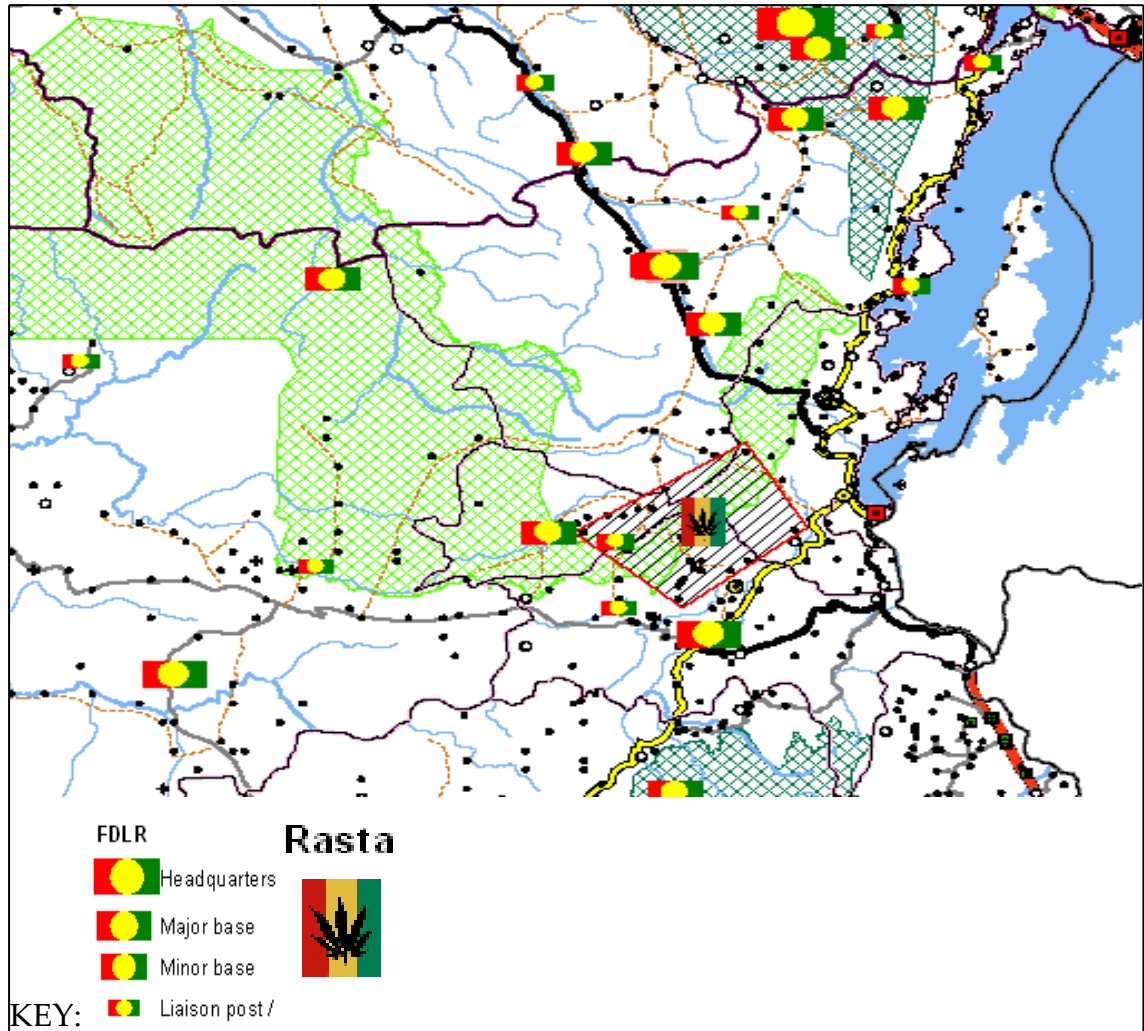
Dependent variable: has the household been looted since 1996?	Model 1	Model 2	Model 3	Model 4
Household size	0.032 (0.067)	0.150** (0.054)	0.138* (0.054)	-0.142 (0.104)
Gender of household head	0.896 (0.550)	0.934 (0.657)	-1.072* (0.418)	-18.145 (40192.981)
Livestock wealth prior to 1994	0.944 (1.008)	0.227 (0.211)	0.443 (0.254)	0.719 (0.714)
Distance from the park Bunyakiri	-0.194 (0.606)			
Distance from the park Kabare only		-3.395*** (0.794)		
Distance from the park Ngweshe only			-0.766* (0.332)	
Distance from the park Kalonge only				0.227 (0.859)
Observations	166	172	224	96
Intercept	0.899 (0.792)	0.471 (0.943)	1.017 (0.523)	21.569 (40192.981)
Hosmer and Lemeshow Test				
Chi square	13.588	17.078	11.552	6.582
Degrees of freedom	8	8	8	8
Significance	0.093	0.029	0.172	0.582
-2 log likelihood	115.905	179.348	231.918	42.312
Cox and Snell R square	0.037	0.262	0.111	0.026
Nagelkerke R square	0.071	0.354	0.162	0.071

Standard errors are in parentheses. *p<0.05, **p<0.01, ***p<0.001.

(Goodness of fit – only models 1,3 and 4 are a good fit based on Hosmer and Lemeshow test as model 2 rejects the null hypothesis.)

In conclusion, this section considers if a statistically significant relationship between looting of households and distance from KBNP exists. The results highlight the differing variables that contribute to changing the probabilities of a household being looted. Significant variables were found to be household size, wealth and residence in a particular chieftaincy and distance from the park. Both Bunyakiri and Kalonge seem to exhibit similarly higher levels of looting throughout the chieftaincy; unlike Ngweshe and Kabare, where the likelihood of a household being looted drops the further away it is from KBNP. The location of Bunyakiri and Kalonge in the nexus of KBNP is likely to be a factor. The east and west boundaries of these chieftaincies in effect border KBNP. In addition to this, both FDLR and FARDC camps were known to be situated throughout Bunyakiri at the time of the survey (see Figure 5.17).

Figure 5.17: Map of FDLR bases and Rastas around and within the mountain sector of KBNP from September 2007 to January 2008, Source: (Spittaels and Hilgert 2008)



5.4 Perceptions of conservation and Kahuzi Biega National Park

Knowledge of national parks and conservation was common with almost 70% (68%) of the surveyed households citing KBNP as their nearest national park. However, support for conservation as such varied depending on the location of the respondent. Surveyed households throughout Bunyakiri were in favour of areas being converted to national parks or nature reserves. In Kalonge, support for conservation was poor, regardless of where respondents were in the chieftaincy. In Kabare and Ngweshe, however, a higher percentage of the households surveyed beyond 10 km of the boundary of the park were in support of conservation compared to those within 5 km of the boundary of the park. Categorically, the percentage of respondents that approved of national parks or reserves differed significantly depending on whether they were within 5 km of the boundary of the park or beyond 10 km. In Kabare ($X^2(3, n=216) = 20.639, p < 0.000$) and in Ngweshe ($X^2(3, n=321) = 18.598, p < 0.000$) a higher percentage of respondents beyond 10 km of the park boundary supported the creation of protected areas probably because they are less affected by its existence (See Figure 5.18).

The questionnaire also collected information from respondents specifically on respondents' perceptions of the park and its impact on their life in their own words. They demonstrated general knowledge of the value of the protected areas and linked any problems they perceived from the park to insecurity. Essentially, the park was seen as a refuge for militia groups and considered to be a factor contributing to sexual violence. The period of conflict had also resulted in a change in the way household members used the park and accessed it.

Figure 5.18: Preference for areas to be protected for conservation as a percentage of the total respondents within 5 km and beyond 10 km of KBNP in Bunyakiri, Kabare, Kalonge and Ngweshe

Chieftaincy		% of responses of total households interviewed within 5 km of KBNP	% of responses of total households interviewed beyond 10km of KBNP
Bunyakiri	Yes	65	62
	No	13	6
	No opinion	20	26
	Do not want to answer	3	6
Kabare	Yes	36	65
	No	61	21
	No opinion	4	13
	Do not want to answer	0	2
Kalonge	Yes	18	21
	No	58	60
	No opinion	25	19
	Do not want to answer	0	5
Ngweshe	Yes	36	57
	No	38	18
	No opinion	26	24
	Do not want to answer	1	2

Regardless of the chieftaincy, and distance from the park, the main problem associated with the park was insecurity. The majority of respondents who indicated a reduction in benefits from KBNP cited security, followed by loss of easy access to the park. A reduction in wildlife numbers by militias was cited as a loss in their benefits by 15% of the respondents in this group (see Figure 5.19). Although a national park has regulations restricting its use by the local population and generally does not allow any form of resource extraction or grazing of livestock, respondents were asked if they had experienced any change in the benefits they used to derive from the park since the arrival of the

Rwandan refugees in 1994. Almost half of the respondents (45%) did not want to answer whether the benefits from KBNP had increased or decreased since that date, whereas 33% of the respondents indicated that there had been a reduction in benefits from KBNP compared to 3% who indicated that benefits accrued to them had increased, and 18% indicated no change and <0.5% did not know. The high percentage of respondents that did not want to answer is probably reflective of their knowledge of the illegality of extracting any resource from the national park.

Close to half (47%) of the households surveyed predominantly associated their insecurity with KBNP (see Figure 5.20). Of the respondents that faced problems from the park, over half (57%) indicated insecurity and attacks from the militia groups from the park was the primary problem. The second most cited was pillaging and sexual violence against women (28%). Other more common problems associated with protected areas in developing countries not in conflict – such as crop raiding, problems with park guards and injury from wildlife (Aharikundira and Tweheyo 2011) - were mentioned but by a much smaller percentage of respondents (2%, 11%, 1% respectively). These results indicate that of the 47.4% of the total survey respondents that indicated a problem from the park, a majority of these respondents (86%) associate the protected area with insecurity. No clear pattern in relation to distance from KBNP within different chieftaincies was discernible. This may be due to respondents' general awareness of insecurity in the region or through experiences that occurred away from the village of residence, as the question did not specify further the reason for the response this level of information was not gathered.

A total of 42% of the respondents admitted to using the park and of that amount the majority (63%) indicated that they used it as a passage way. The low rate of interviewees admitting to using the park is indicative of response bias as respondents are likely to be only too aware that it is illegal to remove

resources from KBNP (Browne-Nuñez and Jonker 2008). Additionally, the presence of militias in the area would contribute to discouraging the neighbouring communities from taking resources from the park. The interviewers also noted that this was the least well-understood section of the questionnaire, and 20% of the respondents did not answer either the entire section or parts of the section. This may be due to poor wording of the section or lack of understanding of conservation. However, where information was garnered about the type of activities that community members engage in within the park, they ranged from mining of minerals to grazing of livestock. The consistently higher frequency of respondents indicated that they utilized the park to collect construction material whether for individual gain themselves or others points to their key use of the park.

Figure 5.19: Illustrating the cited loss of benefits from KBNP since 1994

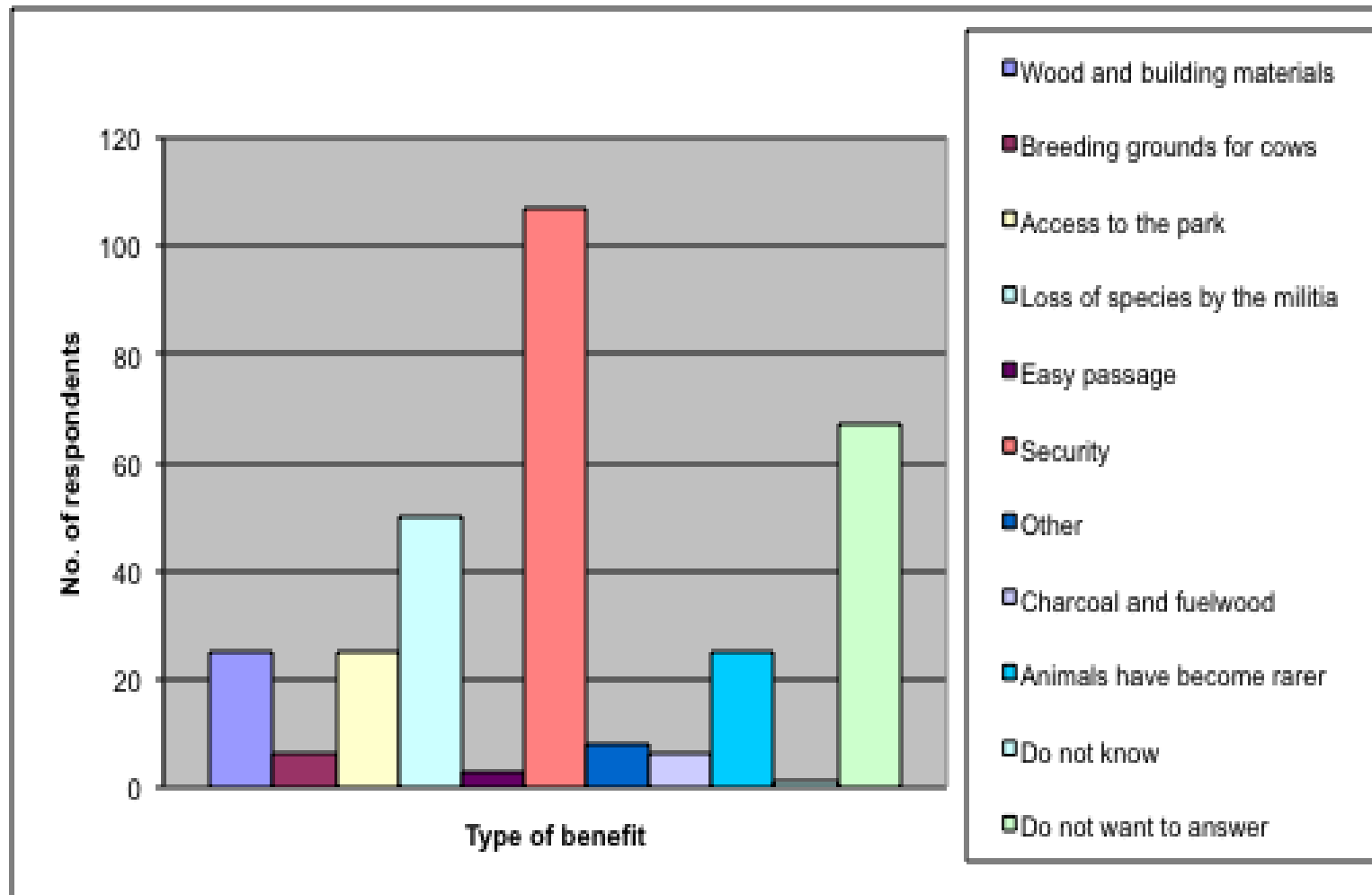
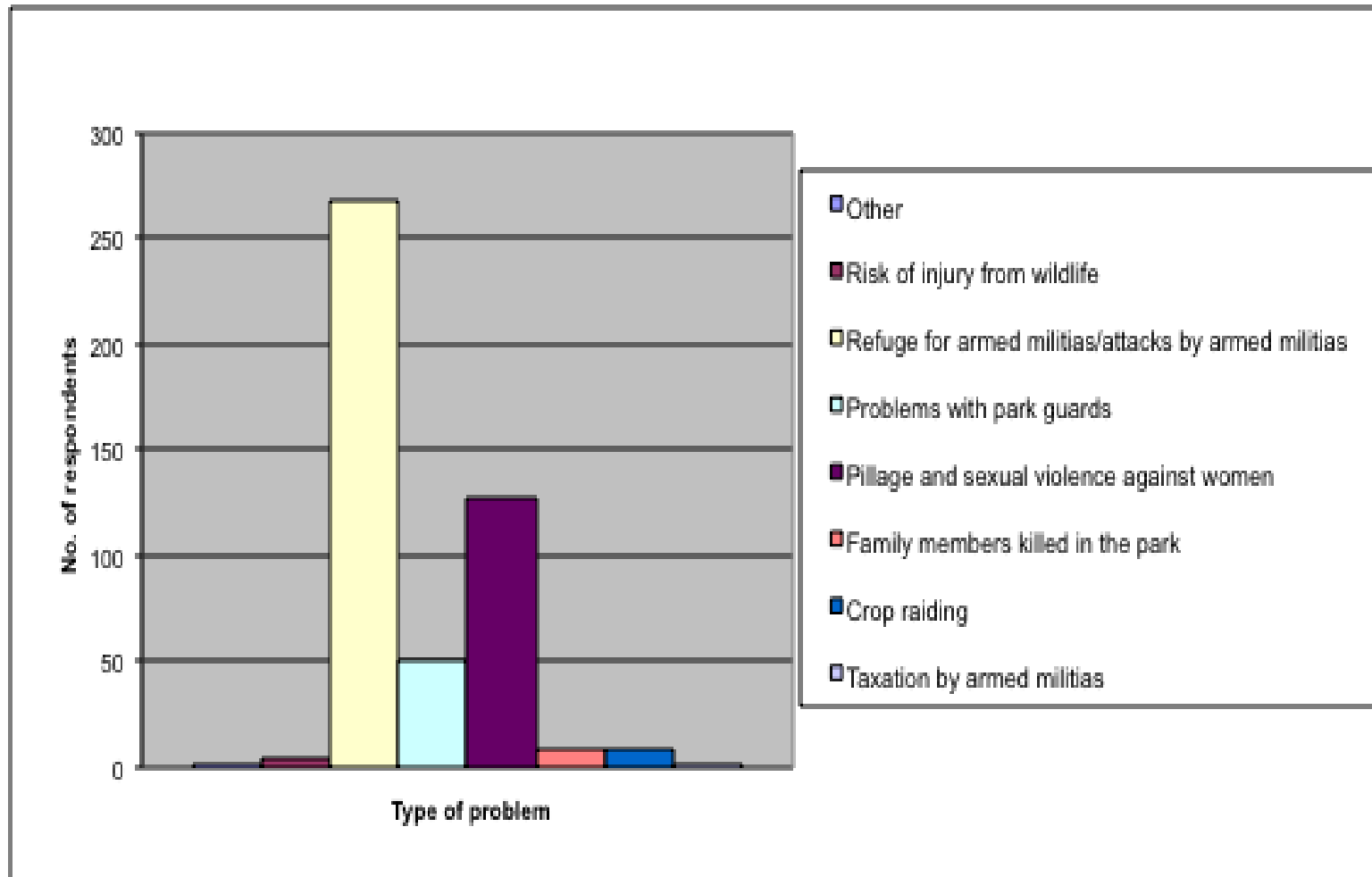


Figure 5.20: Detail of problems from the park presented from respondents to the household survey within 5 km and beyond 10 km of KBNP in Kabare, Kalonge, Bunyakiri and Ngweshe chiefancies



The overwhelming perception is that the park is acting as a centre for violence. This was further reinforced in discussions with the Chief of Bunyakiri who stated that 'the population near the park are more threatened by insecurity than those that are far'(Chief of Bunyakiri, Feb, 2008, personal communication). Further reinforcement of the perception by the local communities of the role of the park in the conflict was also obtained from a group of women at Bunyakiri Hospital (focus group discussion, Feb 2008) who stated that the park contained armed bandits and FDLR (whom they associated with the interhamwe). It was considered to be a place where people were kidnapped from and one woman indicated that her family had moved from their home near the park due to the trauma of the conflict.

Common knowledge of the presence of a national park points to an understanding of its purpose and the fact that it is an area of restricted access and ownership resides with the state. The clear association that the park was a centre of insecurity with almost half the respondents highlights its linkage to conflict. It points to an association with this space as a factor in the dynamics in the conflict. This linkage was substantiated through discussion with women in Bunyakiri and the chief.

5.5 Conclusion

Growing literature on the impacts of conflict on livelihoods does not consider changes in households' access to natural resources over and above agriculture and livestock. Conflicts directly impact household structures. Direct impacts are felt when family members are killed or recruited into armed groups or lose assets as a result of raiding by armed groups or decide to move away from conflict areas. The inability to conduct pre-conflict livelihood activities that maintained the households and negative changes in access to employment, financial services, social relations and political institutions are all a part of the variation in the socio-economic landscape that is felt at the household level

(Justino 2009b). Changes in land tenure and shifting ownership, combined with changes in land use practices are purported to be significant variables both in contributing to violence and happening as a result of increased insecurity brought about by the conflict. In Walungu a decrease of 75% in agricultural production was observed from 1996 to 2005 (OCHA, 2005 cited in Vlassenroot 2005). The disruption in agricultural systems has been shown to lead to food insecurity (Bahirire, 2004 and Diobass, 2005, cited in Vlassenroot 2005) and compelling changes in land use as households shift to the production of short-term crops, such as sweet potatoes and beans, and cease to invest in cash crops such as bananas, coffee and tea. This shift from monoculture to polyculture has impacts on the fertility of the soil (Vlassenroot 2005). The household survey conducted around the mountain sector of KBNP contextualized changes to households as a result of the conflict and whether this was related to the presence/proximity of the national park. It demonstrated that the most direct linkage between the conflict, KBNP and households was the increased probability of being looted. This suggests that the militias are utilizing the protected area as a base from which to obtain supplies and labour/members to maintain their insurgency/rebellion/actions. This is further substantiated by the perception that the park is associated with insecurity and sexual violence. The ability of militias to be able to maintain a presence in the park speaks to a lack of state authority and control.

However, despite the wealth of information gathered through the household survey clear patterns in relation to the protected area across the board could not be discerned. There are a number of possible explanations for this that are likely linked to the lack of clarity in the questionnaire about the actual location of incidents as well as other variables that impact levels of violence, such as militia bases outside the protected area. Whereas it was difficult to discern from analysis clear patterns between KBNP and ownership and use of land, household type and livestock, clearer connections became apparent in relation

to ownership of material items and likelihood of households being looted. The likelihood of a household being looted was the only variable where location of the incident was clear and a linkage to the protected area was also deduced and respondents generally associated the park with insecurity regardless of where they lived. These evaluations lead to the conclusion that the park is a factor in insecurity.

Although other significant variables in relation to levels of violence, such as household size and wealth in livestock prior to the conflict, did not reveal a clear linkage to the protected area they nonetheless provided additional insights into some of the dynamics influencing violence. The survey also provided additional quantitative detail into impacts of conflict on households, such as the observed dramatic decline in livestock and underutilization of land. The extent of the violence in the Kivus was made apparent by the deduction that no area sampled was exempt from the impact of conflict.

Perhaps the most striking aspect of the results obtained from this dataset was the demonstration of the complexity of variables involved in driving conflict. These findings indicate that household surveys as a localized research method can uncover nuances in conflict dynamics that may not have been ascertained with other methods. The ubiquitous nature of violence in the region required a substantial sample size to be able to effectively establish if households in proximity to the park are impacted differently. Ultimately, deducting the appropriate unit of analysis is a critical component of a research design. For example, the ACLED data set would not have identified the role of wealth or household size in a conflict. In essence two extremes in data collection have tended to dominate conflict research, namely, collation on a national/global aggregated scale (e.g. Collier) or ethnographic in nature (e.g. Keen). Although literature has been increasingly utilizing GIS and mapping on a sub-national scale, this has kept its focus on more obviously linked conflict variables such as

location of armed clashes or militia bases. This chapter utilizes a more recently applied method that seeks a deeper understanding of conflict at the household level whilst maintaining a positivist approach. The method enabled conclusions to be reached in relation to the park as a variable in the conflict and also revealed additional impacts, which can inform targeted policy and humanitarian responses (Justino 2009a).

6 The relative significance of economic and ideological drivers in the use of Kahuzi Biega and Virunga National Parks

You know in America it's 'bling, bling', but out here it's 'bling, bang'.
Danny Archer in *Blood Diamond*

Blood Diamond, a major Hollywood movie set in Sierra Leone dramatized the connection between war and diamonds as revenue from the precious stones were used to fund a bloody conflict (Leavitt 2006). The film's title evokes imagery of a clear crystal sullied with the blood of countless victims of violent conflict, killed by militias who are driven by the quest for substantial financial rewards. The militias exploit valuable resources, such as diamonds, that subsequently fuel further violence as the spoils are used to buy weapons. The movie touches on a core variable tested in this chapter which intends to present findings that respond to the research questions that focus on whether *national parks are utilized by militias predominantly for economic reasons, exploiting natural resources available there or national parks are predominantly located in borderlands contributing to their utilization by militias for strategic reasons to further their ideological goals*. To a certain degree the impact of armed conflict on the national parks of Kahuzi Biega and Virunga have been documented, but little information exists about why these areas are specifically targeted.

The findings contribute to the originality of this thesis to the extent that many social scientists theorize that greed provides a more compelling explanation in explaining the dynamics of conflict, often based on empirical findings based on macro-level analysis. Findings from this research suggest otherwise and support a more nuanced appraisal that acknowledges the interplay of greed and grievance in the use of these spaces. However, the emphasis differs between the two parks. Firstly, they confirm that there is a perception that national parks are centres of violence, although this was more rigorously tested

in Chapters 4 and 5. Secondly, there are higher levels of violence around VNP than KBNP pointing to differences in the drivers of the use of the parks by armed militias. The relative importance of location within borderlands is exposed as VNP directly borders the state of Rwanda, a main protagonist in the conflict. Thirdly, there were conflicting findings regarding the drivers behind the motivation for militias to utilize these spaces. Conservation practitioners point to the economic drivers in both national parks whilst the findings from discussions with former combatants point to grievance-derived factors in relation to VNP. An explanation for this diverging finding is the desire by conservationists to draw attention to parks and their destruction by linking it to a key feature related to the ongoing conflict. Although militias indicated that they were engaging in economic activity, the main reason behind their choice of basing themselves in VNP was to contribute to achieving their ideological goal. It was therefore deduced that on balance ideological drivers dominate the use of VNP rather than economic drivers because of its location along an international border.

Conclusions presented in response to the research questions addressed in this chapter highlight the significance of the geographic location near an international border of national parks vis-à-vis their valuable resource composition. The findings are based on comparative analysis of sexual violence data between KBNP and VNP to establish relative levels of violence, interviewing a selection of NGO representatives, humanitarian officers, a small sample of former combatants and the Chief of Bunyakiri. The focus of the initial section of this chapter is on the comparative analysis between KBNP and VNP. This analysis enabled the relative role of greed and location to be examined as KBNP is endowed with conflict resources but not directly located on the border with Rwanda whilst the converse is true of VNP. VNP does not have conflict resources (although the role of charcoal is explored in this chapter) and is located on the border with Rwanda. Additional findings are based on

qualitative research interviews held during the pre fieldwork phase (September–October 2006) and formalized semi-structured interviews with former militia group members, conservation practitioners and the Chief of Bunyakiri during the main data collection period in the DRC (June 2007–March 2008). This subsequent section focuses on VNP due to the inability to access former combatants from the Kahuzi Biega region. However, inferences on the motivation of militias in KBNP are made from discussions with humanitarian and conservation practitioners.

6.1 Comparisons in levels of sexual violence between Kahuzi Biega and Virunga National Parks

This section presents the findings from a comparative analysis between KBNP and VNP utilizing sexual violence data. Numerous conflict researchers have explored the impact of specific valuable resources in initiating and perpetuating conflict. They have attempted to categorize these resources with terms such as 'lootable' (Ross 2004b), 'high value natural resources' (Lujala and Rustad 2012) and 'conflict minerals' (Feeley and Thomas-Jensen 2008). With seemingly overwhelming evidence that specific resources drive conflict, here referred to as conflict resources, the central and southern sector (the area of interest for this study) of VNP has no such resources. Although exploration for oil is ongoing in sections of the park, the location of VNP along the western arm of the Great Rift Valley in Africa is the geological reason for the lack of valuable minerals (personal communication, Jaques Durieux, 2007). Within the southern sector the sclerophyllous forests do not lend themselves to supplying timber for industry. The role of charcoal from VNP in fuelling the conflict has been raised by conservationists and implies that this commodity is therefore a conflict resource. KBNP has abundant amounts of economically viable deposits of gold, coltan (columbite-tantalite) and cassiterite (tin ore) with mining known to have been conducted by RCD – Goma during the Second War. Evidence obtained by a UN expert panel (United Nations Security Council 2008) documents the

exploitation of minerals (namely cassiterite and coltan) from within KBNP by FDLR to finance their activities. The panel placed the revenue of the FDLR from exploitation of minerals in several locations across the Kivus including KBNP as their primary source of financing (United Nations Security Council 2008). This was likely to have been ongoing during the period of study.

Another key difference is that VNP borders Rwanda whilst KBNP does not. The border of VNP with Rwanda has been a key staging ground for various incursions by Rwanda into the DRC and its proxies (see Chapter 2). CNDP was located primarily in North Kivu over the period of analysis (January 2006- June 2007). Due to a lack of a formal agreement and weak implementation in 2006, '*mixage*' (Human Rights Watch 2007: 16) failed which enabled Nkunda to increase his military strength from two to five brigades by May 2007. CNDP was able to increase the size of territory under its control within Masisi and Ruthshuru (Human Rights Watch 2007). This included capturing the park headquarters and moving into the Mikeno sector of VNP, the southernmost edge of the park (Gorilla CD 2007). Nkunda was not only expanding the extent of his area of control but his presence in southern sector of VNP and, in particular, the Mikeno sector which borders Rwanda and Uganda meant that his forces acted as a buffer for Rwanda from the offensives of the FDLR. Nkunda also utilized this position to prepare an offensive towards Goma in October 2008. This attack and involvement of CNDP in mass killings in Kiwanja (North Kivu) were pivotal in his removal from CNDP as a result of an unexpected collaboration with the Rwandan government and Kabila in January 2009 (Weaver 2009). The increase in violence post the national elections was a response to the vacuum created through the loss of RCD-Goma. Congolese and Rwandan Tutsis fears of not only reprisals from and within DRC but a distinct lack of allies to prevent incursions into Rwanda (by the FDLR) were likely to be a key factor in the actions of CNDP. Violence continued to escalate in 2008 until a major reconfiguration of political alliances occurred resulting in the removal

of Nkunda from power in January 2009. This linkage to local movements and agendas of armed groups points to the relative importance of ideological verses economic drivers of violence and further supports localized research to establish nuanced differences in drivers of violent conflict.

Utilizing sexual violence data collected over the period of January 2006 to June 2007 from Kabare, Kahele, Kalonge, Kaniola, MitiMurhesa health zones in South Kivu and Goma, and Birambizo, Kayna, Masisi, Mweso, Ruanguba, Rutshuru and Tchomia health zones in North Kivu (see Chapter 4) a comparative analysis was conducted. Considering that control of the area was primarily by the same militia groups (FDLR and CNDP), population density was controlled for and the same type of data (sexual violence) was used, a comparative analysis was considered to be robust enough to present detail on the differences in the levels of violence between the two sites. A significant difference in victim rates of sexual violence between KBNP⁸ and VNP was observed from January 2006 to June 2007 ($t=2.802$, $df=17$, $p=0.012$, two-tailed); however, KBNP had a lower level of victimization. Although both parks are centres of violence, it appears that the effect of location along the border with Rwanda is a greater influence in levels of violence than the presence of seemingly abundant conflict resources.

The findings from the comparative analysis between VNP and KBNP demonstrate that levels of violence are not positively correlated with the acquiring and control of areas that contain conflict resources. The linkage of

⁸ The comparison was conducted with victim rates from around KBNP from January 2006 to June 2007 less data from Bunyakiri territory. When Bunyakiri was included, no significant difference in violence between the two parks was observed ($t=1.046$, $df=23$, $p=0.307$, two-tailed). It appears that the presence of militia groups throughout Bunyakiri (Spittaels, Stevens and Filip Hilgert. 2008. "Mapping Conflict Motives: Eastern DRC." IPIS Fatal Transactions) negated the effect of the park.

these findings to the actions of Nkunda, whose group, CNDP purported to be motivated by grievance indicates that economic drivers are not the dominant factor in the use of Virunga National Park. This is due to the location of VNP along the border with Rwanda, Nkunda was effectively providing a buffer function to Rwanda over the period of data collection.

6.2 Understanding the economic and ideological drivers of conflict in VNP and KBNP

This section presents the findings of informal and semi-structured interviews held with humanitarian and conservation practitioners and former members of the FDLR. The purpose of collecting this data was to establish if there was a link between the protected areas and violence in the region and also the motivation for militia groups utilizing these spaces. Considering the complexity of the conflict and its regionalization as a result of the Rwandan genocide, the research questions addressed in this chapter sought to further understand the extent to which economic or ideological agendas are a factor in the conflict dynamics related to the use of the national parks. The findings from the previous section indicate that the presence of conflict resources does not result in higher levels of violence but location along the border was more significant. Further understanding of why that might be is further established in this section that is based on results derived from the use of qualitative methods.

6.2.1 Qualitative data collection

Initial informal interviews with humanitarian and conservation practitioners were held in September and October 2006. These meetings sought to establish if there was any indication of a relationship between patterns of violence linked to the conflict and the national parks and further inform development of the research methodology. Discussions were held with individuals from health NGOs (MSF France, HEAL Africa, ICRC), conservation organizations (WCS, WWF, IGCP, ICCN, GTZ), researchers from various centres in ecology and

volcanology (LWIRO and the Goma Volcano Observatory), representatives of MONUC and local development organisations (POPOF Foundation, *Association de femmes pour la conservation de la nature et le developpement durable -AFECOD*).

Semi-formal interviews were then held the following year (2007) with seven former FDLR combatants in order to establish what activities militia groups were engaged in within protected areas. Only the respondents that had been inside a national park were included in the analysis and this resulted in only five interviews being incorporated into the analysis. The interviews took place at the Disarmament, Demobilization, Repatriation, Resettlement and Reintegration (DDRRR)⁹ camp of the UN peacekeeping mission (UNMONUC) in Goma. Interviews were conducted in Kinyarwanda, with translations provided by MONUC staff. Questions focused around activities the combatant would have engaged in during any tenure in a protected area. A crib sheet was used to guide the interview process of the former combatants (see Appendix 6). Ranks of the combatants ranged from cook to major. The interviews were an average 30 minutes long and the questioning remained within the topic of understanding how national parks are utilized and why this might be. Additional interviews with conservation practitioners over this time period were conducted along a similar vein, although these interviews were given more range to roam. Reports produced by NGOs working in the area also provided additional information on activities of militias within the protected areas.

⁹ The DDRRR programme of MONUC was initiated in February 2001, after Resolution 1341 was passed by the UN Security Council. MONUC was mandated to demilitarize foreign combatants still in the DRC. The programme was based on Chapter 9 of the Lusaka peace agreement which outlined that the disarmament should be voluntary, this meant that MONUC was unable to actively disarm resulting in implementation that was inconsistent (Kisangani, Emizet F. 2006. "Legacies of the War Economy: Economic Challenges for Postconflict Reconstruction." In *The Democratic Republic of Congo: economic dimensions of war and peace*, ed. Micheal Nest. London: Lynne Rienner Publishers, Inc.)

All the former combatants interviewed had only been active in VNP and none in KBNP. Access was not granted to former combatants in the DDRRR camp of MONUC in Bukavu, South Kivu. It is likely that combatants that had used KBNP would have passed through this camp. Access was denied due to the difference in the completion of relevant paperwork and registration of the former combatants before transferring to Rwanda. In North Kivu, combatants spent up to several days in the Goma camp whereas in South Kivu combatants only spent a few hours in the Bukavu camp before repatriation to Rwanda (personal communication, Mamdani Dai, 2007). This meant that information regarding activities of militia within KBNP was acquired from secondary sources and interviews with conservation practitioners and park staff.

Obtaining permission to access the DDRRR camp in Goma to interview former combatants took over six months and greatly impacted the number of combatants that were interviewed. My access to former combatants was contingent on the availability of UN staff to inform me of the presence of relevant interviewees potentially further reducing the number of combatants I knew about. I was granted access to former combatants who indicated that they had been based in VNP at some stage during their tenure with the FDLR. Once again, reliance on UN staff to obtain that level of information and inform me of a potential interviewee also likely compromised the number of combatants interviewed and may have introduced bias in the ones that I was given access to. Although anonymity was ensured at the onset of each interview with the former FDLR, it is also likely that responses of former combatants had some bias, given the presence of UN staff during the interview. One interviewee indicated that they had been ordered to stop killing the wildlife by their superiors.

'At the beginning they would trap the animals but now they know the importance of the park and their leaders ask them to stop....The animals are the inhabitants of the forest' (Former FDLR soldier from Rwanda)

The known presence of poaching, highlighted by the rapid decrease of hippo populations, demonstrates that it is unlikely any group occupying the protected area would cease to kill wildlife for provisions whether financial or not. This comment, however, indicates awareness by the militia groups of the illegality of hunting within protected areas. The media attention and international response to the killing of seven mountain gorillas in 2007 (Jenkins 2008) would not have gone unnoticed by the various armed groups operating in the area. Notably, international conservation agencies working in DRC at the time of data collection liaised with CNDP who controlled the area of the park that the gorillas inhabited to advise on how best to conserve the highly endangered population and in November 2008, the park authorities were able to negotiate access to the gorilla populations in areas under Nkunda's control (personal communication, Anecto Kayitare, 2008). It appears that the importance of ensuring that the gorilla populations were well protected to mitigate international criticism was not lost on the leadership of the CNDP who were also reported to be generating revenue from gorilla tourism (see Figure 5.20) (Kinver 2008).

6.2.2 Results from analysis of qualitative data

A majority of the individuals interviewed during the September–October 2006 period indicated that there was more violence closer to the park boundaries than in areas further away. Although no data had been collected by any of the individuals interviewed to establish this relationship, their suppositions were based on their experiences of working in these areas. This was further compounded by the poor motivation of the FARDC as a result of lack of pay and poor working conditions (personal communication PIO MONUC Bukavu). The availability of valuable minerals in KBNP as well as meat and ivory from wildlife were also cited as reasons for use of the park by both armed militias and armed local community members who were able to poach with impunity

(personal communication John Kahekwa, POPOF Foundation; PrinceKalema, WCS; Mwanga, LWIRO). Finally, the strategic value of using the national parks by militias from which to raid neighbouring communities' livestock was mentioned. It was stated that FDLR militias preferred livestock meat to wildmeat and the national parks provided a viable environment from which to base their groups (personal communication Mwanga, LWIRO). These interviews also indicated that the increasing levels of sexual violence were linked to the conflict and this informed the collection of sexual violence data for the analysis in Chapters 4 and Section 6.1.

The data collected during the interviews fed into understanding activities under two themes: economic and strategic. The economic theme stems from literature that focuses on the importance of valuable resources in contributing to conflict (Collier and Hoeffler 1998) whilst the strategic theme seeks to explore if there is a military advantage to operating within protected areas. It has been suggested that protected areas are targeted due to easily available basic necessities such as food and shelter (Hammill 2005), this livelihood aspect is explored within the economic theme. Transcriptions of the interviews with the former FDLR and conservation practitioners were coded, with focus on activities within KBNP and VNP that provided answers to the following questions; what activities did militias conduct in the park; why did militias occupy protected areas; which terrain was used; what activities were conducted from the protected area to the outer regions; and what challenges were encountered by militias.

Economic

The dramatic decline of hippos in VNP has been linked to the economic returns which militia groups acquired through the sale of the meat (Zoological Society of London 2006). This demonstrates a clear link between the national park (created to protect hippos) and the conflict. Furthermore, the provision of food from hippo meat indicated use of the park for supplying basic provisions;

however all the former FDLR interviewed reported that the national park was a poor place to get food. The assumption that the wildlife within the park provided a free source of protein was not underpinned from the interviews although it should be noted that at the time of the interviews, the hippo populations had already been greatly reduced and the levels of other ungulates had decreased significantly (Languy 2009). The availability of resources such as wildmeat would have also been impacted by the use of the park by refugees who fled the Rwandan genocide. The interviewees made statements such as 'difficult to find meat' and 'difficult to find food'. Furthermore, the economic benefit accrued from the sale of hippo meat and bone was only mentioned by conservation practitioners in relation to economic activities conducted by the militia groups historically and not any of the former FDLR that were interviewed.

Conservation practitioners highlighted other economic activities that they considered to be significant to driving the occupation of VNP by militias, and a clear distinction became apparent between the sets of interviews conducted with the former FDLR members and the conservation community on the type of activities conducted in the park.

The conservation practitioners cited the production of charcoal as the main economic activity of the militias within the park. There have been numerous studies by conservation agencies to understand the value of this industry as it relates to VNP. These analyses have been reported widely (IRIN 2009) and incorporated into UN expert panel reports. The United Nations Security Council's (UNSC) 2008 report presents a conservative estimate that the value of the charcoal trade to the FDLR could have been around 2 million USD per annum (United Nations Security Council 2008). The UNSC 2008 report focuses on the revenue the militia groups generated through the taxation of charcoal or provision of security at charcoal production sites. This indicates that the militia

groups were not necessarily engaged in the creation of the fuel itself and the demand for charcoal locally would still exist regardless of the presence of the militia groups in the region.

It is estimated that several hundred thousand trees from VNP are used annually to supply the charcoal trade, resulting in a net loss of biomass as growth rates are slower than extraction (Languy and Kujirakwinja 2009). From the perspective of conservationists, the loss of woody biomass from VNP presents the biggest challenge to ensuring the integrity of the habitat. With linkages to the economic aspects of the DRC conflict cited as a significant factor in its perpetuation, it bodes well for conservationists to make linkages to economic uses of the national parks within the broader framework of the conflict. By making the link explicit regarding the loss of habitat and its role in providing significant economic resources to armed groups, conservationists have utilized this to draw attention to the lack of adequate protection of the park and advocate for additional resources. What is not clear, however, is whether this is a key motivating variable for the use of VNP to the militias or an unintended benefit that militias are able to exploit.

An alternative linkage of the militias to the charcoal trade was presented by one of the former FDLR combatants interviewed, who made a direct connection between the creation of charcoal and a militia base within VNP:

‘they [FDLR] had to prepare charcoal and send Congolese people to go to sell for them and buy salt for them and so on and bring them some things in the forest’ (Rank unknown, former member of FDLR from Rwanda).

His statement points to the use of the charcoal in relation to barter trading so the FDLR can acquire basic food items. The leap to a multi-million dollar industry that benefits this particular group of militias substantially becomes implausible. However, the limitation in this deduction is as a result of the

sample size as further verification of this relationship between the production of charcoal and barter trading by other former combatants was not obtained.

The differences between conservation practitioners and the former FDLR members interviewed were further emphasized as additional details in the economic activities revealed by the militias was obtained. The main economic benefit associated with VNP by the former FDLR is as a base from which to raid and loot both within the park and beyond. Some of the interviewees had been based in the park and others had not and those based beyond the boundary of the park would enter the space to conduct looting exercises.

‘They [FDLR] only go into the park to make the ambush and then come back into the forest’ (Former FDLR/PARECO Corporal from Rwanda)

In this case, the base was in forested land that was not in the national park; otherwise the link to activities that generated a significant return and reasons for occupation of VNP by the former FDLR interviewed were not reconciled to those highlighted by conservation practitioners. One interviewee even claimed that there was ‘no money in the park’ (former FDLR soldier from Rwanda).

Whilst the connection to meaningful economic activities and occupation indicated by conservation practitioners was not confirmed by the FDLR, conservation practitioners indicated other forms of economic activity, beyond the trade in charcoal, that were prevalent within the park. Although, no meetings were held with members of the CNDP, who at the time of the interviews were occupying the bordering section of VNP with Rwanda, linkages were made to gorilla tourism being conducted by Nkunda to generate revenue (see Figure 6.1). Visits to mountain gorillas in the Virunga are a sought-after experience with prices of a single visit to groups in neighbouring Uganda and Rwanda costing upwards of USD 500. Reports indicated that the ‘tourists’ were primarily low-budget visitors, who presumably, could not afford the costs

of the permits in neighbouring countries (personal communication Augustine Basabose, 2008).

In KBNP conservation practitioners indicated the main economic activity that militias engaged in was the extraction of valuable minerals, namely coltan, gold and cassiterite. The FDLR controlled a large section of KBNP that incorporated mining pits within the park (United Nations Security Council 2008). There seemed to be less emphasis on the production of charcoal as a motivator although it was mentioned. In an interview with the DDRRR officer of MONUC in Bukavu, he indicated that the capacity of the UN Peacekeeping forces and FARDC to pursue the militia groups into the national parks was not sufficient and hence these spaces became a safe haven into which the militias could retreat. He also mentioned the use of the park as a route for the FDLR to move between their northern and southern bases. No militias that had been based in KBNP were interviewed so it is difficult to make further deductions about their motivations in the use of KBNP.

Strategic

A clear link between economic activities and presence of militias in VNP was lacking in statements from the former FDLR interviewed. An alternative reason became apparent, in that the militias were using the park for strategic reasons. In this case I use the word strategic to mean *occupation of a protected area for a military advantage towards achieving an ideological goal*. With the FDLR's declared military objective to be the overthrowing of the Kagame-led government in Rwanda (www.fdlr.org), two interviewees indicated that their positioning within VNP was part of the strategy for the rebellion to succeed.

'they [FDLR] decided to go there [have a base in the park] to push out Nkunda and the MaiMai' (former FDLR soldier from Rwanda)

'It [having a base in Binza, in the savannah section of southern VNP] was strategic because [they are] trying to reach Rwanda' (former FDLR Commander from Rwanda)

VNP is located along the border with Rwanda where it is contiguous to another national park, the *Parc National des Volcans* (PNV). This area, therefore, provides a opportunity for gaining entry to Rwanda through a space that is devoid of human habitation and weakly managed by the state. The location of over 26%¹⁰ of protected areas within Sub-Saharan Africa along an international border merits an understanding of the historical context in which they were established. The two case-study sites chosen for this research are either in proximity (KBNP) or along international boundaries (VNP), in this case with Rwanda and Uganda. The regionalization of the conflict has been well documented (Chapter 2) and the involvement and engagement of Rwanda in particular continued to be criticized during and post the research period (Human Rights Watch 2013). The key point here is the aspect of national parks overlapping with border areas is arguably a factor in the link between violence and conservation and in the case of VNP, a direct connection to a neighbouring state is significant.

Other interviewees pointed to the fact that the national park was an area where they could escape reprisals from various armed groups. Statements such as 'away from villages where they are targeted' and 'difficult to leave because of attacks' indicate that militia groups are being pushed into protected areas (Le Billion and Springer 2007a). This points to a pull-and-push scenario with

¹⁰ Calculated utilising National Park data from the UNEP World Conservation Monitoring Centre (WCMC) downloaded on 22 September 2013. Additional layers downloaded from <http://www.diva-gis.org/> and openstreetmap (<http://wiki.openstreetmap.org/wiki/Planet.osm>, <http://download.geofabrik.de/>). Software used to map National Parks across Africa was QuantumGIS (QGIS 2.2 Valmiera) and the operating system is Linux Ubuntu 12.04.3 LTS.

protected areas being the only space available for militia groups to retreat to and, in this context, contribute to furthering the groups' causes.

'They [FDLR] decided to make their camps in the Virunga park, in the forest, because when they were in the villages, they were attacked by the Tutsis from Rwanda...It was better to go in the forest for security reasons.' (Former Propaganda officer for FDLR from Rwanda)

This aspect of national parks providing a safe haven for militias groups was highlighted in an interview with the DDRRR officer of MONUC in Bukavu. He cited the lack of human presence and military capacity to engage with FDLR in the park (in this case KBNP) as reasons for militia groups using these spaces.

This situation is further compounded by the poor protection afforded by the ICCN, the institution established to protect the parks. Two conservation practitioners felt that this was one of the reasons why the militia groups used the parks. Placing the history of ICCN within the wider fate of other institutions during Mobutu's rule meant that the weakness of ICCN is not surprising. The poor enforcement of the boundaries of the park led to a lack of clarity regarding ownership of the land and provided opportunity for encroachment and contributed to historical conflicts over land tenure in the region.

A park official from KBNP indicated that the high level of insecurity around the corridor that connects the mountain sector to the lowland sector (Ninja) was due to the local populations desire to acquire the land that was meant to be protected. He implied that the local communities worked with the armed groups to maintain control of this section of the park. This was substantiated by the Chief of Bunyakiri who mentioned that some communities were taking advantage of the conflict to return to lands they had previously inhabited in the park – '[in the] south part of KBNP are people who were asked to leave the park in 1976 by force and during the war they returned and say that it is their land and they do not want to move' (personal communication Chief of Bunyakiri,

Feb, 2008). It is likely that the Chief was referring to the Ninja area in his statement. The use of land as the 'resource' has been argued to be a significant variable in the dynamics of violence in the DRC conflict(Vlassenroot 2004).

The findings described in this section indicate that in VNP the FDLR were being pushed into the space of the national park, although there were known FDLR bases outside the parks across the Kivus (Spittaels and Hilgert 2008), the extent to which they were being forced into the space of the national park is not clear, if other areas were already occupied by their forces. The presence of FDLR in VNP, I would argue, was linked to a continual offensive towards Rwanda and, at a localized level, the park also provided refuge from hostile groups. The lack of significant economic benefit to occupying VNP presented by the former FDLR interviewees support this deduction. The unintended economic benefits (e.g. charcoal, trade in wildlife meat) were not the driving variable in occupation of VNP. This contrasts to the situation of KBNP, where the presence of valuable commodities was likely to be a major factor in its occupation by various militia groups. It should be noted that this deduction was based on the perspectives of the conservation and humanitarian community only. The conflict also presented the opportunity for encroachment by local communities and rebel groups into the protected area especially in areas such as Ninja where conflict over the creation of the park still existed. The invasion and allocation of national park lands by local communities and in collaboration with armed militias raises the issue of the use of park land as a conflict-related resource.

6.3 Conclusion

On balance, researchers agree that both greed and grievance are a factor in conflict with different scholars arguing for the relative importance of greed versus grievance as the primary motivating factor in the inception and duration of violent conflict. The greed argument is based on the premise that valuable natural resources provide the finances to fuel war either through direct rents

accrued by militia groups or through state failure, as a result of a rentier state. Whilst state failure is certainly the case in the DRC, so too is the presence of conflict resources. The greed factor is less significant when comparisons in violence indicate that the park with conflict resources is seemingly less violent than the one without. This finding is linked to Nkunda's movements across North Kivu that stem from his 'grievance' that Congolese Tutsis' rights would be marginalized within the evolving power structures that were emerging from the national elections.

The initial interviews conducted in 2006 sought to establish if any association existed between violence and the national parks. These preliminary interviews with humanitarian and conservation practitioners indicated that there was an association with levels of violence and the national parks of VNP and KBNP. Subsequent data collection in 2007–2008 built on these initial indications by seeking to gain insights into the militias' awareness of protected areas and their motivations to utilize these spaces. The results from the interviews with the former FDLR demonstrated the strategic value of VNP towards achieving their ideological goal, but made limited mention of significant economic returns associated with this occupation. The ideological goal of the FDLR is to overthrow the Tutsi-led government of Rwanda based on a long history of ethnic conflict between the two groups. The militias also use the park as a refuge from attack by other groups. This resonates with the role of the forests during the transition from conflict to post conflict in Cambodia in the 1990s. Forests on the periphery of the country provided a space for political resistance which compromised peace-building efforts (Le Billion and Springer 2007a). This resonates with literature on borders and borderlands whereby spaces are beyond state control and are effectively vacuums that anti-state actors and others can occupy (Goodhand, 2008).

Furthermore, the use of the national park as a base from which to raid and loot from reinforces the lack of abundant resources that might drive use of this space. This also highlights a possible effect of environmental degradation as a result of the conflict leading to changes in use of the park. The destruction of the hippo population is a case in point, where once abundant populations would have provided an easy source of supply and economic reward through the sale of hippo meat and tooth curios, with the exhaustion of the resource alternative sources of supplies would have had to be found. This would have resulted in a change of the use of the park as a strategic base from which to raid and loot rather than a place within which people can subsist. As the dramatic reduction of the hippo population and significant decline of ungulates had occurred prior to the period of data collection, no evidence of a shift in behaviour from poaching wildlife to raiding local populations was obtained in this study, although use of the park as a base for raiding and looting was identified. Ultimately these findings indicate that there is a purpose that is driving the occupation of these spaces.

The results from the interviews with the conservation community presented a different perspective on reasons for the use of the national parks by militia groups, essentially that of economic drivers. These contrasting perspectives echo the academic debate that has coalesced around these two very aspects of conflict – greed and (subjective) grievance. The conservation agenda benefits from linking the destruction of biodiversity-rich habitat (through the production of charcoal) to a major economic activity fueling the conflict. Conservationists are framing their particular context in order to draw attention to national parks and lobby for greater protection and resources if linkages to the war economy can be made. However, the significant revenues cited were not backed up by the FDLR interviewed and seemingly weakened the linkage to a war economy ascribed by the conservation practitioners and speak to the construction of a particular environmental crisis to solicit political and financial

support (Jeanrenaud 2002). It is likely the exploitation of charcoal would be present regardless of the conflict as the drivers for demand would persist.

With indications that the use of the park on balance is ultimately driven by the militia groups to address an ideological objective versus an economic one, what characteristics of this space would contribute to such an outcome? It is in border studies literature that associations between national parks and conflict can be ascertained – primarily in the placement of national parks on the peripheries of countries and the importance of borderlands in conflict. Even with the indications from the conservation practitioners that the use of the national parks is driven by economic interests and that the land itself is a resource, the borderland areas are argued in the literature to provide the opportunity to drive the type of illicit trading mentioned that neighbouring states and borderland elites benefit from. Furthermore, by understanding the historical context within which the national parks were established, a pattern in the emergence of the location of this type of space as a result of colonization is seen across the Sub-Saharan continent, i.e. protected areas along international borders. This potentially points to similar contexts, where violence is concentrated in national parks beyond the Kivus.

In addition to this, with tenure of national parks residing at the state level, incentives for local communities to engage in their protection or management are limited. This is probably a critical factor in the dynamics of violence, as demonstrated in Nindja, along the corridor of the mountain and lowland sector of KBNP where settlers within the national park utilize the militia groups to secure their holdings and prevent the park authorities from evicting them. Couple this with valuable resources (in the case of KBNP), a weak institution barely enforcing protection of large unpopulated lands, the national parks present useful areas for militia groups seeking to maintain a presence and indeed enable their existence as well as further their political agenda.

Figure 6.1: Summary of findings from semi-structured interviews with former FDLR and conservation professionals in Goma and Bukavu in September, October 2006 and from June 2007 to March 2008

<i>THEME</i>	Sub-themes	Interviews with former FDLR (ONLY VNP)	Interviews with conservation professionals (VNP)	Interviews with conservation professionals (KBNP)
<i>Activities in protected area</i>	Economic	Primarily looting and raiding. Not much income from hunting or sale of income	Extraction of wood/charcoal	Mining of gold, cassiterite, coltan
			Hunting of game – elephants, hippos (historically), antelope	Production of charcoal in some areas
			Fisheries	
			Trade in ivory	
			Gorilla tourism (Nkunda-held territory)	
	Training	Not really		
	Livelihood	Not much food available, few animals, some plants and roots		Eating wildmeat, not economic as numbers are low
		Fish more commonly available		
<i>Problems encountered in protected area</i>		Attacks by other militia groups and FARDC		
		Difficulty to find food		
		Difficult to leave because of attacks		

<i>THEME</i>	Sub-themes	Interviews with former FDLR (ONLY VNP)	Interviews with conservation professionals (VNP)	Interviews with conservation professionals (KBNP)
<i>Why in protected area</i>	Strategic	Near their enemy – Nkunda and Rwanda	Weak national institution not effectively protecting national parks	Enables movement between North/South Bases
		Good vantage point – In mountain sector	No people	Military capacity of UN/FARDC not sufficient to capture in park
		Away from villages where they are targeted		Dense forest and inaccessible
				Get support from local community who want to access/encroach park land (Ninja)
	Economic		Only place with resources	Presence of valuable natural resources (gold, cassiterite, coltan)
			Lack of clarity regarding land ownership	As base to raid and loot and attack people as the move across park
<i>Terrain</i>		Mainly forest. But also bases in the mountains, hills and savannah		
<i>Activities outside the protected area</i>	Economic	Small commerce, e.g. brewing beer and cultivation of land		
		Trading with local communities		

7 Conclusion and possible avenues of research

This thesis demands a call for a more meaningful engagement with the environment in conflict resolution theory and practice. Such an engagement would move beyond a narrow focus on valuable primary commodities or the geography of warfare, and account for the parks and protected spaces.

The study explored the relevance of natural resources in conflict in order to provide the framework for later analysis of specific spaces created due to their inherent natural (as opposed to economic) value. Specifically, the value of these spaces is attributed to their biodiversity rather than any valuation of natural resources or sought-after commodities, such as minerals or oil.

Ultimately, the contemporary debate on the relationships between conflict and natural resources proved to be a useful conceptual arena within which to better understand the influences of “national parks” in and on armed conflict. This was further informed by border studies in relation to conflict. The findings generated in this thesis expand our awareness of the linkages between space and conflict. They demonstrate the relative significance of valuable natural resources, terrain, grievance, borders, borderlands and the impact on civilians of armed conflict that is associated with protected areas.

The thesis began with a basic question. Specifically, it asked *how space, in particular the space of a national park, a factor in the dynamics of armed conflict and what this means for the relative contribution of conservation action to conflict studies and environmental governance?* After a far-reaching review of a wide range of literatures, a number of possible research questions emerged:

1. National parks are centres of violence in that they are sources of violence and victimization rates decline as the distance from the park increases;
2. National Parks are spaces devoid of state presence contributing to their utilization by militias as bases from which to raid and loot households in proximity to the park;
3. National Parks are utilized by militias predominantly for economic reasons, exploiting the natural resources that are available there; and
4. National Parks are predominantly located in borderlands contributing to their utilization by militias for strategic reasons to further their ideological goals.

In seeking to respond to these questions, the thesis has also filled a theoretical and empirical gap in conflict studies literature. Indeed, the theoretical review set out in Chapter 1, the historical context discussed in Chapter 2 and the field-based investigations detailed in Chapters 4, 5 and 6 provide a careful consideration of how spaces set aside to conserve biodiversity experience conflict.

Moreover, extensive fieldwork was conducted in selected parks from September to October 2006 and from June 2007 to March 2008. The fieldwork involved a variety of data collection methods including the mapping of injury data (i.e. from health facilities and organizations) and a household survey. Through these methods, linkages between conservation, conflict and possible drivers were explored. Additional methods were qualitative in nature and entailed semi-structured interviews and focus group discussions with women from South Kivu. Such approaches, while not allowing for

generalizable findings, revealed descriptive insights into the causal relationships between conservation and conflict.

Each of the empirical chapters considered the complex relationships involved and the impact of conflict on the national parks. Whilst the focus of much of the literature is on the resource curse and the risks of natural resources in contributing to conflict onset and duration, the particular role of national parks in shaping conflict (or not) is rarely addressed.

There are two schools of thought when considering the question of understanding the association between national parks and conflict. On the one hand, “political ecology” privileges power and on the other, “political economy” which privileges economics. The thesis drew extensively on these two theoretical frameworks and their critiques and includes literature that considers the role of borders and borderlands within these frameworks.

The absence of any deliberation of protected areas in conflict required the need to establish a connection between the presence of national parks and the armed conflict. This meant that patterns of violence as a result of the conflict were assessed in relation to the national parks (Chapters 4 & 5) and the subsequent empirical work sought to understand the underlying factors driving any connection (Chapters 5 & 6). This thesis drew from research generated by standard conflict methods and local assessments, but had to generate new data.

The above-mentioned conceptual framework and methodology yielded three major findings. The first is that there is indeed a relationship between armed conflict and the space of a national park. In other words, it is not just specific

types of commodities or terrains that shape conflict onset, duration and severity, but the wider range of environments such as national parks. The existence of so-called “*violent parks*” lead to a rethinking of these spaces in conflict dynamics suggesting that it is not automatically the case that such spaces contribute to more peaceful dynamics.

The second finding recognizes that for the most part location is an influence on significance of grievance-derived factors in relation to greed-derived factors when determining the relationship between national parks and organized violence. The idea of “*politicized parks*” leads to a re-thinking of models that privilege economic explanations over political ones. The relative significance of *marginalization* and *ownership* in creating politicized parks offer additional findings that give further credence to grievance-based explanations and challenge dominant models of conservation action.

The third finding emerged from more localized research approaches and conveys the importance of such approaches in future conflict and environmental studies. Specifically, the use of health data to more accurately establish locations of violence was novel as was the household survey to more precisely determine linkage and causality.

I argue that these findings confirm the need for a new approach in political ecology that considers the relevance of ecologically significant spaces (including national parks), on armed conflicts. This approach would emphasize the geo-political location, relevance of borders and borderlands and the impact of conservation action, in the creation of national parks, on the onset and perpetuation of armed conflict.

A specific consideration of nature in conflict dynamics would enhance policy and practise in both conservation and conflict resolution. Such a view would expand debate and engagement beyond the narrow focus of managing specific commodities, pursuing humanitarian action and national park creation. Without a doubt, the application of new methods and techniques to uncover significant variables in conflict dynamics is worthy of further academic treatment within environmental and conflict studies.

In conclusion, by adopting these novel theoretical and empirical approaches through the course of this thesis, we have been able to consider alternative resolutions to the central research question.

The next section presents the key findings in detail and explores how this has led to a rethinking of space in conflict dynamics and in the politics of conflict. It considers how the creation of parks has led to inherent violence and politicization, to dispossessed and marginalized people. The chapter also consider how this novel use of health data and localized research methods have generated alternative perspectives of national parks that are invaluable in establishing their influence on conflict.

The latter section of this chapter reviews the implications of these findings on the political ecology and political economy schools of thought as well as the interplay with grievance-based theories of conflict. The means by which these largely theoretical findings can translate into operational policy responses and action is also discussed. The chapter closes reflecting on future avenues of research and the importance of more debate on the interplay of conservation action (which create national parks) and conflict.

7.1 Key findings

This section presents the key findings from the thesis and argues for a rethink of the relevance of space, particular of national parks within conflict studies and conservation action. In presenting the various facets that this manifests, details from the specific theoretical literatures that are relevant to the inclusion of space, and more explicitly in conflict resolution, are presented.

The following findings are presented within their relative theoretical frameworks. Firstly, national parks are centres of violence. They are utilised by militias to advance their ideological objectives, to seek refuge from enemies, as a base from which to raid and loot and to benefit from easily exploitable, if available, valuable, natural resources .

The relative significance of the aforementioned drivers is dependent on location in relation to the international boundary. Furthermore these are spaces devoid of state and UN intervention which contributes to their use. Finally, the historical context in relation to the creation of the national parks also has a bearing on how these spaces are perceived and contribute to the dynamics related to their control.

7.1.1 Violent parks: rethinking space in conflict

The results demonstrated that levels of sexual violence, as a result of the conflict, were significantly higher when in proximity to KBNP and VNP between 2006 and 2007 (Chapter 4). An additional finding across both case study sites confirmed that specific geographical attributes have no bearing

on the use of national parks in conflict. For example, the type of terrain¹¹ is found to be benign in relation to influencing patterns of violence in any significant way. This finding reinforces the significance of the space that constitutes a national park rather than the geo-physical composition being the key determinant in shaping conflict.

The household survey presented in chapter 5 explores an alternative approach to establishing a connection between a national park and the dynamics of armed conflict. In this case, there was a direct connection of an increased likelihood of a household being looted if it was within close proximity to the park. Further findings revealed that the perceptions of individuals interviewed, regardless of how far their house was from the park, strongly associated the national park with the conflict. Armed militias were utilising the park to raid and loot from households, and those closest to the park were the most vulnerable.

Literature on rentier economies and the political ecology of conservation have relevance to this finding. Security of protected areas in the DRC is provided by the ICCN, which is a paramilitary organisation authorised to secure the country's biodiversity estate. The fate of the ICCN and other government institutions as a result of the mismanagement of DRC's natural resource base leads to the creation of areas that were not protected effectively.

Finally, theories in relation to the political ecology of conservation argue that protected area creation is fundamentally violent, resulting in significant

¹¹ The literature focuses on mountainous, hilly and forested areas as it is assumed that this would be advantageous to warring parties (Buhaug, Halvard, Scott Gates and Paivi Lujala. 2009. "Geography, Rebel Capability, and Duration of Civil Conflict." *Journal of Conflict Resolution* 53(4):544-569.)

social and environmental impacts. The findings in relation to links to violence, across both parks studies, support the relevance of the institutional and historical context within which national parks exist.

Ultimately, the created space of a national park is influencing the dynamics of armed conflict which is manifesting itself through increased levels of violence to civilians in proximity to these spaces. These findings reinforce the conclusion that a more explicit consideration of the space of a national park is required when considering the dynamics of armed conflict. However, the relevance of broader contextual considerations is also examined, focusing on additional factors that shape the significance of national parks in conflict.

7.1.2 Parks on the margins: the relevance of internal borders

The formalisation of internal boundaries to create protected areas has resulted in spaces on the edges of state control and brings attention to the concept of 'marginalization' (Robbins 2004: 76) within political ecology. One of the major debates about the influence of natural resources in shaping conflict onset, duration, termination and impact is whether they are significant in shaping the greed derived drivers of conflict, both directly (Collier and Hoeffler 2004) and indirectly (Lam and Wantchekon 2003).

The focus of this work has been on primary commodities including oil, coltan or other precious metals (Basedau and Lay 2009; de Soysa and Neumayer 2007; Fearon 2005). Political ecologists have sought to understand how significant the location, classification and type of resource (Le Billion 2002; Ross 2004b) is to conflict dynamics but their focus continues to be on specific resources. National parks are generally located in remote areas (supporting theories of the relevance of internal borders), are assumed to be rich in resources and supplies (supporting theories of the relevance of greed) and

are sparsely populated, conditions that would all be advantageous to warring factions.

The thesis research was designed to focus on dissecting the role of national parks on the political economy of conflict and understanding the various impacts these spaces might have in relation to greed or grievance. Chapter 6 demonstrates how assumptions about the relative value of a protected area (on the basis of its valuable primary commodities) are challenged. Findings from the qualitative research underline how militias continue to utilise VNP despite the lack of food or supplies and the hippo and other wildlife populations have been hunted out, leaving little wild meat.

The findings also revealed that militias used the park as a refuge from attack, indicating that they encounter little resistance once they are within the boundaries of the park, due to the scarcity of human populations and government presence. It was implied that government and UN forces do not pursue militias into the protected areas since their focus is on securing the areas where human populations are concentrated.

The formalisation of these internal boundaries that have been reinforced since their creation, was apparent in the widespread knowledge of the existence of national parks by the household respondents in chapter 5. They also subjectively associated the space of the national park with insecurity. These findings begin to highlight how the creation of different types of spaces has significance on their use during periods of conflict.

The subsequent section discusses the implications of national park creation, with emphasis on the location of national parks along international borders.

This has proved to be a key factor driving the relationship between national parks and armed conflict.

7.1.3 Political parks: rethinking space in greed and grievance

A quarter of all national parks in Africa are located along international borders. This is as a result of the creation of sovereign and park boundaries during colonization and speaks to the relevance of borderlands studies in relation to uncovering key aspects of the Kivu parks in the on-going conflict. The location along international boundaries enables rebel groups to have an external base, which the majority have used at some stage (Salehyan 2007). Bearing this in mind, the role of the international boundary becomes relevant as rebels may base themselves in a neighbouring state whilst staying close to their objective.

In Eastern DRC, the Rwandan government fights its rebels through the use of proxy groups such as CNDP. The location of VNP on the border of Rwanda and DRC is therefore critical not only for Rwanda who wishes to secure their borders but also for CNDP to receive any support that is forthcoming. As elaborated in Chapter 6, the location of VNP along the border with Rwanda was a critical factor in its occupation. When considered within the framework of marginalization it offers a perspective on the relationship between location and conflict. In this case, it is the occupation of the border area with Rwanda, proving that location is a key factor in the dynamics of the conflict.

Results did reveal that the dominant use of VNP is not necessarily due to the presence of easily exploitable and valuable natural resources. Although the findings highlighted a lack of consensus on whether VNP has such commodities.

This finding does not diminish the relevance of KBNP in the conflict dynamic, which although not contiguous to Rwanda, is still a part of the borderland context. Chapter 2 presents details on the use of the park by Rwandan refugees in 1994 and subsequent exploitation of its mineral wealth by various armed groups. This is supported by the findings from the qualitative research in chapter 5.

KBNP's location in the borderland would have been a factor but this space was recognised as enabling the feasibility of conflict rather than as a space that was significant in the political dynamic of the conflict. These findings reinforce the importance of the space of a national park, its location within the subnational context and the importance of the regional geo-political dynamics, which have all heavily influenced the violence during the period under study.

By placing the creation of these spaces within their historical, political and geographic context, ethnic groups are incorporated at the edges of sovereign boundaries, having been expelled either voluntarily or forcibly from their country of origin as presented in Chapter 2 and confirmed in Chapter 6.

It also presents the marginalization of conservation within the broader conflict context whereby priority is given to humans, with all efforts focusing on securing their safety. Although the merits of placing border areas more centrally within the policy discourse and the practice of war and peace building (Goodhand 2008) have been articulated, they should encompass differing types of space and, in particular, the role of the natural environment and not just trade in commodities or use of proxies.

7.1.4 Ownerless Parks: Vacuums of space

Conservation has primarily been ordered on the basis of state rule and maintained by centralized institutions, which are largely ineffective during periods of conflict. National parks in Africa have been developed during colonization to create wilderness areas untouched by human interference. This has resulted in the creation of spaces that are divorced from the local context due to this state ownership and management. The establishment of these areas during colonial rule speaks to the influence of non-local forms of natural resource management and is problematic (Adams and Hutton 2007; Robbins 2004). During periods of armed conflict, in particular, the result is that these areas are effectively ownerless. They become vacuums of political space where renegade and subversive agents can thrive. The distribution of species, landscapes and location are all factors. Control of these spaces by non-state actors could be considered as a direct act of aggression towards the state, which is (in theory) the legitimate custodian of these areas.

Within the DRC context, the role of land as a 'natural resource' is heavily contested and highly relevant to the national parks, especially in the Kivu region, where there is a history of convoluted land allocations and migrations resulting in a complicated configuring of land ownership.

The creation of national parks has not been exempt. The Kivu region presents 'concentrated [ethnic] groups' (Weidmann 2009) who are opportunistically using the national parks to achieve their goals. The analysis in Chapter 2 demonstrates how the lack of institutional presence has led to the encroachment onto the national park boundaries by a number of actors in the conflict or to re-establish control of previously inhabited land. Examples include the attempted allocation of a portion of VNP by RCD-Goma to Tutsi

refugees from Rwanda and the on-going hostilities in the Ninja region around KBNP linked to the eviction of people from the Bashi tribe.

The privatization of public goods, resources and spaces are considered to be a fundamental obstacle to peace in the DRC (Reyntjens 2005; Vlassenroot and Raeymaekers 2009). Although these analyses rarely extend to the control of national parks, their 'privatization' in this context speaks to the issue of a land resource that is prized due to the political authority associated with its acquisition. VNP and KBNP have effectively become an 'expression of political power' (Robbins 2004: xvi) against the state. Certain militia groups such as CNDP would fall into these theoretical frameworks but others would not such as the FDLR whose ultimate objective is to capture Rwanda and not achieve legitimacy in the DRC.

Finally, whilst factions in the conflict build coalitions that dissolve as circumstances and agendas shift, I argue that the use of the national parks continues to be the same, regardless of the occupier. The national parks are utilized by different militias or rebel groups depending on their situation within a particular period of the conflict. As Chapter 2 illustrates, in some instances, it is in defiance of the state (CNDP, Mayi-Mayi) or the case of RCD-Goma and elements of the emerging FDLR who were both utilizing KBNP.

RCD-Goma was extracting coltan and the FDLR (at least until 2002) utilized it as a refuge. With the integration of RCD-Goma into the transitional government, the FDLR and splinter groups (namely the Rastas) continued to occupy sections of the park. As these areas become overrun by armed groups or actors seeking to gain control of these spaces, the role of conservation

action that favours a national park model, which ascribes exclusive protection over the habitat, is therefore called into question. Conservation action that privileges a state-owned and managed protected area system is therefore worthy of consideration within the framework of political ecology that seeks to understand this discourse more broadly.

7.2 Contributions to theory and methods

Apart from contributing to the dynamics of violence in the Kivus, this thesis has made a number of additions to both theoretical and methodological considerations in relation to conflict studies and conservation action. This section presents detail on the contributions of this thesis to the theoretical frameworks of political ecology and economy. It also presents detail on the novel use of methods that were applied to this context.

7.2.1 Parks and space: Contributions to political ecology and political economy

When national parks are in weak states where institutional effectiveness is compromised, on or close to international boundaries, they contribute to perpetuating violence during armed conflict. By placing national parks within their historical context it is recognizable that the influence of a weak state and the indirect impact of the political economy of conflict contribute to the conditions for the perfect storm.

The presence of valuable commodities does contribute to their use but it is their construction and geo-political situation which are the dominant factors in their occupation. It is apparent that regardless of their composition, the space of the national park is a variable in conflict and with this deduction, the role of space, (space allocated for the protection of biodiversity), is significant. The national parks are a space for militia groups to regroup and

promote their ideologies and/or conduct economic activities – these spaces therefore provide opportunity.

The contextual environment that has been developed as a result of the rentier economy, creating weak institutions and the political ecology of protected area creation are significant factors in how this space is enabled to participate in violent conflict. The lack of explicit consideration of national parks in conflict studies within Political Ecology and Economy is a critical omission.

Border studies rightly bring to bear the relevance of space in conflict, but also make little mention of national parks. Political ecology focuses on environmental degradation, construction of nature and how that influences and affects political processes but does not consider how ‘natural’ spaces affect political processes. By explicitly exploring linkages between space and the political economy and ecology of conflict, this thesis has uncovered the relevance conservation action and contributed to identifying protected areas as entities worthy of further empirical investigation.

The frameworks that encompass political economy, grievance-based theories, borders and borderlands and political ecology benefit from the consideration of differing types of space more explicitly as demonstrated by the findings of this thesis.

7.2.2 Contributions to conflict studies methods

The emergence of localized research in conflict studies, presented in Chapter 3, laid the foundation for the methodological approach in this thesis. However, its recent application meant that new data had to be generated to respond to the central research question. This approach enabled insights to

be gained at different levels from the perspective of an individual (Chapter 6) through to the relationship of a household to conservation and conflict (Chapter 5) and across wider geographic space as patterns of violence were established through the novel use of injury data (Chapter 4). The challenge of establishing the relevant unit presented in Chapter 3 is addressed through the collection of primary data at different scales and incorporating analysis of the impacts of conflict on civilians.

Novel application of health data

Most academics agree that civil wars exceed a baseline level of lethal violence; usually in excess of a certain number of deaths a year or a point at which 1,000 battle-related deaths have ensued. Yet the situation in DRC confounds these externally-rendered definitions. Indeed, civil war related insecurity in DRC is not just a function of direct battle-related deaths but also of wider indirect fatalities resulting from illness and disease.

Research conducted in this thesis revealed how sexual violence is also a form of conflict-related injury less often engaged in literature. Additionally, low levels of violence that would not pass the threshold are likely to be a precursor to larger conflicts (Salehyan 2007) and therefore important to consider. The collection and use of sexual violence data in chapter 4 as a core variable to establish the linkage demonstrates the value of using data from civilian casualties to understand conflict dynamics.

By measuring violence over a specific time period and exposing the relevance of the use of data on civilian casualties to understanding conflict dynamics, is a novel way of understanding conflict. In Chapter 6, the results from a review of available sexual violence data enabled an assessment and

comparison of violence at an appropriate scale between the two sites. This not only added robustness to the analysis but also substantiated the relative significance of different drivers that would not have been possible otherwise considering the constraints of access to other forms of injury data.

Localized parks: enhanced understanding in conflict studies

Chapter 5 exposed the relevance of situating the national parks within their local context by eliciting detail not only on perspectives of conservation and conflict but also on the tangible impact this had at the household level. Household surveys are a powerful tool for assessing victimization and the impact of conflict on households and wider social relations (International Rescue Committee 2004; Roberts et al. 2004; United Nations 2005). Bringing the parks into this context enabled a more nuanced understanding of the complexity of variables involved in conflict. The localized approaches employed in this thesis to understand conflict, acknowledged the sub-national relevance of dynamics to conflict and ultimately yielded insights that established correlation and causality between the space of a national park and violence. This would not have been possible had analysis been considered at the national scale where the units of analysis may have been too broad to ascribe any connections.

7.3 Policy recommendations

Integrating the role of national parks on armed conflicts within conflict studies provides linkages between violence and natural spaces that have not been previously considered. These linkages address the critique of the exclusion of environmental considerations within conflict studies. Their inclusion is necessary if advances in conflict studies and environmental governance are to be made.

As elaborated in Chapter 4, approaching the issue of the dynamics of violence from the perspective of an area that has been allocated for protection for conservation presented an alternative correlation between these spaces and conflict. Therefore, consideration of these spaces in conflict studies can not only improve contemporary conflict resolution policy and practise but also inform the governance of areas of high biodiversity. How therefore can the concept of political ecology of conflict and conservation be incorporated into everyday environmental and conflict policy?

In Chapter 1, I presented findings from a range of academics of the various impacts differing resources have had on conflict onset and perpetuation. This is reflected in current policy responses through the creation of legislation to control the import of conflict minerals into the USA through the Frank Dodd Act (US Securities and Exchange Commission 2013). The focus of these policy shifts is, however, on trade in minerals and valuable natural resources as opposed to the protection or consideration of areas of high biodiversity.

Although previous efforts to introduce specific teams to fight environmental degradation, such as 'Green Helmets', were rejected by the Group of 77 developing countries due to concerns over sovereignty of natural assets (Dabelko 2008) more recent attempts have been revived but linked to threats as a result of climate change (Goldenberg 2011). The integration more fundamentally of the environment within policy discussion regarding conflict resolution is lacking and this is where the primary action should be focused. Singling out specific resources detracts from the broader interactions between the political context of conflict and nature.

Despite the existence of a number of multilateral environment agreements developed to manage the impact of human activities on areas of high biodiversity, they are rarely enforced during the period of conflict and environmental destruction and degradation is a global phenomenon (Najam 2006 cited in Crawford and Bernstein 2008). The incorporation of broader environmental concerns that include securing protected areas in peace negotiations and agreements should be more explicitly articulated.

The lack of inclusion of gender-based violence and women in peace negotiations has already been highlighted (Daley 2006), and this should be extended to include the broader environment and an acknowledgement of how this interacts with patterns of violence should be sought during peace negotiations.

If the relevance of who has access and control of resources, rather than the resources themselves, are the significant consideration in conflict studies (Peluso and Watts 2001), reasserting control of the resource by a legitimate authority, which maybe a peacekeeping force during conflict, will have an impact on the dynamics of conflict.

Approaches, however, should not only consider securing the space of a national park but also enhancing the security of populations that live in proximity to these hotspots. Increasing protection of areas in proximity to protected areas rather than increased protection of protected areas themselves, would resonate more readily with peacekeeping mandates and humanitarian action, during conflict. Especially as findings from chapter 5 highlighted how households in proximity to the national parks are more vulnerable and more affected by the impacts of the use of the protected areas by militias.

Alternative approaches to conservation that move beyond the premise that national parks should be owned and managed by the state already exist (IUCN 1994) but are not widely applied. The abandoning of ownership of these areas during periods of conflict increases the likelihood of their occupation by actors who opportunistically utilize these spaces to further political and ideological agendas. Reasserting ownership of areas of high biodiversity at local levels engenders a sense of ownership and obligation to support rather than derail efforts to maintain the integrity of these areas in a locally appropriate fashion. The findings from extensive research by Political Ecologists on conservation action can inform policy development moving forward.

7.4 Further avenues for research

The findings from this thesis presented robust evidence of the role of national parks on armed conflict. However, in seeking to establish the existence of the relationship a number of additional avenues are worthy of further investigation which test the extent to which these spaces are relevant in conflict but also the relevance of gender with conflict studies and the value of institutions to the conservation/conflict interface.

Although the influence of the national parks within the context of the Kivus is arguably significant, extrapolating this consideration beyond one specific case warrants further analysis, considering the findings of studies that show that relationships between natural resources and armed conflict are maybe driven by specific cases (Rustad et al. 2008). Further research on the role of national parks that are located far from international borders in conflict would contrast to the context of the findings in this thesis, which acknowledges the importance of border areas in driving the occupation of these spaces. Similar studies in other areas within Asia or West Africa where

the historical context of national parks may be different would also yield valuable insights. Chapter 1 presented detail on the role of timber in Cambodia in shaping the conflict and post-conflict context and on Liberia, where natural resources have been associated with the recent conflict and the post-conflict occupation of Sapo National Park.

The findings from Chapter 4 highlight the gender dimensions of conflict, and in particular the use of sexual violence. Women are overwhelmingly the main victims of sexual violence and gender dimensions of conflict in the DRC have been explored in academic research. Rape within the DRC conflict context has been explained through discourses around heterosexuality, masculinity and femininity. The act of rape reinforces the rapist's masculinity as it realizes aspects of being a provider and fighter. Members of the Congolese Military (FARDC) highlighted how they would distinguish between a life in combat and a ' "normal" ' (Baaz and Stern 2009: 498) life.

Rape, during a time of conflict as a member of an armed group, enables the rapist to release their sexual tension in order to perform their functions as a soldier. FARDC soldiers also distinguished between rape for lust and 'evil' (Baaz and Stern 2009: 510) rape, where unthinkable behaviour to humiliate and destroy a person's dignity becomes conceivable as a result of being within a context of conflict (Baaz and Stern 2009). This work supports the link between conflict and sexual violence and reinforces the validity of using such data to establish level and locations of violence related to the war. Further explorations into this aspect of the conflict fall beyond the scope of the study but understanding drivers of victimization along gender lines is worthy of additional investigation, as is understanding the wider impact of

conflict beyond casualties of armed clashes (Baaz and Stern 2010; Plümper and Neumayer 2006)

Although it has been argued that conflict, in certain contexts, reduces destruction of biodiversity (Martin and Szuter 1999; McNeely 2003), in the context of the Kivus, the impact on flora and fauna has largely been negative. The use of the parks' resources and space, initially by large numbers of refugees and then various armed groups has resulted in dramatic declines in large mammal populations and degradation of large areas of habitat. Although the state is responsible for ensuring that these areas are not exploited, (as defined in national law), the lack of adequate protection by the park authority is not surprising considering the scale of the human population movements and strength of the armed groups. The effectiveness of nationalized management of natural resources through a consideration of the relevance and effectiveness of the institutions responsible for these functions are also worthy of further investigation.

Unless there is a fundamental shift in the consideration of the natural environment within conflict studies, policy and environmental governance structures currently dominant in conservation practice will continue to be a negative variable in the conflict in the Kivus and beyond.

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Appendix 2: Datasheet developed to collect sexual violence data

SEXUAL VIOLENCE DATA COLLECTION SHEET

Name of institution:- _____

Province:- _____

Month:- _____

Year:- _____

No.	Referral (Y/N)	Referred by	Date of incident (m/yr)	Age	Sex	No. of aggressors	Identity of aggressors	Residence of victim (village)	Residence of victim(groupment/ territory)	Place of incident (village/territory)	Place of incident eg field, forest, home

Appendix 3: Sexual violence codebook for dataset for North Kivu

SEXUAL VIOLENCE CODEBOOK FOR DATASET FOR NORTH KIVU

Health Zones were used as the boundary for data collection. In North Kivu data was collected to cover, as much as possible, the following health zones:-

- Rutshuru
- Binza
- Karisimbi/Nyarigongo
- Kayna
- Mweso
- Masisi
- Kabati
- Bambo
- Birambizo
- Goma: within Goma data was collected from the following Health Centres:
 - Goma general hospital
 - Heal Africa (formerly DOCS) general hospital
 - GESOM general hospital
 - Kechero General Hospital (run by CRN)
 - CBCA
Le Charity
 - Bestesda

Number – unique number for each violent act. The following sections in the number refer to the health institution the data was collected from:-

ALIM – Alimbongo Health Centre, Alimbongo town

DOCS- Heal Africa, Goma town

CHARITY- Le Charity Hospital, Goma town

¹²CRN_OCT_04 – CRN (Christian Relief Network) October 2004

CRN_NOV_04 - CRN (Christian Relief Network) November 2004

CRN_DEC_04 - CRN (Christian Relief Network) December 2004

CRN_JAN_05 - CRN (Christian Relief Network) January 2005

CRN_FEB_05 - CRN (Christian Relief Network) February 2005

CRN_MAR_05 - CRN (Christian Relief Network) March 2005

CRN_APR_05 - CRN (Christian Relief Network) April 2005

CRN_MAY_05 - CRN (Christian Relief Network) May 2005

CRN_JUN_05 - CRN (Christian Relief Network) June 2005

CRN_JUL_05 - CRN (Christian Relief Network) July 2005

CRN_AUG_05 - CRN (Christian Relief Network) August 2005

¹² Data collected from CRN did not include the following areas – Walikali ie victims registered at the following health centres Tinga, Kibua, Kaserere (?). Also victims from Walikali that were registered in other areas were removed from the data set.

CRN_SEP_05- CRN (Christian Relief Network) September 2005
 CRN_OCT_05- CRN (Christian Relief Network) October 2005
 CRN_NOV_05- CRN (Christian Relief Network) November 2005
 CRN_DEC_05- CRN (Christian Relief Network) December 2005
 CRN_JAN_06- CRN (Christian Relief Network) January 2006
 CRN_FEB_06- CRN (Christian Relief Network) February 2006
 CRN_MAR_06- CRN (Christian Relief Network) March 2006
 CRN_APR_06- CRN (Christian Relief Network) April 2006
 CRN_MAY_06- CRN (Christian Relief Network) May 2006
 CRN_JUN_06- CRN (Christian Relief Network) June 2006
 CRN_JUL_06- CRN (Christian Relief Network) July 2006
 CRN_AUG_06- CRN (Christian Relief Network) August 2006
 CRN_SEP_06- CRN (Christian Relief Network) September 2006
 CRN_OCT_06- CRN (Christian Relief Network) October 2006
 CRN_NOV_06- CRN (Christian Relief Network) November 2006
 CRN_DEC_06- CRN (Christian Relief Network) December 2006
 CRN_JAN_07- CRN (Christian Relief Network) January 2007
 CRN_FEB_07- CRN (Christian Relief Network) February 2007
 CRN_MAR_07- CRN (Christian Relief Network) March 2007
 CRN_APR_07- CRN (Christian Relief Network) April 2007
 CRN_MAY_07- CRN (Christian Relief Network) May 2007
 CRN_JUN_07- CRN (Christian Relief Network) June 2007
 GESOM – GESOM Hospital, Goma town
 MSF_RUT_07 – MSF France Rutshuru General Hospital 2007, Rutshuru town
 MSF_KY_07- MSF France Kayna General Hospital 2007, Kayna town
 MSF_NY_06 – MSF France Nyanzale General Hospital 2006, Nyanzale town
 MSF_NY_07 – MSF France Nyanzale General Hospital 2007, Nyanzale town
 VIR_GH – Virunga General Hospital, Goma town
 RWAN – Rwanguba General Hospital, Rwanguba town
 RUT_CBCA – Rutshuru General Hospital, CBCA support, Rutshuru town
 KAN_CBCA_07 – CBCA Kanyabayonga Health Centre, Kanyabayonga town

The following gaps in sexual violence data are from the following periods and organisations:-

MSF France Rutshuru – Oct 2005- December 2006 – Records in MSF France’s Paris office

MSF France Kayna – October 2005 – December 2006

MSF France Kanyabayonga – the entire length of the program from October 2005 – January 2007

Referral - Has the victim been referred from another Health institution?

Referred by - The name of the Health institution if the victim has been referred.

Date of incident (month/year) – Where available, the month/year that the incident occurred in recorded

Age of victim - Where available, victims ages have been categorized as follows –

0-5 yrs
6-12 yrs
13-18 yrs
19-45 yrs
+45 yrs
Adult¹³
Child¹⁴

Sex of victim - Where available the sex of the victim is recorded

No. of aggressors - Where available the number of aggressors that were involved in the violent act. These numbers have been categorized as follows-

1, 2-5, +5

Identity of aggressors - Where available the identity of the aggressors has been recorded into the following categories-

Civilian – either known or unknown to the victim. This group included (where indicated in the records) family members, people from the local community, classmates, fisherman, teacher, hunters, cowboys, ex. Military, demobilized soldiers, bandits, poachers, shepherd.

Combatant – individual in military fatigues either known or unknown to the victim

Gunman – Any armed man, not clear whether civilian or combatant and gunshots were heard

FDLR – member(s) of the FDLR militia group

Police – member(s) of the national police force

MaiMai – member(s) of the MaiMai militia group

Blank – no mention of identity, unknown or unidentified

Residence of victim (village) - The name of the village/locality that the victim resides in.

Residence of victim (territory) - The name of the territory the victim resides within.

Place of incident (village) – The name of the village/locality that the incident occurred

¹³ Some records only indicate that the victim is an adult

¹⁴ Some records only indicate that the victim is a child

Place of incident eg forest, field etc – The environment within which the incident occurred. The following categories have been utilized:-

Aggressor's residence – the incident occurred at the residence of the aggressor

Field – the incident occurred either to/from or within the field. Field normally refers to area utilized for cultivation and on average is approximately ????? (REF) km from the residence.

School – the incident occurred either to/from school or at school.

Residence – the incident occurred within or near the residence of the victim

Bush/Forest – the words for bush ('brousse') and forest are interchangeable. Difficult to distinguish, from the records, exactly which environment the incident occurred within.

Forest – the incident occurred within a forested environment normally whilst collecting fuel wood.

Blank – no mention of environment within which the incident occurred.

Hiding place – the incident occurred with the victim's hiding place

River – the incident occurred either to/from the river or at the river. Water collection points are on average approximately???? km from the residence.

Market – the incident occurred either to/from the market or at the market

Quarter/village – the incident occurred within the quarter/village, including to/from Church (records CRN_OCT_06/203 and CRN_DEC_06/14)

Road – the incident occurred on the road and includes to/from a trip.

Kidnapped & raped in forest – location of abduction of the victim is not specified but the incident occurred in a forested environment

Kidnapped in forest – location of abduction of victim is from a forested environment but environment of the incident is not specified

Kidnapped to/from market – location of the abduction of the victim is to/from market but the environment of the incident is not specified

Kidnapped to/from field - location of the abduction of the victim is to/from field but the environment of the incident is not specified

Kidnapped to/from residence - location of the abduction of the victim is from their residence but the environment of the incident is not specified

Date of admittance – Month/Year the victim was first registered at the health institution for a treatment.

Appendix 4: Household survey questionnaire instrument

SECTION 1: INTERVIEWERS INFORMATION

1.) Interviewers name:- _____

2.) Date of interview:- _____

3.) Number of interview per day:- _____

4.) Name of village:- _____

5.) Name of localitie:- _____

6.) Name of groupment:- _____

7.) Name of terrority:- _____

8.) GPS point (provided by supervisor):-

SECTION 2: HOUSEHOLD ROOSTER:

IDENTIFY THE HOUSEHOLD WHERE THE INTERVIEW WILL TAKE PLACE. ASK FOR THE MOST SENIOR MEMBER OF THE HOUSEHOLD THAT IS AVAILABLE AT THAT TIME, INTRODUCE YOURSELF AND THE PROJECT AND START THE INTERVIEW:

READ:- My name is _____. I work for a researcher with an economics University. I am currently conducting a household questionnaire to better understand the people of this area. This questionnaire is part of a project that involves other areas of Eastern Democratic Republic of Congo. I would be thankful if you would be willing to answer some questions for me. I will not be writing your name or sharing the information you give me with anyone in this area or the government.

READ:- The following are general questions about the members of this household.

1) Do you eat and sleep in this household most days? (Circle answer given)

1. Yes

2. No

IF THE RESPONDENT ANSWERS NO, YOU SHOULD ASK TO SPEAK WITH SOMEONE ELSE FROM THE HOUSEHOLD THAT DOES EAT AND SLEEP IN THE HOUSEHOLD MOST DAYS. IF YOU HAD TO IDENTIFY A NEW RESPONDENT PLACE AN X HERE: ____

2) Are you married? (Circle answer given)

1. Yes

2. No

88. Do not want to answer

3) Which ethnic group do you belong to?

1. Please specify _____

99. Do not want to answer

4) How old are you? (Circle answer given)

1. 0-5 years old

2. 6-12 years old

3. 13-18 years old

4. 19-45 years old

5. 45+ years old

88. Do not know

99. Do not want to answer

5) Are you the head of this household? (Circle answer given)

1. Yes

2. No

IF NO, CONTINUE; IF YES GO TO QUESTION 7

6) What is your relationship to the head of the household? Please specify:_____

7) How many people, including yourself, eat and sleep in this household most days? Please specify:_____

8) . List the people (relationships you have to them) who eat and sleep most days in this household with you?

<i>Relationship</i>	<i>Number</i>
Parents	
Parents of spouse	
Spouse(s)	
Children	
Spouse of children	
Brothers	
Sisters	
Uncles	
Aunts	
Cousins	
Nieces	
Nephews	
Friends	
Other	
Other	
Other	
Other	

READ:- Throughout this questionnaire I will ask you questions regarding things that have happened before or after the Rwandan refugees came to DRC. I mean the time before or after the genocide in Rwanda in 1994.

9) Has any one of the people who eats and sleeps in this household most days had to move from their usual place of residence, into this house, because of war or war like events or because of government orders since the Rwandan refugees came to DRC?

1. Yes
2. No
88. Do not know
99. Do not want to answer

IF YES, CONTINUE, IF NO OR DO NOT KNOW OR DO NOT WANT TO ANSWER GO TO 11

10) How many people who eat and sleep in this household most days have had to move from their usual place of residence, into this house, because of war or war like events or because of government orders since the Rwandan refugees came to the DRC? Please specify_____

11) Have any previous members of this household had to move from this house to other areas because of war or war like events or because of government orders since the Rwandan refugees came to DRC?

1. Yes
2. No
88. Do not know
99. Do not want to answer

IF YES, CONTINUE, IF NO OR DO NOT KNOW OR DO NOT WANT TO ANSWER GO TO SECTION 3.

12) How many previous members of this household have had to move from this house to other areas because of war or war like events or because of government orders since the Rwandan refugees came to the DRC? Please specify_____

SECTION 3 : SOCIO-ECONOMIC SITUATION

READ:- The following questions are related to your current living conditions

1) Are the walls of this household made of any of the following materials? (Multiple answers possible)(Circle answers given)

1. Mud
2. Earth bricks
3. Cement bricks
4. Planks
5. Iron sheets

- 6. Grass for the roof
- 7. Rocks
- 8. Dried banana stalk for roof
- 9. Locally burnt bricks
- 10. Other (specify)_____
- 88. Do not know
- 99. Do Not Want to answer

2) Is the roof of this household made of any of the following materials? (Multiple answers possible)(Circle answers given)

- 1. Grass
- 2. Tiles
- 3. Corrugated iron
- 4. Tarpaulin
- 5. Other (specify)_____
- 88. Do not know
- 99. Do Not Want to answer

3) Do any members of this household own a wooden bicycle?

- 1. Yes
- 2. No

IF YES, CONTINUE, IF NO GO TO 5

4) Is yes, what is the total number of wooden bicycles owned by members of this household? 1.

- 1. Please specify_____
- 88. Do not know
- 99. Do not want to answer

5) Do any members of this household own a Chinese bicycle?

- 1. Yes
- 2. No

IF YES, CONTINUE, IF NO GO TO 7

6) If yes, what is the total number of Chinese bicycles owned by members of this household?

- 1. Please specify_____
- 88. Do not know

99. Do not want to answer

7) Do any members of this household own Motorbikes?

1. Yes
2. No

IF YES, CONTINUE, IF NO GO TO 9

8) If yes, what is the total number of motorbikes owned by members of this household?

1. Please specify_____
88. Do not know
99. Do not want to answer

9) Do any members of this household own a Radio?

1. Yes
2. No

IF YES, CONTINUE, IF NO GO TO 11

10) If yes, what is the total number of radios owned by members of this household?

1. Please specify_____
88. Do not know
99. Do not want to answer

11) Do you or any other member of this household own any fields?

1. Yes
2. No
99. Do Not Want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO 16

12) What is the total size of the fields owned by members of this household?

1. Please specify_____
88. Do not know
99. Do not want to answer

13) Are any of these fields that you or any other member of this household own not being utilised?

- 1. Yes
- 2. No
- 88. Do not know
- 99. Do not want to answer

IF YES, CONTINUE, IF NO OR DO NOT KNOW OR DO NOT WANT TO ANSWER GO TO 16

14) If yes, what is the total area of the fields not being utilised?

- 1. Please specify_____
- 88. Do not know
- 99. Do not want to answer

15) Why are these owned fields not being utilised? (if person does not want to answer, please write this in the response section)

16) Do you or any other member of your household rent any fields?

- 1. Yes
- 2. No
- 88. Do not know
- 99. Do not want to answer

IF YES, CONTINUE, IF NO OR DO NOT KNOW OR DO NOT WANT TO ANSWER GO TO 21

17) What is the total area of the fields rented by members of this household?

1. Please specify_____

88. Do not know

99. Do not want to answer

18) Are any of the fields you or members of this household rent not being utilised/not cultivated ie fallow?

1. Yes

2. No

99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 21**

19) If yes, what is the total area of the fields that you or members of this household rent that is not being utilised?

1. Please specify_____

88. Do not know

99. Do not want to answer

20) Why are these rented fields not being utilised? (if person does not want to answer, please write this in the response section)

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

21) Did you own any livestock before the Rwandan refugees came to DRC?

1. Yes

2. No

99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 42**

22) Did you own any cows before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 24**

23) If yes, how many cows did you own before the Rwandan refugees came to DRC?

1. Please specify_____
88. Do not know
99. Do not want to answer

24) Did you own any goats before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 26**

25) If yes, how many goats did you own before the Rwandan refugees came to DRC?

1. Please specify_____
88. Do not know
99. Do not want to answer

26) Did you own any sheep before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 28**

27) If yes, how many sheep did you own before the Rwandan refugees came to DRC?

1. Please specify_____
88. Do not know
99. Do not want to answer

28) Did you own any pigs before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 30**

29) If yes, how many pigs did you own before the Rwandan refugees came to DRC?

1. Please specify_____
88. Do not know
99. Do not want to answer

30) Did you own any chickens before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 32**

31) If yes, how many chickens did you own before the Rwandan refugees came to DRC?

1. Please specify_____
88. Do not know
99. Do not want to answer

32) Did you own any ducks before the Rwandan refugees came to DRC?

1. Yes

- 2. No
- 99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 34**

33) If yes, how many ducks did you own before the Rwandan refugees came to DRC?

- 1. Please specify _____
- 88. Do not know
- 99. Do not want to answer

34) Did you own any 'PINTOOLES' (wild bird?) before the Rwandan refugees came to DRC?

- 1. Yes
- 2. No
- 99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 36**

35) If yes, how many 'PINTOOLES' (wildbird?) did you own before the Rwandan refugees came to DRC?

- 1. Please specify _____
- 88. Do not know
- 99. Do not want to answer

36) Did you own any guinepigs before the Rwandan refugees came to DRC?

- 1. Yes
- 2. No
- 99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 38**

37) If yes, how many guinepigs did you own before the Rwandan refugees came to DRC?

- 1. Please specify _____
- 88. Do not know
- 99. Do not want to answer

38) Did you own any turkeys before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 40**

39) If yes, how many turkeys did you own before the Rwandan refugees came to DRC?

1. Please specify _____
88. Do not know
99. Do not want to answer

40) Did you own any rabbits before the Rwandan refugees came to DRC?

1. Yes
2. No
99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 42**

41) If yes, how many rabbits did you own before the Rwandan refugees came to DRC?

1. Please specify _____
88. Do not know
99. Do not want to answer

42) Do you own any livestock now?

1. Yes
2. No
99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 63**

43) Do you own any cows now?

1. Yes
2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 45**

44) How many cows to you own now?

1. Please specify_____

88. Do not know

99. Don't want to answer

45) Do you own any goats now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 47**

46) How many goats to you own now?

1. Please specify_____

88. Do not know

99. Do not want to answer

47) Do you own any sheep now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 49**

48) How many sheep to you own now?

1. Please specify_____

88. Do not know

99. Do not want to answer

49) Do you own any pigs now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 51**

50) How many pigs do you own now?

1. Please specify_____

88. Do not know

99. Do not want to answer

51) Do you own any chickens now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 53**

52) How many chickens do you own now?

1. Please specify_____

88. Do not know

99. Do not want to answer

53) Do you own any ducks now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 55**

54) If yes, how many ducks do you own now?

1. Please specify_____

88. Do not know

99. Do not want to answer

55) Do you own any 'PINTOOLES' (wildbird?) now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 57**

56) If yes, how many 'PINTOOLES' (wildbird?) do you own now?

1. Please specify _____

88. Do not know

99. Do not want to answer

57) Do you own any guinepigs now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 59**

58) If yes, how many guinepigs do you own now?

1. Please specify _____

88. Do not know

99. Do not want to answer

59) Do you own any turkeys now?

1. Yes

2. No

99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 61**

60) If yes, how many turkeys do you own now?

1. Please specify _____

88. Do not know

99. Do not want to answer

61) Do you own any rabbits now?

1. Yes
2. No
99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 63**

62) If yes, how many rabbits do you own now?

1. Please specify_____
88. Do not know
99. Do not want to answer

63) What are the main ways of making money in this village?
How important is each way to you? (if do not want to answer write
in the table below)

	Source of revenue	Importance: 1: Very important 2: Important 3: Less important
1		
2		
3		
4		
5		

SECTION 4: SATISFACTION WITH LIVING AREA

READ:- The following questions are related to incidents in your living environment over the last month.

1) Have you heard weapon shots in your neighbourhood in the last month?

1. Yes
2. No
99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 3**

2) If yes, how often have you heard the weapon shots in your neighbourhood in the last month?

- 1. At least once per day
- 2. Once a week
- 3. Not even once a week, but at least once this month.
- 4. No weapon shots in the last month
- 99. Do Not Want to answer

3) Have you seen any type of firearm in your neighbourhood in the last month?

- 1. Yes
- 2. No
- 99. Do Not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 6**

4) If yes, was it held by someone that you know?

- 1. Yes
- 2. No
- 99. Do not want to answer

5) Please describe the type of firearm that you last saw ? (if person does not want to answer please write this in the response section) (AND SHOW CARD LATER TO CONFIRM)

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READ:- *The following questions are related to incidents in your living environment from the time when Mzee Kabila became president of the Democratic Republic of Congo in 1996 to today.*

6) Has the house you mostly live in been looted since the time Mzee Kabila became president of DRC?

1. Yes
2. No
99. Do Not Want to answer

7) Has anyone in this household been a victim of a crime or a violent encounter since Mzee Kabila became president of DRC?

1. Yes
2. No
99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO SECTION 5**

8) How many members of this household have been victims of a crime or a violent encounter since Mzee Kabila became president of DRC?

1. Please specify _____
88. Do not know
99. Do Not Want to answer

9) What type of crime or violence did the members of this household who have been victims of a crime or violent encounter since Mzee Kabila became president of DRC experience? (Multiple responses are acceptable) (Circle answers given)

1. Fight with or involving only people from this village
2. Fight with or involving only people from outside this village
3. Fight with or involving both people from your village and people from outside this village
4. Robbery by only people from this village
5. Robbery by only people from outside this village

6. Robbery by both people from you village and people from outside this village
7. Armed Attack by people from outside this village
8. Other. Please specify _____
99. Do not want to answer

SECTION 5: MORTALITY AND MISSING MEMBERS OF THE FAMILY

READ:- Thank-you for your patience so far. I have a couple more questions and would like you to focus on issues regarding members of this household that have gone missing or died since Mzee Kabila became president of DRC in 1996.

1) Has any person(s) who was a regular household member died or gone missing since Mzee Kabila became president of DRC in 1996?

- 1) Yes
- 2) No
- 99) Do Not Want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO SECTION 6

2) If yes, how many people from you household have died or gone missing since Mzee Kabila became president of DRC in 1996?

1. 1-4
2. 5-10
3. +10
88. Do not know
99. Do Not Want to answer

3) Was the cause for any of the household members' death since Mzee Kabila became president of DRC in 1996 due to disease?

1. Yes
2. No
99. Don't want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO 5

4) If yes, how many household members have died due to disease since Mzee Kabila took power?

1. Please specify_____

88 Don't Know

99 Do not want to answer

5) Was the cause for any of the household members' death since Mzee Kabila took power due to a traffic accident?

1. Yes

2. No

99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 7**

6) If yes, how many household members have died due to traffic accidents since Mzee Kabila took power?

1. Please specify_____

98 Don't Know

99 Do not want to answer

7) Was the cause for any of the household members' death since Mzee Kabila took power due to war related events?

1. Yes

2. No

99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 9**

8) If yes, how many household members have died due to war related events since Mzee Kabila took power?

1. Please specify_____

98 Don't Know

99 Do not want to answer

9) Was the cause for any of the household members' death since Mzee Kabila took power related to pregnancy or childbirth?

1. Yes

2. No

99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 11**

10) If yes, how many household members have died due to pregnancy or childbirth complications since Mzee Kabila took power?

1. Please specify_____

98 Don't Know

99 Do not want to answer

11) Were any household members' abducted by militias since Mzee Kabila took power?

1. Yes

2. No

99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 13**

12) If yes, how many household members have been abducted by militias since Mzee Kabila took power?

1. Please specify_____

98 Don't Know

99 Do not want to answer

13) Were any household members recruited my militia/military since Mzee Kabila took power?

1. Yes

2. No

99. Don't want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO SECTION 6**

14) If yes, how many household members have been recruited by militia/military since Mzee Kabila took power?

1 Please specify_____

98 Don't Know

99 Do not want to answer

CHECK THAT THE TOTAL NUMBER OF PEOPLE MENTIONED IN QUESTIONS 4,6,8,10,12,14 IS THE SAME AS THE TOTAL IN QUESTION 2.

SECTION 6: RELATIONSHIP WITH NATIONAL PARKS AND CONSERVATION

READ:- This is the last section of the questionnaire which is about the natural environment.

1) Do you know any of the names of any of the national parks and or nature reserves in the Democratic Republic of Congo?

1) Yes

2) No

99) Do Not Want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO 6

2) If so, which ones? (List them below)(if person does not want to answer, please write this in the response section)

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3) Do you know the name of your nearest national park or nature reserve to where we are now?

1. Yes

2. No

99 Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 6**

4) If yes, what is it called? Please specify _____
(if person does not want to answer, please write this in the response section)

5) How far is the nearest park or reserve which you mentioned in the previous response?

- 1. Specify distance _____
- 88. Do not know
- 99. Do Not Want to answer

6) In your opinion should areas be made national parks or nature reserves?

- 1. Yes
- 2. No
- 3. No opinion
- 99. Do Not Want to answer

IF YES, CONTINUE, IF NO GO TO 8 , IF NO OPINION OR DO NOT WANT TO ANSWER GO TO 9

7) If yes, why should they be made national parks of nature reserves? (if person does not want to answer, please write this in the response section)

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8) If no, why do you think these areas should not be made national parks or nature reserves? (if person does not want to answer, please write this in the response section)

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9) Do you feel that you as an individual benefit from the national parks and nature reserves?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

IF YES, CONTINUE, IF NO GO TO 11, IF DO NOT WANT TO ANSWER GO TO 12

10) If yes, how? (if person does not want to answer, please write this in the response section)

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11) If no, why not? (if person does not want to answer, please write this in the response section)

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12) In your opinion, do you think that other people in the village benefit from the national parks and nature reserves?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

IF YES, CONTINUE, IF NO GO TO 14, IF DO NOT WANT TO ANSWER GO TO 15

13) If yes, how?(if person does not want to answer, please write this in the response section)

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14) If no, why not?(if person does not want to answer, please write this in the response section)

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15) Do you ever enter your nearest national park or nature reserve for you individual gain?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO 17

16) What do you do inside the national park or nature reserve in order to gain benefit for yourself? (if person does not want to answer, please write this in the response section)

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17) Do you enter the national park or nature reserve on behalf of others?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER GO TO 20

18) Are the people you enter the national park or nature reserve for, any of the following? (Multiple answers possible) (Circle answers given)

- 1. People from your village
- 2. People from another village
- 3. Military/militia group
- 4. Other. Please specify_____
- 99. Do not want to answer

19) When you enter the park for someone else, what do you do in the national park or nature reserve for them? (if person does not want to answer, please write this in the response section)

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20) Where you deriving any benefits from the national park or nature reserve before the Rwandan refugees came to DRC?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

21) Since the Rwandan refugees came to DRC, do you benefit more or less from the national park or nature reserve?

- 1. More
- 2. Less
- 99. Do Not Want to answer

IF MORE, CONTINUE, IF LESS GO TO 23, IF DO NOT WANT TO ANSWER GO TO 24

22) If more, list the additional benefits you get. (if person does not want to answer, please write this in the response section)

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23) If less, list the benefits that you no longer get. (if person does not want to answer, please write this in the response section)

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24) Do you face problems caused by the national park or nature reserve?

- 1. Yes
- 2. No
- 99. Do Not Want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 26**

25) If yes, what kind of problems originate from the park?

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26) Do you think relations between the local community and the park staff have changed since the Rwandan refugees came to DRC?

- 1. Yes
- 2. No
- 99. Do not want to answer

**IF YES, CONTINUE, IF NO OR DO NOT WANT TO ANSWER
GO TO 30**

27) If yes how has it changed?

- 1. Become better
- 2. Become worse
- 99. Do not want to answer

IF BECOME BETTER, CONTINUE, IF BECOME WORSE GO TO 29, IF DO NOT WANT TO ANSWER GO TO 30

28) If improved, what positive aspects can you identify?(if person does not want to answer, please write this in the response section)

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29) If not improved, what negative aspects can you identify?(if person does not want to answer, please write this in the response section)

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30) In your opinion are you better off or worse off having a park close to your home since the Rwandan refugees came to DRC?

- 1. Better
- 2. Worse
- 99. Do Not Want to answer

IF BETTER, CONTINUE, IF WORSE GO TO 32, IF DO NOT WANT TO ANSWER GO TO END

31) If better off, why do you think that is? (if person does not want to answer, please write this in the response section)

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32) If worse off, why do you think that is? (if person does not want to answer, please write this in the response section)

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END

READ:- THANK-YOU VERY MUCH FOR YOUR TIME AND ASSISTANCE. IS THERE ANYTHING I MAY ANSWER BEFORE I LEAVE

SECTION 7: ADDITIONAL INFORMATION

THIS SECTION SHOULD BE FILLED IN BY THE SURVEYOR ALONE

- 1. Sex of the respondent
 - 1. Male
 - 2. Female
- 2. I think the respondent was (circle one):-
 - 1. 0-5 years old
 - 2. 6-12 years old
 - 3. 13-18 years old

4. 19-45 years old

5. 45+ years old

3) When you arrived to conduct the interview the respondent was clearly occupied with something else? (Circle one)

1) Yes. Please

specify: _____

2) No

4) Did you feel that the respondent was eager to respond to your questions? (Circle one)

1) Yes

2) No

5) Did you feel that the respondent was apprehensive to respond to your questions? (Circle one)

1) Yes

2) No

6) Did you feel that the responded was distracted when you were asking him/her questions? (Circle one)

1) Yes

2) No

7) Did you feel that the respondent was attentive to your questions? (Circle one)

1) Yes

2) No

8) The tribe of the people in this area is

9) Which question do you think was problematic to the respondent and why?

YOU ARE DONE, THANK-YOU

Appendix 5: Collation of household survey data

Household Survey notes:

<i>Section/Question number</i>		<i>Meaning of word</i>
Section 2		
8	Other	Includes: orphans, in law, illegitimate children, displaced person, grandchildren, step parents, grand parents
Section 3		
15	Insecurity	-Due to conflict, -war including mention of armed bandits, FDLR, -land occupied by FDLR
	Other	-Disputed ownership -Due to illness -Lack of clear ownership -Problem insects -Destruction by wild animals
	Poverty	Includes: -Lack of resources -Lack of money
2	Other	Includes: - pulp

63		A= Agriculture C = Small business L= Livestock W = Work for others M = Mining CH= Charcoal CS = Civil servant MB = Make bricks MP= Make palm oil F = Fish SA = Sale of alcohol T= Tailoring TE = Teaching N = Nurse (including 'to give medicine') TG = Transport of goods MPL = Make planks (wooden) H = Honey production FC = Fish farming/culture TH= Traditional healer CA = Carpenter
Section 4		
9	Other	-torture by Mayi-Mayi -torture by Rwandan Hutus in the park -torture by Bandits -kidnapped and taken into the forest and

		shot
Section 6		
7	Construction materials	Are primarily wood
	Other	-Can assist somehow in the future -Cannot go against government policy -No problem
8	Other	-Fields are overcome by forest -The forest causes sickness

10	Other	-Attracts community conservation programmes -Contributes to fertile soils -Contributes to improvement of life -Protects against disease
	Provides food	-yams and game
11	Other	-the park is for foreigners -the park is not important
13	Other	-provides passageway to different areas -attracts development projects i.e building of schools -Income from tree cutting -Farming -Own interests -Profit from the help of foreigners
14	Other	-It causes many problems to villagers -Many people don't know it's importance -More for the country than the local population -People do not express their needs -What is the significance of the park?
16	As a passageway	Includes: -to/from Bukavu/Kalonge -to/from market
	Other	-Cultivate crops -Grazing livestock
18	Other	Includes: -poachers -researchers -NGO -park guards -pit sawers
19	Porter	-can include also for the militias
23	Other	-FDLR have destroyed the park -More trees -Work on the road -Tourists no longer come -Used to cultivate and fish culture in the park but cannot because of Rwandan refugees -Do not get good agricultural profitability and the work is very demanding -Taxes

25	Other	-road impracticable through the park -Contributes to poverty
31	Other	-Good place to rest -Helps fight diseases -Visit animals -Visual aids for educating students/pupils
32	Other	-Do not wish to live by the park -Park keeps animals in the park -Refugees in the park -Will get blamed for chasing away the animals
Section 7		
3		1= Cooking 2= No, the interviewee was NOT occupied with something else 3=Preparing to leave home 4=Taking care of a baby 5= Working in the compound 6= Working in the field 7= Socialising with others/friends 8= Other (includes drinking wine, selling things/property, sewing, yes but interviewer did not elaborate on activity, meeting)

Appendix 6: Outline of interview questions for former combatants

Outline of interview questions for former rebels

The basic premise of the interview is to try and further understand why militia groups are utilising protected areas as bases for their activities over other areas.

1. Explain the purpose of the interview and introduce yourself
2. Ask permission from the person to be interviewed
3. Ask whether they mind if the interview is recorded
4. Explain that their name will be changed in any transcripts but I would like to keep the fact that they were interviewed in Goma and that they fought for FDLR – Ask them if they have any problems with that.

Explain the following:-

That I want to understand the world from their point of view. I want to know what you know in the way you know it. I want to understand the meaning of your experience, to walk in your shoes, to feel things as you feel them, to explain things as you explain them. Will you become my teacher and help me understand?

1. Ascertain level of understanding of concept of protected areas – did the militias know that they were in a national park? Did it influence decision making regarding locating of bases?

Do you know what a national park/protected area is?

Can you name any national parks?

Do you know how they become protected?

Do you agree that national parks should exist/

2. Use of national park by militia groups

Where were your bases/mostly based? What type of terrain was this?

Were you mostly based in Virunga or did you ever spend time in other areas of DRC? Which ones?

Was it in a forest? Savannah? Near a large town? (if so, which one?)

Did you like where your bases were placed? Why?

Did you know if your bases were ever in National Parks?

Why do you think you had bases in the national park?

3. Activities conducted whilst in national park/protected areas

What did you do for food?

What did you do for weapons?

What other activities did you conduct in the park? Eg training

Was bushmeat, timber, minerals ever extracted from the national park?

If so, how were you able to extract commodities from the protected area? (Use transport, manual labour?)

Do you know the reason for being based in these areas?

Debriefing – mention some of the main points of the interview back. Allow for comment and feedback.

I have no further questions. Do you have anything more you want to bring up, or ask about, before we finish this interview?

Take 10 minutes after the interview to take notes, impressions