

**A VIEW FROM THE OTHER SIDE OF THE FENCE:  
TSONGA COMMUNITIES AND THE KRUGER NATIONAL PARK, SOUTH AFRICA.**

by

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Brandon P. Anthony

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## Abstract

People whose livelihoods chiefly involve the direct exploitation of local natural resources often come into conflict with the institutions of protected areas, which are dedicated to natural resource conservation or preservation. Many scholars and managers now question the traditional top-down approach of excluding local participation and ignoring local interests in protected areas establishment and management. More participatory planning is believed to enhance local support for biodiversity conservation goals of protected areas. It is also believed that sustainable utilization of certain resources and/or protected area outreach programs will contribute to rural development, especially in underdeveloped countries, and decrease conflicts between local people and park authorities. However, efforts in different parts of the world to integrate objectives of biodiversity conservation and rural development have had mixed results. This research highlights some of the challenges to this process in the communal areas of South Africa.

This research adopts a mixed methods approach utilizing questionnaires, interviews, the Pebble Distribution Method, and Threat Reduction Assessments. It empirically examines the nature of the relationship, including the perceptions and use of natural resources, between the Kruger National Park (KNP) and rural Tsonga communities located adjacent to its western border. Some of these communities are represented on the Hlanganani Forum, established in 1994 when South Africa became a new democracy. The historical background of these communities, which form part of the former Gazankulu homeland, is characterized by a general dissatisfaction with park authorities due to conflicts with wildlife and perceived loss of access to resources within the KNP. Although the focus here is on interactions between South Africa's KNP and its neighbouring rural communities, the findings have relevance and resonance beyond Africa as they raise key questions that can be considered in similar contexts.

Fundamentally, this thesis argues that KNP's success in merging goals of biodiversity conservation and socio-economic development is largely shaped by, and dependent upon, local perceptions of institutions responsible for resource use and access. Specifically for KNP, stronger and more forthright commitment and dedicated investment towards its neighbouring communities is needed. Moreover, to effectively integrate these objectives, KNP and protected areas in similar contexts must:

- i) involve a thorough understanding by all stakeholders of the ongoing needs and aspirations of relevant parties, including local perceptions of nature and its conservation;
- ii) be supported by strong institutions, and enabling legislation and policies;
- iii) meaningfully address immediate concerns including employment, damage-causing animals, and land claims; and
- iv) recognize and accept limitations to partnerships, including those concerning public safety and veterinary risks.

**Keywords:** Kruger National Park, protected areas, community-based conservation, natural resource management, Tsonga, rural livelihoods, human-wildlife conflicts, community fora, Threat Reduction Assessments, Pebble Distribution Method

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## Abbreviations

|            |   |
|------------|---|
| BTB        | Bovine tuberculosis   |
| CAMPFIRE   | Communal Area Management Plan for Indigenous Resources                          |
| CBC        | Community-based Conservation  |
| CBD        | Convention on Biological Diversity  |
| CBNRM      | Community-based Natural Resource Management                                     |
| CED        | Community Environment Development   |
| CITES      | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CLO        | Community Liaison Officer   |
| CONTRALESA | Congress of Traditional Leaders of South Africa                                 |
| CPA        | Community Property Association  |
| CPPPP      | Community Public Private Partnership Programme                                  |
| DANCED     | Danish Cooperation for Environment and Development                              |
| DAVS       | Department of Agriculture - Veterinary Services                                 |
| DBSA       | Development Bank South Africa   |
| DCA        | Damage-causing animal(s)  |
| DFID       | Department for International Development (U.K.)                                 |
| DEAT       | Department of Environmental Affairs and Tourism                                 |
| DFED/EA    | Department of Finance and Economic Development - Environmental Affairs          |
| DLA        | Department of Land Affairs  |
| DWAF       | Department of Water Affairs and Forestry  |
| EIA        | Environmental Impact Assessment   |
| FMD        | Foot-and-Mouth Disease  |
| GNC        | Gazankulu Nature Conservation   |
| GT         | Gazan Trust   |
| GTZ        | Deutsche Gesellschaft für Technische Zusammenarbeit GmbH                        |
| HF         | Hlanganani Forum  |
| HoD        | Head of Department  |
| ICDP       | Integrated Conservation and Development Program                                 |
| INTAC      | Integrated Nature-based Tourism and Conservation Management Program             |
| KNP        | Kruger National Park  |
| LEMA       | Limpopo Environmental Management Act No. 7 of 2003                              |
| LIRDP      | Luangwa Integrated Resources Development Project (Zambia)                       |
| MEC        | Member of Executive Council   |
| NEEP       | National Environmental Education Programme                                      |
| NPB        | National Parks Board  |
| NT         | Nghunghunyani Trust   |
| NTDEA      | Northern Transvaal Department of Environmental Affairs                          |
| PA         | Protected Area(s)   |
| PaC        | People and Conservation Department  |
| PDI        | Previously Disadvantaged Individual   |
| PDM        | Pebble Distribution Method  |
| PoE        | Panel of Experts  |
| PTO        | Permission to Occupy certificate  |
| RDP        | Reconstruction and Development Program  |
| SANDF      | South African National Defence Force  |
| SANP       | South African National Parks  |
| SAPS       | South African Police Service  |
| TA         | Traditional Authorities   |
| TEP        | Tourism Enterprise Programme  |
| THETA      | Tourism & Hospitality Education and Training Authority                          |
| TRA        | Threat Reduction Assessment   |
| ZAR        | South African Rand [1 USD = 6.44 ZAR (2004)]                                    |

## Chapter 1: Introduction

This dissertation examines the relationship between the Kruger National Park (KNP) and rural Tsonga communities located adjacent to its western border. Some of these communities are represented on the Hlanganani Forum, established in 1994 when South Africa became a new democracy. The historical background of these communities is characterized by a perceived inadequacy of compensation for their loss of access to resources within the KNP and to damage caused by wildlife escaping from the park. These historical conflicts continued to occur through the dynamic economic and political transformations within South Africa since 1994. Post-Apartheid changes have witnessed a transformation in KNP policies, which are now more socially inclusive and seek to integrate its core biodiversity conservation objectives with socio-economic ones, designed to assimilate the park into the broader socio-economic landscape and improve relations with its neighbouring communities.

The dissertation highlights some of the challenges to the process of integrating biodiversity conservation and rural development in the communal areas of South Africa. This objective is part of a more general problem concerning participation in resource management by rural communities living in the neighbourhoods of national parks and other protected areas. Although the focus here is on interactions between South Africa's KNP and its neighbouring rural communities, the findings presented here have relevance and resonance beyond Africa as they raise key questions that can be considered in similar contexts.

### 1.1. Background to Research

People whose livelihoods<sup>1</sup> chiefly involve the direct exploitation of local natural resources often come into conflict with the institutions of protected areas, which are dedicated to natural resource conservation or preservation. Many scholars and managers now question the traditional top-down approach of excluding local participation and ignoring local interests in protected areas (PA) establishment and management (Kiss 1990; Rihoy 1995). More participatory planning is believed to enhance local support for biodiversity conservation goals of PAs (MacKinnon *et al.* 1986; Happold 1995; Heinen 1996). It is also believed that sustainable utilization of certain PA resources and/or PA outreach programs will contribute to rural development, especially in underdeveloped countries, and decrease conflicts between local people and park authorities. However, efforts in different parts of the world to integrate objectives of biodiversity conservation and rural development have had mixed results (Alpert

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<sup>1</sup> Following Ellis (2000; p 10), *livelihood* is defined as that which comprises: "...the assets (natural, physical, human, financial, and social capital), the activities, and the access to these (mediated by institutional and social relations) that together determine the living gained by the individual or household."

1996; Brandon *et al.* 1998; Newmark and Hough 2000; Hughes and Flintan 2001; Barrett *et al.* 2005). These evaluative studies have shown that synergies between the two do not always occur, they are not a panacea, and must more fully incorporate local conditions and expectations in their design and implementation if they ever hope to succeed. This dissertation examines a case of recent efforts by a world-renowned protected area in South Africa to merge its biodiversity conservation objectives with socio-economic ones designed to benefit its neighbouring rural communities.

This research adopts a case study approach, utilizes mixed methods, and empirically examines the nature of the relationship, including the perceptions and use of natural resources, between the KNP and rural communities located adjacent to its western border. Despite a decade of active engagement between the KNP and its neighbours, little is known about this relationship and what factors influence it. The historical background of these communities, which forms part of the former Gazankulu homeland, is characterized by a general dissatisfaction with park authorities (Els 1994). There is a perceived inadequacy of compensation for their loss of access to resources within the KNP (Hopkins 1999) and to damage caused by wildlife (Cock and Fig 2000; Freitag-Ronaldson and Foxcroft 2003). Such a background potentially magnifies the conflict between the KNP and these neighbouring communities. The geographical location of the study area (see figure 3.3. in chapter 3.1.4.) indicates that there is direct physical contact between KNP and these communities, potentially increasing the incidence of damage causing animals (DCAs) into adjacent areas, creating conflicts of interest between KNP and human safety and agricultural land use. These conflicts occurred throughout the dynamic economic and political transformations within South African National Parks (SANP) since 1994 (SANP 2000; Mabunda *et al.* 2003). These changes have witnessed a transformation in KNP policies, which are now more embracing of the interests of neighbouring communities and seek to integrate biodiversity conservation and socio-economic objectives.

## 1.2. Research Problem

The problem addressed in this research is:

*How successfully is Kruger National Park meeting its biodiversity conservation and socio-economic objectives through its interaction with neighbouring communities along its western border?*

Essentially this thesis argues that KNP's success in merging goals of biodiversity conservation and socio-economic development is largely shaped by, and dependent upon,

local perceptions of institutions responsible for resource use and access. Moreover, effectively integrating objectives must i) involve a thorough understanding by all stakeholders of the needs and aspirations of relevant parties, ii) be supported by strong institutions and enabling policies, iii) meaningfully address immediate concerns, and iv) recognize and accept limitations.

In order to address the primary research problem stated above, four research questions were formulated and are listed below. Each question is expanded in Chapter 2, data presented in Chapters 4 to 7, and comprehensively discussed in Chapter 8.

1. How do local communities value and use natural resources?
2. What are the costs and benefits of the KNP for local communities and how are they distributed?
3. How do local communities view the various institutions responsible for managing natural resources?
4. How effective has the Hlanganani Forum been in achieving its conservation and socio-economic objectives?

### **1.3. Justification for Research**

This research is pioneering on a number of fronts and can be justified on geographical, theoretical, methodological and practical grounds. Firstly, although there have been extensive studies on the interrelationships between PAs and people in other regions (Lindsay 1987; Heinen 1993; Durbin and Ralambo 1994; Fiallo and Jacobson 1995; Studsrod and Wegge 1995; Mehta and Kellert 1998; Emerton and Mfunda 1999; Hall 2000; Infield and Namara 2001), and limited cases involving black KNP personnel (Els 1995), and the Makuleke tribe with KNP (Tapela and Omara-Ojungu 1999), little is known about the factors influencing the interactions between the KNP and neighbouring communities along its western border, nor about the effectiveness of the HF. This is despite the fact that one of the five pillars of social ecology in SANP is research and monitoring and that the HF has been operational for over a decade. Addressing this relative neglect is timely given restructuring within SANP (chapter 5.2.), coupled with new legislation regarding PAs (chapter 2.6.3.) and land tenure in communal areas (chapter 2.5.). Furthermore, although the contentious issue of DCAs has been recognized in the area (Cock and Fig 2000; Freitag-Ronaldson and Foxcroft 2003; Mabunda 2004), there has been no systematic evaluation to date of the extent of this damage and how it is affecting attitudes towards the KNP.

Secondly, by drawing primarily from two theoretical frameworks, namely resource use (Firey 1960) and beliefs, attitudes and values (Rokeach 1976), this research attempts to integrate findings on how these theoretical frameworks interact within a specific local context. The research also raises questions on the application of Firey's theory in situations where conceptual definitions are blurred (chapter 8.1.4.).

On methodological grounds, most previous studies have been bi-partisan in nature, investigating only the interaction between parks and local people. This research, however, can be considered multi-partisan as it examines a number of relationships simultaneously including those between KNP, neighbouring communities, Limpopo Province, Traditional Authorities (TAs), and the HF. Although one can potentially become lost in the breadth of these relationships, it was vital to consider each of these stakeholders within the frame of natural resource management in the study area. Further, by using a multi-method approach, with innovative techniques including the Pebble Distribution Method (PDMs) and modified Threat Reduction Assessments (TRAs) (chapter 3.3.), this research allows a better understanding of complex social phenomenon and benefits from the iterative process of comparing data within and between methods.

Finally, this research is justified for practical reasons. The potential application of these research findings cannot be underestimated as they provide essential information useful for drawing up a lasting management plan for the KNP (Freitag and Briggs 1998; Braack *et al.* {n.d.}), including quantification of natural resource use by rural people adjacent to KNP, and improved understanding of the importance attached to each resource and its specific uses. Moreover, research findings here are crucial in understanding the role of KNP's interaction with community fora including the HF, and hopefully will be utilized to guide further engagement with community groups. Lastly, research findings on attitudes of local communities towards both the KNP and HF and the factors that influence them, are valuable in determining priorities for more targeted action in resolving conflicts and improving relationships.

The overall goals in this research are to:

- a) offer insight into enhanced functioning of the Hlanganani Forum;
- b) contribute to improving relations between the KNP and its neighbouring communities;
- c) offer options for promoting both biodiversity conservation and socio-economic development objectives in rural communal areas;



- d) contribute an empirical study to the field of community involvement in biodiversity conservation; and
- e) build on theoretical underpinnings in understanding park-people conflicts.

#### **1.4. Limitations of Scope and Key Assumptions**

Limitations in this research primarily are methodological. Constraints concerning language difficulties and data availability are explained and justified in chapters 3.3.4.1. and 3.7. Secondly, this research relied on household statistics of Census 2001 for its estimate of households and population in the study area. Although this data was three years old at the time of the fieldwork and population and household numbers may have changed since the Census, it is the most accurate information available on the social and demographic conditions in the study area.

Thirdly, limitations of the community questionnaire concern the sample size chosen and its administration. The study area comprises approximately 18,339 households (Table 3.1). A sample size of 240 households was used which ensures a maximum sampling error of +/- 6.28 at a confidence level of 95%. Although the fraction of total households sampled is only 1.3% when  $N=240$ , this has little effect on the margin of error and many studies have typically less than 1% sampling fraction (Weisberg *et al.* 1996). Survey research has a number of limitations, including the fact that one time surveys are not appropriate tools for measuring causality, because multiple variables can confound results. However, this research is cross-sectional in nature (chapter 3.1.2.) and was augmented with interviews and other techniques to gain more longitudinal perspectives. There also could be biases in exaggerating DCA problems, as some respondents may have expected the research to be a mechanism through which compensation could be obtained, although no mention of financial compensation was included in the administering of the questionnaire (see chapter 8.5.). These potential biases were also addressed by triangulating results with other techniques including personal observation, interviews and DCA incident reports. Limitations in accuracy were also apparent when respondents were asked to provide estimates of time and amounts of resources collected by individual households (chapter 4.4.2.). Biases could also have resulted from the time of administering the questionnaire. By conducting the questionnaire during the day, responses reflected primarily those who would be home at that time, and exclude those who are usually absent due to e.g. employment obligations.

Fourthly, TRA is a useful tool for evaluating conservation interventions. It is easy to understand and use by those implementing management programs, and is sensitive to changes in project areas and across sites. However, it has specific weakness as an evaluation tool in that it does not directly measure the biodiversity conserved; instead it indirectly measures the threats met. There is lack of consistency and ambiguity, the results could be subjective, and the scores for management performance are not directly linked to a specific biodiversity (Margoluis and Salafsky 2001). Moreover, as they are intended to only measure anthropogenic threats to biodiversity, their application is limited as other threats are purposely excluded in the exercise. Similarly, as PDMs are a form of focus group, their results cannot be extrapolated to the entire study area, although attempts were made to conduct these exercises in different areas and across age/gender groups to test whether these factors differ in terms of attitudes toward landscape units and use. Moreover, they were able to provide rich data concerning the breadth of resource and landscape use in the study area, which is little known.

Finally, there is an inherent difficulty in interpreting research results using a mixed-method approach, especially those which seem contradictory (Kelle 2001). However, this research focused on current perceptions and, thus, it was instrumental to mix quantitative and qualitative techniques to gain a meaningful picture of the social processes under investigation. For example, the best way to obtain valid explanations of social phenomena, including local concepts and meanings of 'nature', is by combining quantitative surveys on the one hand and ethnographic investigations into the structures of meanings and local knowledge on the other.

### **1.5. Research Design and Presentation**

The research design is explained in chapter 3 and the thesis presentation is summarized in Table 1.1 below. Due to the complex and multi-dimensional nature of this research, data chapters are organized by actors (chapters 4–6), followed by an examination of an acute local conflict (chapter 7), and an integrated discussion (chapter 8). Within the discussion, proverbs of the Tsonga-Shangaan people (Junod 1978), along with their meanings, are inserted throughout the text to bring additional insight and context to the topics covered. Research findings and implications are then summarized in the final chapter.

Table 1.1. Research design and presentation

| CHAPTER                                   | OBJECTIVES   | OUTCOMES  |
|---|--|---|
| <b>CHAPTER 1</b><br><b>'Introduction'</b> | <ul style="list-style-type: none"> <li>• Background to research</li> <li>• Research problem</li> <li>• Justification</li> <li>• Outline</li> <li>• Delimitations</li> </ul>  | <ul style="list-style-type: none"> <li>• Studies of park-people relationships showing varied results</li> <li>• KNP developing long-term management plan</li> <li>• Study area has history of conflict with KNP</li> <li>• Lack of research on KNP and neighbouring communities</li> <li>• No research to date on evaluation of community fora</li> </ul>   |
| <b>CHAPTER 2</b><br><b>'Background'</b>   | <ul style="list-style-type: none"> <li>• Literature review</li> <li>• Parks and people paradigms</li> <li>• KNP establishment</li> <li>• KNP policy changes</li> <li>• Park outreach</li> </ul>                              | <ul style="list-style-type: none"> <li>• Shifting global conservation paradigms</li> <li>• South Africa unique in terms of past policies and current challenges</li> <li>• Park management struggling through transition</li> <li>• Theoretical framework in understanding park – neighbour relations</li> </ul>  |
| <b>CHAPTER 3</b><br><b>'Methods'</b>      | <ul style="list-style-type: none"> <li>• Methodology</li> <li>• Research design</li> <li>• Research techniques</li> <li>• Data analyses and validity</li> <li>• Ethics and limitations</li> </ul>                            | <ul style="list-style-type: none"> <li>• Mixed method approach used to understand complex interaction</li> <li>• Community access gained through cooperation with Traditional Authorities</li> <li>• Pilot study followed by 10 month field research</li> </ul>   |
| <b>CHAPTER 4</b><br><b>'The People'</b>   | <ul style="list-style-type: none"> <li>• Community profile</li> <li>• Resource use and access institutions</li> <li>• Resource use and value</li> <li>• Beliefs and attitudes</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Environmental and economic constraints hindering livelihoods, especially in Thulamela Municipality</li> <li>• TAs primarily govern resource use and access in rural areas</li> <li>• Park neighbours heavily dependent on local natural resources, utilizing wide variety of landscapes and species, including protected flora and fauna</li> <li>• Nature distinctly defined and valued</li> </ul>            |
| <b>CHAPTER 5</b><br><b>'The Park'</b>     | <ul style="list-style-type: none"> <li>• Transition to People and Conservation in KNP</li> <li>• Benefits and their distribution</li> <li>• Knowledge, beliefs &amp; attitudes</li> <li>• Threats to biodiversity</li> </ul> | <ul style="list-style-type: none"> <li>• Adoption and implementation of social ecology objectives in KNP slow and affected by restructuring, philosophical approaches, capacity, and role of individuals in building relationships</li> <li>• Community attitudes towards KNP mixed and largely influenced by employment, lack of interaction with KNP and DCAs.</li> </ul>   |
| <b>CHAPTER 6</b><br><b>'The Forum'</b>    | <ul style="list-style-type: none"> <li>• Origin of Hlanganani Forum</li> <li>• Achievements</li> <li>• Complaints &amp; constraints</li> <li>• Evaluation of Forum effectiveness</li> </ul>                                  | <ul style="list-style-type: none"> <li>• Some noteworthy achievements of HF, but uncertainty concerning its representation, management and legitimacy</li> <li>• Awareness of HF and its activities low in study area and correlated with village association and gender</li> <li>• Effectiveness of HF affected by shifting legislation, poor accountability, broken promises, institutional conflicts and lack of reporting and monitoring</li> </ul> |
| <b>CHAPTER 7</b><br><b>'The DCAs'</b>     | Investigation of interaction regarding damage-causing animals (DCAs)   | <ul style="list-style-type: none"> <li>• DCA control limited and complicated by state of KNP border fence, overlapping responsibilities, policy vacuum and use of professional hunters</li> <li>• Synergistic factors contribute to DCA problem</li> <li>• Community perception of DCA intense, clouded by confusion of institutional responsibility, and fueled by lack of compensation</li> </ul>   |
| <b>CHAPTER 8</b><br><b>'Discussion'</b>   | <ul style="list-style-type: none"> <li>▪ Research questions discussed individually</li> <li>▪ DCA issue treated separately</li> </ul>  | <ul style="list-style-type: none"> <li>• Resource management largely driven by socio-economic and cultural factors</li> <li>• Increasing threats to biodiversity evident, especially by outsiders</li> <li>• Role of PaC ambiguous and awareness of PaC minimal in study area</li> <li>• TAs relatively strong in study area; DFED/EA highly criticized especially due to DCA problems; attitudes towards KNP mixed.</li> </ul>                         |
| <b>CHAPTER 9</b><br><b>'Conclusions'</b>  | Research findings and implications   | <ul style="list-style-type: none"> <li>• Resolution of the research problem</li> <li>• Implications</li> <li>• Avenues for future research</li> </ul>   |

## **1.6. Conclusion**

This introductory chapter aims to lay the foundations for this thesis. It introduced the research problem and research questions. The research was then justified on theoretical, methodological, geographical and practical grounds. Finally, an outline of the thesis design was presented, and the limitations were given. On these foundations, the thesis can proceed with a detailed description of the research beginning with a literature review in the following chapter.

## Chapter 2. Literature Review

### 2.1. Introduction

This literature review seeks to provide a theoretical and conceptual foundation which forms the basis for this research. In a chronologic but also thematic manner, it aims to chart the body of knowledge and identify issues directly relevant to the research problem, and expose research gaps which have not been previously addressed. These gaps unearth four research questions which form the basis of inquiry in this study, and are presented in text boxes.

By offering a framework to deepen the understanding of historic and current approaches to conservation, with particular reference to southern Africa, this review outlines shifting narratives concerning biodiversity conservation, demonstrating how these narratives are affecting contemporary efforts to involve local communities in the establishment and management of protected areas (PAs) *vis-à-vis* national parks. Moreover, it illustrates how the Republic of South Africa is unique due to its colonial and Apartheid legacy, coupled with its recent transition to democracy, and what challenges it faces in biodiversity conservation, particularly with rural communities in the former homelands. Finally, by using the Kruger National Park's (KNP) interactions with its neighbouring communities as a case study, it illustrates the challenges that a conservation body is faced with when it is required to be financially competitive, ecologically sustainable *and* socially acceptable.

### 2.2. The need for a more holistic approach

Changes in global development thinking represent fundamental shifts away from the technology-dominated paradigm developed in the 1960s toward a less technocratic and more people-centered approach to sustainable growth (Cernea 1991; Kottak 1991; Roe 1991). Much of this shift arose by reassessing key assumptions regarding the relationship between people and the environment. Central discourses rested on defining poverty (Gray and Moseley 2005), and the extent to which there is a direct causal relationship between poverty and environmental degradation. Forsyth *et al.* (1998) refer to the orthodox or mainstream view of this linkage where 'poverty and environmental damage are inextricably linked, and are self-reinforcing' (1998:2). Underlying this view are specific assumptions as to the way in which people manage their environment in the face of poverty or environmental degradation. It is assumed, for example, that the poor will always degrade their environment in response to population growth, economic marginalization and existing environmental degradation, and that the only way to avoid further environmental degradation is to alleviate poverty. In some

cases, there may well appear to be a direct, causal relationship between poverty and environment, which would support the orthodox view of this linkage. Frankenberger and Goldstein (1992) cite examples of households that resorted to over-harvesting wild foods, overgrazing pasture, and increased planting in marginal areas when faced with food insecurity. Such examples postulate straightforward causal relationships between poverty and the environment where land degradation is seen as a *result* of food insecurity, or food insecurity as a *result* of faulty natural resource management, neglecting possible feedback loops, and other social, economic, cultural processes that may contribute to these relationships.

Forsyth *et al.* (1998), however, question the universality of such causal relationships between poverty and resource degradation, offering an alternative view of the social processes involved in resource management. Basing their claims on a growing body of empirical studies, they proposed that the relationship between poverty and environment is complex rather than directly causal in either direction. They argued that local responses to change are socially and environmentally specific, shaped by institutions and that depending on the situation, may actually lessen impacts and promote sustainable livelihoods. For example, Batterbury and Forsyth (1999) demonstrated how local adaptation processes have been utilized by local communities in the face of environmental threats to both improve livelihoods *and* reduce environmental degradation. How individuals relate to their environment cannot therefore be automatically generalized to all people and all environmental situations, as was the development policy based on the orthodox view (Leach *et al.* 1999). Local institutions are seen as central, and an acknowledgement of the diversity of local contexts is seen as imperative in understanding people-environment relationships. According to Forsyth's alternative view, a reconceptualization of the relationship between people and their environment must occur not only at the policy level, but at a deeper level which questions how, why, and under which circumstances such processes might occur in order to reevaluate our basic assumptions.

This systematic search for development has also been accompanied by increasing concern for biological diversity<sup>2</sup> loss (Wilson 1988; Ehrlich and Ehrlich 1992; Reaka-Kudla *et al.* 1997; Myers *et al.* 2000). In many developing countries, severe financial constraints and inadequate

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<sup>2</sup> 'Biological diversity', according to the Convention on Biological Diversity, means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

resources for protecting sensitive areas has resulted in the merging of biodiversity management with more participatory forms of development planning and organization, giving rise to community-based conservation<sup>3</sup> (CBC) or community-based natural resources management<sup>4</sup> (CBNRM). Community participation, in principle, should enable communities to regain control over natural resources and, at the same time, strengthen decision-making capabilities, increase empowerment and involvement, and improve social and economic well-being (see also Uphoff 1991). While these terms have been used extensively in both political and research fora, the concepts underlying these expressions and the conceptual links between them are often ambiguous and based on very different assumptions and interpretations of how individuals within communities experience daily life and interact with the environment. Further, although CBNRM projects have been broadly praised as activities which seek to bridge the gap between the needs of wildlife and of local human populations, they can only be considered successful if they improve both the well-being of local communities and maintain, if not increase, biodiversity.

This research, which focuses in part on control of and access to resources will be examined more holistically in light of social processes embedded in both the conservation and development spheres, exploring how issues of power, participation, legitimacy, and costs and benefits are integral parts of people's relationships with nature, each other, and PAs, not only locally, but in relation to wider societal processes. These are themes that have only been touched on briefly in southern Africa, and are particularly little understood in the former homelands of South Africa. By taking such an approach, this research examines existing beliefs, attitudes, and behaviors of rural communities in South Africa, their representation in a local organization (Hlanganani Forum), and their interaction with the KNP.

### **2.3. Biological Diversity and Protected Areas**

The importance of biological diversity as natural resource capital for economic development and sustaining human welfare has been well documented (Ehrlich and Ehrlich 1992; Costanza *et al.* 1997; Reaka-Kudla *et al.* 1997; de Groot *et al.* 2002). However, the rate at which natural resources continue to be degraded and the persistent deterioration of human welfare in developing countries have caused concern at local, national, and international levels. One

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<sup>3</sup> 'Conservation' in this study is defined as more than an *intentional* practice leading to the maintenance of biodiversity, ecological processes and life-support systems. It also encompasses practices that *result* in the above regardless of their stated or non-stated intention.

<sup>4</sup> 'CBNRM' means any utilisation of indigenous biological resources by a community for sustainable harvesting, traditional use or commercial purposes.

approach to conserve dwindling biodiversity under the constraints of limited funding has been through designation of PAs (Margules and Pressey 2000; Bruner *et al.* 2001), including in identified biodiversity ‘hotspots’ (Myers *et al.* 2000). Currently, over 100,000 PAs cover approximately 11.5% of the world’s terrestrial (almost the size of the South American continent) and 0.5% of marine territories (IUCN-WCPA 2003).

PAs are defined as ‘areas of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means’ (IUCN 1994). PAs are categorized by IUCN partly according to their level of human intervention (Table 2.1).

Table 2.1: IUCN Management Categories of Protected Areas. Adapted from (IUCN 1994).

| Category | Description   |
|----------|---|
| Ia       | <i>Strict Nature Reserve</i> : Protected area managed mainly for science.   |
| Ib       | <i>Wilderness Area</i> : Protected area managed mainly for wilderness protection.   |
| II       | <i>National Park</i> : Protected area managed mainly for ecosystem protection and recreation.                               |
| III      | <i>Natural Monument</i> : Protected area managed mainly for conservation of specific natural features.                      |
| IV       | <i>Habitat/Species Management Area</i> : Protected area managed mainly for conservation through management intervention.    |
| V        | <i>Protected Landscape / Seascape</i> : Protected area managed mainly for landscape / seascape conservation and recreation. |
| VI       | <i>Managed Resource Protected Area</i> : Protected area managed mainly for the sustainable use of natural ecosystems.       |

PAs are essentially ‘social spaces’ (Ghimire and Pimbert 1997), and as such, cannot be decoupled from the human context. Communities living in and around PAs often have important and longstanding relationships with these areas that embrace *inter alia* cultural identity, spirituality and subsistence practices that are essential to the continued existence of the community and frequently contribute to the maintenance of biodiversity. These relationships between people and land have too often been ignored and even destroyed by well-intentioned but insensitive resource conservation and management initiatives (Stevens 1997a). However, it is increasingly being recognized that nature protection is by default embedded in highly complex social and political settings, constituting elements of human dignity, legitimacy, governance, accountability, and non-local forces (Brechin *et al.* 2002).



It has been postulated that PAs cannot coexist in the long term with communities that are hostile to them (West and Brechin 1991; McNeely 1993; Pimbert and Pretty 1997; SANP 2000a), although there are arguments that conservation can be imposed, and flourish, where the rural poor are weak and can be easily ignored, such as the case of the Mkomazi Game Reserve in north-eastern Tanzania (Brockington 2003). However, when placed in the proper context, PAs can make significant contributions to human welfare. Many PAs face pressure from increasing populations whose economic well-being has suffered from a cumulative neglect of land and other resources. For PA managers, detailed knowledge of the people whose lives are affected by the establishment and management of parks can be as important as information about the flora and fauna to be conserved (Veech 2003). The cultural and socio-economic characteristics of local people including their customary tenure systems, traditional knowledge and practices, form the basis for measures to promote sustainable use of natural resources, alleviate poverty, raise the quality of human life and create positive support for PAs (MacKinnon *et al.* 1986; Kiss 1990; Happold 1995; Rihoy 1995; Heinen 1996).

#### **2.4. Establishment of Protected Areas in Africa**

Africa is rich in biodiversity, ranging from rainforests to savannas, wetlands, and deserts. Yet, surveys suggest that over 65% of the original wildlife habitat in Africa has been lost (Kiss 1990). One of the characteristics of PAs in Africa is that they usually cover a large area, often thousands of square kilometers, allowing for wildlife migration and to support diverse ecological processes. It is also a continent where people rely heavily on natural resources for their livelihoods, which often, in combination with demographic, social and economic factors, threaten PAs (World Bank 1996; Balmford *et al.* 2001). The search for interventions that would achieve conservation and human development goals has therefore been of much relevance at all levels on the continent. This section will provide a historical perspective on the establishment of PAs in Africa and the factors that have influenced them. It uses Roe's (1991) conceptualisation of narrative and counter-narrative to describe the shift away from a widely accepted ideology of conservation based on wildlife preservation, excluding humans and minimising human influence. This narrative of 'fortress conservation' or 'fences and fines' is now challenged by a counter-narrative, termed 'community conservation' which, analogous to more people-centered approaches to development, has been adopted as a central element in conservation discourse and policy (Adams and Hulme 2001).

#### 2.4.1. Conservation 'against' the people

Governmental responses to overuse or abuse of natural resources has usually been legal and coercive (Peluso 1992). Certain resource uses are declared illegal, and people excluded from certain spaces in order to protect the resources of concern. This prohibitive approach regards local residents in and around PAs as *adversaries*, to be restricted from accessing designated areas that have now been granted 'protected' status. Establishment of PAs in Africa also has its roots partly in social Darwinism<sup>5</sup> (Norgaard 1997), and in the hunting ethos and natural history studies that were popular in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries in the western world (Mackenzie 1987; Grove 1997; Neumann 1998). The need for unspoiled natural places where manhood could be proven through hunting by colonial masters led to enactment of meticulous legislation that restricted game to the few elite, and separated human settlements from the land that was deemed suitable for game (Carruthers 1995; Adams and Infield 2001).

By the end of the 19<sup>th</sup> century, natural historians and hunter elites started to sound alarms about the rate at which African game was being hunted and also decimated by rinderpest<sup>6</sup> (Carruthers 1995). As a result of these concerns, influential groups comprised mostly of colonial governors, aristocrats, sport hunters, and leading landlords in the colonies began to advocate for game preservation (Mackenzie 1988). These groups wanted wildlife protected in Africa for a number of reasons. First, Africa had a rich endowment of the mega-fauna, such as elephants, rhinos, and lions that were of special interest to hunters. Second, Africa had a high diversity and density of game compared to other colonies at that time. Third, African tribes had a high population growth rate and it was feared that their hunter-gatherer lifestyles coupled with their shifting cultivation practices would lead to increased agricultural expansion, which was viewed as a threat to the survival of wildlife. The colonial masters and the conservationist pressure groups felt that they needed to do everything possible to stop the disappearance of African game, which they also attributed to the demands of trade, the activities of sportsmen, and the menace of disease (Hingston 1931). Colonial officers, game

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<sup>5</sup> Social Darwinism is a belief expounded primarily by Herbert Spencer that the strongest or fittest should survive and flourish in society, while the weak and unfit should be allowed to die. It was popular in the late Victorian era and was popularized by application of Darwinian ideas of adaptation and natural selection.

<sup>6</sup> Rinderpest is a highly contagious morbillivirus ungulate disease infecting cloven-hoofed animals. It is believed to have wiped out 90% of the cloven hoofed animals at the turn of the 19<sup>th</sup> century, including 2.5 million cattle in South Africa alone. Tsetse fly is the vector of 'nagana' (in animals) and 'sleeping sickness' (in humans), which had limited European trekkers from settling in the heart of the Lowveld. Entomologists speculated that because so much of the wildlife died from rinderpest, the number of game hosts were reduced which eradicated the tsetse fly (Carruthers 1995). Ironically, this disease which caused so much devastation, actually allowed people to settle in the Lowveld permanently, as they no longer had to move seasonally to avoid the onslaught of the tsetse fly. This marked the beginning of large-scale agriculture in the region (MELISSA 2000?).

wardens and rangers were appointed and given wide-ranging administrative and judicial powers over both the PAs and local people that lived within or around these designated areas.

The interests and concerns of local African people were not considered in the establishment of these PAs. Indeed, Mackenzie (1988) argues that foreign interests predominantly influenced the legislation for wildlife management and PAs in particular. Creation of these PAs often deprived local people of resources that they had been accessing for a long time, for both their cultural and economic values (Barrow and Murphree 2001). This narrative of establishing and managing PAs, termed by Murphree (1996) as ‘conservation against the people’, could partly explain unsympathetic attitudes or even hostile behaviors toward wildlife management in Africa by local people.

Post-colonial African governments continued to implement conservation policies that excluded local communities as an approach to managing PAs (Gibson 1999). This exclusion was achieved through deployment of para-military trained rangers who enforced wildlife laws by apprehending lawbreakers and either levying a fine on them, meting out punishment or having them legally prosecuted in court. Local community members, in efforts to secure their means of survival, were the primary offenders under this form of wildlife management, and it caused much tension and conflicts between PA managers and local people. Serious conflicts would arise where some of the communities claimed traditional access rights to resources in PAs. For example, at the end of the civil war in 1986, those living in and around Lake Mburo National Park in Uganda consciously set out to clear the area of wildlife to ensure that the government would lose interest in the area (Hulme and Infield 2001). Other examples include the Ovambo of northern Namibia who cut fences and raced into the Etosha National Park in 1990 with guns and pick-up trucks to gather meat for their families (Armstrong 1991).

#### *2.4.2. Integrated Conservation and Development Projects (ICDP)*

In the 1980s, many conservationists, international conservation organizations and African wildlife departments conceded that traditional ideologies and exclusionary approaches of managing PAs were increasingly becoming ineffective for a number of reasons (Inamdar *et al.* 1999; Jones 2001). First, the approach was believed to be too expensive to be sustained over long periods, as it would require many rangers to patrol vast areas of PAs. Second, it was realized that local people are the main offenders of wildlife laws, so if they could become custodians of wildlife, then African wildlife would have a secure future. Third, it was pointed out that local people bear the greatest costs from PAs by way of damaged property such as

crops, livestock and lost opportunities to use PA resources, yet benefited least from wildlife conservation programs (Gibson 1999). This revelation, which coincided with the more general global trend in development studies (see chapter 2.2.), led to initiatives to begin to include local communities in wildlife management in Africa's PAs (Gibson and Marks 1995).

This approach was to design programs and policies that integrated conservation and development (Alpert 1996; Hughes and Flintan 2001). Rural communities were presented with incentives including assistance to improve their agriculture or provide schools and clinics as a form of *quid pro quo* for accepting limitations on access to natural resources. In this manner, local residents are deemed beneficiaries, to be bought off by goods and services that will boost incomes and well-being. However, to the extent that these material incentives are perceived as bribes, they become problematic in that people then need to be continuously rewarded with additional benefits to ensure their cooperation with regimes of protection (Uphoff 1998). The implication of such an approach is that, resembling the exclusionary approach, resource conservation is something that predominantly serves the interests of outsiders rather than local communities, and suggests to villagers that resource-conserving behavior is non-beneficial to them.

There is a growing literature critiquing ICDPs, demonstrating that they have not achieved the changes in behavior sought, at least not on the scale or with the speed that is desired (Barrett and Arcese 1995; Wells 1998; Newmark and Hough 2000; Marcus 2001). Roderick Neumann (1997) goes as far as to contend that many ICDPs and other PA buffer zone programs more closely resemble colonial conservation practices in their socio-economic and political consequences, and constitute geographical expansion of state authority beyond PA boundaries into rural communities. The approach has also come under profound criticism from biologists who do not think it will, nor can succeed (Kramer *et al.* 1997). Moreover, ICDPs including often oversimplified project evaluations, have repeatedly been more paternalistic than participatory, conceived and implemented from a distance by external 'expertise', mainly for professional convenience, and have not capitalized on what has been learned about development processes and behavioral change (Cernea 1991; Kottak 1991; Buck and Uphoff 1997). One can, however, question this critique, suggesting that when dealing with long-standing and complex social and political situations, ICDPs should not have been expected to achieve quick changes, that have not been amenable to solutions by administrative or coercive means either.

### 2.4.3. *Community-based Conservation (CBC): conservation by, for and with the people*

Reflecting dissatisfactions with the first two approaches, juxtaposed with wider experience with introducing developmental change, another approach has emerged that is more fully participatory. In this narrative, conservation *starts* with communities as a focus and foundation for assessing natural resource uses, potentials, problems, trends and opportunities, and for taking action to deal with adverse practices and dynamics (Little 1994; Murphree 1996). Instead of adversaries, local residents are viewed as *partners* in resource conservation and with whom agencies should work and from whom they can learn (Adams and McShane 1992; Wells *et al.* 1992; Pimbert and Pretty 1997). The underlying assumptions of this approach, which are examined in this research, are that if communities benefit from wildlife, are knowledgeable and understand the importance of conservation, only then will they change their behavior to support conservation initiatives (McNeely 1989; Sibanda and Omwega 1996; Emerton 2001). The CBC approach has been lauded as a better approach to PAs management in Africa (Pimbert and Pretty 1994; Western 1994; Schwartzman *et al.* 2000) than the traditional top-down approach.

#### 2.4.3.1. Rationale for CBC

Two main reasons drive why CBC is of current concern to governments, NGOs and donor agencies. First, the concept of CBC originated from international concerns for the *protection of biodiversity*, maintaining the integrity and viability of particular ecosystems with their unique combinations of species. The second reason concerns the *maintenance of ecosystems* such as watersheds for their multiple service functions of benefit to communities, regions, nations, and globally (de Groot *et al.* 2002). These have definite economic value though not always commensurate with the costs to those persons and communities whose cooperation is needed to protect those resources. There can be a third reason, however, *preservation of global cultural diversity* where the identity and values of certain communities are socially and emotionally linked to living in and extracting resources from particular ecosystems, termed ‘geopietty’ by Harmon (1987). Quite often, fragile ecosystems are associated with vulnerable cultures, when groups defined ethnically or linguistically have been marginalized by the dominant culture and rely on certain environments (Clay 1988). Such groups need to maintain their own identity and homogeneity if larger societal heterogeneity in terms of languages, belief systems, aesthetics, and social organization is to be preserved. If the ecosystems on which such livelihoods depend are lost, so are the associated cultural systems (Maffi 2001).

The concerns mentioned above have been expressed at international levels by environmental organizations such as the UNESCO's Man and Biosphere Program (1971) and the World Conservation Strategy (1980) (Redclift 1984). Moreover, the 1982 Third World Congress on National Parks in Bali called for expansion and consolidation of PAs. A decade later, the preservation tone had changed, and the Fourth Congress in Caracas in 1992 under the theme 'Protected Areas for Life', advocated partnerships with wide ranging interests to benefit people, PAs, and biodiversity. The recent Fifth World Parks Congress, which took place in South Africa, under the theme 'Benefits Beyond Borders' focused largely on the role of PAs in alleviating poverty and as part of our sustainable future (IUCN-WCPA 2003).

Although interpreted differently by different people and in diverse contexts, CBC philosophy is based on the premise that communities neighbouring PAs are forced to exploit resources in the PA because they lack any alternatives for their survival. Second, because they do not legally benefit from the existence of the PA, they do not have enough incentives to conserve it. Third, if they are not given an opportunity to participate in the management processes of the PA, they are alienated from the resources, and perceived as an obstacle to conservation initiatives (Gibson 1999). To achieve the goal of CBC, different strategies are used. First, by promoting community participation in planning and management, it is hoped that communities will develop a 'sense of ownership' for resources, hence take on management responsibilities. Second, by ensuring that tangible benefits from resource use accrue to the local communities who bear much of the costs of PAs, through crop-raiding wildlife and other lost economic opportunities, it is hoped that the PA will garner support from local communities. Third, by promoting wildlife education and environmental awareness programs, it is hoped that local communities will gain more understanding about environmental problems, and develop positive attitudes to support initiatives to protect PAs (Adams and Hulme 1998).

CBC ranges from, at one extreme, minimalist 'passive participation' initiatives that seek only to inform neighbours of PA activities, to another extreme, in which they devolve tenure and responsibility for management of key resources to autonomous local institutions (Borrini-Feyerabend 1996; Pimbert and Pretty 1997; Barrow and Murphree 1998; Hackel 1999). Understanding the degree to which communities participate is important in understanding and defining CBC. For the purposes of this research, CBC will imply programs conducted in areas surrounding KNP, with the main purpose of soliciting support of neighbouring communities

for KNP, through such activities that raise conservation awareness and seek to benefit these communities.

#### 2.4.3.2. Contextualizing CBC

Three decades ago, CBC was considered likely to be unproductive or, worse, destructive of environmental resources. Arguments that Hardin (1968) made against sustainable use of common property resources were regarded as conclusive. As the short-term benefits to individuals from exploiting a common resource would be greater than the short-term costs to those same individuals, it was thought to be 'rational' for individuals to overutilize any common resources and ultimately destroy them by pursuing their self-interest. This would promote overuse of resources even though the sum of those costs would eventually exceed total benefits, impairing the renewability of resources, and leading to their termination. Hardin suggested that protection and preservation of natural resources required either their privatization, so that individuals would see and bear the costs of their extraction, or their management by state institutions, able to bring instruments of coercion to shoulder on individuals not accepting restrictions on sustainable use. Rather than entrust responsibility for resource management to communities, Hardin advocated regimes of private property, state control, or possibly a combination of the two.

This assessment, however, interpreted 'common property' regimes as 'open access,' when in fact, many if not all are governed by established norms and precedents, often with roles and rules that regulate access to and use of resources (McCay and Acheson 1987; Gibbs and Bromley 1989). Arguably, not all local mechanisms are effective in deterring abuses of soil, forest, water and biological resources especially with obtrusive state action(s), increasing levels of 'modernization', or with the changing nature of village economies and social relations coupled with growing pressures on local resources (Lawry 1989). But then, neither are all market or state institutions effective. Strong arguments have been made against Hardin's thesis on both logical and empirical grounds (e.g. Kimber 1981; Ostrom 1990; Jodha 1995). Berkes and Farvar (1989) further criticize Hardin's model as 'Western ethnocentric, emphasizing competition rather than cooperation and assuming the supremacy of individualism rather than communitarianism.' (1989:2). There is now also emerging literature on 'the tragedy of the anti-commons,' showing how market mechanisms expected to regulate the use of resources can contribute to their degradation (Feeney *et al.* 1990).

It is increasingly argued that community institutions, formal or informal, can achieve as good or better results than state or private management (Ghai 1994; Berkes 1995; Baland and Platteau 1996; Jacobs and Bassett 1996). Pye-Smith and Borrini-Feyerabend (1994) give a detailed analysis of success stories of CBC in Africa. They indicate a number of factors that lead to successful implementation. For example, in Zimbabwe's CAMPFIRE program, they cite dedication of the community members to conservation stemming from tangible benefits accruing from use of wildlife. They attribute the success to full community empowerment to manage, and communities' understanding of their rights and agreement to take on responsibilities. Some CAMPFIRE critiques, though, have noted that local communities do not fairly benefit from the program, as decision-making powers are still central at the district council level (Patel 1998; Shackleton and Campbell 2001).

#### 2.4.3.3. Challenges to CBC

Although a number of conservationists believe that communities in control of natural resource management are better managers than state institutions (Western 1994; Uphoff 1998), the CBC approach has been critiqued by those who think that the interests of local people, especially those living in poverty, are unavoidably inimical to the needs of environmental conservation. Brandon (1998) raises concerns that involving community interests in conservation has become a slogan laden with assumptions, which has constrained creative thinking to address park protection and biodiversity conservation problems. Attwell and Cotterill (2000) maintain that the present ethnocentric fascination in African countries is largely a 'conservation cul-de-sac', and believe the real issue is that the finite limits to resource depletion can only be addressed ultimately by confronting human population growth. Also, Hackel (1999) raises concerns about the ability of the CBC approach to change people's behavior through economic incentives, and argues that CBC cannot generate enough benefits to offset costs communities bear from wildlife. He further asserts that CBC does not necessarily encourage the communities to comply with conservation laws, and that by itself CBC does not address the development needs of the people, hence it is most unlikely that local people will support it. He concludes that CBC can only act as a means by which traditional protectionist policies and approaches can be modified to suit socio-economic realities in Africa.

Additional research findings indicate that CBC does not meet conservation goals. For example, the Luangwa Integrated Resources Development Project (LIRD) in Zambia failed to reduce the incidences of killing animals using wire snares (Lewis and Phiri 1998) and to



benefit rural communities (Wainright and Wehrmeyer 1998). Both Songorwa (1999) and Rabesahala and Gautier (1995) argue that local communities, although understanding adverse consequences of environmental degradation, are largely interested in their own survival rather than conservation and, therefore, are difficult to meaningfully engage in conservation. David Happold (1995: 407) frankly states, 'An African family which is undernourished, living in poor conditions, and with little income, can hardly be expected to embrace an ideal which is based on beauty, aesthetics, and the future. Survival, today and tomorrow, has understandably a much greater priority.' Other literature indicates that community institutions have been eroded and compromised, to the extent that they cannot manage to take on conservation responsibilities (Barrett *et al.* 2001). Other weaknesses of involving local communities include lack of capacity on the part of the communities (Songorwa *et al.* 2000), including to stem the tide of increased pressure on resources from in-migration to these areas (de Sherbinin and Freudenberg 1998). These critics believe that community conservation is no panacea, can be problematic in implementation, and in some cases, a call to return to a more authoritarian protectionist approach has been posited (see e.g. Spinage 1998; Brechin *et al.* 2002). Moreover, although CBC promises to 'empower' local communities, they also may be seen as threatening to those who must relinquish control over resources or flows of benefits (Goldman *et al.* 2000; Larsen 2000; Campbell and Shackleton 2001; Ribot 2002).

The challenges of involving neighbouring communities have been well-examined (Kiss 1990; Wells *et al.* 1992; Borrini-Feyerabend 1996; Goldman *et al.* 2000; Larsen 2000; Campbell and Shackleton 2001; Ribot 2002). One of the concerns noted is the degree to which communities are or should be involved in the management processes. Schmink (1999) emphasizes the importance of the degree of participation in the success of natural resource management. She cautions about idealizing or romanticizing local resource users, and social and political dynamism, which outsiders may encounter in trying to implement CBC projects. Barrett *et al.* (2005), in their review of studies of integrating poverty reduction and resource conservation in the tropics, illustrate that synergies between the two do not naturally emerge, thus, flexible and adaptable approaches are critically needed in developing partnerships. Further complications in CBC practices and attitudes towards PAs revolve around the definition, heterogeneity, and cohesion of communities (Barrow and Murphree 1998; Agrawal and Gibson 2001).

But even when traditional management is in place, it cannot act in isolation. There could be other actors outside such a community with divergent interests that will have a significant

influence on the effectiveness of involving communities in PAs management. Naughton-Treves (1999) cautions about the challenges of re-assigning property rights of wildlife, since it is not a landed property. Because the ownership of wildlife is only decided when it has been killed, due to its transient and transitory status, assigning property rights for effective management may threaten the already threatened wildlife populations, particularly where human population densities are high. She advocates partnerships between people's democratically elected committees and government agencies as the best institutions to involve in wildlife management, as well as the communities that are in close proximity to a PA.

In spite of the burgeoning literature on CBC evaluation it would be unwise to make generalized policy prescriptions about CBC approaches in PAs management. Case studies put emphasis on different factors, often with no mention of other factors that would enable comparison of cases or test alternative hypothesis (Holmes 2003). As such, review findings could be interpreted differently. As the debate continues about whether CBC is effective, empirical data are needed to understand if indeed CBC works and under what conditions, in order to propose appropriate policies for PAs management and biodiversity conservation. In addition, each country has its own unique conditions that may influence implementation of conservation programs differently. Even within a country, there are variations from one PA to another. From this framework, the plan by the South Africa National Parks '*to encourage partnerships between National Parks and our neighbours*' (Braack *et al.* {n.d.}) will be evaluated in this research.

## **2.5. Republic of South Africa**

The post-Apartheid state in South Africa retains the legacy of a highly polarised economy, and the challenge is to restructure inequalities and achieve both equitable and sustainable development (Magome and Murombedzi 2003). The state's focus is on the most impoverished and underdeveloped communities in the country, particularly rural communities living in the former homelands and adjacent to PAs, including the KNP. In view of the challenges experienced by other African countries in articulating CBC, there is need to examine the unfolding resource management process within the South African context. To begin, this section provides a historical perspective on the policies that have affected land use and distribution in South Africa. An overview of the challenges that South Africa is now facing will also be introduced, followed by relevant legislation to land reform beginning from 1913. Next, the history of homelands will be discussed including their current socio-economic and environmental conditions. Since 1994, attempts at land reform in the former homelands will

be examined, including a brief review of South Africa's 1997 Land Reform Policy. Finally, the tensions between traditional authorities and democracy will be highlighted, and the role of provincial and local governments in environmental protection.

#### *2.5.1. Apartheid: Separation of the Races*

With the enactment of Apartheid laws in 1948, racial discrimination in South Africa was institutionalized. Race laws touched every aspect of social life, including a prohibition of marriage between non-whites and whites, separate schools, bars, and the sanctioning of 'white-only' jobs (GCIS 2002). Non-compliance with the race laws was dealt with harshly. All blacks were required to carry 'pass books' containing fingerprints, photo and information on access to non-black areas (GCIS 2002).

#### *2.5.2. Former Homelands*

A core part of South Africa's unique colonial and Apartheid experience was the enforcement of massive inequality in land access and tenure to support the privileges of the ruling minority (Aliber 2003). Based primarily on the 1951 *Bantu Authorities Act*, 70% of South Africa's population was confined to 13% of the land area from the 1950s through the 1980s (Figure 2.1). Part of the reasoning for this was to create reservoirs of cheap labor for the mines, factories, and farms of white South Africa (Lahiff 1997; Bryceson 2000). Traditional or tribal leaders were left to control this land under so-called 'communal tenure'. It is estimated that over 3.5 million black people were forcibly dispossessed of their land and homes during the Apartheid era, at very high financial costs to the government (Lahiff 1997).

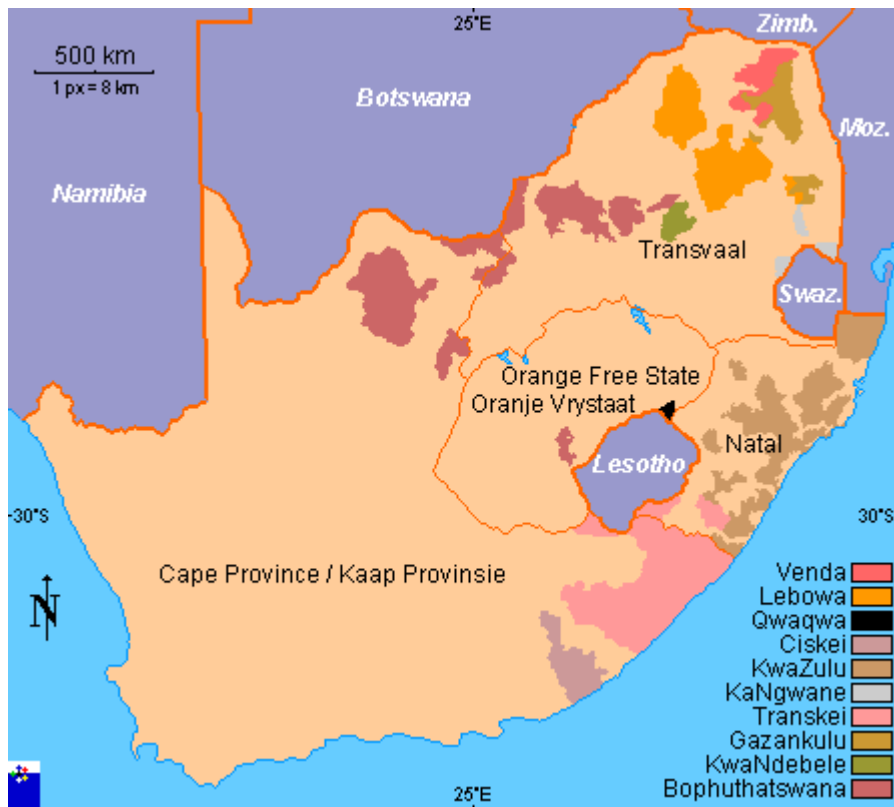


Figure 2.1: Location of 10 homelands in former South Africa  
 Source: <http://www.crwflags.com/fotw/flags/zaold.html>

Current conditions in the former homelands have been shaped by a history of racially discriminatory laws, dispossession and forced removals. The policies and practices extending back almost a decade have, to a large degree, contributed to the acute socio-economic and environmental problems that South Africa is currently facing and, thus, an understanding of these processes must be considered in proposing any future activities. Table 2.2 below provides a brief list and explanation of the more relevant legislation<sup>7</sup> regarding land use.

Table 2.2: Legislation on land-use in South Africa from 1913 to present

| <b>Pre-Apartheid Legislation</b>    |  |
|-------------------------------------|--|
| <i>1913 Natives Land Act</i>        | - began the series of racially-based laws of dispossession and land rights. It mandated the creation of African Reserves. Land was divided between ‘white’ and ‘black’ South Africans, with 87 % of the land to be considered ‘white’. This Act also made it illegal for blacks to purchase or lease land from whites except in reserves. This Act forms the historical ‘cut-off’ date for land claims under the Land Restitution program under the current Land Reform Policy |
| <i>1920 Native Affairs Act</i>      | - paved the way for the creation of a countrywide system of tribally based, but government appointed, district councils.   |
| <i>1923 Natives Urban Areas Act</i> | - brought about separate areas for occupation by blacks in the cities, and was used as an influx control mechanism. It formed the basis for establishment of the high-density townships on the perimeters of towns and cities. It gave local authorities the power to demarcate and establish African locations on the outskirts of white urban and industrial areas, and to determine access to, and funding of, these areas.   |

<sup>7</sup> Information on legislation can be accessed from South Africa Department of Land Affairs web site located at <http://land.pwv.gov.za/>

| <b>Apartheid Legislation</b>                               |   |
|--|---|
| <i>1950 Population Registration Act</i>                    | - forced all South Africans to register as Black, White, Asian or Colored.  |
| <i>1950 Group Areas Act</i>                                | - legally mandated expelling black residents from towns to townships and forced a majority of colored residents to move to segregated public housing schemes and private developments. It sought to purge newly proclaimed white residential areas of all other race groups, and implemented this through land expropriation.   |
| <i>1951 Bantu Authorities Act</i>                          | - established black homelands and regional authorities (Tribal Authorities). It established a basis for ethnic government in African reserves, known as 'homelands'. These homelands were independent states to which each African was assigned by the government according to the record of origin. All political rights, including voting, held by an African were restricted to the designated homeland. Africans living in the homelands needed passports to enter South Africa.  |
| <i>1975 Physical Planning Act</i>                          | - allocated enormous territories for the expansion of white settlement around cities and far smaller areas for black, colored and Indian areas.   |
| <b>Post-Apartheid Legislation</b>                          |   |
| <i>1994 Reconstruction &amp; Development Program</i>       | - provided a set of guidelines and principles that gave direction to the initial process of formulating the land reform policy and program.   |
| <i>1996 Communal Property Associations Act</i>             | - provides for the establishment of legal entities which will enable groups of beneficiaries to acquire, hold and manage property on a communal basis within a supportive legislative framework. The Act provides an important and necessary alternative for communities, which aspire to hold and manage land on a communal basis.   |
| <i>1996 Interim Protection of Informal Land Rights Act</i> | - intended as a temporary measure to secure rights of people occupying land without formal documentary rights, pending the introduction of more comprehensive reform. This Act has been extended annually and remains in force.   |
| <i>1997 White Paper on South African Land Policy</i>       | - sets out the vision and implementation strategy for South Africa's land policy. It also seeks to decentralize functions to local govt. The Land Policy is built on three pillars: restitution, redistribution and land tenure reform.   |
| <i>2004 Communal Land Rights Act</i>                       | - aim is to provide for legal security of land tenure by transferring communal land to communities or persons (including women); or by awarding comparable redress. The Act also provides for a) a land rights enquiry, b) the democratic administration of communal land by communities, c) Land Rights Boards, and d) the co-operative performance of municipal functions on communal land. The Congress of Traditional Leaders of South Africa (Contralesa) was adamantly opposed to the Bill leading to this Act (SABCnews 2002). |

Forced removal and dispossession of black South Africans under colonialism and Apartheid resulted in not only racial segregation, but also extreme land shortages and land tenure insecurity (Adams *et al.* 1999a). Among rural communities, the land use preference is to have two separate plots of land, one for residential purposes enough for the household's gardening and the kraal<sup>8</sup>, the other and larger area farther away from the village often used for grazing cattle and subsistence farming (Metcalf 1996; Mathebula pers. comm.). In the former homelands, opportunities for individual farmers to acquire extensive tracts of land for large-scale commercial farming and family estate were non-existent. Against these developments, the high population density and growth exacerbated the demand for land. The problem was worsened by the absence of any land market in the homelands, making it difficult for middle-income personnel to acquire land. The provision of access to land in these areas was largely

<sup>8</sup> A 'kraal' is a South African term for a fenced compound where livestock are generally kept.

through direct allocation to farmers, with land use rights held by tribal authorities. Land use rights were not permanent, but temporary rights could be secured by means of a Permission to Occupy (PTO) certificate (Kepe *et al.* 2001).

#### 2.5.2.1. Former Homelands: socio-economic conditions

Although the homelands were officially eradicated after the 1994 elections, Els (2002b) estimates that 48% of the black rural population of South Africa still live on the land which constituted these former homelands. This translates into more than 17 million people based on subsistence agriculture within a communal utilization system in more than 800 tribal areas, with a mean annual income of approximately 6000 ZAR (~932USD) per household. Because unemployment can fluctuate between 40 and 80% among the potentially economically active population of these areas most people cannot escape from being directly dependent on the natural resources of the areas in which they live (Els 2002b). Coupled with an estimated population growth rate of 2.7% per year, and the fact that more than one half of the population in these rural communal areas are under sixteen years old, Els believes that the subsistence pressure on the natural environment on which these people live will become so severe and unrealistic within the next decade that the government will be obliged to extend the land available to such communities just to make room for people to be able to live there.

This deepening social and economic crisis in the rural areas – fuelled by falling formal sector employment, HIV/AIDS, and the collapse of agricultural support services in the former homelands – is accelerating the movement of people from ‘deep rural’ areas to urban areas throughout the country, while thousands of retrenched urban workers make the journey the other way. The result is a highly diverse pattern of demand for land and numerous hot-spots of acute land hunger in both urban and rural areas (Carnegie *et al.* 2000; Francis 2002).

To gain an understanding of the socio-economic conditions that these former homelands now face, indicators of the predominantly Tsonga-Shangaan speaking rural population in the former Gazankulu homeland (Limpopo Province) where this research concentrates are provided below.

- The population has more females (55%) than males (45%), partly due to migrant labor.
- 90% of population live on less than 1 USD/day.
- 10-20% adults are infected with HIV.
- 45% of the population is under 15 years old.
- 50% of the people 15 years and older are illiterate.

- 32% of those over 20 years old have no education; 13% have only completed high school.
- amongst those aged 15 to 65 years, 50% are unemployed.
- 2/3 of households have no electricity and use wood as the main energy source for cooking.
- 76% of households use a pit latrine as the toilet facility.
- 70% of households have no water supply, with 17% traveling > 1km for piped water.
- 88% of households have no refuse removal by a local authority.

Sources: Hoffman *et al.* (1999), Statistics South Africa (1999; 2003a), Baumann (2001), and Freeman (2002).

#### 2.5.2.2. Former Homelands: environmental scarcity

Figure 2.2 illustrates the causes and effects of environmental scarcity in the former homelands. According to Homer-Dixon and Percival (1998), Apartheid created homelands in relatively resource-poor areas. Resources were also inequitably distributed within the homelands themselves, as often elites controlled access. Populations sustained themselves through subsistence agriculture with added remittances from family members working in industry and mines outside the homelands. Homeland agricultural producers suffered from a chronic lack of investment capital, were denied access to markets, and lacked knowledge of appropriate land-use management techniques - a product of discriminatory education and agricultural extension services. Opportunities to move into urban areas were restricted by influx control; these restrictions combined with high fertility rates led to increased population densities (Callimanopulos 1984). Soils were fragile and susceptible to erosion (Hoffman *et al.* 1999). Inadequate supplies of electricity and fossil fuels forced people to use fuelwood, which became scarcer (Vogel and Morgan 1997?). Rural poverty escalated as agricultural and grazing productivity declined from land degradation, and daily water and energy needs became ever more difficult to satisfy.

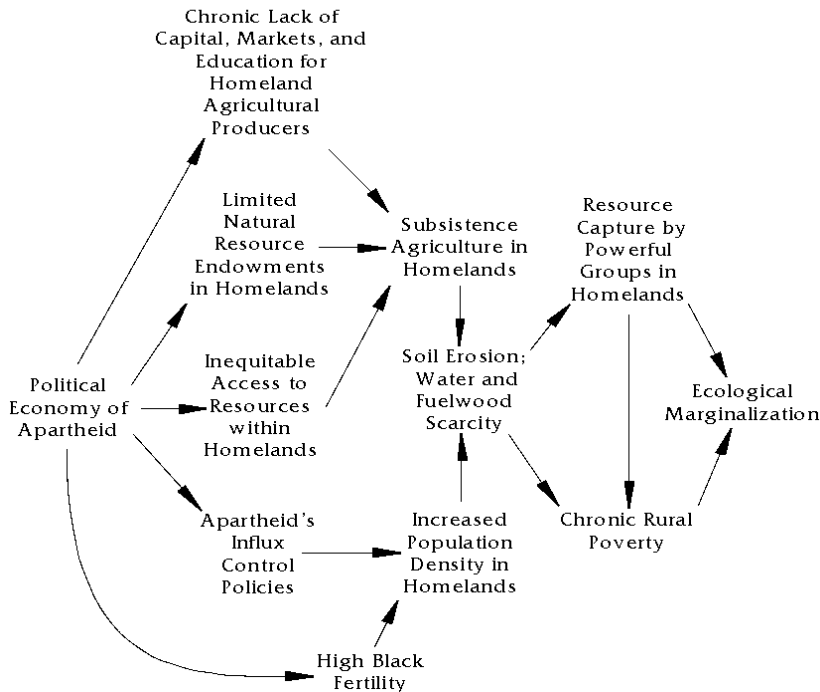


Figure 2.2: Environmental scarcity within South African homelands (Homer-Dixon and Percival 1998)

This rising scarcity of crucial environmental resources boosted incentives for powerful groups to secure access to remaining stocks - a process called 'resource capture' by Homer-Dixon and Percival (1998). In many cases, resource rights were traded for political favors in the homelands' often highly corrupt system of political rule. The combination of overpopulation, depleted resources, and unequal resource access resulted in ecological marginalization. To survive, people migrated first to marginal lands within the homelands and then to ecologically and infrastructurally marginal urban areas as the Apartheid system began to show signs of limited reform in the early 1980s.

### 2.5.3. Land Reform Policy in the 'New' South Africa since 1994

In 1994, when the African National Congress under Nelson Mandela came to power, Apartheid was lifted, much of the previous racially-based legislation repealed, and homelands were reincorporated into South Africa and their administrations absorbed into nine new provincial structures. From practically no rights under Apartheid, black South Africans are now promised, under their new Constitution, almost every conceivable modern right, including social and political, economic, environmental, developmental, and tenure. The South African government is required by this new Constitution to undertake land reform and launched the Reconstruction and Development Program (RDP) program for this purpose in



1994 (DLA 1997). The RDP included a commitment to make land reform the central and driving force of rural development, and redistribute 30% of agricultural land within 5 years. A decade later into this transition, however, many of these issues are still unresolved. As of 2001, only 1.2% of agricultural land was redistributed (Kepe and Cousins 2002). Over 13 million people, the majority of whom are impoverished, remain crowded into the 'homelands', where land rights are often unclear or contested and land administration is in disarray (Turner 2001; Statistics South Africa 2002).

Land in the rural areas of the former homelands is categorized as unsurveyed, unregistered state land, and 'trust land' (Fourie and Hillermann 1998; Ntsebeza 1999; Lahiff 2001). In practice effective land administration has fallen away, record keeping has broken down and most land transactions are extra-legal (Bruce 1998). This breakdown includes loss of records, doubts as to which laws apply and the unauthorised issue of permits and other documents (Adams 2002). Public sector investment is discouraged by the lack of legal clarity with respect to the necessary procedures for land acquisition and allocation. To address these conflicts, land reform in South Africa, including its former homelands, has been pursued under three broad headings (DLA 2002), namely land redistribution, land tenure reform, and land restitution.

#### 2.5.3.1. Land Redistribution

Through a system of discretionary grants, this aims to provide the poor with land for residential and productive use in order to improve their livelihoods. The land redistribution program is aimed at opening up access to privately owned farmland for those who were forbidden to own it by the Apartheid regime. Unlike tenure reform, land redistribution has been the subject of an active program since 1994. However, although substantial areas of farmland in the former 'white' districts have been transferred to black ownership, the process is hindered by a range of problems including inexperienced officials, poor co-ordination with provincial departments of agriculture and local governments, and cumbersome approval mechanisms, and has not significantly altered the racial distribution of private farm ownership (Zimmerman 2000; Lahiff 2001).

#### 2.5.3.2. Land Tenure Reform

Tenure reform is intended to secure and extend the land tenure rights of the victims of past discriminatory practices. In the South African rural context, tenure reform is generally taken to mean the protection, or strengthening, of the rights of residents of privately owned farms

and state land, together with the reform of the system of communal tenure prevailing in the former homelands. Despite the introduction of much progressive legislation, the state has yet to deal effectively with the two most pressing challenges in the area of rural tenure – reform of the chaotic system of communal land in the former homelands and long-term security of tenure for residents of privately owned farms (Adams *et al.* 1999b).

Almost all land in the rural areas of the former homelands is still legally owned by the state. During the Apartheid period, the administration and management of land in these areas was under the jurisdiction of tribal authorities. Given that tribal authorities were often an extended arm of the state, there was no clear distinction between land ownership, administration and management. Today the administration of communal land is spread across a range of institutions such as tribal authorities and provincial departments of agriculture, but is in a state of collapse in most areas. There is widespread uncertainty about the validity of documents such as Permission to Occupy (PTO) certificates, the appropriate procedures for transferring land within households and the legality of leasing or selling rights to use or occupy land. Numerous cases have been reported of development initiatives that are on hold awaiting clarity on ownership of land in the former homelands (Steenkamp and Urh 2000; Ashley *et al.* 2001; Mahony and Van Zyl 2001). The government hopes to resolve these conflicts through the recent enactment of the *Communal Land Rights Act* No. 11 of 2004, through which a process of returning communal land to individuals and communities will be implemented.

#### 2.5.3.3. Land Restitution

Land restitution is designed to restore land and provide other remedies to people who were dispossessed as a result of racially discriminatory legislation and practice since 1913. So far, the program has redressed little of the poverty that rural land restitution claims represent (Lahiff 2001). This program suffers from a high number of backlogged cases and bureaucracy. Of the almost 69,000 land claims launched, only slightly over half had been settled as of January 2003 (Source: DLA web site: <http://land.pwv.gov.za/home.htm>). Perhaps more importantly for this research, however, is that most land claims settled to date are in urban areas, with approx. 95% of over 20,000 rural land claims still pending. Complex challenges lie ahead in relation to large rural claims, many involving hundreds or even thousands of households. This fact has contributed to the lack of clarity and questionable land uses in the former homelands, a possible cause for the hesitancy of donor investment in eco-tourism or community forestry into these areas (Adams *et al.* 2000). From a PAs management perspective, this is exacerbated by the fact that land claims currently cover approximately

10% of the area of all national parks in South Africa, with a number launched for areas within the jurisdiction of KNP (SANP 2002) including within this research's study area.

#### *2.5.4. Dynamic tension: Traditional Authorities and democracy*

In addition to the administrative problems briefly outlined above, land reform also faces another highly contentious dilemma, i.e. of how to effectively implement land reform and reconcile tensions between traditional authorities<sup>9</sup> and elected government councils.

A particular discrepancy exists in South Africa's new Constitution as well as legislation arising from it (Ntsebeza and Hendricks 1998). On one hand, it preserves a Bill of Rights based on democratic principles, including elected representative government; on the other, the Constitution recognizes the role of unelected traditional authorities but fails to clarify their functions and powers. This is despite the fact that a large number of traditional leaders administered unpopular colonial and Apartheid policies and, in the process, were deeply compromised in many communities (Bruce 1998).

The recognition of powers of traditional leaders has a number of far reaching implications for control over land allocation and resource conservation. Chiefly authority is ascribed by lineage rather than achieved through elections, and its patriarchal principles ensure that major decisions on land allocation and local government are almost invariably taken by men only. On the one hand, widespread abuse of power and corruption by the traditional leaders during Apartheid is well documented (Hendricks 1990; van Kessel and Oomen 1997). On the other hand, many tribal people still look to their chiefs for direction, trust them, and are loyal to their authority (Ntsebeza 1999; Campbell and Shackleton 2001). Notwithstanding this 'good chiefs/bad chiefs' scenario, about 40% of South Africans hold their land (approx. 17% of total land area) under indigenous customary land tenure systems irrespective of the formal legal position under national law (van Kessel and Oomen 1997). Rural South Africans rely largely on these traditional customary institutions.

The intention of post-1994 South Africa, by establishing democratically elected local government with 'development functions' and democracy in decision making regarding land,

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<sup>9</sup> The terms 'traditional authorities' and 'traditional leaders' are all encompassing terms to refer to 'chiefs' of various ranks. As the usage in this review refers to both people and structures, both terms are used. However, these do not necessarily mean 'Tribal Authority'. The Tribal Authorities were the formal structures set up under the Bantu Authorities Act of 1951 and comprised chiefs and headmen, appointed councilors and a tribal secretary. The extent to which 'chiefs' can be regarded as 'traditional', is highly disputed. The use of the term is not intended as acknowledgement that 'chiefs' are necessarily legitimate leaders in their areas.

was to introduce a separation of powers and democracy in the form of elected representation in local government and land, even in rural areas. Undoubtedly, this was a major departure from a single, powerful Tribal Authority where practically none of its officials were democratically elected. Understandably, traditional leaders were, and still are, not happy with this and see rural elected councilors and the extension of democracy to land issues as deeply threatening attempts to undermine their political and economic powers (Ntsebeza 1999). The government is trying to reconcile this dichotomy by harmonizing the institution of traditional leadership within the new system of democratic governance through the recent *Traditional Leadership and Governance Framework Act* No. 41 of 2003, which was highly contested by the Congress of Traditional Leaders of South Africa (CONTRALESA).

Moreover, regarding these newly elected councils, negligible support is given to newly elected rural councilors. They are few and cover scattered, often inaccessible villages. They do not have adequate transport, or even, in some cases, telephones. Above all, they are poorly remunerated, making it difficult to attract people of caliber (Ntsebeza 1999). In cases where councilors are elected from the local populace, these same councilors may find themselves in potentially compromising predicaments, i.e. having to submit to two distinct authorities; their employer (government), and their traditional leader. Rather than underestimate or overlook this integral part of the social, political and economic framework, solutions to land tenure problems and resource conservation may be largely found in understanding and including the historical and cultural heritage of rural institutions (Murombedzi 1998).

#### 2.5.5. *Provincial and local governments*

Through the provincial legislature and necessary coordinating structures, environment and conservation departments in each province play an important role in developing collaboration between other departments responsible for activities concerning the conservation and use of biodiversity within the province. In Limpopo Province, Environmental Affairs is a branch within the Department of Finance and Economic Development (DFED/EA), whose primary role and function is ‘To stimulate, promote and maintain an enabling environment conducive for sustainable economic growth, social justice and a decent quality of life for all’ (Limpopo Provincial Government 2005). This branch is operationally sub-divided into municipal districts which provide conservation extension services, and regulate and monitor the use of natural resources, including in communal areas (Mokganya pers. comm.). DFED/EA activities are largely governed by the *Limpopo Environmental Management Act* (LEMA) No. 7 of 2003, which is aligned with national legislation (*Environmental Management Act*:

*Biodiversity Act 2004; Protected Areas Act 2003*). An additional function of DFED/EA is to promote sustainable development outside PAs, through the forging of appropriate partnerships with communities, NGOs, the private sector, and other government departments.

Given the current tension between Traditional Authorities and financially-constrained elected government bodies in the communal areas, exacerbated by ambiguity in their roles and functions, it is useful for this research to gain an understanding of the attitudes and beliefs of local communities regarding these institutions in terms of land and resource use.

**Research Question: How do local communities view the various institutions responsible for managing natural resources?**

## 2.6. Protected Area Management in South Africa

This section provides a brief introduction to South Africa’s rich biodiversity including its threats, and a history of the country’s PAs management with related legislation. Based primarily on colonial and Apartheid practices and policies, the section will also show how South African National Parks (SANP), the body responsible for national parks management, is realizing the transition so that it reflects the new political, economic and social realities of post-1994 South Africa.

### 2.6.1. Biodiversity under threat

The Republic of South Africa is endowed with diverse natural resources (see Table 2.3), largely as a result of its mix of tropical and temperate climates and habitats, and is ranked as the third most biodiverse country in the world (DEAT 1998).

Table 2.3: Species richness of South African taxa (DEAT 1997)

| <b>Taxa</b>     | <b>Number of described species in South Africa</b> | <b>Percentage of earth’s total</b> |
|-----------------|--|------------------------------------|
| Mammals         | 227  | 5.8                                |
| Birds           | 718  | 8                                  |
| Amphibians      | 84   | 2.1                                |
| Reptiles        | 286  | 4.6                                |
| Freshwater fish | 112  | 1.3                                |
| Marine fish     | 2150   | 16                                 |
| Invertebrates   | 77 500   | 5.5                                |
| Vascular plants | 18 625   | 7.5                                |

Despite this richness, however, South Africa's biodiversity is under threat. The country's *White paper on the conservation and sustainable use of South Africa's biological diversity* (1997) states that 3435 (15%) of South Africa's plant species, 102 (14%) of bird, 72 (25%) of reptile, 17 (20%) of amphibian, 90 (40%) of mammal, and 142 (22%) of butterfly species are listed as threatened in the national Red Data Books. Trends indicate that this condition is not improving, and that growing human populations and unsustainable resource consumption rates will result in increasing negative impacts on biodiversity. Loss of wildlife and its habitats, the overexploitation of certain species, introduction of exotic species, and conflicting relations between PAs and local people continue to challenge conservation efforts (DEAT 1998; Perrings 2000; Steenkamp and Urh 2000). There is also a mounting concern related to climate change and its potential effects (Hulme *et al.* 2001; Erasmus *et al.* 2002; Meadows and Hoffman 2003) .

#### 2.6.2. History of protected area management

*'It would be a biological crime if we allowed such a peculiar race to die out, because it is a race which looks more like a baboon than a baboon itself does...We have so far got about 20 who are just about genuine...It is our intention to leave them there (in the park) and to allow them to hunt with bows and arrows but without dogs. We look upon them as part of the fauna of the country'* [Colonel Denys Reitz, Minister for Native Affairs, in the South African Parliament on April 3, 1941. He was referring to a group of southern Bushman people who survived on an abandoned farm near the Gemsbok Kalahari Park, from which they had been recently evicted for hunting game; cited in Volkman (1986)].

Formal PAs management in South Africa has a long history, dating back to when the forest reserves of Knysna and Tsitsikamma were proclaimed in terms of the *Cape Forest Act* of 1888. This was followed by the establishment of forest services in Natal in 1891, and in the Orange Free State and Transvaal by 1903. As a response to declining wildlife numbers and uncontrolled hunting, a number of statutory game reserves were established, specifically the Pongola (1894), Hluhluwe and Umfolozi (1897), Sabie (1898), Giant's Castle in the Drakensberg and Singwitsi (1903) (Bigalke 2000).

After the union of South African colonies in 1910 the central government assumed conservation responsibility for forestry, inland waters, islands and the seashore, and the first *National Parks Act* (No. 56) was promulgated in 1926. Fish and game preservation was a function allocated to the provinces, however, who continued to expand their activities and establish nature conservation agencies (DEAT 1997).

Prior to 1994, like elsewhere in southern Africa, the familiar approach to proclaiming PAs in South Africa was to remove (often forcefully) resident rural people and relocate them elsewhere without adequate compensation (Callimanopulos 1984; Volkman 1986; Borrini-Feyerabend 1996; Lahiff 1997; Campbell and Shackleton 2001). These and other neighbouring communities were then customarily deprived of access to PAs, any participation or input in their management, or any share of their benefits (Khan 1994). Moreover, under Apartheid, disadvantaged and usually destitute communities had ‘no effective recourse through either the judiciary or the democratic process’ (Magome and Collinson 1998). The result was that much human misery and hostile attitudes towards established PAs were produced in shaping South Africa’s extensive PAs network (SANP 2000a).

### 2.6.3. *The rationale for change*

Since the democratic elections of 1994, the National Parks Board (NPB) changed its name in 1997 to South Africa National Parks (SANP), and has undergone major changes with regard to philosophy, policy and organisational structure so that it reflects the new political, economic and social realities of South Africa as underpinned by the new Constitution. In addition to its core objectives of conserving biodiversity and maintaining landscapes, its new management policy has been transformed towards integrating wildlife conservation concerns with the socio-economic needs of its neighbouring communities, an objective also elaborated on in South Africa’s *National Report to the Fourth Conference of the Parties to the Convention on Biological Diversity* or ‘CBD’ (1998). The new board's transformation statement reads as follows:

*South African National Parks is striving to transfer power and control of resources from the minority that had been appointed and privileged by an undemocratic system, to the majority that participates in the new democratic process. It is also directing the benefits of its activities to providing for all South Africans, rather than the more wealthy and privileged sections of society.* [cited in Cock and Fig (2000)]

At the time of this field research, the *National Parks Act* No. 57 of 1976 and its associated amendments formed the legal basis for the management of all South African national parks. However, as of 1 November 2005, the *National Environmental Management: Protected Areas Act* 57 of 2003 (as amended by the *National Environmental Management: Protected Areas Amendment Act* No. 31 of 2004) repealed this former Act and is applied in conjunction with the *National Environmental Management: Biodiversity Act* No. 10 of 2004. The new *Protected Area Act* repeals sections of the *Environmental Conservation Act* No. 73 of 1989, and gives expression to the *White Paper on the Conservation and Sustainable Use of South Africa’s Biological Diversity* (Notice 1095 of 1997).

Of particular concern to this research, the new Act is more conducive to sustainable use of PAs' resources than the previous legislation which was more restrictive in this regard. Firstly, the new Act states that the purposes of PAs include:

- 17. (h) to provide for the sustainable use of natural and biological resources;
- (j) to manage the interrelationship between natural environmental biodiversity, human settlement and economic development.

Secondly, Section 42 (1) of the Act makes provision for PA management authorities to enter into co-management agreements with another organ of state, including local communities or individuals. Such an agreement may allow for devolution of power, benefit-sharing, sustainable use of biodiversity, access, occupation of the PA, development of economic opportunities, and support in administering and implementing the agreement.

Finally, Section 50 (1) states that the management authority of a national park, subject to the park management plan, may enter into a written agreement with a local community inside or adjacent to the park, to allow members of the community to sustainably use specific biological resources in the park.

#### 2.6.4. Social Ecology at SANP

Policy shifts in SANP towards integrating wildlife conservation concerns with the socio-economic needs of neighbouring rural communities has been realized in part by the establishment of the Social Ecology Department in 1994. Social ecology is central to the SANP's new vision and is described in its 1998 Corporate Plan, as:

*'... a strategy and process that conveys the philosophy and approach of the SANP to neighbouring communities and establishes mutually beneficial dialogues and partnerships with these communities. The process ensures that the views of the community are taken into account to the largest possible extent and are acted upon, that the Parks' existence is a direct benefit to neighbouring communities and that, in turn, communities adjacent to Parks welcome the conservation efforts of the SANP'* [cited in SANP 2000a: 20].

According to SANP (2000a), social ecology comprises five major functions: community facilitation; economic empowerment; environmental education; cultural resource heritage management; and research and monitoring. Thus, social ecology's over-arching role is to educate, economically empower, and encourage park neighbours and land users to embrace and support SANP objectives. However, there is widespread belief that emerging policy shifts have yielded minimal benefits to communities, and concrete progress in rural development has remained tentative (Tapela and Omara-Ojungu 1999; Emerton 2001; Maharaj 2005). This



may be due to worsening financial constraints in SANP, however, as the capacity of Social Ecology was downscaled in 2001 under Operation Preveil which sought to keep the organization from going into liquidation (Moore and van Damme 2002).

## 2.7. Kruger National Park

### 2.7.1. Bio-physical characteristics

The KNP, situated in the northeastern section of the Republic of South Africa (Figure 2.3), is approximately 350 km from north to south, averaging 60 km in width, and covers nearly two million hectares (Mabunda *et al.* 2003), i.e. about the size of Israel or Slovenia. It is unrivalled among South Africa's 22 national parks, being home to an unparalleled diversity of wildlife and is maintained by one of the world's most sophisticated management systems (Braack 2000). Furthermore, more than 254 cultural heritage sites have been identified within the Park's borders (SANP 2000a).

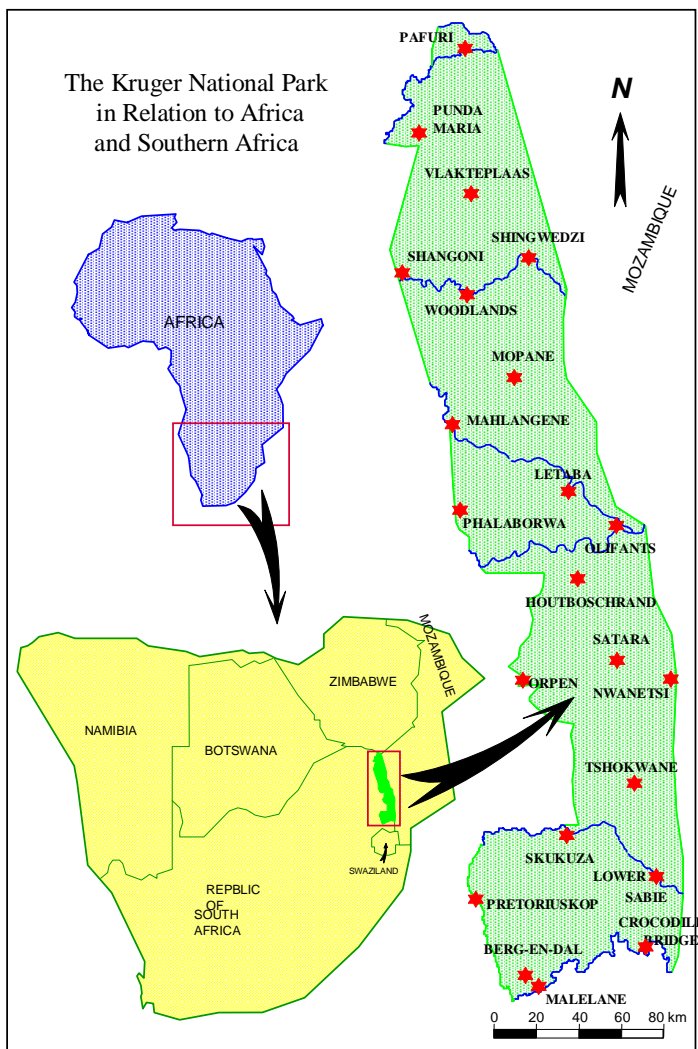


Figure 2.3: The Kruger National Park and its location in South Africa (stars within KNP represent ranger section outposts). Source: GIS Lab, Scientific Services, KNP.

According to Jacana Education Ltd. (2000), 16 ecozones exist within the KNP. Three of these ecozones are represented along the western border from the Punda Maria gate south to the Klein Letaba River, namely the Mopane/Bushwillow Woodlands, Sandveld, and Riverine. The KNP also comprises eight main river catchments, including the Shingwedzi and Letaba in this research's study area (see figure 3.3 in chapter 3.1.4.). Annual precipitation ranges from 500-700mm in the area, and thus is classified as 'semi-arid' (Jacana Education Ltd. 2000).

Land use adjacent to the western border of the KNP is characterized by slightly undulating plains containing villages with built-up land, surrounded by areas for subsistence farming. However, there still remain relatively sizeable vacant, bushland areas with biodiversity largely intact, especially between the Shingwedzi and Klein Letaba Rivers (DWAf *et al.* 2001) (see also figure 2.4). Adjacent areas are demarcated from the KNP by way of a boundary fence originally intended to control the spread of foot-and-mouth disease. However, many sections of the fence are dismantled and/or need repair (Bigalke 2000; SANP 2000a). A combination of factors contributes to the poor condition of the border fence: extensive damage during flooding in 2000; poor maintenance; and actions of persons illegally crossing into South Africa from Mozambique (Wentzel pers. comm.).

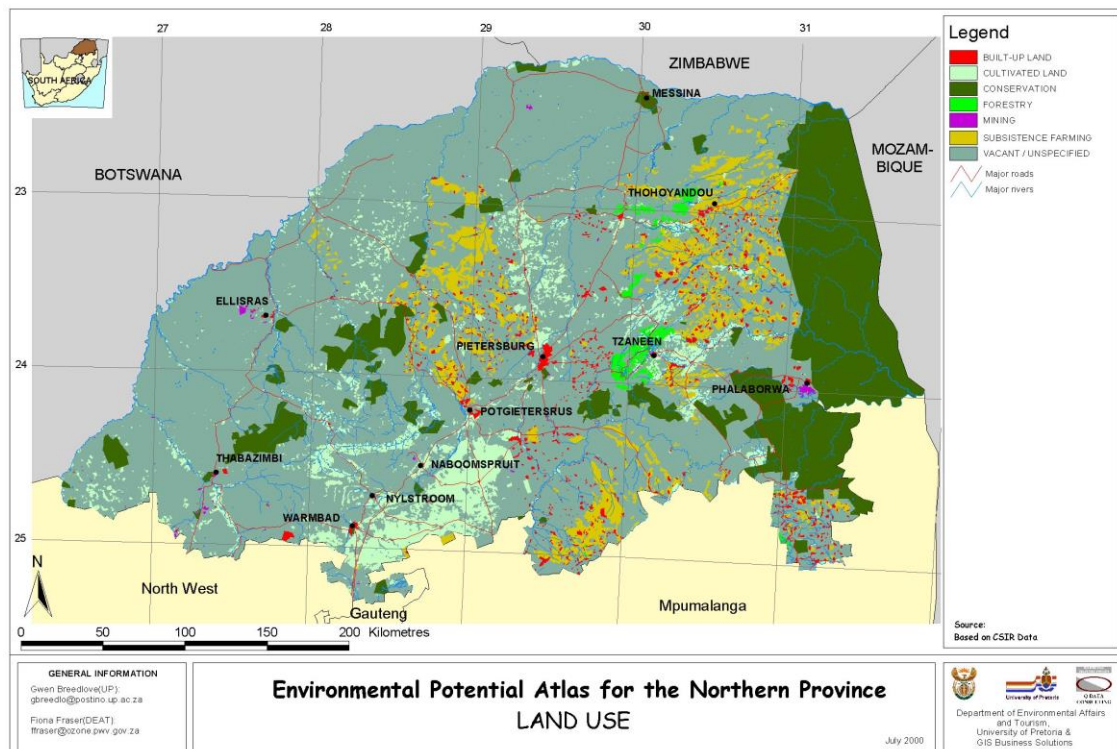


Figure 2.4: Land use for the Northern Province  
 Source: Dept. of Environmental Affairs and Tourism, University of Pretoria and GIS Business Solutions. 2000. *Environmental Potential Atlas for the Northern Province: Land Use*. Based on CSIR data.

### 2.7.2. History

KNP lies adjacent to the former Gazankulu homeland, and can be traced back to 1898 when a small game sanctuary was established at Sabie (Hopkins 1999). This was later to be called the Sabie Game Reserve and together with Singwitsi Game Reserve added to it in 1903, formed the nucleus of the KNP which was founded in 1926 under the first *National Parks Act* (Carruthers 1989). Other national parks in South Africa are smaller in total area, but constitute part of an attempt to develop the conservation of a representative sample of each of South Africa's diverse ecological systems.

South Africans commonly assume that KNP was named after Paul Kruger, the president of the Transvaal Republic, in order to venerate his personal interest in nature conservation, and in particular his struggle against substantial opposition to establish the park which now bears his name. However, Jane Carruthers (1994) closely examined the accuracy of this link between Paul Kruger and the KNP and has found it to be largely inaccurate. Her analysis of contemporary sources demonstrated that Kruger lagged behind public opinion (both in the Transvaal and internationally) on wildlife conservation and was forced into establishing the Sabie Game Reserve. She further argues that the connection between Kruger and national parks was deliberately generated to serve Afrikaaner Nationalist political purposes. Chief among these have been the advancement of republican and Apartheid ideology, the denigration of Britain, a need for international respectability and the promotion of Afrikaaner scientists. She contends that constructing the myth of Paul Kruger to create an Afrikaaner culture in the KNP positioned the park firmly with the white, Afrikaaner Nationalist arena. This had important implications for the future of national parks in the changing political circumstances of South Africa. KNP's establishment came at a critical stage in the political development of the republic, and was a calculated decision to enlist the support of Afrikaaners and create a symbol of national unity.

Before 1994 appointed board members were exclusively white males, commonly closely aligned with Afrikaaner nationalism. These board members developed 'close bonds with the Nationalist government after 1948 (when the latter came to power)' (Carruthers 1995: 83). This was cemented by the inclusion of the centrally appointed provincial administrators. The organization as a whole was therefore white-controlled and chiefly reflected Apartheid culture and practice. For example, until the 1980s, black visitors to the KNP were only allowed accommodation at Balule, a single-tented camp, established in 1932 with very rudimentary facilities (Cock and Fig 2000). Access for black visitors was also restricted by economic

factors such as entry fees and the possession of motorized transport, both being difficult given the levels of scarcity and impoverishment for black people.

The only black Africans allowed to remain in KNP were as low-paid labourers (Carruthers 1995). This reflected the culture of the white administration, which involved racist employment and housing practices. Rather than being a means of nation-building, the parks worked against national unity to reflect and maintain the privileges of the white minority. The KNP had become an area of conflict between Park management and rural communities living in the park's interface zones, as it ignored or suppressed existing indigenous knowledge, local institutional systems and practices. This 'fences and fines' approach adopted by the park's management often compounded the problems of poverty, disempowerment and population pressure in the neighbouring rural communities. Despite policy changes, opposition to wildlife protection continued to grow from these underdeveloped rural communities. This was due to the perceived inadequacy of compensation for loss of access to resources within the KNP (Hopkins 1999), and to damage caused by wildlife escaping from the KNP (Bigalke 2000; Cock and Fig 2000; Freitag-Ronaldson and Foxcroft 2003).

### *2.7.3. Social Ecology at Kruger National Park*

Part of the transition within SANP has meant restructuring and commercialization of some of its activities in KNP, in part, due to increasing financial constraints (Mabunda 2004). Concomitant with these changes, the KNP established its own Social Ecology Program, which facilitates participatory communication structures with the Park's neighbours and affected communities<sup>10</sup>. It consists of about 120 villages and private game farms with an estimated total human population of 1.5 million (SANP 2000a). The first duty of the Program was to break down barriers of ambiguity and antagonism and address real issues affecting the daily lives of their neighbours. As of 1999, this program was working with 88 communities bordering the Park and by March 2000, twenty-four permanent social ecology staff (~0.8% of total) were employed by KNP (SANP 2000b). The Social Ecology Program entered into dialogues with communities within 15 km of the park boundaries (Freeman 2002). Seven

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<sup>10</sup> According to Braack *et al.* {n.d.}, 'Neighbours and Affected Communities' refer to 'any person or grouping of persons which within reasonable limits is deemed to be directly affected by the presence of the Park or the activities present therein'. This includes not only those persons living in close proximity to the Park who may occasionally be subject to damage inflicted by animals escaping from the Park, but also those living some distance away who may reasonably expect to use the Park as an offset area for saleable commodities, or live near main access roads to the Park which offer business opportunities, or who through historic displacement may currently be geographically well removed but have reasonable claim to access for ancestral worship or other purposes. The above description refers largely to black communities living along the western boundary of the KNP, but other stakeholders include many private nature reserves, hotels, mining and agricultural industries.

multi-village fora have been organized and meet monthly to discuss issues of concern to the communities such as wildlife depredation on crops and livestock, foot-and-mouth disease, ways to bring about socio-economic development in the communities, and land claims (Mmethi pers. comm.). The latter are of great interest to the communities, several of whom have begun the process of land titling and formation of Community Property Associations (CPA), in hopes that they can negotiate in the future with the KNP and the private sector to develop lands they are claiming within the park.

Since 1996, several land claims have been lodged, one successfully, to gain access to portions of the KNP. In 1998 the Makuleke Tribe succeeded in reclaiming a portion of the northern tip of the park, known as the 'Pafuri Triangle', from which it was evicted in 1969. The complex history leading to this event is succinctly described by Carruthers (1995), Steenkamp and Urh (2000), and Reid (2001). The tribe has formed a CPA and negotiated an arrangement to keep management of the Makuleke Contractual Park under the KNP and in accordance with the CITES treaty. However, this process has not been without its obstacles, in part due to diverse stakeholder interests and positions (Ramutsindela 2002).

Current fora focus areas include the establishment of joint ecotourism ventures with local communities, developing markets within the Park for the sale of local crafts; providing funding for self-help projects; and negotiating with neighbouring market gardeners to provide the Park with fresh produce. Participation by neighbouring communities in resource management was considered a means of empowering and addressing the socio-economic aspirations of the communities represented by the Hlanganani Forum (HF), by establishing the 'Mariyeta Initiative', a buffer zone development scheme in which communities planned to set aside 11,000 ha of land as a buffer zone on the western border of KNP (Nobela pers. comm.).

In pioneering research for the KNP, Herman Els (1994, 1995) compared the value judgments of black KNP personnel on nature and nature conservation with those in the neighbouring rural areas in the Bushbuckridge region (south of this research's study area) and found no significant difference between them. He concluded that negative value judgments of the adjacent rural communities regarding the value and function of the KNP is widespread because of the belief that KNP cares more for wild animals than for people. Respondents in his study indicated that it was unfair that wild animals had grass to eat while the cattle of the neighbouring people were starving to death during the drought. They also indicated that these

people considered the KNP a ‘bad’ place because they were restricted from gathering firewood and hunting within its boundaries. Respondents indicated that people living adjacent to the KNP were not scared of KNP rangers but were convinced that these rangers care more about wild animals than people, and agreed with the statement that people living adjacent to the KNP should be compensated for stock losses due to lions, which is producing hostility and negative attitudes towards the KNP and conservation in general from local Tsonga communities (Wentzel pers. comm.). The staff of the KNP are therefore viewed as *people who farm with lions* to the detriment of the rural cattle owners (Els 2002a).

More recently, David Mabunda, the current CEO of SANP, conducted a survey (N=130) of 49 villages adjacent to KNP to measure the level of awareness, attitudes and perceptions of these communities regarding the park’s activities (Mabunda 2004). He unexpectedly found, in contrast to Els’ findings and other published works (Carruthers 1995; Cock and Fig 2000; Pollard *et al.* 2003), that attitudes and perceptions toward the KNP were in fact positive.

Given the diverse results in the attitudinal surveys of Els and Mabunda further to the south, and aside from a limited number of studies on the Makuleke’s land claim, little is known about the interaction between the KNP and communities falling within the jurisdiction of the Hlanganani Forum (see next section), and how costs and benefits of the KNP may influence this interaction. Understanding this relationship in its local context is crucial.

**Research Question: What are the costs and benefits of the KNP for local communities and how are they distributed?**

## 2.8. Hlanganani Forum

The Hlanganani Forum (HF) was initiated in 1994 when KNP called a meeting with the intent of reaching out to their neighbouring communities (Chauke pers. comm.). All villages within the ‘red line’ (~15km of Park border) were invited, although KNP first contacted a member of the Mhinga Tribal Authority. The overall aim of the HF, according to its first constitution was to:

*‘build a relationship between Kruger National Park, the Northern Transvaal Department of Environmental Affairs (NTDEA), and the communities bordering on the Park within Giyani and Malamulele regions so as to enhance development and environmental education opportunities within these organizations and villages’.*

(Hlanganani Forum Constitution, approved 9 March 1995)

More specifically, its primary goals were:

1. To build trust and friendship between the KNP, neighbouring villages, and the NTDEA.
2. To resolve mutual problems.
3. To facilitate the establishment of small business development and to support existing business in the communities bordering on the Park by using the infrastructure and economy of the Park.
4. To promote environmental education within the communities.
5. To facilitate development and capacity-building within the region with the support of sponsors and developers not directly involved in the region.

Original membership in the HF consisted of a) 26 villages with 2 representatives each, b) KNP with 5 official members: 3 local rangers plus 2 head office staff, c) NTDEA with 5 official members, and d) South African Police Service (SAPS) with 5 officers: one each from Pafuri, Venda, Saselamani, Malamulele, and Giyani (SAPS are no longer members in the Forum). According to Frances Mhinga (pers. comm.), the HF gained Section 21 status (not-for-profit) in 2001, and currently represents 27 villages, although an additional 15 villages lie in the research study area which are not represented on the HF (see figure 3.3 in chapter 3.1.4.). The main issues that were central to discussion of the HF were damage-causing animals (DCA) that were escaping from the KNP and the resulting lack of compensation to damage caused by these animals, the poor condition of the Park's border fence, the proposition of installing a new public entrance (Shangoni Gate) to the KNP between Punda Maria and Phalaborwa, and a proposed buffer zone which would comprise both community and KNP land (Mariyeta Park). The HF is considered by both KNP Social Ecology staff and its chairperson to be the most active KNP forum, due primarily to the long history of conflicts in the area.

As the HF matured, it developed a new Constitution in 2000 with an expanded primary goal to more accurately reflect its priorities:

*'To build a healthy working relationship between Kruger National Park (Park), the Limpopo Province Department of Agriculture, Land and Environmental Affairs (Government), and the communities bordering on the Park within the Mopani and Thulamela municipality (Forum) so as to enhance development, employment opportunities, environmental education opportunities, care of problem animals and compensation on livestock that belong to members communities.'*

HF objectives were also extended and encompass both primary and secondary objectives:

A. Primary objectives:

1. Deepen and strengthen a healthy relationship between the Forum, the Park, and the Government.
2. To work toward development of the previously disadvantaged communities.
3. To create employment opportunities either in the Park, the Government, or even in the Forum.
4. To help educate member communities about conservation and other environmental matters.
5. To help take care of problem animals either by employing professionals or by participating in the tendering process of the Government and of which the money generated there of shall be made available for the use that will benefit the Forum.
6. To look at compensation of the members who have lost their livestock.

B. Secondary objectives:

7. Managing different environmental and conservation related projects that are beneficial to the community members. Aimed at community development and empowering the community socially and economically.
8. Creating employment opportunities.
9. Establishing a support center that will look at training of professional hunters, compensation of people who have lost their livestock and also giving information to the relevant law enforcement officers in the Park and the Government about people who transgress the law according to the Nature Conservation Act.

Despite being in existence for more than a decade, no evaluation has been conducted on the effectiveness of the HF, its influence, nor its perception by neighbouring communities. This aspect of the research is crucial in understanding the role of KNP's interaction with community fora and the value they hold for CBC schemes.

**Research Question: How effective has the Hlanganani Forum been in achieving its conservation and socio-economic objectives?**

## 2.9. Neighbouring Communities

### 2.9.1. History

Communities in the study area comprise almost exclusively (96.2 – 99.1%) people from the Tsonga people group (Statistics South Africa 2003b). Tsonga are a diverse population, and in



the mid-1990s, numbered about 1.5 million in South Africa, and at least 4.5 million in southern Mozambique and Zimbabwe (1UpInfo 1996). In the 18<sup>th</sup> century, ancestors of the Tsonga lived in small, independent chiefdoms. Most Tsonga relied on fishing for subsistence, although goats, chickens, and crop cultivation were also important. Because their coastal lowland habitat was tsetse-fly infested, cattle were rare in their economies (1UpInfo 1996).

During the mfecane<sup>11</sup> and subsequent turmoil of the 19<sup>th</sup> century the history of the Tsonga was dominated by invasions of Zulu conquerors who left Chaka and enslaved the Ama-Thonga of the coast (Junod 1923). Many Tsonga emigrated inland to the Transvaal from 1835 to 1840. Some successfully maintained their independence from the Zulu, while others were conquered by Zulu warriors even after they had fled. One Zulu military leader, Soshangane, established his authority over a large Tsonga population in the northern Transvaal (see figure 2.1) in the mid-19<sup>th</sup> century (1UpInfo 1996). The descendants of some of the conquered populations are known as the Shangaan, or Tsonga-Shangaan.

Tsonga who migrated inland brought new sources of food into the Transvaal, including cassava, certain kinds of groundnuts, potatoes and sorghum. Particularly important were the maize and fowls introduced in their new settlement areas. Agricultural work was performed almost exclusively by women, except for initial land clearing which was the men's responsibility (Magubane 1998). Even today, labour division along gender lines still exists: men are traditionally hunters, herdsman, fishermen, housing constructors, as well as traders; women are agriculturalists, gatherers, and collect water and fuelwood (Ombe 2003). Crop harvesting was usually cooperative, done on a rotational basis, with area communities gathering to harvest each family's crop in turn.

By the early 1920s, the Tsonga-speakers constituted about 4% of the total South African population (Magubane 1998). In the north, large chiefdoms, including Xikunda, Mhinga, Xigalo, and Makuleke occupied distinct reserves adjacent to the KNP. The Tsonga-Shangaan homeland, Gazankulu, was carved out of northern Transvaal Province during the 1960s and granted self-governing status in 1973. In the 1980s, the government of Gazankulu established a legislative assembly made up mostly of traditional chiefs. The chiefs opposed homeland independence but favored a federal arrangement with South Africa (1UpInfo 1996).

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<sup>11</sup> "The Crushing" - a series of Zulu and other Nguni wars and forced migrations in the early 19<sup>th</sup> century that changed the demographic, social, and political configuration of southern and central Africa.

### 2.9.2. Social Organization

Communities were torn apart as families were moved to the Tsonga homeland, and the resulting taxation and overpopulation made people increasingly dependent on migrant labour. This caused men to leave their families for long periods, and today even women in rural areas seek seasonal work on nearby citrus farms (Mathebula pers. comm.).

However, traditional Tsonga homesteads (*muti*) still exist: a typical settlement consists of a man, his wife or wives, their children and the families of their married sons (Magubane 1998). Cylindrical houses with earth walls and conical thatched or reed roofs constitute the generally circular homestead, bordered with a perimeter wall or fence, made from branches and tree stumps. At the homestead center is the cattle kraal (*xivaya* or *tshanga*). A special meeting area (*huvo*), usually enclosed by branches and situated under a tree, exists within the community, as does the *gandzelo* for sacrificial purposes, which may be anywhere in the *muti*. The *vandal*, which may be inside or outside the *muti*, is where the men meet to discuss the administration and the affairs of the *muti*. No woman or child is allowed in this area.

Family authority rests with the father, who is traditionally treated with great respect by the wife and children. Within an extended family, the ranking and status of wives and their children is determined by the order in which they were married (Magubane 1998).

### 2.9.3. Traditional Authorities

A typical Tsonga-Shangaan Traditional Authority is composed of a chief (*hosi*), under which a hierarchy exists to serve the community at large (Hartman *et al.* 1993). Junod (1923) states that the role of the chief is tantamount to tribal life as 'the [chief] forms the center of national life. It is through him that the clan becomes conscious of its own unity. Without him, it loses its bearings and it has lost its head' (1923: 367). Chieftainship is hereditary and falls to the most senior member of the oldest lineage in the strongest clan in the group. The new chief must be approved by the council and formally inducted into office.

In the past the *hosi* yielded supreme power. He allocated land and sanctioned the start of initiation rites, harvest ceremonies and rain dances; he mediated between members of the group and ancestral spirits; he made all decisions relating to war and the army; he was also responsible for the administration of the group, and tried serious cases and those on appeal from headmen (*tindhuna*) (Magubane 1998).

#### 2.9.4. Tsonga and the Environment

Traditional Tsonga beliefs include that man has a physical body (*miri*), and a spiritual body with two attributes, *moya* and *ndzuti*. The *moya* (associated with the spirit) enters the body at birth, and on death is released to join the ancestors. According to Magubane (1998) the *ndzuti* is linked to a person's shadow and reflects human characteristics, and who, on death, leaves the body in the spirit world. The spirit of the dead (*swikwembu*) is imbued with the individual and human characteristics of the person and can hold much power with respect to causing rain to fall or trees to bear fruit (Junod 1962). Not only is there life after death, but on entering the world of the dead the individual retains links with the living. Thus, for many Tsonga today 'society' implies an all-encompassing entity, including both the living and the dead (Mathebula pers. comm.).

The Tsonga concept of *ntumbuluko* corresponds with the English notion of *nature* (Els 2002a). However, nature includes more than mountains, plants, rivers and wild animals to the Tsonga: it also embraces the concept of tradition. The Tsonga also believe that man is central to creation and all else is of lesser significance as it was created purposely to maintain human life (Els 2002a). The Tsonga further believe it is their right to utilize natural resources within their direct living environment, and this is non-negotiable (Els 2002a). However, 'meaningful and judicious use is not always implied by this inherent right, and this difference in conceptual approach often leads to conflict with nature conservation authorities' (Els 2002a), thus resource use conflicts are often rooted deeply in culture. Many Tsonga believe that it is irrational that mankind can protect and conserve wild animals, because wild animals belong to *Xikwembu* (the Supreme Being) and live wild. Thus, it is difficult for Tsonga to view wildlife from an aesthetic perspective. Rather, as in the case of trees they are evaluated on their intrinsic usefulness and/or potential danger to humans and property (Mathebula pers. comm.).

Although comprehensive studies have been undertaken on categorical use of various plants by Tsonga communities (Junod 1962; Liengme 1981; Terblanche 1994), medicinal plant usage along KNP's western border (Botha *et al.* 2001), and economic value of specific taxa in rural South African contexts (Shackleton 1996; Shackleton *et al.* 1998; Shackleton *et al.* 1999; Mashabane *et al.* 2001; Shackleton 2001; Shackleton *et al.* 2001; Shackleton *et al.* 2002; Twine *et al.* 2003; Shackleton and Shackleton 2004), no investigation on the use and relative importance of both wild flora and fauna, nor on landscape units has been carried out previously. By collecting data on this aspect of Tsonga rural livelihoods, important information on resource use and demand can be gained, including of protected species.

Further, by improving understanding on local uses of resources, and the value attached to those resources, conservation agencies are better equipped to engage in CBC initiatives that can incorporate a wider range of possibilities. On the other hand, by neglecting this fundamental information, a knowledge gap is created which may lead to the failure of CBC.

**Research Question: How do local communities value and use natural resources?**

## 2.10. Theoretical and conceptual considerations

Research on interactions between local communities and PAs can be considered multi-theoretical, drawing on, *inter alia*, the theories outlined below which in some cases have overlapping concepts. This research primarily draws from Walter Firey's (1960) resource use theory as it provides a comprehensive approach to understanding the human dimension in PAs management, and his hypotheses are purported to be universally true descriptions of humans as resource users across all cultures and physical regimes. However, this research is also informed by relevant conceptual frameworks developed elsewhere, and are also outlined below.

Walter Firey's (1960) **resource use theory** recognizes that ecological, economic, and ethnological/cultural frames of reference all interact with each other in a form of negotiation and trade-offs to optimize each of these frames and, thus, play a role in shaping local perceptions toward the use and fate of a resource system. This system is socially constructed and viewed differently by different social groups within their own frame of reference, based on personal attributes including their needs, perceptions, and attitudes regarding a PA or natural resource system (see also Gergen 1994; Hannigan 1995). According to Firey, any resource process, to be adopted, must first be valued (i.e. accorded some worth) by people in terms of their own system of activities. Thus, there are some resource complexes<sup>12</sup> which are not valued by a given people and which, consequently, will not be adopted (no matter how superior they may be by other criteria). There is also a growing body of empirical evidence suggesting that local people's support for PAs depends primarily on their perceptions of the costs and benefits of living in or adjacent to such areas against the background of demographic and socio-economic conditions (Heinen 1993; Little 1994; Fiallo and Jacobson 1995; de Boer and Baquete 1998).

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<sup>12</sup> 'Resource complexes' are defined by Firey as man-mind-land structures which show stability and resilience to external influences, and that impose constraints upon humans such that they willingly conform their behavior to the practices which comprise that resource system. These contrast with 'resource congeries', which show little stability and vary widely to external changes.

Given the history of conflict between the KNP and its neighbouring communities, coupled with acute poverty in the area, perceptions of local people toward the KNP and its objectives may indeed be more heavily influenced by both economic and cultural factors. For example, if neighbouring communities do not perceive economic or culturally relevant advantages from a proposed arrangement with the KNP, they are not likely to positively participate in the proposal. Culture<sup>13</sup>, one aspect of Firey's model, can be a synthesizing element among people and must be considered in structuring benefit-sharing from CBC initiatives (Charnley 2005). Hegemonic models of PAs development can destroy a group's self-esteem and sense of self-worth by de-humanizing them (Johnston 1995), as is traditionally the case in South Africa. If culture is lost or destroyed, including traditional forms of communal resource use, it can be tremendously difficult to recover (Maffi 2001), and can cause the destruction of natural resource bases in cultures closely associated with forests (Robinson and Redford 1994; Richards 1997). Recognition and understanding of different cultural systems along the borders of KNP permits a broader, more appropriate overall policy toward natural resource use to be developed.

The Firey model also offers insights into how integration can assure conservation or sustainability. Perpetuation of resource flows, replenishment of resource stocks, and protection of biological diversity and desired environmental conditions is only possible when people value these conditions and share expectations that others will forego opportunistic practices threatening sustainability. Gain-seeking is not ruled out entirely: economic gain is both inevitable and necessary for motivating resource production to meet human needs for income and sustenance. Sustainable practices are, hence, both gainful and non-gainful, but also biologically possible and socially acceptable.

Gain seekers are motivated to voluntarily comply with expected non-gainful practices because they require the predictability that comes with shared values and expectations. Unconstrained opportunism threatens everyone by opening the door to a war of all against all, in which all run the risk of losing natural capital, social order, and future gain-seeking. Imposition of administrative order, with the disadvantage of abstract and inflexible rules, often results from unconstrained individualism and economic opportunism. In short, resource conservation or

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<sup>13</sup> A definition of culture sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO) and stated at a World Bank conference on culture and development is: "*the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. It includes not only arts and letters, but also modes of life, the fundamental rights of the human being, value systems, traditions, and beliefs*" (Seragaldin and Taboroff 1992).

sustainability depends on maintenance of a particular social order, because social order provides common expectations and values that make it possible for a group of people to set limits on environmental change by limiting destructive economic opportunism (Firey 1978).

Understanding **behavior** conducive to participation in CBC and management can also be a starting point for reaching the goal of participatory management. Milton Rokeach (1976) outlines a typology of five organized **beliefs**<sup>14</sup> that make up one's total belief system, some of which are more central and more resistant to change than others. If more central or 'primitive' beliefs are suddenly and inextricably disrupted by strong external pressure, strong anxiety can result. In dealing with the potential dismantling of traditional authority structures - currently a threat in South Africa - the repercussions resulting from e.g. challenges to identity, may be one avenue of investigation for those wishing to involve traditional structures in CBC programs. In contrast, maintaining and utilizing traditional structures, where these are believed to be 'good' and 'preferable' by local communities, may minimize anxiety regarding proposed changes in natural resource management schemes<sup>15</sup>. Regarding race and shared beliefs, Rokeach (1976) also theorizes that in situations where external pressures to discriminate along racial lines are slight or absent, differences in beliefs on important issues are stronger determinants of prejudice or discrimination than differences in race or ethnic membership. An **attitude** is defined by Rokeach (1976) as 'a relatively enduring organization of beliefs around an object (physical or social, concrete or abstract) or situation predisposing one to respond in some preferential manner'. In this light, investigation into attitudes by local communities towards conservation and PAs in general, versus specific institutions and situations (e.g. KNP), may also hold promise in understanding park-people conflicts.

**Liberal democratic theory** is premised on a notion of abstract individualism and assumes that all people are equal in the public sphere, which is characterized by modern values of rationality and impartiality (Held 1995; Luckham *et al.* 2000). **Social democracy**, on the other hand, departs from social inequalities and attempts to increase citizen involvement in the affairs of government and expand the concept of citizenship to cover economic and social rights as well as political rights. Thus, it aims at a redistribution of power and resources to enable citizens to participate in the decisions that affect their lives (Luckham *et al.* 2000). In this research, involvement of local stakeholders in the management of KNP may be seen as an

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<sup>14</sup> A 'belief' is defined by Rokeach (1976: 113) to be 'any simple proposition, conscious or unconscious, inferred from what a person says or does'. Beliefs may be descriptive/existential, evaluative, or prescriptive/exhortatory.

evolving social democratic process by which citizens are acquiring increasing rights and power to influence government decisions that directly affect their livelihoods. Related to this, participatory management in conservation refers to situations that substantially involve all or some of the stakeholders in a PA in management activities, especially when access to natural resources are essential to local livelihoods and cultural survival (Borrini-Feyerabend 1996). Because participatory management implies a partnership between the agency with jurisdiction over a PA and other relevant stakeholders and because decisions are shared between all involved to some extent, the case for participation is further strengthened by the reality that most situations are complex and would benefit from multiple interpretations.

Based on Firey (1960), conventional discourse on sustainability asserts that PAs management needs to simultaneously be biologically sound, economically feasible, and socially acceptable. Moreover, PAs cannot be divorced from people, either as direct users of their resources, or as beneficiaries of the goods and services they provide. Even when a PA's resources are not directly used, its management includes that of the relationship between people and the area's resources, as well as human interactions that are produced. Therefore, the best way for resource planning to proceed is to seek avenues of balancing the criteria used in optimizing each of the three categories of knowledge pertinent to natural resource use (ecological, economic, and ethnological/cultural), i.e. articulating, mediating, and negotiating trade-offs.

In defining which people are impacted by a PA, the concept of local community can facilitate focusing on the needs and rights of resource users who have in the past been marginalized by conservation efforts. However, this might engender a limited understanding of the place of people in complex natural resource use systems, because it suggests a homogeneity that may not exist at all levels, and ignores those who cannot be identified with a local, geographic community. The concept of stakeholder, guided by social democratic influences, has gained prominence in conservation and development circles because of its usefulness in identifying and defining those who have influence on, or can be affected by, the management process. The rationale for stakeholder participation is that it can lead to legitimacy, and in planning includes a) the quality of management decisions that integrate the knowledge, needs and aspirations of all parties; b) the feasibility of management decisions that are accepted and owned by stakeholders; and c) the empowerment and democratization that result from the

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<sup>15</sup> By exposing information that is inconsistent with a person's value-attitude system, he/she may be induced to question this system. For example, by revealing flaws in particular natural resource management practices (e.g. traditional or 'Western'), one may alter his/her value or attitude towards the practice(s).

involvement of people and their organizations in formulating and implementing policy and management decisions.

Relationships among and between stakeholders and their interaction with natural resources are partly governed by embedded beliefs and attitudes (Rokeach 1976). PAs management is the task of transforming these beliefs and attitudes through integration to meet defined goals. Increasingly, in addition to environmental sustainability and biodiversity conservation, these also include social and economic goals, such as the provision of human needs, poverty reduction, social justice, and equity (Luckham *et al.* 2000). The process of transforming must recognize the complexity and coherence of existing institutions<sup>16</sup> and the diversity and interests of the various stakeholders. It therefore must give stakeholders the opportunity to participate in the design of new arrangements, instead of providing external and technocratic answers. It should also embrace the range of development and natural resource management issues, instead of confining itself to narrow conservation objectives.

Within this framework, the challenge for PA planners and managers, including the KNP, is to design and implement planning processes and institutional arrangements that use the tools of participation to achieve objectives as diverse as environmental sustainability and biodiversity conservation, poverty reduction and provision of basic human needs, and equity and social justice. Moreover, by employing this theoretical and conceptual framework, it is critical to understand under what conditions social interventions vis-à-vis community fora are operating, and to evaluate how obstacles can be overcome in ensuring their success.

## **2.11. Conclusion**

This chapter has shown that shifting narratives in both development thinking and PAs management, and global reorientations in biodiversity conservation coincided with a dramatic political transition in South Africa. This juxtaposition called for the reintegration of KNP into wider processes in society, and the need to realign policies which reflected the new political, economic and social realities of post-1994 South Africa. Part of this realignment created a Social Ecology Program which has begun to address both past injustices and contemporary socio-economic and environmental challenges, including a deeper understanding of the costs and benefits of the KNP to its rural neighbours. By initiating dialogue with local communities

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<sup>16</sup> Institutions are humanly developed constraints that shape human interaction and the way societies evolve through time (North 1990). Institutions are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behavior, conventions and self-imposed codes of conduct), and their enforcement



via a number of representative fora, the KNP hopes to establish community facilitation, economic empowerment, environmental education, cultural resource heritage management, and research and monitoring. The Hlanganani Forum, one of seven fora interacting with the KNP, was established in 1994 and now represents 27 villages along KNP's western boundary. This review has also shown that Tsonga communities living adjacent to KNP, some of which were forcibly removed from the KNP under colonial and Apartheid practices, rely largely on local natural resources for their livelihoods and are still largely governed *de facto* by traditional authorities. Although a myriad of new legislation has been passed to address land tenure, traditional authorities and local governance, and environmental protection, the former Gazankulu homeland still retains the legacy of earlier practices and programs. This includes acute poverty, land tenure insecurity, poor infrastructure and, in some areas, environmental degradation.

Although KNP is world-renowned for its sophisticated biodiversity management and associated research, sadly, there is a dearth of comparable scholarly social research of equivalent scope and quality on the interactions of KNP with its rural neighbours. Only a handful of articles from 1992 to present in *Koedoe*, SANP's scientific journal, involve social science research with neighbouring communities. This research gap is, understandably, of great concern for KNP management and is one of the 'Balancing Theme' objectives identified within its mission (Mmethi pers. comm.). This review has also highlighted a number of research gaps which are addressed in the current study, followed by embedded research questions. Given the complex, cross-disciplinary nature of the research problem, Chapter 3 provides an outline of the research design and techniques utilized to answer these research questions.

## Chapter 3. Research Methodology

### 3.1. Research Design

In this section, justification of design type and focus will be provided based on the research problem and associated research questions. Moreover a description of the time and dimension and research subjects will be presented, including the geographical scope of the study.

#### 3.1.1. Research Design Type

This research studies the ongoing interaction of the KNP with its neighbouring communities and so is limited by lack of baseline data on communities, including those represented on the HF, before the social intervention. Therefore, a post-test only control group design has been chosen (Figure 3.1) which has virtually all the experimental rigour of a pre-test/post-test control group approach. Since data were collected at approximately the same time, problems of maturation, history, test effects and regression towards the mean have been minimised (see Table 3.4). Although it is impossible to be certain that the experimental and control groups were equivalent to begin with, by employing randomization techniques and ensuring a relatively large sample size (>30) in each group, researchers can safely use this design type (Bless and Higson-Smith 2000: 76).

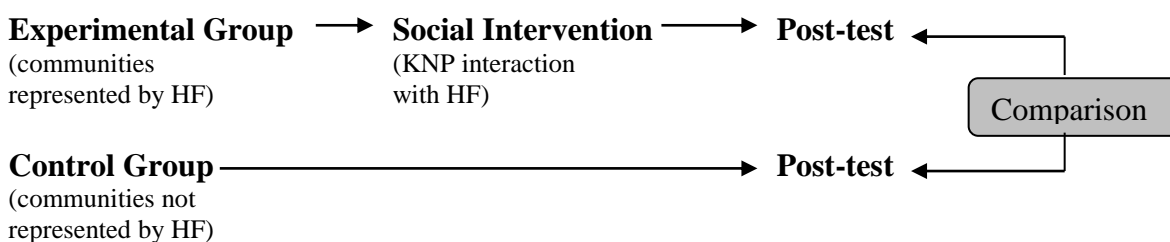


Figure 3.1: Post-test only control group design.

Note: KNP = Kruger National Park, HF = Hlanganani Forum

This thesis' research questions revolve around the main research problem and are stated in chapter 1.2. The research questions are grouped into two research areas affecting sustainability, i.e. local resources and needs, and stakeholders and participation (see Figure 3.2). Each of the research areas drew from a combination of techniques, which are described separately in chapter 3.3.

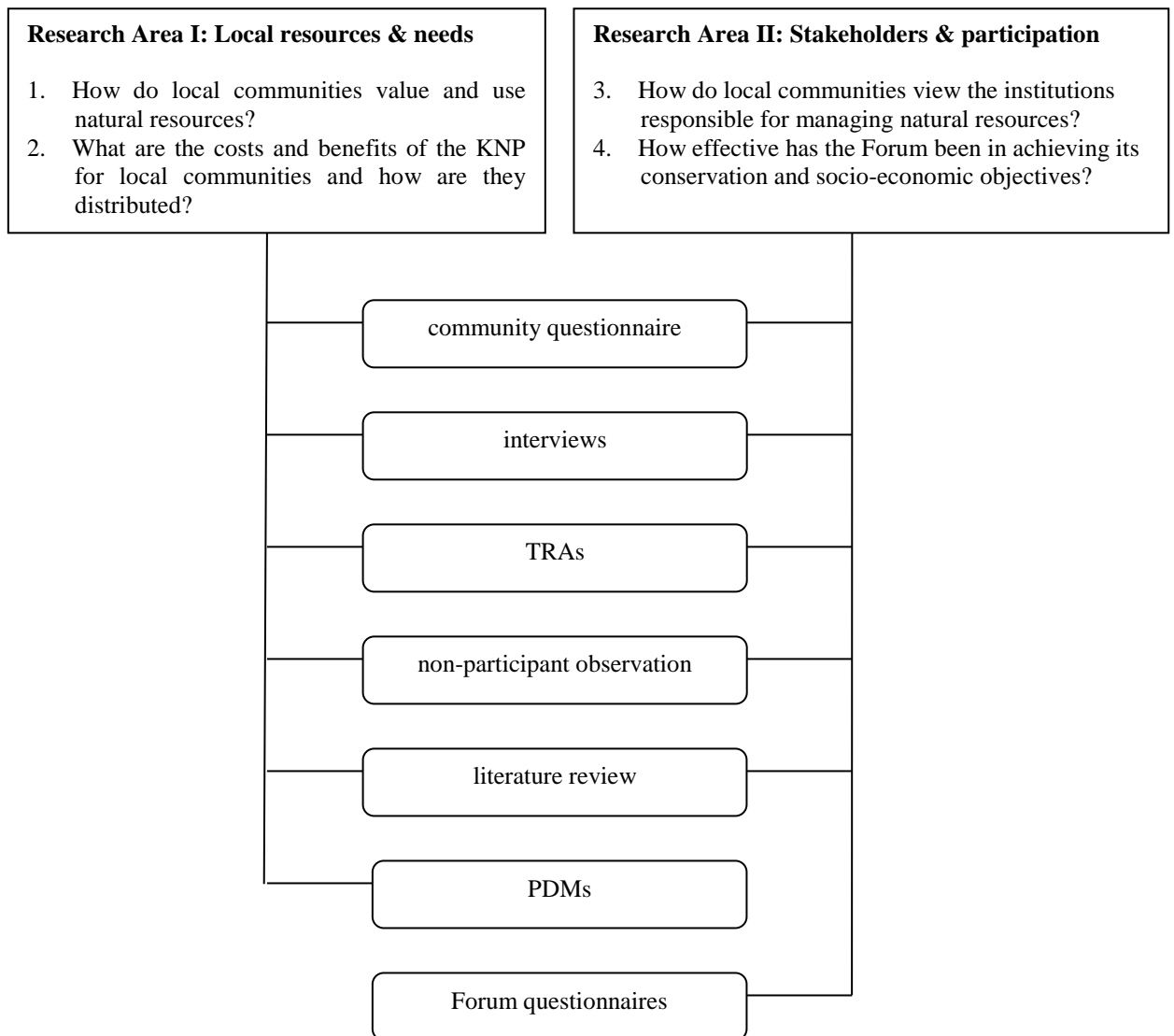


Figure 3.2: Research areas, questions and techniques used.

### 3.1.2. Research Focus

Three different descriptive categories, which are not mutually exclusive and were dealt with simultaneously, were investigated. These include:

1. *Conditions*: the current state of the research subjects. In this category, socio-economic and demographic variables were measured among the target populations, and data compiled on the current political, legal, and economic variables relevant to the research.
2. *Orientations*: research subjects' attitudes and beliefs. Primarily, attitudes and current beliefs of the target communities and other relevant stakeholders were determined regarding issues including natural resources, conservation, land tenure, protected area management, and KNP.
3. *Actions*: by using both direct and indirect observations (including interviews), actions of stakeholders towards natural resources, the KNP, and other stakeholders were examined.

### 3.1.3. Time dimension

As data was collected within a relatively short time period (e.g. six weeks for household face-to-face questionnaire), this research is *cross-sectional* in nature. Although the inherent difficulty with cross-sectional designs is that they cannot measure changes over time and can be very difficult in demonstrating causality, this approach is beneficial in describing differences between populations at a particular moment in time. In addition, by also relying on qualitative methods, this research acquires *longitudinal* perspectives, based on both relevant literature and the perception(s) of respondents.

### 3.1.4. Research subjects and geographical area of concern

The following units of analysis have been selected to better understand the social interactions of the relevant KNP stakeholders in the case study.

1. *Individuals*: individual staff from KNP, DFED/EA, Department of Agriculture – Veterinary Services (DAVS), Department of Land Affairs (DLA), Makuleke C.P.A., and South African National Defence Force (SANDF); traditional chiefs; community leaders; traditional healers; professional hunters; municipal government planners; local mining operators; and community members were targeted as units of analysis.
2. *Groups*: the various communities both represented, and not represented, by the HF, based on households. The population was stratified and focus groups were conducted based on a) age and gender, and b) villages.
3. *Organizations*: the conditions, policies and actions of the HF, KNP Social Ecology, KNP Conservation Services, DFED/EA, DAVS, DLA, Nghunghunyani Trust (NT), Gazan Trust (GT), Makuleke C.P.A., and Traditional Authorities were investigated.

In keeping with KNP's commitment to involve villages within 15km of its border in community fora, and to include all those within the jurisdiction of the Hlanganani Forum, the household face-to-face questionnaire sampling frame consisted of all village households located within that area, extending from the Punda Maria gate, south of the Luvuvhu River to the Klein Letaba River (Figure 3.3), excluding four villages in the southern section which were moved to the Phalaborwa Forum (Mbawula, Palawubeni, Makuva, Savulani). In addition, two communities (Lambani, Mushiro) which are currently represented on the Hlanganani Forum, were also excluded, as they joined the Hlanganani Forum later and were not original members (Mhinga pers. comm.). See Table 3.1 for the list of sampled villages, their 'official' Traditional Authority affiliation, population, household numbers, and distance from the KNP.

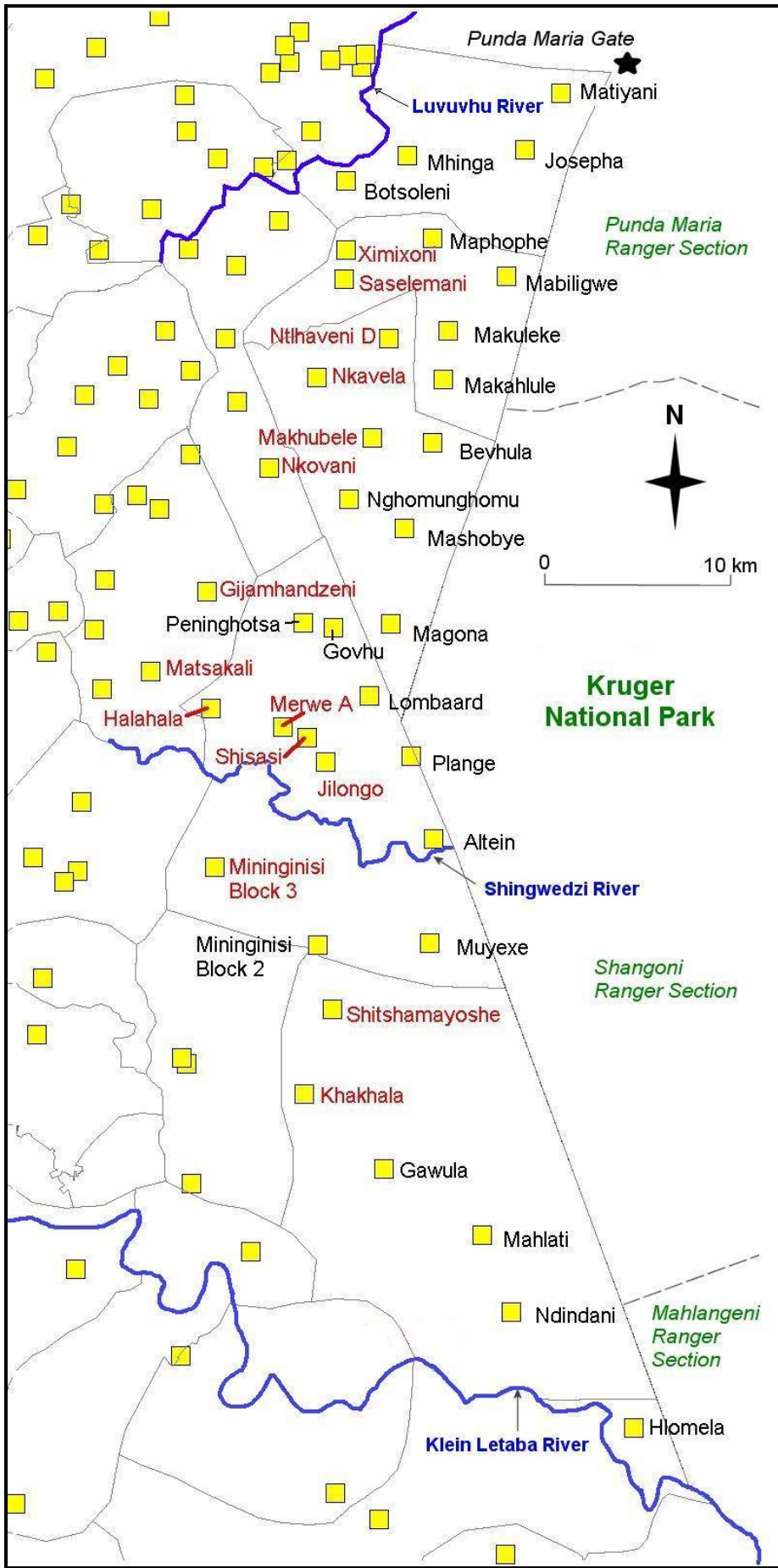


Figure 3.3: Study area with village locations (Hlanganani Forum-represented villages in black, non-Forum villages in red)

Table 3.1: Villages from which households sampled, including HF representation, 'official' Traditional Authorities, population, households, and distance from KNP border.

| HF rep?        | Village                        | <i>Hosi</i> <sup>a</sup>         | Population <sup>b</sup> | Households   | km from KNP |
|----------------|--------------------------------|----------------------------------|-------------------------|--------------|-------------|
| Yes            | Bevhula                        | Bevhula                          | 2225                    | 445          | 2.5         |
| No             | Ntlhaveni Block D (Hlungwani)  | <i>Bevhula</i>                   | 2191                    | 438          | 7.0         |
| No             | Nkavela (Hangalakani)          | <i>Bevhula</i>                   | 3049                    | 610          | 10.0        |
| No             | Makhubele (Xanguyintshwa)      | <i>Bevhula</i>                   | 3392                    | 678          | 6.0         |
| <b>1Y/3N</b>   |                                |                                  | <b>10857</b>            | <b>2171</b>  | <b>6.4</b>  |
| Yes            | Peninghotsa                    | <i>Madonsi</i>                   | 781                     | 153          | 7.0         |
| Yes            | Govhu                          | <i>Madonsi</i>                   | 1579                    | 310          | 4.5         |
| No             | Gijamhandzeni                  | Madonsi                          | 1441                    | 262          | 11.5        |
| No             | Matsakali (Malsakali)          | Madonsi                          | 1482                    | 269          | 14.0        |
| No             | Halahala                       | Madonsi                          | 1522                    | 298          | 10.0        |
| No             | Mabayeni + Merwe A             | Madonsi                          | 1752                    | 344          | 7.0         |
| No             | Shisasi                        | Madonsi                          | 1813                    | 355          | 5.0         |
| No             | Jilongo (Merwe C)              | Madonsi                          | 2346                    | 460          | 5.0         |
| <b>2Y/6N</b>   |                                |                                  | <b>12716</b>            | <b>2451</b>  | <b>8.0</b>  |
| Yes            | Nghomunghomu                   | Magona                           | 1864                    | 373          | 6.0         |
| Yes            | Mashobye                       | Magona                           | 1869                    | 374          | 2.5         |
| Yes            | Magona (Gidjana)               | Magona                           | 2927                    | 585          | 2.0         |
| <b>3Y/0N</b>   |                                |                                  | <b>6660</b>             | <b>1332</b>  | <b>3.5</b>  |
| Yes            | Matiyani                       | Mhinga                           | 3209                    | 583          | 2.0         |
| Yes            | Mhinga (Nkhavi)                | Mhinga                           | 6381                    | 1160         | 5.0         |
| Yes            | Botsoleni (Chavani)            | Mhinga                           | 2870                    | 522          | 8.5         |
| Yes            | Josepha                        | Mhinga                           | 3973                    | 790          | 3.0         |
| Yes            | Maphophe                       | Mhinga                           | 5965                    | 1065         | 7.0         |
| Yes            | Maviligwe                      | <i>Mhinga</i>                    | 2475                    | 442          | 3.0         |
| Yes            | Makuleke                       | <i>Mhinga</i>                    | 4589                    | 819          | 4.0         |
| Yes            | Makahlule                      | <i>Mhinga</i>                    | 2023                    | 361          | 2.5         |
| <b>8Y/0N</b>   |                                |                                  | <b>31485</b>            | <b>5742</b>  | <b>4.4</b>  |
| Yes            | Lombaard                       | Mtiti                            | 1987                    | 390          | 2.0         |
| Yes            | Plange (Mtiti)                 | Mtiti                            | 2608                    | 511          | 0.5         |
| Yes            | Altein                         | Mtiti                            | 2417                    | 474          | 1.5         |
| <b>3Y/0N</b>   |                                |                                  | <b>7012</b>             | <b>1375</b>  | <b>1.3</b>  |
| No             | Ximixoni                       | Shikundu                         | 683                     | 122          | 10.5        |
| No             | Saselemani (Mahlohlwani)       | Shikundu                         | 2639                    | 471          | 10.0        |
| No             | Nkovani                        | Shikundu                         | 2849                    | 570          | 10.5        |
| <b>0Y/3N</b>   |                                |                                  | <b>6171</b>             | <b>1163</b>  | <b>10.3</b> |
| Yes            | Mininginisi Block 2 (Thomson)  | <i>Xiviti</i>                    | 2958                    | 510          | 8.5         |
| Yes            | Muyexe                         | <i>Xiviti</i>                    | 3532                    | 609          | 2.5         |
| Yes            | Gawula                         | <i>Xiviti</i>                    | 3145                    | 542          | 9.0         |
| Yes            | Mahlathi                       | <i>Xiviti</i>                    | 3074                    | 530          | 4.5         |
| Yes            | Ndindani                       | <i>Xiviti</i>                    | 1860                    | 321          | 5.0         |
| Yes            | Hlomela (Macene)               | <i>Xiviti</i>                    | 1058                    | 203          | 2.0         |
| No             | Mininginisi Block 3            | <i>Xiviti</i>                    | 4419                    | 762          | 11.5        |
| No             | Shitshamayoshe (Mhlava Willem) | <i>Xiviti</i>                    | 1214                    | 206          | 9.0         |
| No             | Khakhala                       | <i>Xiviti</i>                    | 2448                    | 422          | 11.5        |
| <b>6Y/3N</b>   |                                |                                  | <b>23708</b>            | <b>4105</b>  | <b>7.1</b>  |
| <b>23Y/15N</b> | <b>38 villages</b>             | <b>7 official, 20 unofficial</b> | <b>98609</b>            | <b>18339</b> | <b>6.1</b>  |

<sup>a</sup> Note that Traditional Authority leadership structures in *italics* are currently being contested either formally or informally

<sup>b</sup> Source: (Statistics South Africa 2003)

### 3.2. Toolbox approach and justification

The complexity of interaction in the study area means that great care had to be taken in selecting the research approach (c.f. Denzin and Lincoln 1994; Crotty 1998). Along with this complexity, however, exists a flexibility of choice that, if managed skillfully, can accommodate for creativity in addressing the difficult challenges posed within the realm of conservation and development where this topic is embedded.

This research investigates at three levels. Firstly, it is *exploratory* and *descriptive*. Building on previous authors' work, this research explores the value and use of local natural resources by local communities, describes the *de facto* process of DCA control, and identifies factors which shape attitudes towards conservation. Secondly, it contains elements of *correlation* and *explanation*. Primarily concentrating on quantitative questionnaire data, correlational research is applied to assess the type and strength of relationships between known variables, and subsequently explained using both quantitative and qualitative techniques. Finally, it is both *applied formative* and *summative evaluation* research. Evaluation research can be used to assess the design, implementation and usefulness of social interventions, including activities for benefit-sharing and building relationships between protected areas and local communities. Summative evaluations are designed to determine the extent to which programs, vis-à-vis community fora, meet their specified aims and objectives, and formative evaluation seeks ways to improve such programs. Although ideally summative research is undertaken at the end of a program, they are often carried out within its life-cycle (Bless and Higson-Smith 2000).

The research employs a multi-method approach (see chapter 3.3 below), which relies on both quantitative and qualitative data designed to better understand complex social phenomena (Punch 1998) and the social context of behaviour (Byers 1996). It is argued by these authors that by ignoring the complexity of the background the research will be impoverished. Quantitative and qualitative techniques provide a tradeoff between breadth and depth and between generalizability and targeting to specific (sometimes very limited) populations. Where quantitative methods can quantify variables and identify relationships between variables, qualitative methods may go further by providing fruitful explanations for such relationships. However, this distinction may be too simplistic as it is not guaranteed that either approach will necessarily satisfy the canons of scientific rigour and thus care should be taken when using them. The use of mixed methods opposed to strictly quantitative research has been proposed for a number of reasons. For example, it has been noted by Frechtling and

Sharp (1997) that quantitative researchers are becoming increasingly aware that some of their data may not be accurate and valid because survey respondents may not always understand the meaning of questions being asked, and because people's recollection of even recent events is often flawed. Secondly, qualitative researchers have improved techniques for classifying and analyzing large quantities of descriptive data (Miles and Huberman 1994). Finally, it is increasingly recognized that all forms of data collection occur within a cultural context and are partly affected by the perceptions and beliefs of investigators and data collectors (Kelle 2001).

The necessity for integrating qualitative techniques in this research was founded on four aspects of the study (Taylor and Bogdan 1984):

1. The research explored complex relationships in depth, including individual perceptions and their underlying reasons;
2. It involved seeking relevant variables that were not previously identified;
3. It was undertaken on a little known ethnic group;
4. It sought to understand informal and unstructured linkages in organizations.

This research was also iterative, i.e. there was an ongoing interactive assessment of the data collected. Greene *et al.* (1989) proposed that mixed-method evaluation studies employing quantitative and qualitative techniques can help sequentially by using results of the first method to inform the second, and so on (see also chapter 3.4). Such an integrated approach not only assisted in 'triangulation' of data (Cresswell 1994), but built a mechanism of flexibility into the research design that was crucial in working in the social and physical context in which the study lies. The aim of triangulation, as its name implies, is to study the object of research in two or more ways to achieve objectivity, reliability and validity (Miles and Huberman 1994). In this research, triangulation consisted of three types:

1. Data source – two or more kinds of data sources were used.
2. Method – multi-methods were used to investigate the same research question(s).
3. Data type – qualitative and quantitative data are utilised.

### **3.3. Research techniques**

This research involved a one-month pilot study, followed by a longer field component from February to November 2004. The techniques employed in this research included a protocol for securing access, a literature review including KNP and DFED/EA reports and minutes from Hlanganani Forum meetings, a face-to-face questionnaire administered to village



households, two written questionnaires for Hlanganani Forum members: one for village representatives and the other for institutional representatives, semi-structured and structured interviews, biodiversity threat reduction assessments (TRAs), pebble distribution methods (PDMs), and non-participant observation. Overall strengths and weaknesses of each of these methods can be found in Appendices A and B.

### 3.3.1. Pilot Study

As part of the more comprehensive research plan, a one month Pilot Study was conducted in and around the Kruger National Park in August 2003. This involved *non-participant observation*, and discussion of the proposed methodology with key informants in the field including staff of KNP Social Ecology with whom the research was registered. This helped to identify potential difficulties with the planned methodologies and to investigate the appropriateness of the proposed instruments. It also helped to identify the community's likely response to the longer field study to be conducted later, and to initiate meetings with relevant traditional leaders regarding access to their communities. Further, it afforded an opportunity for the researcher and the proposed research to be introduced to the Hlanganani Forum members at their meeting in August 2003. In addition, *unstructured* and *semi-structured interviews* were conducted to:

- identify and develop contacts in the field;
- identify both the actors involved in, and scope of, the KNP and its stakeholders (Leach 2002);
- prescribe initial avenues of research.

Where necessary, a field assistant/translator was utilized in conversations with interviewees who did not speak English. A day was spent with this translator in advance to discuss the research, translate questions, and 'test' the approaches.

As part of the Pilot Study, a *literature review* of relevant archival and other documentation at KNP office(s), local colleges/universities, and municipal government offices was conducted to deepen understanding of the research topic. This proved to be of immense value as the locations of many villages in the study area were clarified, meeting minutes of the Hlanganani Forum were obtained, and local information was secured which otherwise would not have been available without being physically present in this local context.

### 3.3.2. Access

It is culturally inappropriate for a researcher to simply drive into a rural village in the study area and conduct a household survey (cf. Els 2002). Nor is it fitting in these contexts for researchers to stop and non-chalantly chat to women carrying water or young men herding cattle. There is precise protocol which must be followed, especially in conducting discussions between the young and the elderly (Izugbara 2000). For this reason, access to the rural communities was secured through a Traditional Authority Secretary who is well respected in the area, and whose jurisdiction borders the study area. This key informant not only provided instruction in this access protocol, but personally introduced the researcher to the relevant chiefs (*tihosi*) and village headmen (*tindhuna*) in the study area. In these meetings with the Traditional Authorities the researcher was able to introduce himself, the proposed research, and the potential benefits and products that the Traditional Authorities could expect upon its completion, including a summary of research findings in both XiTsonga and English. Moreover, these meetings proved to be avenues whereby data could be gained concerning the challenges that these institutions are facing, including land-use related issues. This time-consuming, but necessary process of securing access was of utmost importance as some respondents later in the research inquired as to whether the research team had permission from the local Traditional Authority to conduct the research and ‘be in their village’.

### 3.3.3. Literature Review

A broad literature review was conducted as part of this research and, in addition to theoretical and conceptual works and previous relevant studies, consists mainly of records, reports and policy documents of the KNP and DFED/EA. In addition to attending Hlanganani Forum monthly meetings from February to November 2004, where non-participant observation took place, minutes of 51 Forum meetings since 1994, including Executive meetings, were obtained. Remaining minutes (approx. 50%) could not be located, either from the Hlanganani Forum Executive nor KNP’s People and Conservation Department.

### 3.3.4. Questionnaires

One component of this research was to measure socio-demographic factors, beliefs and attitudes amongst community and Hlanganani Forum members. Moreover, it involved identifying and understanding differences between groups of people regarding these variables. If used correctly, surveys are an excellent way of measuring their occurrence (Weisberg *et al.* 1996). Three separate questionnaires were employed in this research: a household face-to-face questionnaire, a written questionnaire for Hlanganani Forum members who represent villages,

and a written questionnaire for Hlanganani Forum members who represent institutions (see Appendices C to E). Each will be dealt with separately below.

#### 3.3.4.1. Household face-to-face questionnaire

Based on theoretical and conceptual considerations and previous research, face-to-face questionnaires were formulated to elicit primary data from respondents. Questionnaires contained factual questions (e.g. age, gender, level of education, resources used), ranking questions (e.g. community needs, worst DCAs), and contingency questions (based on whether respondent e.g. knew of HF, or has had DCA damage). The questionnaire incorporated both closed-ended questions with a combination of different measurement scales (nominal, ordinal, scale) and open-ended questions. Open-ended questions were primarily used to allow respondents to express their beliefs in their own words or determine attitude strength, and were manifest (content) coded using a contextual method based on positive/negative or topical classifications, trying to preserve as much detail as possible (Weisberg *et al.* 1996). Likert-type questions, which use a rating scale to measure *inter alia* attitudes (Anderson *et al.* 1983), were limited to 3-point only as this form is most frequently used in African contexts (Bless and Higson-Smith 2000; Els pers. comm.). Questionnaire length and order of questions/topics were constructed to maximise the comfort of the respondent and to reduce consistency bias.

Data on basic demographic variables such as household location and size, Traditional Authority affiliation, education level, and economic activity was collected via face-to-face questionnaires on a household level, and conducted by trained local field assistants to minimize researcher bias including language and cultural barriers, fear of foreigners and officials (see also Barrett and Cason 1997). Secondly, the utilization and importance of natural resources both within and adjacent to KNP was examined. Thirdly, costs and benefits of the KNP to local communities were investigated. The final part of the questionnaire was directed at gaining insight into the personal beliefs and attitudes of individuals regarding the Hlanganani Forum, land use management institutions and towards conservation in general. These questionnaires provided data on quantifying natural resource use, damage caused by wildlife, and identifying perceptions of costs and benefits of the KNP by local communities. Moreover, they helped to determine the role that independent variables (e.g. involvement in the Forum, age, gender, level of education, household income, Traditional Authority affiliation, proximity to the KNP) play in attitudes towards local institutions, the KNP, and conservation.

Community questionnaires were first written in English, and then translated into Tsonga-Shangaan by a linguistic teacher at the Giyani Multi-purpose Education Center. The Tsonga-Shangaan version was then translated back into English by one of the hired field assistants. Inconsistencies and/or clarifications in the text were then discussed and modified in a joint meeting between the two translators and the author. Questionnaires were pre-tested on the research assistants, as well as a sample of 20 people from rural villages adjacent to the study area (Sudman 1983). As a result of the pre-testing and discussions, some questions were deleted and others modified to improve clarity.

#### 3.3.4.1.1. Sampling Procedure

In order to ensure an accurate representation of the target population, especially in cases where populations are non-homogenous, it is important to obtain a representative sample in order that results can be generalised to the larger population (Weisberg *et al.* 1996). Originally, in order to measure differences between Traditional Authority affiliations, stratified random sampling was intended, whereby the target population would first be subdivided based on this parameter. However, data collected during the pilot study revealed that the authenticities of many traditional leaders in the study area are being contested (see Table 3.1). Thus, simple random sampling was finally chosen from the target population (based on available village household numbers) to obtain a representative sample (see also chapter 3.1.4). A sample size of 240 households was used which ensures a maximum sampling error of +/- 6.28 at a confidence level of 95%. Although the fraction of total households sampled is only 1.3% when N=240 (see Table 3.1), this has little effect on the margin of error and many studies have typically less than 1% sampling fraction (Weisberg *et al.* 1996).

In order to minimise sampling error, when possible, the researcher team attempted to sample at least one village within a day. The questionnaire was administered within 32 days in May-June 2004 extending from north to south through the study area.

Households are numbered according to 'stand numbers' usually available through local Traditional Authority offices. However, in some villages, this proved to be a cumbersome activity as some stand number lists were incomplete and/or numbers were unknown to individual household occupants. In these cases, the research assistants looked for stand numbers on posts within the lot or, if none, asked neighbours. As much as possible, household

heads<sup>17</sup> were surveyed at each selected household, and the time of sampling was optimised i.e. when household heads were likely to be home (e.g. during daylight hours, weekdays only). In cases where the household head was not home, the household occupants were allowed to determine who would respond to the questionnaire. Moreover, by utilising two mature, male field assistants, both cultural inhibitions and non-sampling error was minimised, and data disclosure from the respondents maximised (Els pers. comm.). Research assistants were instructed, if possible, to ensure an equal representation of male and female respondents, and avoid gatherings of neighbours or other household members when individuals were being interviewed. Local words were used whenever possible and technical jargon avoided.

Before administering the questionnaire, cultural norms were followed, i.e. an introduction of the administrators, the form and rationale of the questionnaire and an explanation of its intended purpose(s). Further, in order to maximise social acceptability, assistants allowed time for the respondents to ask their own questions. Finally, all selected households received a small gift (pen) whether they chose to participate or not in the survey.

To deal with non-responses (e.g. adult household member not home), the following strategy was used:

- 1) return to household at a different time (later in the day or the following day).
- 2) if still no response, another household was selected based on the last digit of the random number which was selected for the original household. In doing so, alternately choosing households to the left, and right, from the originally selected household was undertaken.

#### 3.3.4.2. Forum representatives questionnaires

Two separate written questionnaires were prepared for members of the Hlanganani Forum: one in Tsonga-Shangaan for village representatives; the other in English for institutional representatives. Many of the questions within these questionnaires were similar to those of the community survey allowing for statistical comparisons, although specific questions were added to target respondents' personal involvement in the Forum. The questionnaires were distributed over a period of 3 months at regular Hlanganani Forum meetings with the provision that they be returned before November 2004. Total returned questionnaires were N=15 (village reps) and N=4 (institutional reps).

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<sup>17</sup> In keeping with Statistics South Africa practice, a "head of household can either be male or female, and is the person who assumes responsibility for the household" (Budlender 1997). In this research the respondent was allowed to decide who the household head is.

### 3.3.5. Threat Reduction Assessment (TRA) Technique

Evaluation of the effectiveness of KNP and DFED/EA management in mitigating identified threats to the KNP and its adjacent areas since 1994 was conducted through a modified threat reduction assessment technique (TRA) (Margoluis and Salafsky 2001). This methodology has been used to assess ICDPs in Kenya, Tanzania and Uganda (Persha 2001), is a low-cost, practical alternative to more cost- and time-intensive approaches, and is based on data collected through simple techniques. TRA monitors threats to the resources rather than changes to biological parameters themselves, as a proxy measurement of conservation impact. Rather than being driven by complex and often laborious collection of data on indicators, it can be directly related to management interventions and readily interpreted by management staff. Moreover, it is a useful instrument in research such as this where little, if any, baseline data exists on biodiversity threats. It is sensitive to changes over short periods of time and throughout a project site, allowing comparisons of performance among projects at different sites (Margoluis and Salafsky 2001). Although it can be used as a completely independent measurement of intervention success, it was utilized in this research as a complement to other methods, including non-participant observation and interviews. As this component was conducted late in the research, trust and rapport had already been established between the researcher and the participants. This was advantageous in that it allowed unexpected results to be raised through discussions within the TRA exercises. In particular, TRA data results were used broadly to address, in part, three research questions:

- Q1: how local communities use natural resources;
- Q2: identifying benefits of KNP resources; and
- Q4: identifying mitigation of threats to biodiversity since HF inception.

The modified TRA approach was carried out by organizing two group discussions with KNP staff representatives from the management and law enforcement departments as applicable from each of the two primary KNP ranger sections in the study area (Punda Maria, Shangoni). In addition, to determine if management by DFED/EA has effectively mitigated threats to biodiversity outside the KNP, two modified TRAs were also conducted with DFED/EA staff from the Greater Giyani and Malamulele municipality offices. Criteria for TRA participants were that they must either currently hold positions within the study area or have worked in the area for at least 10 years, and are familiar with local biodiversity and its threats. A secondary focus of participant selection was guided by the need to have a diversified group whose members can easily communicate, to avoid redundancy during discussions (Krueger 1994; The Nature Conservancy 2000).

The assessment is based on three main parameters of the environment: species richness, habitat area and condition, and ecosystem functioning<sup>18</sup>. Participants were assisted to internalize their thinking about these parameters, and think back to 1994 and make an evaluation and value judgment<sup>19</sup>. The key principle of TRA as an evaluation tool is that if threats to an area are mitigated, then the management will have succeeded. Conversely, if the threats are not mitigated, the management approach will have failed. It is therefore imperative that the assessment group is able to identify both internal and external direct threats<sup>20</sup> to the local environment, and with facilitation, estimate the degree to which these threats have been reduced as a measure of management success. A threat reduction index (TRA-I) is then used to evaluate the effectiveness of a management approach.

The TRA approach to measuring management success is based on three key assumptions (Margoluis and Salafsky 2001):

1. *All destruction of biodiversity is human-induced.* Losses of species or habitats due to natural processes such as fires from lightning are not considered threats to biodiversity. Human-caused increases in the magnitude or frequency of natural events, however, can be considered as threats. In this research, for example, alien species propagated by humans or transported by humans (e.g. truck tires) were considered as threats.
2. *All threats to biodiversity at a given site can be identified.* At any given point in time, all the direct threats to biodiversity that exist can be identified. One can also separate the effects of different threats and rank them in terms of the area they affect, intensity, and urgency.
3. *Changes in all threats can be measured or estimated.* One can systematically, either quantitatively or qualitatively, assess the degree of reduction of all threats at any given time.

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<sup>18</sup> *Individual Species*: Range or collection of species present.

*Habitat Area and Condition*: Area of habitat present and degree to which it is intact.

*Ecosystem Functioning*: Degree to which the habitat is able to maintain target systems and processes.

<sup>19</sup> 1994 was chosen as a convenient 'marker' for this exercise, as it coincides with the Republic of South Africa's first democratic elections, major policy changes within KNP, and the inception of the Hlanganani Forum.

<sup>20</sup> *Internal Direct Threats* are defined as factors that have a direct impact on biodiversity and are caused by local resident stakeholders, such as overexploitation of fuelwood. *External Direct Threats* are factors that have a direct impact on biodiversity but are caused by outsiders, such as logging by large multinational companies. Although not included in the worksheet, participants were also encouraged to consider *Indirect Threats*, which are social, political, and economic factors that induce changes in the direct threats, such as threats from poverty or inadequate government policy. These helped in distinguishing from where direct threats originate (subsistence vs. commercial) and by which actors (local vs. outsiders).

First, participants were led through a ‘brainstorming’ exercise, whereby they were encouraged to think out loud and write down what they believe to be threats to biodiversity of the area since 1994. KNP staff were to focus only on the area within their respective ranger section and 5km into the park from the KNP border. DFED/EA staff were asked to concentrate their assessment on the area within their municipality jurisdiction which extends 15 km from the KNP border. In addition, where applicable, participants were informed to exclude those sections which fall either north of the Luvuvhu River or south of the Klein Letaba River. Everything that participants cited as threats were written on a chart to help participants visualize and reflect on the identified issues. Threats, for purposes of this research, were defined as any human related phenomena that could be avoided, either by KNP or DFED/EA management, that negatively affect the existence of the area in question and are viewed as the inverse of opportunities (Margoluis and Salafsky 2001). Natural phenomena such as natural fires were not considered to qualify as threats, although illegally lit fires were.

Second, to assist participants to focus their thinking about species richness, habitat condition and area, and ecosystem functioning, threats were ranked according to their relative importance to one another. This was achieved by considering a) the portion of habitat(s) in the site that the threat will affect, b) the impact or severity of destruction caused by the threat, and c) the urgency or immediacy of addressing the threat. A comparative ranking scale for each of these categories was proposed throughout the exercise, as it was convenient and acceptable to participants (see Appendices F to I). A total sum score was computed after all the threats were scored.

Third, a consensus building exercise was used with the group to assess the extent to which the KNP or DFED/EA management had mitigated each threat. All participants were given approximately five minutes to think about each threat and evaluate independently, to what extent the management approaches had addressed a specific threat. Scores were assigned on a percentage basis.

The original version of this methodology was modified as no mechanism was integrated into the scoring to allow for threats which had either *arisen* or *worsened* during the period of assessment. Thus, according to the original TRA scoring, threats to biodiversity could only either remain as they were or have positive mitigation. The justification for modifying the methodology was that the original assessment provides an over-simplistic and potentially over-optimistic view of agencies’ abilities to mitigate threats. The modified version provides a



more accurate picture of the current status and trends to biodiversity threats. In the original assessment, if a threat had not been addressed at all, management would score zero. Where management had fully mitigated a threat, the score would be 100 percent. However, in this research, the option for a negative score was added for cases where threats had worsened and a score of -100 percent if new threats had arisen since 1994 and had not been mitigated.

It should be noted, however, that the TRA approach is not immune to bias. The ‘% Threat Reduced’ category is probably the biggest pitfall in this respect. Thus, while carrying out the assessment, it was emphasized to all participants that they must keep in mind that the intention of the TRA exercise is to gain a realistic understanding of the progress made so far, and to be as impartial as possible when doing the assessment.

During the initial stages of the exercise, it was envisioned that personal assessment and scoring could be influenced by some of the more vocal participants. To overcome this, a means of writing one’s score and keeping it secret from other participants until all had finished scoring was devised to guard against such influences. If there were large disparities in the scores, a discussion was conducted to ensure that an objective consensus be reached. After the scoring and ranking exercise, total ranking scores were multiplied by the percentage of the threat met to get a raw score for each threat. Dividing the sum of the raw scores for each threat by the total possible rankings of all the threats and multiplying by 100 computed the threat reduction index (TRA-I):  $(\text{TRA-I} = \Sigma \text{ Total Raw Scores} / \Sigma \text{ Total Rankings} \times 100)$  (Margoluis and Salafsky 2001). This means that the higher the index, the more successful management has been in mitigating the threats. This procedure was carried out for the two ranger sections and two local municipalities in the study area, to have a meaningful comparison of the indices both within and outside the park, and throughout the study area.

During analyses, all threats for the four areas were combined into categories based on the nature of the threat (e.g. illegal harvesting of flora, illegal harvesting of fauna, illegal fire, disease transfer). Average TRA index values were then computed for each category of threat. Finally, a prioritized list of categorical threats was constructed based first on its presence in the four assessed areas and, secondly, its TRA index value. Although comprehensive monitoring of biodiversity threats has not been conducted in the assessed areas, TRA results were triangulated against findings from interviews, reports and other documentation, and personal observation.

### 3.3.6. Pebble Distribution Method (PDM)

A further objective of this research was to assess the importance<sup>21</sup> of landscape units and species-level biodiversity to those communities bordering the Kruger National Park, and who are largely dependent on wild resources. Although comprehensive studies have been undertaken on categorical use of various plants by Tsonga communities (Junod 1962; Liengme 1981; Terblanche 1994) and economic value of specific taxa in rural South African contexts (Shackleton 1996; Shackleton *et al.* 1998; Shackleton *et al.* 1999; Mashabane *et al.* 2001; Shackleton 2001; Shackleton *et al.* 2001; Shackleton *et al.* 2002; Shackleton 2004), no investigation on the use and relative importance of both landscapes or wild flora and fauna had been carried out previous to this research. By collecting data on this aspect of Tsonga rural livelihoods, important information on resource use and demand can be gained, including of protected species. It was assumed that importance in this case is expressed not as much in economic terms, but rather as a more holistic rating of relative preferences. For this reason, explanation during these exercises explicitly avoided using terms associated with prices, and emphasized concepts of e.g. ‘general value’, ‘usefulness’, and ‘importance’.

To gain an understanding of the importance of landscape units and biodiversity, which captures local priorities and avoids complex quantification, this research employed the Pebble Distribution Method (PDM) which, in essence, is a weighted ranking exercise (Sheil *et al.* 2002) employed within focus groups. Although focus group results cannot be generalized to larger populations, they are useful in complementing other methods to understand how particular social groups interact with and perceive e.g. natural resources (Krueger 1994; The Nature Conservancy 2001). PDM exercises are versatile, especially in contexts where participants may be illiterate and/or easily confused by complex mathematical or rhetorical ranking exercises. Like other forms of focus groups, PDMs are advantageous in that they i) are socially oriented in which inhibitions can be relaxed in a group format, ii) are flexible in that they allow the moderator to probe unexpected issues, iii) have high face validity especially to participants, and iv) are relatively low-cost and speedy (Krueger 1994). PDMs can be used for a number of purposes, including past-present-future uses and values of various land types, overviews of the overall importance placed on the sources of biological resources used by communities and, more specifically for this research, comparisons of the value of various land types, and identification and relative weighting of the most important animal and

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<sup>21</sup> *Importance* is, in any form, a relative judgment: it is the property of the relationship between that being judged and whoever makes the judgment at some point in time, or within some hypothetical scenario. Such judgments are subjective, depending on personal experiences and knowledge, and may or may not bear any direct relation to tangible costs and benefits.

plant taxa per use category (Sheil *et al.* 2002). Although the use of numbers in assessing importance might give an inappropriate appearance of certainty, it is recognized that these numbers are not a ‘final result’ but, rather, are useful in that they can be used to identify patterns and, perhaps more importantly, are particularly valuable in stimulating dialogue among participants regarding their perceptions of the importance of local biological diversity. Moreover, the relatively structured process in this technique whereby participants were led step-by-step through the methodology and exercise minimized potential disadvantages in employing focus groups, namely the loss of control by the researcher, and encountering lethargic and unresponsive participants (Krueger 1994).

As PDM exercises are a form of focus group, it was vital to keep the size of the group manageable (6-10), to encourage equal participation, and to keep the composition of the group as homogenous as possible. As this aspect of the research concentrated on comparing differences in importance of biological resources across gender, age, and villages, the focus groups included:

1. high school students (mixed gender) / men  $\geq$  35 yrs of age / women  $\geq$  35 yrs of age
2. Mapophe village (northern part of study area) / Peninghotsa village (central part of study area) / Ndindani village (southern part of village area)

In total, nine PDM focus groups were conducted in August – September 2004, involving 58 participants. In each case, relevant local Traditional Authorities were approached for permission to conduct the exercises and in appointing suitable persons to invite participants and assist with the exercise (usually local high school biology or science teachers). The assistant served to brief the researcher on cultural norms inherent in small group meetings (see Olson *et al.* 1995), help coordinate the discussion and to translate. All PDMs lasted 3-4 hours each and were conducted in a building chosen by the local Traditional Authorities. Plant and animal taxa were identified using field guides (Van Wyk 1974; van Oudtshoorn 1991; Van Wyk and van Wyk 1997; Van Wyk and Gericke 2000; Apps 2001; Grant and Thomas 2001; Schmidt *et al.* 2002; Sinclair *et al.* 2002), species lists (Junod 1962; Junod 1978; Liengme 1981; Mabogo 1990) and assistants/participants who knew the English common names. In cases where taxa were questionable or unknown, corresponding names were followed by a ‘?’ or left blank, respectively (see Table 4.12).

In the three stages of the exercise, participants were required to distribute 100 counters (i.e. beans) between labeled cards indicating i) landscape units, ii) resource use categories, and iii)

species, in proportion to their ‘importance’. With the assistance of translators, the comparative nature of this exercise was explained to the participants, including the use of examples. In the first stage of the exercise participants were asked as a group to assess, by distributing the 100 beans among eight cards labeled with specific landscape units, the relative importance of these landscape units in meeting their livelihood needs considering all of the resource use categories described in Table 3.2. Both landscape units and resource purpose/use categories were determined through interactive consultation and discussion with the PDM exercise participants. For example, when considering the resource category ‘utensils and tools’, if the group allocated 15 beans to the ‘river/stream’ labeled card this would mean that this landscape unit contributes 15% to supplying wild resources needed for ‘utensils and tools’ (see also Table 3.3).

Table 3.2: Description of resource use categories identified in research and utilized in PDM focus group exercises.

| <b>Use Category</b>                 | <b>Description</b>  |
|-------------------------------------|---|
| A. Food – <u>wild</u> flora & fauna | Primary and secondary food from wild plants and animals; famine food (incl. wild fruits, honey, wild birds, fish, game, etc.) |
| B. Drink                            | Drinks/teas/beer/wine made from wild plants   |
| C. Fuelwood                         | Used for fire   |
| D. Medicine                         | Medicinal and health-related  |
| E. Construction                     | Plant parts used for building huts, fences, kraals  |
| F. Utensils & tools                 | Plant parts used for tools in agriculture, utensils   |
| G. Ornaments / religious            | Wild plant and animal parts used in ceremony, dress, jewelry, musical instruments   |
| H. Recreation                       | Resources used for recreation, games, fun   |

Secondly, participants were required to assign a relative weighting to each of the eight resource use categories according to how important these elements are in sustaining livelihoods. At this stage of the exercise, respondents were reminded to think about not only immediate individual needs, but those of the entire community, of all ages and gender, and throughout the entire year. The mean relative importance values of both landscape units and resource categories were then multiplied to provide a weighted landscape unit importance score. Importance values for each landscape unit and use category were compiled for all three age/gender groups across the three villages, and mean scores calculated using SPSS (ver 13). One way ANOVA was employed to test whether differences exist between mean scores of the various landscape units between a) villages and b) age/gender groups. If significant differences between means did exist, Tukey HSD post hoc tests were then used to determine which means differed.

Table 3.3: PDM table illustrating landscape unit importance.

| Landscape unit   | Resource purpose/use |  |                        |                                  |                                   |                            |   |   |     |
|--|----------------------|--|------------------------|----------------------------------|-----------------------------------|----------------------------|---|---|-----|
|  | Village (muti)       | Household / community garden (xirhapa) | River / stream (nkova) | Lake / dam (tiva / damu / qhivi) | Swamp / marsh (xibawa / xibodhlo) | Cultivated fields (masimu) | Grazing area (dyele / mariso / marisweni) | Forest / bush (xihlahla / nhova / khwati) | Sum |
| A. Food – wild flora & fauna (swakudya / swihari / swinyenyana / nhlampfi) |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| B. Drink (xakunwa)   |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| C. Fuelwood (tihunyi)  |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| D. Medicine (murhi / timintsu / ntsembyani)                                |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| E. Construction (swoaka / mhandze)   |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| F. Utensils & tools (xitirho)  |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| G. Ornaments / religious (xiambalo / nguvu / -khavisa / -vugandzeri)       |                      |  |                        |                                  |                                   |                            |   |   | 100 |
| H. Recreation (ku wisa / ku hefemula)                                      |                      |  |                        |                                  |                                   |                            |   |   | 100 |

After assessing the importance of landscape units, the final stage of the PDM exercise was conducted, i.e. to elicit local information about importance of specific wild taxa through a hierarchical weighting procedure. This form of the PDM assumes that the scores of ‘importance’ are additive and can be subdivided through a hierarchy of increasing resolution, ultimately including species-level information. These assumptions are formalized within the context of decision making and priority theory (Saaty 1996).

Figure 3.4 conceptualizes a two-level hierarchy as an example. This hierarchy has three analytical properties relevant to using this approach:

1. The sum of all parts at any given level in the hierarchy adds up to one ( $\Sigma A$  to  $H = 1.0$ ). In this research, this also meant that each purpose/use category (e.g. food, drink, fuelwood, medicine) must be ranked according to its importance to the overall use of biological resources in the area.
2. The value of each category is the sum of all members of the category at the level immediately below it (e.g. if  $A = 0.15$ , then  $\Sigma a$  to  $e = 0.15$ ).

3. The value of any lower level ‘entity’ can be calculated as a proportion of the whole by simply multiplying together the fractions that lead towards it at each branching point.

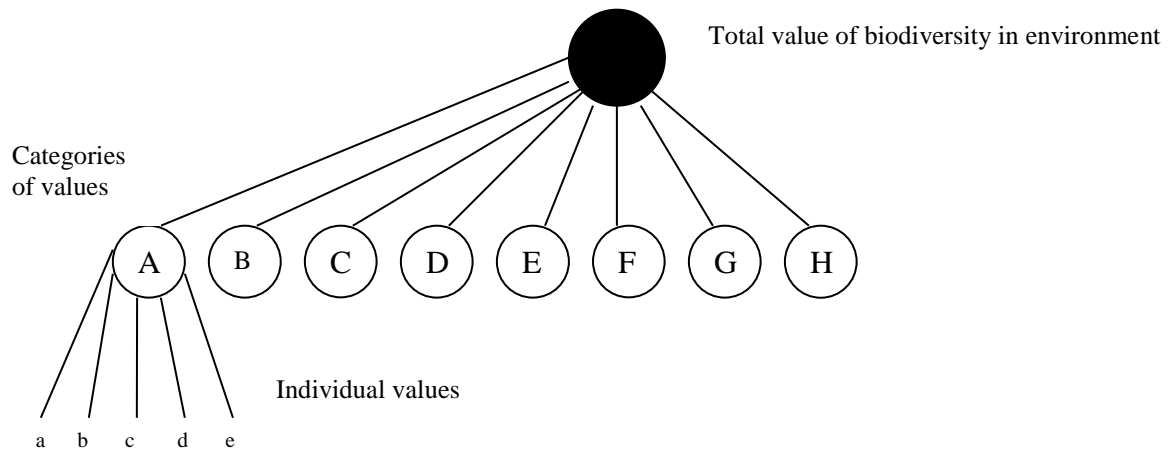


Figure 3.4: General hierarchical principle used in analyzing importance

It is important to note that the value classes must be a) comprehensive (combined categories are inclusive of everything that needs to be assessed), b) they are exclusive of each other, and c) they are simple and clear enough to be explained to and understood by the respondents. This last aspect was accomplished by repeated explanations by the researcher and translator on class definitions (see Table 3.2 above). Moreover, to keep species lists manageable, and as recommended by Sheil *et al.* (2002), lists were limited to no more than 10 taxa. In order to discern between the relative importances of wild resources for food and identify specific flora and fauna species in this category use, wild flora from wild fauna were treated separately in this component of the PDM, and thus represented a third level in the hierarchy for this resource use category.

At the lowest level, the importance of a *category of use* (*c*) of a *species* (*s*) is represented as an individual value  $U_{sc}$ . A more useful species may have one or several uses with its own  $U_{sc}$  within one or several classes, e.g. one plant may provide two different food sources from the roots and fruit bodies, its bark useful as a medicinal preparation, and its stem for fuelwood. In this case, four  $U_{sc}$  result, two of which belong to the same ‘food’ class.

The importance of a species is the sum of all a species  $U_{sc}$  values, and can be calculated with the following Local User’s Value Index (LUVI) equation (Sheil *et al.* 2002):

$$\text{LUVI} = \sum_{s=\text{species, for all } c,} U_{sc}$$

The direct approach to using PDM is that each  $U_{sc}$

can be weighed directly within a grouped comparison, i.e. a comparison is made within each class to weigh each  $U_{sc}$  as a series of exercises, and then the classes themselves are compared in one exercise. Ordering in this manner (lower before higher) ensured that the respondents had reflected upon the true composition of each class. It was also important that species are ranked according to the class of value (not their total value), when they have more than one use.

$U_{sc}$  values for all species and resource categories were compiled from all three age/gender groups across the three villages, and combined to provide a list of Total Combined LUV (LUVct) scores calculated using SPSS (ver 13). Linear regression analysis was then used to compare LUVct scores between resource use categories and flora and fauna categories.

At the conclusion of each PDM session, all participants received a free lunch and a small gift (e.g. bag of oranges, loaf of bread, pen set, soccer ball) for their willingness to participate in the exercise. PDM field assistants also were provided a free lunch and remunerated. Moreover, after each set of focus groups for each village, the relevant Traditional Authority received a copy and brief explanation of the results.

### 3.3.7. Interviews

In order to capture and better understand the perspectives of relevant actors, interviews were utilized in both research areas. Interviews involve direct, personal contact with research subjects who are asked to answer questions relating to the research problem (Bless and Higson-Smith 2000). In order to better understand social phenomenon from the actor's perspective, Mkabela (2005) emphasizes the need for researchers to empathize and identify with the people being studied within African indigenous communities. Although indigenous knowledge systems are often situated knowledge, the researcher does not necessarily have to be indigenous to understand them, including in this research where the researcher was considered a 'white, northerner' (Mutema 2003). By allowing interviewees to freely explain terms and issues from their own perspective, these interactive interviews helped to construct a 'picture' of the nature of the relationship between the communities and the KNP, including how they define and value natural resources, each other, and approach and resolve conflicts. Where necessary, follow-up interviews were carried out to clarify issues and explore further avenues of interest related to the research, as it unfolded.

In addition to *unstructured* ('informal') interviews with individual community members, *scheduled structured* and/or *semi-structured interviews* were conducted with a number of relevant actors, including key persons from the following institutions or organizations:

- SANP Executive
- SANDF
- SAPS
- KNP Management Board
- KNP Conservation Services
- KNP People and Conservation Department
- DFED/EA Mopani District Office
- DFED/EA Vhembe District Office
- DFED/EA Head Office
- DLA
- DAVS
- Greater Giyani Municipality Planning Office
- Traditional Authorities
- Makulele C.P.A.
- Gazan Trust
- Nghunghunyani Trust
- Hlanganani Forum
- Professional Hunting Outfitters
- Local mining companies
- Traditional healers

### 3.3.8. *Non-participant observation*

Observational methods were used in both social and non-social contexts within this research. These methods can allow researchers to gain direct qualitative data on programs, processes or behaviors being studied, and thus, to gain a more holistic understanding of the context within which the research lies (Frechtling and Sharp 1997). They are particularly useful in formative and summative evaluation research such as this whereby it can a) provide direct information about the behavior of individuals or groups, b) allow the researcher to enter into and understand the context, and c) provide excellent opportunities to identify unanticipated outcomes. Although disadvantageous in terms of potential alteration of behavior by participants and personal researcher bias, an attempt was made to overcome these (especially during Hlanganani Forum meetings) by explaining *a priori* the researcher's role as a non-participant observer, remaining neutral in discussions, acting naïve but interested in knowledge of issues or conflicts, trying to lend a sympathetic ear to both sides of a conflict, and by minimizing note-taking and/or use of a camera during observations (Taylor and Bogdan 1984).

Observational methods are also limited in that they cannot be applied to observing attitudes or beliefs, or phenomena related to the private spheres of life. These limitations were offset by



using them as a complement to other methods, and by restricting their use to verify proclaimed attitudes/beliefs by research subjects.

Finally, observational methods were utilized by recording bio-physical elements and structures, including e.g. the use of natural resources by local communities, bait for predator-luring along the KNP border, and breakages and weaknesses of the KNP border fence. Data gained from this technique includes photographs inserted throughout the thesis text.

### 3.4. Data analyses and interpretation

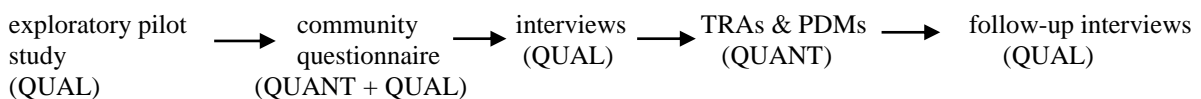
Using the Miles and Huberman (1994) interactive structure, and assisted by Atlas.ti (ver. 5.0) software, qualitative data was analysed in three main components, in addition to data collection:

1. Data reduction
  - a) editing, segmenting and summarizing data.
  - b) coding and memoing, finding themes, clusters and patterns
  - c) conceptualizing and explaining
2. Data display: organizing, compressing and assembling information
3. Drawing and verifying conclusions (includes linkages with quantitative data).

Quantitative data was first compiled in Microsoft ® Excel 2002, then transferred to and analyzed using SPSS (ver. 13) software to:

1. study trends and variation (mean, medium, variance, etc.)
2. study associations (correlation, regression analyses, non-parametric tests) between basic socio-economic and demographic data/factors and attitudes/perceptions.
3. produce ‘classifications’ or groupings of households according to social and demographic factors, and attitudes and beliefs.

In linking quantitative and qualitative techniques, an alternating design to link data collection types was applied, an example of which is illustrated below:



### 3.5. Validity

The primary aim of research design is to identify relationships (if any) between independent and dependent variables with a high degree of certainty (Bless and Higson-Smith 2000). The

potential of a design to achieve this is referred to as its validity. *Design validity* takes two forms; internal and external. While *internal validity* examines the degree to which a research design has excluded all alternative explanations for the research findings, *external validity* is concerned with the extent to which the research results can be generalized to a broader population. Techniques and research designs which were employed in this research to maximize internal validity are summarized in Table 3.4 below.

Table 3.4: Techniques / design characters used to maximize internal research design validity.

| <i>Source of bias / description</i>  | <i>minimized by ...</i>   |
|--|---|
| <i>History and maturation</i><br>Unintended changes which occur in the world or within subjects, which might confound results.                         | <ul style="list-style-type: none"> <li>• applying post-test only design.</li> <li>• many interviewees being interviewed only once.</li> </ul>   |
| <i>Test effect</i><br>Prior exposure to a test or technique can bias responses, usually through retesting. Can include boredom, fatigue, and practice. | <ul style="list-style-type: none"> <li>• sampling households only once and entire villages in less than two days (usually one).</li> <li>• conducting community survey from north to south in study area, by traditional authority affiliation.</li> <li>• keeping questionnaires and interviews as short as possible to reduce fatigue.</li> </ul> |
| <i>Instrumentation effects</i><br>Instruments should be accurate and culturally sensitive.   | <ul style="list-style-type: none"> <li>• pre-testing instruments during pilot study</li> <li>• using appropriate instruments for the context (e.g. PDMs)</li> </ul>   |
| <i>Experimental mortality</i><br>Subjects drop out of research during data collection period.  | <ul style="list-style-type: none"> <li>• exchanging contact details with all interviewees, which became especially important when job positions changed and follow-up interviews were required.</li> <li>• emphasizing value of subject to research to maintain participation.</li> </ul>   |
| <i>Reactive effects</i><br>Respondents react unnaturally when being observed (e.g. text anxiety).  | <ul style="list-style-type: none"> <li>• being as unobtrusive as possible in data collection, e.g. allowing subject to choose time and location for interview.</li> <li>• confronting subjects when providing contradictory statements.</li> </ul>  |
| <i>Selection</i><br>Some participant groups are excluded from research.  | <ul style="list-style-type: none"> <li>• applying randomization to sampling design.</li> <li>• identifying all relevant stakeholders in pilot study.</li> </ul>   |

To achieve high external design validity, randomization was applied to the sampling design, a relatively large sample size was chosen for the community questionnaire (N=240), both ‘on-the-ground’ and managerial staff from a wide range of institutions were interviewed, and unobtrusive techniques were used in data collection, e.g. allowing subject to choose time and location for interview.

However, validity refers not only to design, but also to instruments. In this case, instrument evaluation is concerned with *what* the measurement techniques actually measure and is comprised of four types; content, criterion-related, construct and face validity (Bless and Higson-Smith 2000). Table 3.5 summarizes this research’s attempts at increasing instrument validity.

Table 3.5: Techniques and procedures used to maximize research instrument validity.

| <i>Instrument validity type</i> | <i>maximized by ...</i>  |
|---------------------------------|--|
| Content                         | <ul style="list-style-type: none"> <li>• wide-based literature review and discussion with local research subjects to decide upon appropriate operational definitions of ambiguous concepts.</li> </ul>   |
| Criterion                       | <ul style="list-style-type: none"> <li>• using more than one method to investigate a research problem (e.g. community survey, interviews and DFED/EA records to quantify scope of DCA problem)</li> </ul>  |
| Construct                       | <ul style="list-style-type: none"> <li>• constructing questionnaires and interview questions based on theory, past research, and logical deduction.</li> <li>• using standard statistical tests in data analysis.</li> <li>• justifying modification of any instrument (e.g. TRAs)</li> </ul>  |
| Face                            | <ul style="list-style-type: none"> <li>• discussing proposed methodologies with research subjects (e.g. KNP PaC and Conservation Services staff, traditional leaders, and key informants)</li> <li>• pre-testing community survey.</li> <li>• garnering regular feedback from field assistants.</li> <li>• asking same question in more than one way.</li> <li>• keeping follow-up interviews to specific topics.</li> </ul> |

### 3.6. Ethics Protocol

An ethic of research involving human subjects should include two essential components: (1) the selection and achievement of morally acceptable ends, and (2) the morally acceptable means to those ends (cf. NCPHSBBR 1979). The first component is directed at identifying acceptable ends in terms of research benefits for participants and relevant groups, and for the advancement of knowledge. The second component is directed at ethically appropriate means of conducting research. Thus, the moral imperative of respect for human dignity translates into a number of important principles in research ethics, which were addressed in this research's protocol. These included respect for free and informed consent, and respect for privacy and confidentiality.

#### 3.6.1. *Respect for free and informed consent*

Before research began, of primary concern, was the need for free and informed consent of the research participants. In seeking informed consent, the following information was assured to each participant in either Tsonga (e.g. face-to-face questionnaires, PDMs) or English (TRAs, interviews):

- A statement that the study involves research, an explanation of the purposes of the research, the expected duration of the subject's participation, and a description of the procedures to be followed in understandable terms;
- a description of any benefits to the participant(s), which may reasonably be expected from the research;
- an explanation of whom to contact (with contact details) for answers to pertinent questions about the research; and

- a statement that participation is voluntary, refusal to participate or discontinued participation would involve no penalty or loss of benefits to which the participant is otherwise entitled.

### 3.6.2. *Respect for privacy and confidentiality*

All communication pertaining to the research follows generally accepted ethical standards, including:

- *Anonymity and Confidentiality*: Results are presented in a grouped, not individual manner. All personal information provided by individuals are made anonymous whenever possible and remain confidential unless otherwise determined by the individuals. A file containing names and any identification will be kept secure for 3 years after the termination of the research, after which they will be destroyed. Only the principal researcher (dissertation author) will have access to this file.
- *Priority of Communities Involved*: Condensed results/recommendations of the research, in the Tsonga-Shangaan language, will be made available to the Hlanganani Forum members, and all relevant Traditional Authorities upon completion of the research.
- *Respect*: Consideration for the communities and all participants are observed in all communications.

### 3.7. **Limitations**

Although a well-managed protected area network exists in South Africa, with extensive natural history studies, there is a paucity of scholarly research which attempts to understand the nature of the relationships these areas have with their neighbouring communities. Further, baseline data on biodiversity and/or biological indicators in the area was non-existent, which severely limited a longitudinal perspective on trends since 1994, and justified using the TRA methodology. Although a number of studies have been conducted further south in the Bushbuckridge area, this scarcity of data is especially true in this research's study area which lies in a relatively remote section of Limpopo Province. This research gap constituted one of the major difficulties for the researcher.

Securing financial, statistical information and DCA data records from the institutions involved in the research also was a limiting factor in the study. This was especially the case with the KNP Social Ecology office in Punda Maria, DFED/EA head office in Polokwane and the Hlanganani Forum secretariat. This may have been a result of the records not being

centrally collated at these offices. Moreover, traditional healers were reluctant, understandably, to share common names of plants that they utilized for medicine.

Because the study was cross-cultural in nature, the researcher found that lack of knowledge of the Tsonga-Shangaan language also limited the study's findings, especially during Hlanganani Forum meetings when the discussion moved from English, or during the administration of the community questionnaire. Cultural nuances and operational definitions of terms were also limiting, although attempts were made to understand concepts which had multiple meanings. In addition, there were a number of inconsistencies regarding taxa names during the PDM exercises with one taxon having multiple names between villages, and some names being used to describe a number of different species. In these instances, if field guides could not help in identification, samples were asked to be brought for clarification. If doubt remained, taxa lists included a '?' for doubtful but likely names, and corresponding English or Latin nomenclature were left blank if there was no consensus on identification (see Table 4.12). Finally, a number of respondents had difficulty in providing accurate quantitative information in the community questionnaire (e.g. hours spent collecting fuelwood per week, kilograms of wild fruits harvested, and age in some instances). In these cases, respondents were encouraged to provide best estimates.

Due to financial and time constraints, a more comprehensive study could have been accomplished with longer study duration. Subsequent research is certainly suggested to gain a wider perspective on the relationship between KNP and its neighbours.

### **3.8. Summary**

This chapter has served to provide a justification of research design type and focus based on the research problem and associated research questions. It has also described the research subjects, and defined the temporal and spatial scope of the research. Moreover, the chapter has provided a detailed description of the research techniques utilized, including their limitations.

Now that the background has been set in Chapter 2, and the research methodology described within this chapter, the following four chapters will present research results on the People (Chapter 4), the KNP or 'Park' (Chapter 5), the Hlanganani Forum (Chapter 6), and damage-causing animals (Chapter 7). These will be followed by a comprehensive discussion chapter and final conclusions.

## Chapter 4: The People

### 4.1. Introduction

This chapter concentrates, and briefly discusses research results, on the ‘people’ considered neighbours of KNP (see chapter 2.7.3). People in this context are community members that reside, access and use natural resources within the study area. It also comprises Traditional Authorities (TA) that incorporate villages within the study area, and are recognized either formally or informally by the local populace.

The chapter is divided into four major sections. The first highlights socio-demographic factors that may influence community development programs, including CBC initiatives, in these rural areas. It also provides a ranked assessment of community needs that might affect efforts by KNP, and other conservation agencies, in addressing community concerns.

The second section investigates the relationship between institutions responsible for resource control and access in the study area, i.e. TA, local and provincial government. It seeks to address the research question, ‘*How do local communities view the various institutions responsible for managing natural resources?*’ (see also chapter 5). These institutions include TAs, local government, and the DFED/EA.

The third section examines the use of natural resources in the area, addressing the research question, ‘*How do local communities value and use natural resources?*’ Data are based on interviews, non-participant observation, and focus groups employing weighted ranking exercises (PDM).

The final section draws on community questionnaire results on local beliefs and attitudes with respect to nature. It also investigates factors which may influence beliefs and behavior towards natural resources, examines various categorical uses associated with nature, and beliefs about sustainability. The chapter concludes with a summary of research findings based upon the preceding four major sections.

### 4.2. Community Profile

#### 4.2.1. Introduction

Understanding socio-demographic factors and needs of local communities should be a starting point in initiating PA outreach and/or CBC initiatives with park neighbours (MacKinnon *et al.*

1986; Brechin *et al.* 2002; Veech 2003). By doing so, communities can communicate their own needs and aspirations in such relationships from the outset, and can cooperatively guide the types and extent of any proposed activities.

This research utilized a face-to-face questionnaire administered to a random sample of village households within 15 km of KNP's border. One part of this questionnaire investigated factors identified in similar studies as influencing conservation attitudes including household access to livestock and agricultural land (Adams and Infield 2001; Infield and Namara 2001), and socio-demographic variables including age, gender, household income, residence time in village, and education (see e.g. Infield 1988; Heinen 1993; Newmark *et al.* 1993; Fiallo and Jacobson 1995; de Boer and Baquete 1998; Mehta and Heinen 2001; Holmes 2003; Hill 2004). The results of this data analysis are presented below although discussion will be largely reserved for Chapter 8, which more explicitly examines the relationship of KNP with its neighbours. In a second part of the questionnaire, respondents indicated and ranked their most important community needs from a predefined list. These were then ordered to provide an overall ranking of community needs for the study area.

#### 4.2.2. Socio-demographic variables

Based on Census 2001 figures, population densities in the study area are approximately 104.0 persons/km<sup>2</sup> in Thulamela Municipality and 39.5 persons/km<sup>2</sup> in Greater Giyani Municipality. The questionnaire sample consisted of 83 males (34.6%) and 157 females (65.4%), all ≥18 years of age. Respondents were asked to provide their age, number of people in the household<sup>22</sup>, years their family has resided in the village, and number of household members currently attending school (Table 4.1).

Table 4.1: Descriptive statistics for socio-demographic variables in community questionnaire.

| Variable                                     | N   | Min. | Max. | Mean  | S.D.   | Variance |
|--|-----|------|------|-------|--------|----------|
| age of respondent                            | 240 | 18   | 102  | 39.33 | 17.631 | 310.865  |
| number of people in household                | 240 | 1    | 18   | 5.80  | 2.650  | 7.023    |
| years family in village                      | 225 | 1    | 52   | 23.20 | 12.593 | 158.587  |
| number of household members attending school | 236 | 0    | 7    | 2.56  | 1.627  | 2.647    |

Respondents were also asked to list the ages and gender of all household members. Males (N=662, mean age=22.1, S.D.=17.102) represented 47.52% of the sampled households, while females (N=731, mean age=26.5, S.D.=19.716) constituted 52.48%. Census 2001 figures differ slightly from these, reporting 43.9% of the population of wards lying in the study area

to be male. However, preliminary independent demographic analyses of the Census results suggest that the final figures probably represent an underestimate of males (Statistics South Africa 2003).

The population structure resembles a typical broad-based age pyramid characteristic of developing countries, with a large proportion in the younger age groups (50.3% of the population is  $\leq 19$  years), and a steadily decreasing proportion in older age groups (Figure 4.1). Also noteworthy is that of all the males residing in the study area, 79% are  $\leq 29$ , compared to 67.3% for females. This agrees with Census 2001 ward data for the study area, which also indicate a  $>12\%$  difference between gender proportions for these age classes, with figures of 81.8% and 69.3% for males and females respectively (Statistics South Africa 2003). Of the households sampled in this research, 6.25% had no males at all, and 12.5% had no males  $\geq 18$  yrs old. Similar figures for females were 2.9% and 1.25%, respectively.

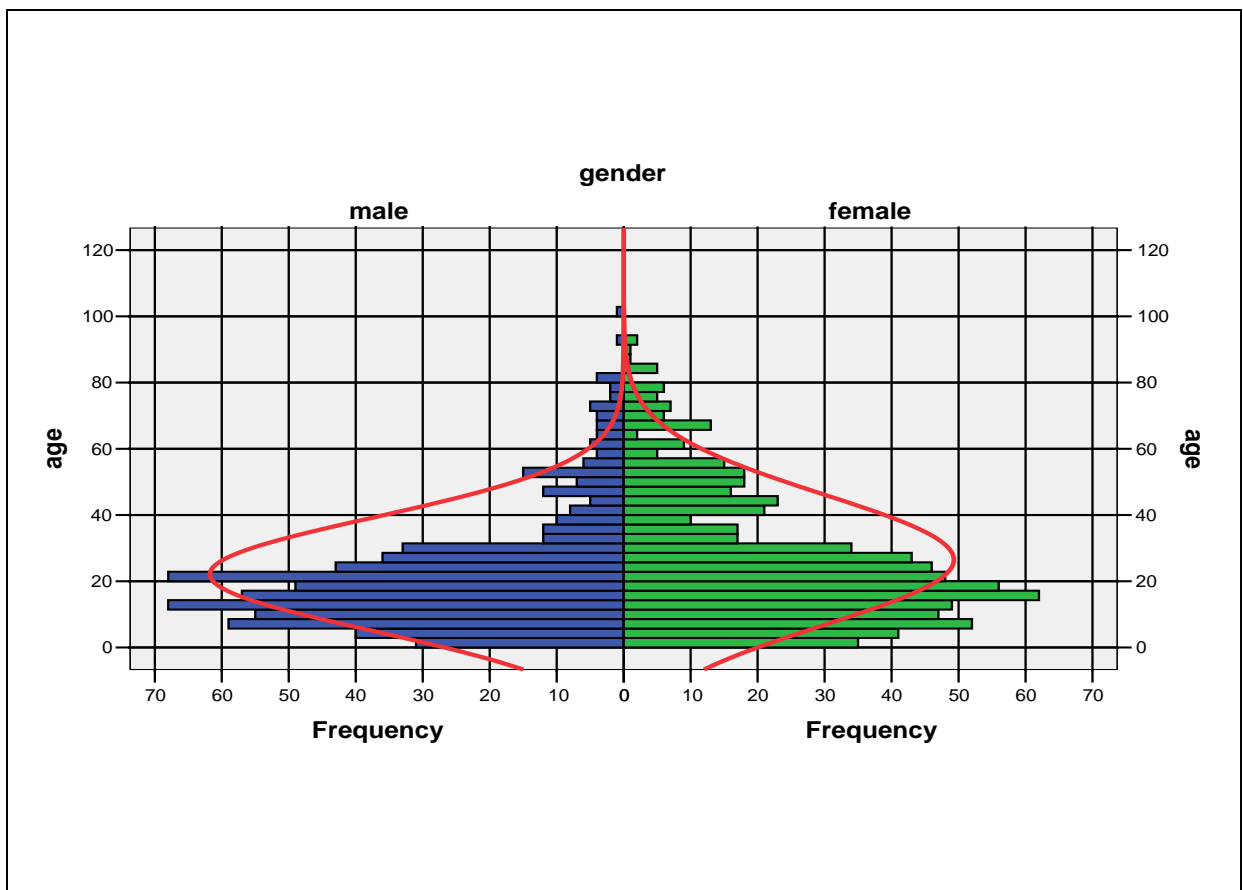


Figure 4.1: Population pyramid for sampled households, with normal curve for each gender.

<sup>22</sup> Number in household means those persons who reside in the household on average at least 4 times per week.



In this research, level of education was also determined from household respondents, and is summarized in Figure 4.2. A bimodal frequency distribution can be seen with 42.9% of respondents completing primary school level or less (first three columns), and 57.1% attending high school level or higher. These data agree with trends from Censuses in 1996 and 2001, in which increasing proportions of the population in the study area are gaining higher education. Those with higher education tend to be younger ( $r=.708$ ,  $p<0.001$ ) and male ( $\chi^2=11.196$ ,  $df=5$ ,  $p<0.05$ ), consistent with provincial results of a rural survey conducted in 1997 (Statistics South Africa 1999).

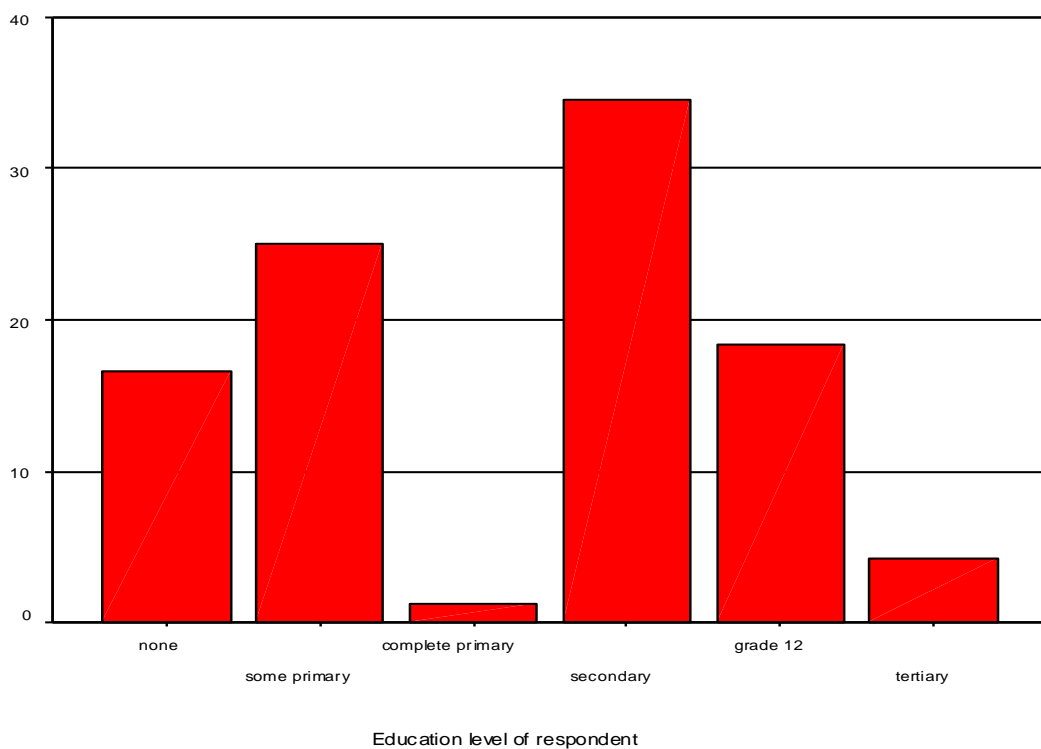


Figure 4.2: Bar graph illustrating education level of community survey respondents (N=240)

Similarly, employment status was also ascertained from respondents and results are illustrated in Figure 4.3. As expected, unemployment of respondents is high in the study area, with only 8.75% being employed. This figure may be an underestimate of employment in general, as those who are employed, especially those working for an employer, were unlikely to be at home during the administering of the questionnaire. On the other hand, the figure does fall within the range of ward employment figures (7.0 – 14.4%) from Census 2001 (Statistics South Africa 2003).

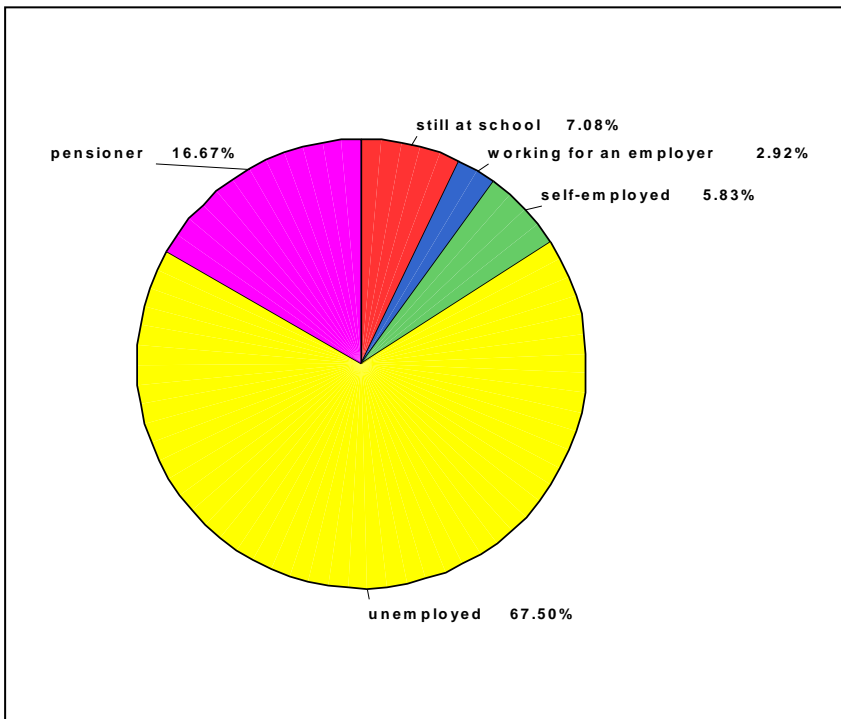


Figure 4.3: Pie chart showing employment status of community survey respondents (N=240)

Average monthly income for sampled households in this research was recorded on an ordinal scale, and is summarized in Figure 4.4. Incomes are highly skewed (skewness=0.854, S.E.=0.157) with almost 90% of households sampled receiving  $\leq 1000$  ZAR/month (155 USD), and only 1.7% with an average household income of  $>5000$  ZAR/month (776 USD).

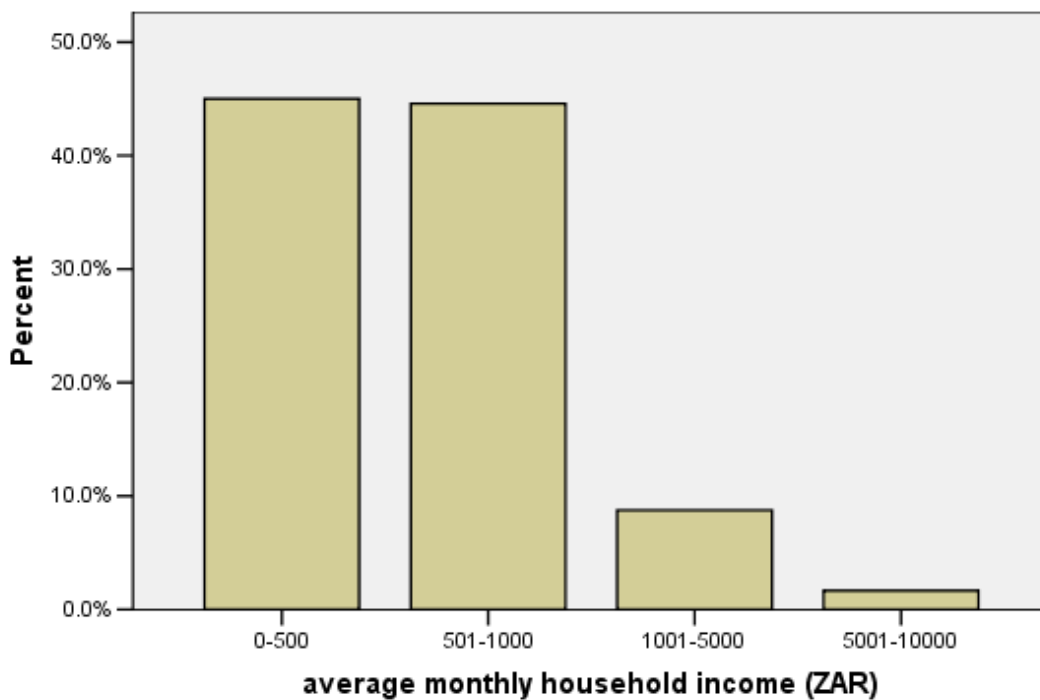


Figure 4.4: Bar graph showing percentage of households sampled in average monthly income (ZAR) classes (N=240).

Respondents were then asked to rate their household's current economic condition compared to two years ago, providing reasons for their response (Table 4.2). Most (77.3%) respondents stated 'Worse', 16.8% 'Better', and 5.9% 'don't know' (N=238).

Table 4.2: Qualitative responses for reasons for choice to question on trend in household's economic situation.

| Reasons  | Percent of categorical response |
|--|---------------------------------|
| <b>'Worse'</b>   |                                 |
| • income insufficient to support family                          | 48.6                            |
| • I'm/we're unemployed   | 24.0                            |
| • we rely on pension which is insufficient                       | 6.9                             |
| • we don't have money for school fees                            | 5.1                             |
| • prices are going up  | 4.6                             |
| • death of family members  | 3.4                             |
| • we rely on child grants  | 1.1                             |
| • our income has decreased                                       | 1.1                             |
| • there is no man/husband in our household                       | 1.1                             |
| • I get little money from my sales                               | 1.1                             |
| • my children are without food                                   | 0.6                             |
| • we're still building a house                                   | 0.6                             |
| • I'm unable to work   | 0.6                             |
| • the number of people in our household has increased            | 0.6                             |
| • my father has two households                                   | 0.6                             |
| <b>'Better'</b>  |                                 |
| • I/we have enough for our needs                                 | 23.5                            |
| • pension increased  | 20.6                            |
| • because old age pension and/or child support grants support us | 17.6                            |
| • I/we are employed  | 17.6                            |
| • it's better than nothing                                       | 14.7                            |
| • sometimes we build RDP houses                                  | 2.9                             |
| • because we don't run out of maize meal                         | 2.9                             |

#### 4.2.3. Livestock holdings and agricultural land

Type and descriptive statistics of household livestock holdings were calculated from questionnaire responses (Table 4.3). Chickens are the most frequently held livestock type in the sampled households (65.8%), followed by cattle (26.3%), goats (20.4%), and dogs (20.0%). In addition to livestock types identified in the questionnaire, horses were also observed in the study area, although the frequency is minimal. Diversity of different livestock holdings ranged from none to six types, and are distributed as follows: none (25.0%); 1 type (32.5%); 2 types (22.5%); 3 types (11.3%); 4 types (5.8%); 5 types (1.7%); 6 types (1.3%).

Table 4.3: Livestock holdings of households sampled in community survey (N=240).

| Livestock type | % of households | Number of livestock |      |       |      |
|----------------|-----------------|---------------------|------|-------|------|
|                |                 | Min.                | Max. | Mean  | Mode |
| Chickens       | 65.8            | 1                   | 68   | 8.18  | 1    |
| Cattle         | 26.3            | 1                   | 44   | 7.60  | 3    |
| Goats          | 20.4            | 1                   | 27   | 5.92  | 4    |
| Dogs           | 20.0            | 1                   | 7    | 2.21  | 1    |
| Cats           | 5.4             | 1                   | 3    | 1.38  | 1    |
| Pigs           | 5.0             | 1                   | 8    | 2.92  | 2    |
| Donkeys        | 3.8             | 1                   | 17   | 6.22  | 6    |
| Ducks/geese    | 2.9             | 1                   | 18   | 5.14  | 2    |
| Sheep          | 0.4             | 4                   | 4    | 4.00  | 4    |
| Pigeons        | 0.4             | 58                  | 58   | 58.00 | 58   |

To gain an understanding of recent trends in household livestock numbers, respondents were also asked to indicate increases, decreases, or no change in the past two years. Sixty-two respondents (28.2%) claimed that their livestock numbers increased over the past two years, due primarily to breeding. In contrast, over one third of respondents (38.2%, N=220) stated that numbers have decreased, indicating the following reasons for the reduction:

|                                     |             |
|-------------------------------------|-------------|
| Killed / died (no reasons provided) | 32.3%       |
| Diseases                            | 20.4%       |
| Killed for meat                     | 17.2%       |
| Sold                                | 10.8%       |
| Killed by wild animals              | 10.8%       |
| Lost                                | 3.2%        |
| Died due to drought                 | 3.2%        |
| Killed for funeral                  | 1.1%        |
| Stolen                              | 1.1%        |
| <b>TOTAL</b>                        | <b>100%</b> |

A majority of respondents (70.4%, N=240) indicated that they have a garden (land under cultivation). Of those that have a garden, 87.6% stated that their garden is in their stand (Figure 4.5), 1.2% stated near their stand, and 19.5% indicated that they have a garden far from their stand (figures exceed 100% as some households have more than one plot of land under cultivation). However, 17% of those households with a garden stated that they are unable to plant crops annually, due to limitations brought about by drought, poor fencing, insufficient money to cultivate, and physically disabled family members. Based on this data, almost one half (42%) of the households in the study area are unable to plant crops annually and thus are likely more dependent on exploiting natural resources to meet their subsistence needs.



Figure 4.5: Woman in Mahlathi village harvesting maize and peppers from household stand

Most respondents (85.2%) believe that the land in their area is ‘good’, citing soil fertility, available water and sufficient crops as indicators. In contrast, those who believe that the land is not good credit their opinion to soil infertility, termites, poor soil texture and porosity, and erosion (Figures 4.6 and 4.7). In a similar question to ascertain the opinion of respondents to land availability for community members, about two thirds (65.8%) stated that there is enough land compared to 17.9% stating not enough, and 16.3% didn’t know. When responses were grouped according to municipality, i.e. villages north or south of the Shingwedzi River, Thulamela Municipality had a higher number of responses indicating land shortages (19.7%) compared to Greater Giyani (9.8%). Of interest is why respondents indicated their choice. Although most responses stated land shortages in their area were due to scarcity of sites for residential and/or cultivation, a number of respondents specifically claimed that their grazing and agriculture land is being taken from them by KNP’s ‘buffer zone’.





Figure 4.6: Drainage area near Jilongo village indicating soil erosion



Figure 4.7: Grazing area in Greater Giyani Municipality marked by termite mounds

#### 4.2.4. Community needs

In order to determine importance of community needs, respondents were asked to rank the five most important needs from a predefined list, allowing opportunity to also add to the list (Table 4.4). Employment was ranked as the most important community need overall, followed by health, school, electricity and drinking water facilities. Of least importance to respondents from the list provided were protecting forests and wild animals which, in contrast, are of primary concern for conservation agencies.

Table 4.4: Overall ranking of community needs by community survey respondents (N=238). Mean scores range from 0 (no importance) to 5 (most important).

| <b>Overall Rank</b> | <b>Community need</b>          | <b><i>n</i></b> | <b>mean score</b> |
|---------------------|--------------------------------|-----------------|-------------------|
| 1                   | Employment                     | 185             | 3.10              |
| 2                   | Health facilities              | 164             | 2.37              |
| 3                   | School facilities              | 182             | 2.34              |
| 4                   | Electricity facilities         | 144             | 1.95              |
| 5                   | Drinking water facilities      | 111             | 1.26              |
| 6                   | Road improvement               | 81              | 0.80              |
| 7                   | Training opportunities         | 86              | 0.74              |
| 8                   | Protection of crops/livestock  | 61              | 0.73              |
| 9                   | Housing                        | 52              | 0.60              |
| 10                  | Preserving traditional culture | 36              | 0.33              |
| 11                  | Tourism development            | 27              | 0.29              |
| 12                  | Protection of forest           | 29              | 0.26              |
| 13                  | Protection of wild animals     | 32              | 0.26              |

To determine the geographical distribution of the five overall most important community needs (see Table 4.4 above), an initial categorization was made based on whether all respondents within a village ranked that need within their own five most important needs (Table 4.5). If all respondents within a village ranked e.g. electricity as one of their top five needs, that village was assigned an 'X' in the table. Although a more detailed study is required, which would ideally consider heterogeneity within communities and a more thorough investigation of current and proposed development activities, this list could serve as a starting point for prioritizing community development programs by e.g. KNP's People and Conservation Department.

Table 4.5: Villages within study area, separated by municipality in which all questionnaire respondents ranked specified community needs among the most important.

| Village                                   | Overall Rank |                   |                   |                        |                           |
|---|--------------|-------------------|-------------------|------------------------|---------------------------|
|   | 1            | 2                 | 3                 | 4                      | 5                         |
|   | Employment   | Health facilities | School facilities | Electricity facilities | Drinking water facilities |
| <b><i>Thulamela Municipality</i></b>      |              |                   |                   |                        |                           |
| Botsoleni (Chavani)                       | X            |                   |                   | X                      | X                         |
| Josepha                                   |              |                   |                   |                        | X                         |
| Maphophe                                  | X            | X                 |                   | X                      |                           |
| Matiyani                                  |              |                   | X                 |                        |                           |
| Nkovani                                   | X            |                   |                   |                        |                           |
| Saselemanani                              | X            |                   | X                 |                        |                           |
| Ximixoni                                  | X            | X                 |                   |                        |                           |
| Bevhula                                   | X            |                   |                   |                        |                           |
| Gijamhandzeni                             | X            |                   |                   |                        |                           |
| Halahala                                  |              | X                 |                   | X                      |                           |
| Jilongo (Merwe C)                         |              |                   |                   | X                      |                           |
| Mabayeni + Merwe A                        |              | X                 |                   | X                      |                           |
| Matsakali                                 | X            | X                 |                   | X                      | X                         |
| Shisasi                                   |              | X                 |                   |                        |                           |
| <b><i>Greater Giyani Municipality</i></b> |              |                   |                   |                        |                           |
| Gawula                                    |              |                   |                   | X                      |                           |
| Hlomela                                   |              | X                 | X                 |                        | X                         |
| Khakhala                                  |              |                   | X                 | X                      |                           |
| Mahlathi                                  | X            |                   |                   |                        |                           |
| Mhlava Willem                             | X            | X                 | X                 |                        | X                         |
| Mininginisi Block 2 (Thomson)             |              |                   | X                 | X                      |                           |
| Mininginisi Block 3                       |              |                   | X                 |                        |                           |
| <b>TOTAL</b>                              | <b>10</b>    | <b>8</b>          | <b>7</b>          | <b>9</b>               | <b>5</b>                  |

In a separate section of the questionnaire, respondents were asked to indicate the most important natural resource and/or land problems they face. Results imply that about one half of the households in the area are unaware of any problems or feel that they have none (Figure 4.8). For those that did indicate specific problems, water scarcity (13%) was mentioned most frequently, from households widely distributed in the area. Land shortages were described by 10% of respondents, with 19 of the 20 reported being from households within villages north of the Shingwedzi River (see also chapter 4.2.3). These two resource scarcity dilemmas were followed by DCA problems, soil limitations, and livestock disease. Scarcity of fuelwood was only reported by 2% of the households sampled, and all of these were by respondents living north of the Shingwedzi River.



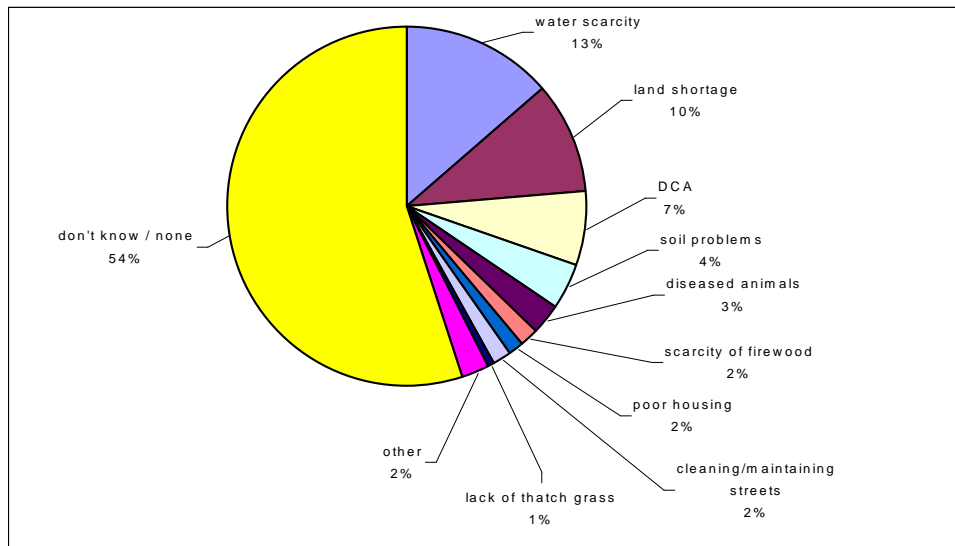


Figure 4.8: Pie chart indicating percentage of most important natural resource and land problems perceived by respondents in communities (N=240).

Finally, about 2 in 3 respondents (67.5%) believed there are natural resources they need but do not have access to. The primary resources sought included livestock (64.4%), followed by drinking water (10.3%), land (4.6%), fuelwood (2.3%), and adequate food (2.3%).

#### 4.2.5. Summary

These results indicate that the rural population bordering KNP consists of households with an average of 5.8 members, and families residing in the area on average for 23.2 years, but ranging from one to 52 years. The population structure is broad-based with over half of the population < 20 yrs of age, and having a higher proportion of females compared to males, especially in age classes above 29 yrs. Education distribution is bimodal, with approximately half of the respondents having completed primary school or less, and the other half attending high school or higher. Despite this variation in education, poverty is still widespread in the area, with almost 90% of households earning less than 1000 ZAR/month. This poor economic situation is believed to be worsening by over three-quarters of those people sampled.

Livestock holdings and access to agricultural land in the study area are varied. Three in four households had livestock of some kind, with eleven types of livestock observed in the area. Chickens, cattle and goats were reported to be the most frequently held livestock and the maximum livestock diversity was six types. Almost 40% of respondents claimed that household livestock numbers are decreasing, primarily due to economic and environmental constraints. Access to land for cultivation was secure for 70.4% of respondents, although similar economic and environmental constraints limited capacities of some households to

plant crops annually. Most felt their land was ‘good’, although land shortages were identified as a constraint in some cases, particularly in Thulamela Municipality.

Community questionnaire respondents ranked employment as their greatest community need, followed by facilities required for health care, schools, electricity and drinking water. Ranked last was the protection of forests and wild animals. Although slightly more than half of the respondents were unaware of or did not believe that they face any resource or land problems in their area, those that did indicated water scarcity as the greatest. This deficit was reported widely throughout the study area. In contrast, land shortages were mentioned, but were by and large restricted to households located north of the Shingwedzi River. A related question on natural resource access confirmed these initial findings, as respondents indicated that next to desiring greater units of livestock, access to water, land and fuelwood were secondary.

### **4.3. Institutions concerning resource access and control**

#### *4.3.1. Introduction*

By establishing democratically elected local government with ‘development functions’ and democracy in decision making regarding land, post-1994 South Africa is introducing a separation of powers and democracy. Traditional leaders, often highly popular and respected in rural areas, see local government and this extension of democracy to land issues as deeply threatening attempts to undermine their political and economic powers (Ntsebeza 1999). However, it has been reported that both local government and municipal extensions of provincial departments are poorly supported in terms of finance, administration, and infrastructure (Adams *et al.* 1999; Baumann 2001). Thus, it was essential for this research to determine perceptions of local communities towards these institutions vis-à-vis their functions, responsibilities and effectiveness. As the functions of local government are more widespread and overlap in many cases with Traditional Authorities, perceptions of these institutions were obtained from a specified section of the community questionnaire which allowed for a comparative analysis (chapter 4.3.2.). On the other hand, perceptions of provincial Environmental Affairs, which are of more central concern to this research on resource use and DCA control (Chapter 7), were acquired through both the community questionnaire and interviews (chapter 4.3.3).

#### *4.3.2. ‘Two bulls in the same kraal’ - Traditional Authorities and Local Government*

Comparatively, the functional roles of traditional authorities are more widely recognized in the study area. These institutions are believed by community members to be responsible for

the allotment of residential and agricultural sites (Table 4.6). TAs are also believed to play an important ‘overseer’ and protective role in the rural areas with respect to land use and security of access to resources. In contrast, the responsibilities of the municipal government are less well known, with over 60% of respondents indicating that they ‘don’t know’ of its role or that it does ‘nothing’. Where municipal government responsibilities were identified, they tended to relate to provision of and maintenance of local infrastructure (housing, roads, water, etc.).

Table 4.6: Beliefs and frequency of responses about the role of traditional authorities and municipal government with respect to land-use (N=240).

Note that column sums are greater than the sample size as respondents could provide more than one responsibility per institution.

| <b>Responsibility</b>                           | <b>Traditional Authorities</b> | <b>Municipal Government</b> |
|---|--------------------------------|-----------------------------|
| to give us a place to build our homes           | 125                            | 20                          |
| to give us land to plough / farm                | 74                             | 5                           |
| to ensure that land is being used properly      | 19                             | 4                           |
| to provide RDP housing                          | 4                              | 18                          |
| to oversee people's problems and concerns       | 4                              | 5                           |
| they issue sites for businesses                 | 3                              | 2                           |
| to collect money/taxes from us                  | 2                              | 1                           |
| developing our area                             | 1                              | 2                           |
| to protect/control wild animals and/or forests  | 6                              |                             |
| they protect us                                 | 2                              |                             |
| they give us permission to cut wood             | 1                              |                             |
| to allot/distribute resources                   | 1                              |                             |
| to arrest us if we illegally collect firewood   | 1                              |                             |
| to give us land for a graveyard                 | 1                              |                             |
| to inspect our village                          | 1                              |                             |
| to issue permits for using anything in the land | 1                              |                             |
| to sell people's fields to farmers              | 1                              |                             |
| to clean / maintain our roads                   |                                | 22                          |
| to ensure water supply                          |                                | 16                          |
| to provide electricity                          |                                | 2                           |
| to return land to its rightful owners           |                                | 2                           |
| to support sports / build stadiums              |                                | 2                           |
| to build schools                                |                                | 1                           |
| to collect garbage                              |                                | 1                           |
| to employ people                                |                                | 1                           |
| to give grants                                  |                                | 1                           |
| to remove unwanted weeds                        |                                | 1                           |
| to search for suitable areas for development    |                                | 1                           |
| it isn't yet established here                   |                                | 2                           |
| I don't know                                    | 60                             | 108                         |
| nothing   | 5                              | 39                          |
| <b>TOTAL</b>                                    | <b>312</b>                     | <b>256</b>                  |

These functional distinctions were also confirmed during interviews with various community members and representatives of traditional authorities. According to *Hosi* Ndindani, although all communal lands are owned by the state, *tihosi/tindhuna* have authority to grant lands for garden plots and homesteads to their *muganga* (village(s)) members. If individuals want that land registered, they can apply to the Department of Land Affairs (DLA) for a Permission to

Occupy (PTO) certificate. The *tihosi/tindhuna* attend this meeting and consent to the application.

Mtititi TA representatives stated that they are responsible for access to and control over a number of resources, including allocation of grazing and residential sites (originally 0.25 ha but reduced to 0.105 ha due to municipal by-laws), and granting permission to collect a) live trees for construction, b) dry wood for transport to other villages, c) sand / rock for both local use and for transport to other villages, and d) transfer of cattle both within traditional authority area, and to outside (primarily to reduce theft). They play a judicial role in fining any persons caught illegally collecting any resource that requires a permit, especially those persons who do not reside within the TA area, when guilty parties receive a stiffer penalty. They also play an important role in resource monitoring stating, *“In the event that the tribal police see that the amounts of resources are dwindling, they inform the hosi who would then inform the community to cease with collecting that resource.”* According to Magona TA representatives, which is located just north of Mtititi TA, these responsibilities are also undertaken by their institution, although they mentioned that the Department of Agriculture *“banned the extraction of live trees in 2001 due to high deforestation rates”*. Magona TA staff are also responsible for confiscating illegally collected firewood in their area (Figure 4.9), claiming that this is *“a growing problem in their area, especially by outsiders”*. Both KNP and DFED/EA staff echo this concern.



Figure 4.9: Illegally collected fuelwood (mostly *Colophospermum mopane*) confiscated by Magona Traditional Authority in August 2004.

Other resources controlled by TA in the study area include mopane caterpillars (*Imbrasia bellina*) and thatch grass, although this control is not widespread and most community members ‘do not require a permit’ for their collection.

As well as identifying perceptions of roles and responsibilities of the various institutions involved in land use, it is also important to understand perceptions on how well these institutions are doing. Questionnaire respondents were asked to evaluate both their respective TA and the municipal government, in terms of how well it was doing in its role with respect to land-use, whatever they conceived that to be. Summarized results are presented in Figure 4.10 below. Again, more than half of the respondents had no idea on the effectiveness of the municipal government, stating that they didn’t know of its activities. For those that did evaluate the institution, equal numbers assessed positively and negatively. In contrast, as well as being better recognized, 59.6% of community members believed their TA was doing a good job with respect to land use issues, and only 11.7% believed it was not.

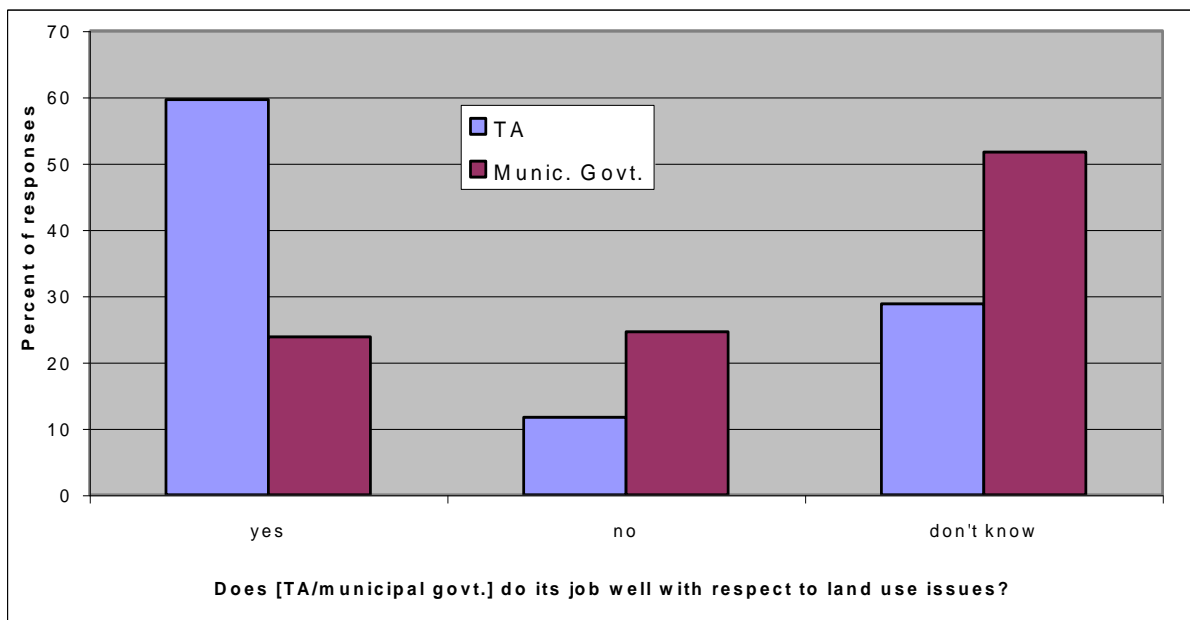


Figure 4.10: Bar graph showing belief by community members regarding performance of local institutions with respect to land use issues (N=240).

In order to identify what variables might be influencing this evaluation, correlation analysis was used to compare responses with selected variables (Table 4.7). Although age ( $r=0.141$ ,  $p<0.05$ ,  $N=240$ ) and level of education ( $r=-0.133$ ,  $p<0.05$ ,  $N=240$ ) were significantly correlated with responses towards TA effectiveness, linear regression analysis revealed that they are very weak predictors of responses ( $R^2=0.022$ ). These results indicate that the selected variables do not play a deciding role in influencing opinions. On the other hand, *de jure*

traditional authority was found to be the single major factor influencing perceptions of municipal government effectiveness ( $r=0.194$ ,  $p<0.01$ ,  $N=240$ ).

Table 4.7: Results of Pearson's correlation analysis of performance of municipal government (shaded) and traditional authorities (clear) with respect to land use issues (N=240).

| variable                                   | r     | Sig.<br>(2-tailed) |
|--|-------|--------------------|
| <i>de jure</i> Traditional Authority       | .194  | .003**             |
|  | .100  | .122               |
| gender                                     | .072  | .268               |
|  | -.060 | .354               |
| age  | .004  | .948               |
|  | .141  | .029*              |
| years family in village                    | -.038 | .570               |
|  | -.013 | .850               |
| education level                            | -.053 | .411               |
|  | -.133 | .039*              |
| monthly household income                   | -.105 | .104               |
|  | .010  | .880               |
| household member ever been employed at KNP | .099  | .125               |
|  | .053  | .413               |
| knowledge of HF                            | -.085 | .188               |
|  | -.069 | .287               |
| DCA problems                               | -.106 | .102               |
|  | .039  | .551               |

By investigating further the relationship between respondents from specific *de jure* TA in the area, only in Mhinga, Madonsi, and Xiviti TA did respondents hold more favourable responses to municipal government performance in their areas (Figure 4.11). Respondents from Bevhula and Mtititi TA held more uniform views, with approximately equal percentages of 'yes' and 'no' responses. Finally, community respondents from Shikundu and Magona TA alike held more negative than positive views. Negative opinions of the effectiveness of the municipal government were largely governed by housing and water shortages, poor road maintenance, and the belief that it 'does nothing in our area', 'shows favoritism in its activities' and 'doesn't treat people equally'.

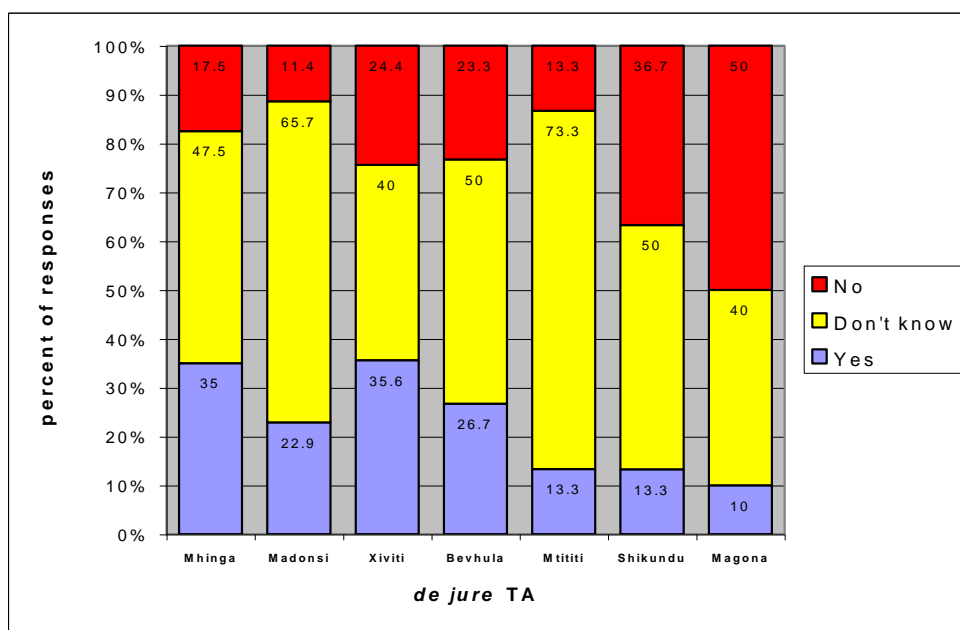


Figure 4.11: Percentage of responses by community members within various *de jure* Traditional Authorities to question, 'Does the municipal government do its job well with respect to land use issues?'

#### 4.3.3. Department of Finance and Economic Development-Environmental Affairs (DFED/EA)

In Limpopo Province, Environmental Affairs is a directorate within the Department of Finance and Economic Development (DFED/EA). This directorate is operationally subdivided into municipal districts which provide conservation extension services in communal areas, and *inter alia* regulate and monitor the use of natural resources as per the *Limpopo Environmental Management Act* (LEMA) of 2003. Within the study area, two district offices are functioning, i.e. the Vhembe District office operating out of Thohoyandou, which is responsible for Thulamela Municipality to the north, and the Mopani District office located in Giyani and responsible for the Greater Giyani Municipality to the south.

Unstructured and semi-structured interviews with community members, TA representatives and staff from various levels within KNP and DFED/EA were conducted in order to understand the relationship that the DFED/EA has with rural communities and KNP, and what factors support prevailing opinions about the institution. Unequivocally from these interviews, the major topic of concern was the role of the DFED/EA in controlling DCA and the lack of compensation for damage caused by these problem animals. This topic is dealt with more comprehensively in Chapter 7, although a brief discussion is relevant here as opinions regarding the DFED/EA in this area spill over into other natural resource management issues.



Complaints from community members, TA representatives, and KNP staff centered on the incompetence and alleged negligence of DFED/EA officers in attending to DCA reports in the study area. This criticism extends back over 10 years, exemplified when an employee of the Gazankulu Nature Conservation (GNC), the antecedent of the current DFED/EA, admitted in a HF meeting in 1994 that, ‘due to the law enforcement activities of the GNC they could not attend to every DCA report, and because of that the GNC are not popular among some of the local communities.’ In 2004, when public outcry mounted when a number of people and livestock lost their lives to crocodiles and hippos at the Makuleke Dam (Figure 4.12), one local *hosi* complained that the DFED/EA is “*by-passing Traditional Authorities in its dealings with the DCAs at Makuleke Dam, causing friction between the once ‘harmonious’ villages of Makuleke and Ntlhaveni Block D.*” Further criticism of the DFED/EA include:

- slow (or no) response to DCA reports.
- DFED/EA rangers not informing local *tindhuna/tihosi* when hunting DCAs.
- Maviligwe village members are upset by broken promise by Provincial Ranger to return to kill lion after he had witnessed partly eaten cattle. In the end, he didn’t return, the lions ate the rest of the cattle, and nothing was done.
- buffalo meat not being returned by DFED/EA rangers to community members in Mininginisi Block 2.
- ‘reneging’ on their promise to compensate farmers who experience losses from DCAs.

These criticisms, whether perceived or real, have far-reaching implications. For example, one villager reported in an interview that lions had recently killed a cow in his village. They called the DFED/EA, but they failed to come. The villagers subsequently took matters into their own hands and caught the lion, killed it, and distributed the meat/skin to the affected livestock owner.



Figure 4.12: Woman from Ntlhaveni D village washing laundry in Makuleke Dam. Women often throw rocks into the water to ‘scare away crocodiles’ before filling their containers.



Similar to the negative perceptions and low awareness of local municipal government (chapter 4.3.2), perceptions of the DFED/EA by local TA are generally negative. One *hosi*, with three villages in the study area, summarized the relationship so far as ‘not good’, adding, “*the DFED/EA only comes here to arrest people for poaching fish and game, collecting mopane worms and for cutting trees. They offer no environmental education. It could be greatly improved by offering the community environmental education and awareness on the role of the provincial government in this regard.*”

In defense of the DFED/EA, both field officers and District Managers alike attribute these objections to a lack of resources and unnecessary bureaucracy. Poor transport (only 2 vehicles being available for the entire study area), deficiencies in training and manpower, inadequate record-keeping, and hiring unqualified staff were all cited as constraints to attending to DCA reports. As one staff member stressed, “*Transport is a burning issue, and what we now have to do is prioritize, i.e. lions and buffalo are a priority, partially because of the recent foot-and-mouth disease (FMD) outbreak, but we tend to leave elephants.*” These capacity constraints were observed as well during an interview at the Malamulele DFED/EA field office, where the office was found to be simple, with only a phone, desk and filing cabinet, but no computer, no photocopier, and surprisingly, no electricity.

Internal relational criticism of the DFED/EA was also prevalent during the interviews. DFED/EA field officers were frustrated with regulations set forth by provincial headquarters regarding the need to acquire permission first from head office before attending to DCA reports. They felt that this obviously inhibited their response time and facilitated lower success rates in tracking and controlling DCA. Similarly, in response to questions about the cooperation between head and district offices, some district level staff contend that “*DFED leadership in Polokwane [Head Office] don’t care about the environment, nor do they have adequate knowledge in this area. For example, when we ask for rifles, they question our need for them. I think that there is a low level of understanding between the directorates which makes for difficulties on both sides. I also believe there are power struggles occurring at Head Office, which means there’s very little help coming to the District level. It’s always difficult when your bosses are fighting.*” In addition, it was noted that staffing changes in the Department are high because there is low support from Head Office, very few incentives for staff, and problems with communication. One staff member expressed his concern that “*There are people who have earned promotions within the Department but have not been moved up because there are just no posts - they only get promissory notes that if a post should open,*

*they'll be considered. This generates very low morale amongst the staff."*

Finally, fundamental criticism was launched by DFED/EA staff at the staffing policies and structural inclusion of Environmental Affairs within the Department of Finance and Economic Development. In one District staff member's words, "*The DFED exists to make money and to finance development, which causes a 'conflict of interest' with Environmental Affairs. To illustrate, Environmental Impact Assessments (EIA) cannot stop any developments from taking place. Moreover, DFED/EA is employing people who do not have a passion for the job, but only want to build their resumes, move on and advance their careers. There is too much movement of people within and out of the department.*" Likewise, one District Manager confessed, "*Environmental Affairs should not be part of this Department as the department is all about gambling and casinos. The Department is very big and has little or no interest in environmental issues. We need to promote more cooperative governance within the provincial government itself, but also with the municipal government and the Traditional Authorities. The way it is now we're not talking to one another. Environmental Affairs should either be a separate department or be merged with another department with more aligned values and mission e.g. water affairs and forestry or agriculture.*"

#### 4.3.4. Summary

In summary, the activities of local government are perceived by most people to be either non-existent or unknown. This low awareness and/or lack of activity in the study area is partly responsible for a low rating on the effectiveness of local government in the rural areas. Responses were influenced primarily by *de jure* Traditional Authority affiliation, although positive responses on the effectiveness of local government were minimal. In contrast, the roles and responsibilities of Traditional Authorities are much better recognized in the area, with respondents stating that their functions are extensive, ranging from provision of residential and agricultural sites, to protecting forests/wild animals and overseeing people's concerns. Moreover, TAs had a much higher approval rating compared to local government by respondents, with approximately 60% of respondents reporting positively overall. Negative responses for both institutions included criticisms of unequal treatment and favoritism, although in both cases these were minimal.

The role of DFED/EA in the rural areas is uncertain and ambiguous. Although it is the primary body responsible for implementing and enforcing LEMA 2003 regulations, its activities are limited. Results indicate that it is the TAs which are *de facto* controlling access

to natural resources and enforcing LEMA 2003, with tribal courts functioning in part to fine transgressors. In addition, there is widespread criticism on the control, or lack thereof, of DCAs by DFED/EA and the withholding of compensation for damages caused by these animals (see also Chapter 7). DFED/EA representatives attribute much of this deficiency to low capacities, although a number also report poor understanding and communication between head office and local district offices as hindering effectiveness. Finally, there are fundamental discrepancies described by some staff concerning the inclusion of Environmental Affairs within a government department responsible for financial and economic development, claiming that an intrinsic conflict of interest exists between the two.

#### **4.4. Resource Use**

##### *4.4.1. Introduction*

Although a number of studies have been undertaken on categorical use of various plants by Tsonga communities, medicinal plant usage along KNP's western border, and the economic value of specific taxa in other rural South African contexts (see chapter 2.9.4), no investigation on the use and relative importance of both wild flora and fauna, nor on landscape units has been carried out previously. By improving understanding on local demands and uses of resources, and the value attached to those resources, conservation agencies are better equipped to engage in CBC initiatives that can incorporate a wider range of possibilities. On the other hand, by neglecting this fundamental information, a knowledge gap is created which may lead to the failure of CBC. This section presents research results regarding resource use and value gained from the community questionnaire, interviews, PDM focus groups, and non-participant observation.

##### *4.4.2. Resource collection patterns*

As part of a community face-to-face questionnaire administered to a random sample of 240 households in the study area, respondents were asked whether they collected various resources, who collected the resource, how much was collected over various time periods, and how long was required per week to collect drinking water and fuelwood (see Table 4.8). Fuelwood and thatch grass are the most frequently collected resource, in terms of percentage of households, and are consistent with similar South African studies (Shackleton *et al.* 2000; Twine *et al.* 2003). To a lesser degree, wild fruit, timber poles and medicinal plants were also collected. Finally one in 20 households collect wild birds for meat, and a minimal number collect flora or fauna for cultural/religious purposes, and wild animals for meat.

Table 4.8: Results to community questionnaire as to whether household members collect various resources.

| Resource                         | % of households |                 |      |                              | N   |
|----------------------------------|-----------------|-----------------|------|------------------------------|-----|
|                                  | collects        | doesn't collect | buys | given by others <sup>a</sup> |     |
| fuelwood                         | 93.3            | 3.8             | 2.5  |                              | 239 |
| thatch grass                     | 78.3            | 17.9            | 3.8  |                              | 240 |
| wild fruit                       | 34.6            | 65.4            |      |                              | 240 |
| timber poles                     | 18.8            | 81.3            |      |                              | 240 |
| medicinal plants                 | 11.7            | 88.3            |      |                              | 240 |
| wild birds for meat              | 5.0             | 95.0            |      |                              | 240 |
| flora/fauna for culture/religion | 3.3             | 96.7            |      |                              | 240 |
| wild animals for meat            | 1.3             | 97.5            |      | 1.2                          | 240 |

<sup>a</sup> two respondents noted that meat from wild animals had been distributed by KNP; one respondent similarly claimed meat had been received from the local *hosi*.

It was assumed that all households obtain drinking water, although it was important to know the source of their supplies. Categories for drinking water sources were adapted from Census 2001, although respondents could, if needed, indicate new categories or multiple sources (Figure 4.13). The majority of households source their drinking water from either taps within household yards, or from community stands, often queuing > 200m from the household (Figure 4.14).

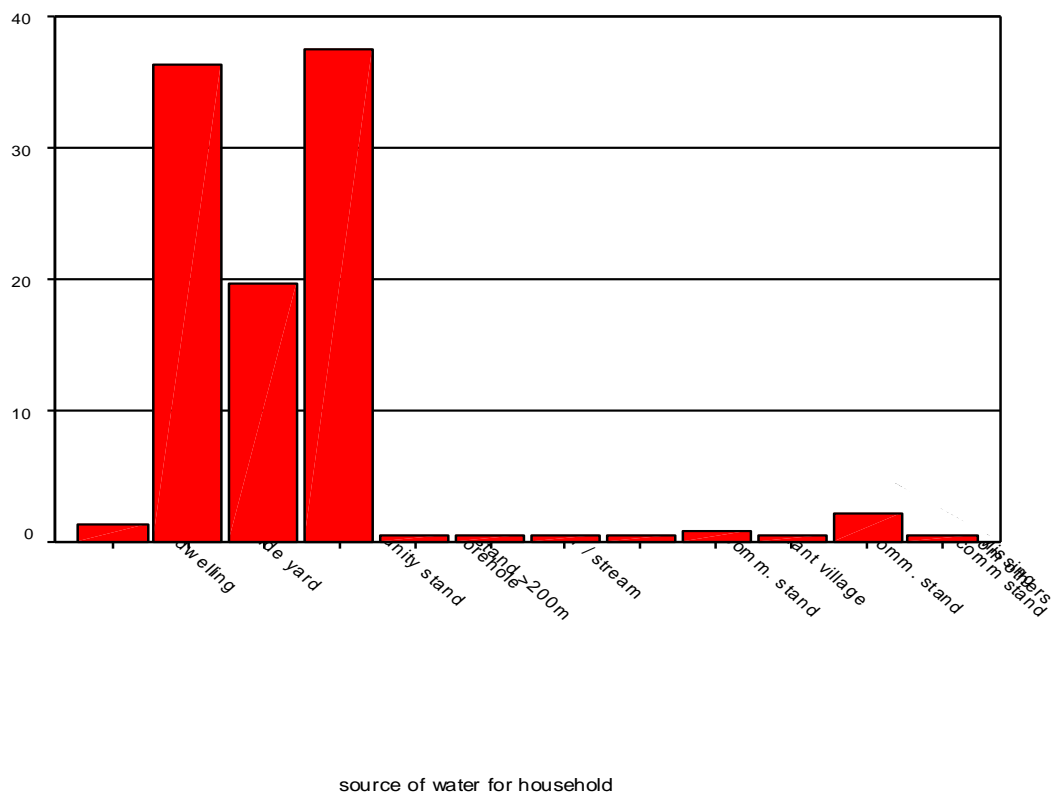


Figure 4.13: Bar graph showing source of drinking water for sampled households (N=240)



Figure 4.14: Queuing for water at a community stand in Nkavele village.

According to Department of Water Affairs and Forestry (DWA) Free Basic Water Services<sup>23</sup> service levels, 42.2% of the sampled households have either no infrastructure or are below RDP standard (Table 4.9).

Table 4.9: Percentage of sampled households within various DWA water service levels.

| Service Level            | Description   | % of households in sample |
|--------------------------|---|---------------------------|
| <i>No Infrastructure</i> | Household has no access to any infrastructure i.e. those people that still drink unsafe water from a dam, spring, river or stream.  | 3.3                       |
| <i>Below RDP</i>         | Household has access to infrastructure but at a BELOW RDP standard e.g. Standpipe > 200m  | 38.9                      |
| <i>At RDP</i>            | The infrastructure necessary to supply 25 litres of potable water per person per day supplied within 200 metres of a household and with a minimum flow of 10 litres per minute (in the case of communal water points) or 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections). | 20.1                      |
| <i>Above RDP</i>         | Household have access to 'in-house' or 'in-yard' water supply connections.  | 37.7                      |

An estimation of resource quantities was also gathered through the questionnaire, and descriptive statistical results are presented in Table 4.10. Exact quantities were difficult to obtain, so respondents were asked to provide estimates based on e.g. headloads of fuelwood

<sup>23</sup> Part of South Africa's DWA vision is to 'ensure that water services are provided to all South Africans in an efficient, cost-effective and sustainable way'. This includes a commitment to provide 6000 litres/household/month of free water for basic needs, in part through infrastructure development. Details and implementation status can be found at departmental web site at <http://www.dwaf.gov.za>

per week (Figure 4.15), or number of 20 litre water containers per week. Final calculations were based on these figures (see also footnotes in Table).

Table 4.10: Descriptive statistics of quantity of various resources collected and used by sampled households

| Resource                  | Unit                      | Time period | N   | Mean    | S.D.    |
|---------------------------|---------------------------|-------------|-----|---------|---------|
| water                     | litres                    | weekly      | 188 | 902.3   | 692.92  |
| fuelwood                  | cubic metres <sup>a</sup> | weekly      | 225 | 0.2902  | .36397  |
| thatch grass              | bundles <sup>b</sup>      | annually    | 228 | 1291.71 | 1541.60 |
| timber construction poles | number                    | annually    | 228 | 17.71   | 82.799  |

<sup>a</sup> Fuelwood amounts were given by respondents as ‘headload’ or ‘bakkie load’ per week. Based on personal observation, headloads averaged 0.141 m<sup>3</sup>, and were multiplied by a headload conversion factor of 0.375 to give a total volume of 0.053 m<sup>3</sup>. Bakkie loads were considered to have an average of 17.5 headloads yielding a mean of 0.928 m<sup>3</sup> per load. See FAO (1983) for more information on calculating fuelwood volume.

<sup>b</sup> Thatch grass is commonly collected in ‘bundles’ in the rural areas, and are approximately 1 m long and 15-20 cm in diameter. Responses were given as either number of individual bundles or roofs needed to be thatched per year (average=1500 bundles/roof). See also Figure 4.16.



Figure 4.15: Woman carrying ‘headload’ of fuelwood near Khakhala village.

Although a wide variation in quantities collected for each of the resources was observed, households’ average weekly consumption of water and fuelwood is approximately 900 litres and 0.3 m<sup>3</sup>, respectively. This translates into over 3910 litres of water being utilized per household on a monthly basis. This consumption level falls well under South Africa’s DWAF entitlement of 6000 litres/household/month of free water for basic needs.





Figure 4.16: Traditional Tsonga hut being constructed in Mahlathi village. Roofs are assembled from timber poles and ‘bundles’ of thatch grass.

Likewise, annual household fuelwood use for the entire study area averages  $15.09 \text{ m}^3$ . If one uses a conversion factor of  $1 \text{ tonne (t)} = 1.39 \text{ m}^3$  for converting fuelwood volume to mass<sup>24</sup>, then this is equivalent to approximately  $10.86 \text{ t/household/year}$ . This figure is higher than the range of annual household consumption of  $4.7 - 8.4 \text{ t}$  reported in Bembridge and Tarlton (1990), and  $2.993 - 8.468 \text{ t}$  by Shackleton and Shackleton (2004). This difference may be explained by error in the conversion factor, but most probably is due to the fact that fuelwood and woodlands in general were scarcer in their study sites.

Rural users of resources face many constraints on how they allocate their time between procuring and using resources, and carrying out other activities. Divisions of labour and relative time investments in collecting resources are thus important in understanding the relationship between people and their environment. This research analyzed household labour distribution for four resources, i.e. water, fuelwood, thatch grass, and timber poles. As thatch grass and timber pole collection are seasonally dependent, time investment analysis was restricted to water and fuelwood collection only.

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<sup>24</sup> According to FAO (1983), this conversion factor can be used for tropical fuelwood species assumed to be air dry (15% moisture content). Personal observation of fuelwood collected was that the majority was dead branches and twigs and, thus, largely falls into this category.

From the study sample, responsibility for both water and fuelwood collection lies primarily with women and/or children (Figures 4.17 and 4.18). Men were solely responsible for water collection in only 3.8% of sampled households, and shared the responsibility in a further 7.7% of the households. Similarly, men were the sole fuelwood collectors in only 2.3% of the households sampled and shared the task in 2.7% of households. Although women and/or children primarily undertook thatch grass collection, men are more involved, contributing in 40.2% of households sampled. Finally, men are predominantly responsible for collecting timber poles for construction, being the sole collectors in 88.6% of households, and sharing the responsibility in a further 4.6% of the households.

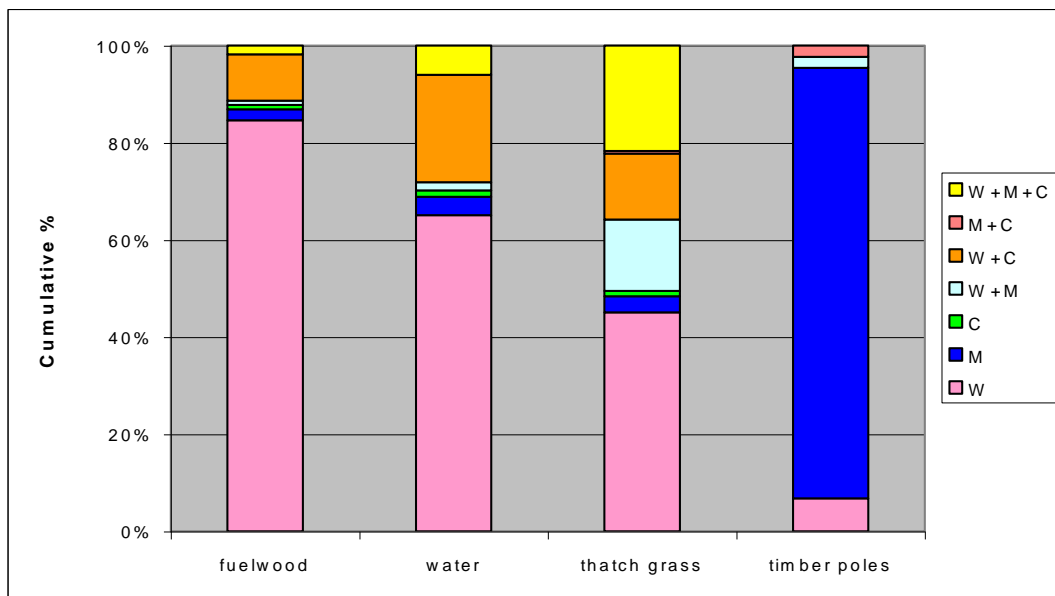


Figure 4.17: Stacked bar graph showing labour division in resource collection (W=women, M=men, C=children)



Figure 4.18: Women and children collecting fuelwood in Peninghotsa village.



Weekly collection times of water and fuelwood per household are illustrated in Figure 4.19. Mean water collection time was 8.54 hours (S.D.=10.219), whilst mean time for fuelwood collection was 10.73 hours (S.D.=11.791). Thus, for only these two resources, combined collection times averaged almost 20 hours per week per household.

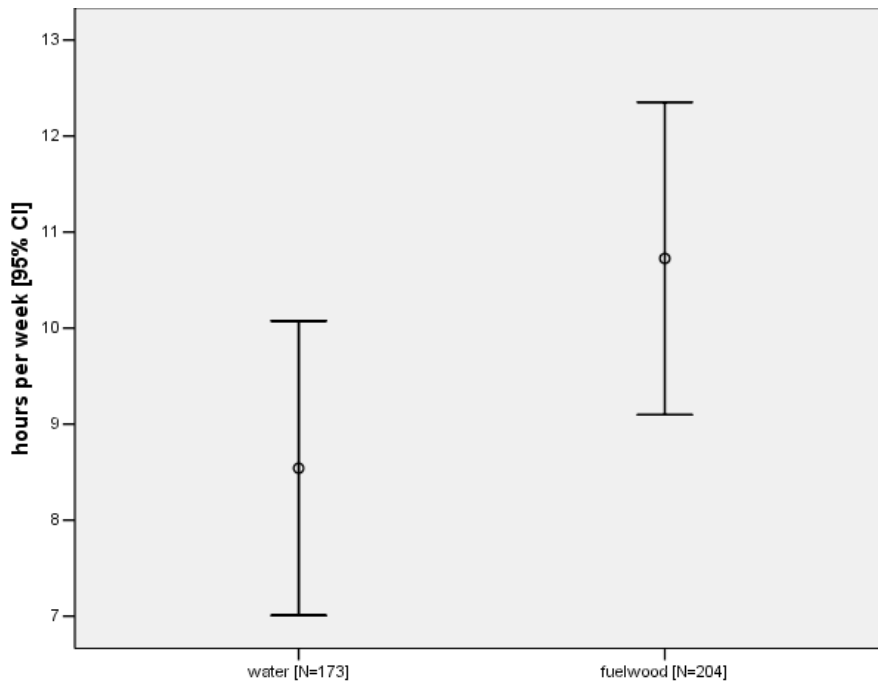


Figure 4.19: Bar graph showing time taken per week to collect water and fuelwood by sampled households.

#### 4.4.3. Landscape units

One objective of this research was to assess the importance of landscape units to local communities. Landscape units were identified through consultation with local TA personnel and high school biology teachers. The PDM method (see chapter 3.3.6) was conducted in three villages in the study area, varying in geographical location: Maphophe (north), Peninghotsa (central), and Ndindani (south). Three PDM focus groups were carried out in each village over a period of three days. Groups comprised men 35+ yrs of age, women 35+ yrs of age, and mixed gender upper high school students. All sessions were conducted in local schools and employed a local translator/assistant. The nine PDM sessions involved a total of 58 participants including 18 high school students (9 male; 9 female; mean age=17.6; range=15-20), 22 men  $\geq$  35 yrs of age (mean age=52.7; range=35-89) and 18 women  $\geq$  35 yrs of age (mean age=43.8; range=36-60, with two ages unknown).

There are two primary factors which this research addressed with respect to landscape unit importance. The first is the relative role that landscape units play in providing wild resources

that contribute to fulfilling a community’s livelihood needs for food, drink, fuelwood, medicine, etc. The second is how important each of the resource categories is believed to contribute to a community’s overall well being. These questions were addressed simultaneously within the PDM exercises. In the first stage participants were asked as a group to assess, by distributing 100 beans among labeled cards (see Figure 4.20), the importance of identified landscape units in meeting their livelihood needs according to each of the following use categories described in Table 4.11.

Table 4.11: Description of resource use categories identified in research and utilized in PDM focus group exercises.

| Use Category                        | Description   |
|-------------------------------------|---|
| A. Food – <u>wild</u> flora & fauna | Primary and secondary food from wild plants and animals; famine food (incl. wild fruits, honey, wild birds, fish, game, etc.) |
| B. Drink                            | Drinks/teas/beer/wine made from wild plants   |
| C. Fuelwood                         | Used for fire   |
| D. Medicine                         | Medicinal and health-related  |
| E. Construction                     | Plant parts used for building huts, fences, kraals  |
| F. Utensils & tools                 | Plant parts used for tools in agriculture, utensils   |
| G. Ornaments / religious            | Wild plant and animal parts used in ceremony, dress, jewelry, musical instruments   |
| H. Recreation                       | Resources used for recreation, games, fun   |



Figure 4.20: High school group in Peninghotsa village ‘distributing beans’ in PDM exercise.

Secondly, participants were required to assign a relative weighting to each of the eight resource use categories according to how important these elements are in sustaining livelihoods. The mean relative importance values of both landscape units and resource categories were then multiplied to provide a weighted landscape unit importance score. Final weighted relative importance scores for each age/gender group and village are illustrated in Figures 4.21 and 4.22 below.

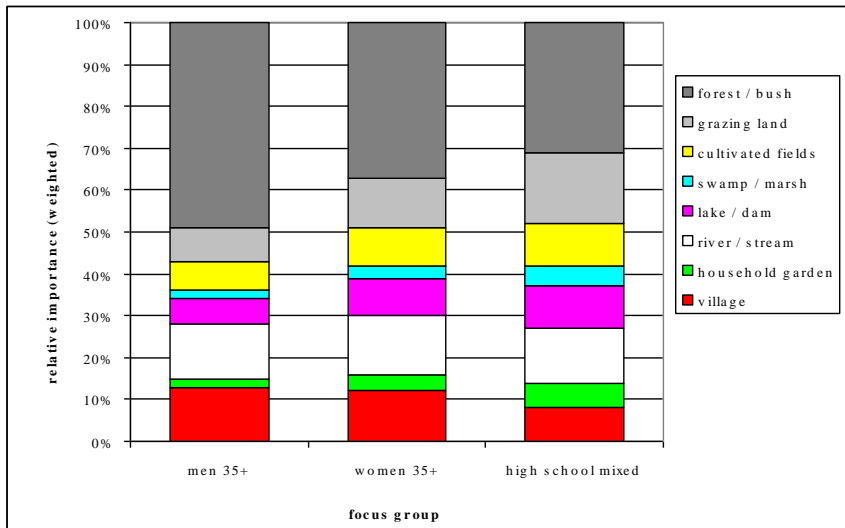


Figure 4.21: Weighted relative importance of various landscape units to community livelihood per age/gender group.

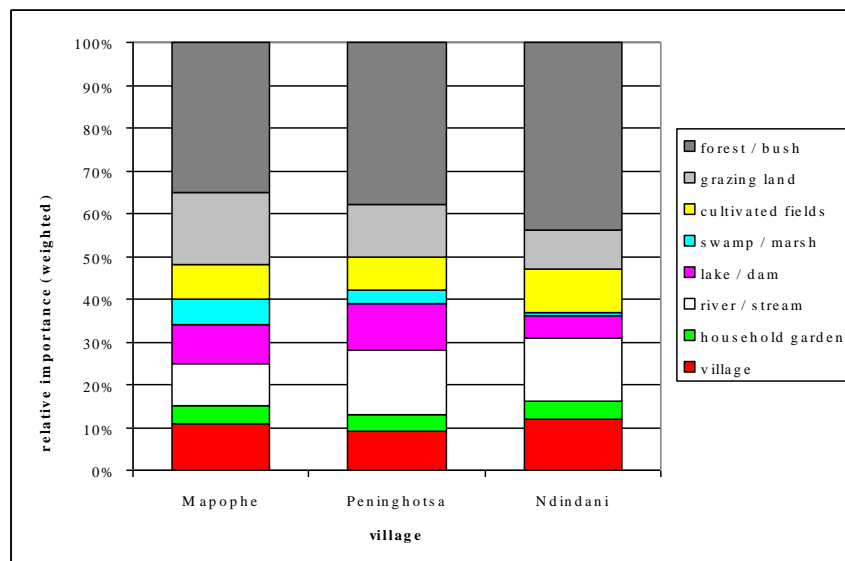


Figure 4.22: Weighted relative importance of various landscape units to community livelihood per village group.

One way ANOVA was employed to test whether differences exist between mean scores of the various landscape units between a) villages and b) age/gender groups. A significant difference was found between village scores for the swamp/marsh category ( $F=5.049$ ,  $p=0.009$ ). Tukey HSD post hoc tests determined that a significant difference exists only between Maphophe and Ndindani villages (Mean Difference=4.51000, S.E.=1.43134,  $p=0.007$ ). This difference is further explained by analysing the mean % importance by various use categories towards the swamp/marsh landscape unit, before factoring for the relative weight of resource use categories. Figure 4.23 shows that Maphophe village utilizes swamp/marsh significantly more than the other two sites for three categorical uses, namely for drink (wild flora), utensils and tools, and ornamental and religious purposes.

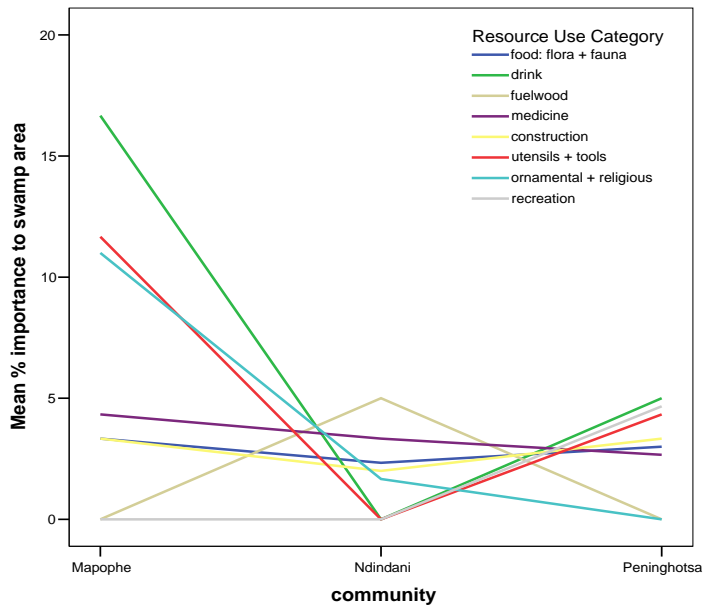


Figure 4.23: Line graph showing mean percent importance by community of various resource use categories fulfilled by the swamp/marsh landscape unit.

Likewise, ANOVA revealed that a significant difference in means is found between age/gender groups with respect to importance of grazing land ( $F=3.986$ ,  $p=0.023$ ), and this difference lies between the men 35+ and high school mixed groups (Mean Difference=9.73000, S.E.=3.44593,  $p=0.017$ ). To determine the source of this difference in terms of resource use categories, mean % scores by the high school mixed group are higher for all use categories, except for ‘ornamental/religious’ (Figure 4.24).

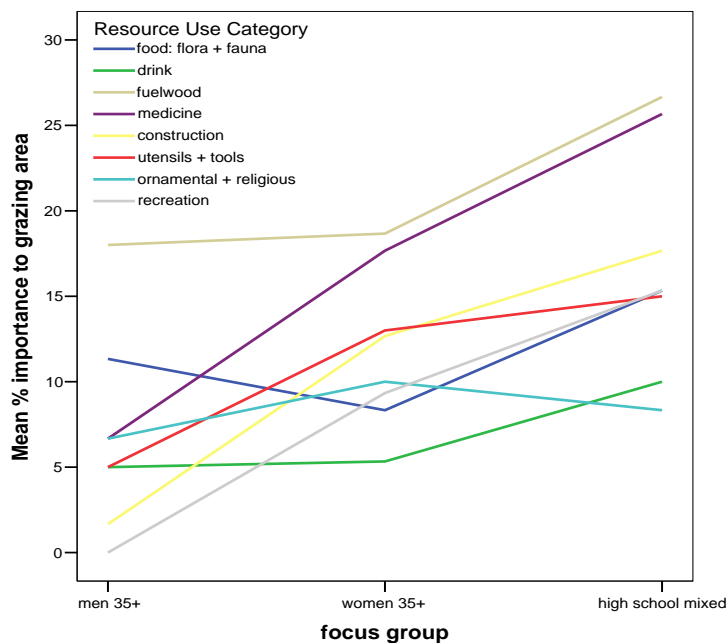


Figure 4.24: Line graph showing mean percent importance by age/gender group of various resource use categories fulfilled by the grazing area landscape unit.

Finally, in order to understand the overall relative importance for all landscape units and resource use categories identified in the PDM exercises, mean values for both village and age/gender groups were combined. Figure 4.25 summarizes this analysis and, in the last column, also illustrates the total relative importance of each landscape unit to sustaining livelihoods in the three villages studied.

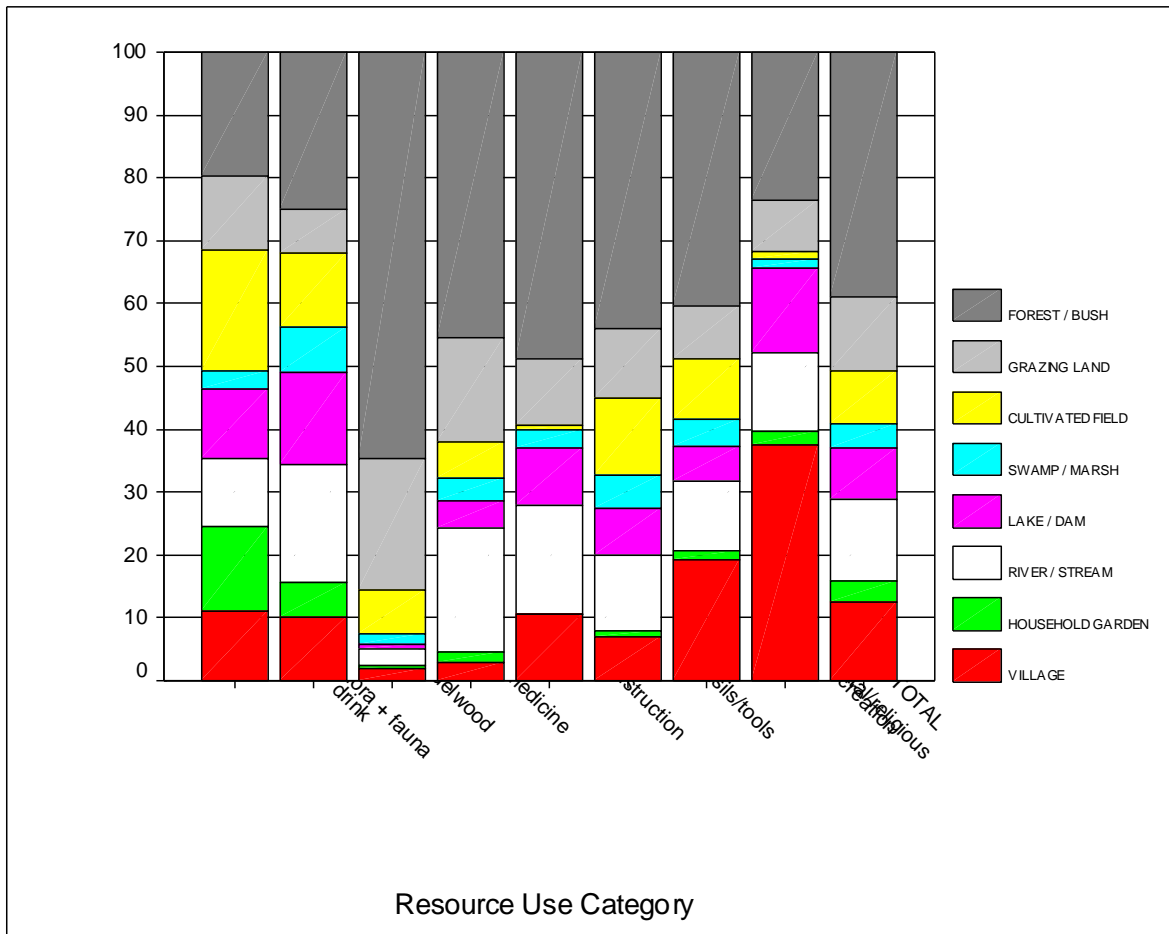


Figure 4.25: Bar graph showing relative importance assigned to landscape units per resource use category for Maphophe, Peninghotsa and Ndindani villages.

A number of observations can be drawn from these results. Firstly, all landscape units contribute to each resource use category in some way except for one, i.e. the household garden was not considered by any group to contribute to construction needs. Secondly, there is variation between villages and between age/gender groups regarding the perception of how landscape units contribute to sustaining community livelihoods. In some cases, this variation has been shown to be significant. Thirdly, the relative importance of forest/bush and river/stream habitats cannot be underestimated, as this research revealed that these landscape units contribute 38.9% and 13.1%, respectively in terms of importance, in supplying wild natural resources necessary to sustain these local communities.

#### 4.4.4. Flora and fauna

The final component of the PDM exercises involved asking participants to list a maximum of 10 species/taxa they know to be locally used for each of the eight resource use categories (see Table 4.11). They were then instructed, again by distributing 100 beans to cards labeling these species, to assess the relative importance of each of these species/taxa to the specified resource use (see chapter 3.3.6 for more detailed information on methodology). A list was compiled combining the total  $U_{sc}$  scores of all nine PDM exercises for each species/taxa, across all resource use categories (Table 4.12 and Appendix J).

In total, 162 taxa were identified, with 94 taxa being used in one use category and two taxa utilized in up to seven categories (marula, *Sclerocarya birrea caffra*; fig, *Ficus* spp.). Marula, leadwood (*Combretum imberbe*), and mopane (*Colophospermum mopane*) were the most highly valued species amongst the PDM participants, contributing 22.4% to the overall value of wild flora and fauna in the area. Indeed, over one half of local biodiversity value is tied up in only 18 taxa, comprising 16 flora and two fauna species (mopane caterpillar, *Imbrasia bellina*; leopard, *Panthera pardus*). Also noteworthy are mopane caterpillar (see Figure 4.26) and blue buffalo grass (*Cenchrus ciliarus*) which, although being utilized in only one resource use category, are particularly highly valued locally with LUVct scores of 0.01966 and 0.01161, respectively.



Figure 4.26: Pails of dried mopane caterpillars (*Imbrasia bellina*) being sold for food along roadside near Giyani.

Table 4.12: Ranking of combined total Local Users Value (LUVct) and resource categories (ResCat) for all taxon identified in PDM focus groups.

|    | <b>XiTsonga-Shangaan</b> | <b>English</b>                 | <b>Latin</b>                            | <b>ResCat †</b> | <b>LUVct</b> | <b>Cumul. %</b> |
|----|--------------------------|--------------------------------|---|-----------------|--------------|-----------------|
| 1  | nkanyi                   | marula                         | <i>Sclerocarya birrea caffra</i>        | 7               | 0.09591      |                 |
| 2  | mondzo                   | leadwood                       | <i>Combretum imberbe</i>                | 6               | 0.06836      |                 |
| 3  | xanatsi                  | mopane                         | <i>Colophospermum mopane</i>            | 6               | 0.05932      |                 |
| 4  | nkaye                    | knob thorn                     | <i>Acacia nigrescens</i>                | 5               | 0.03883      |                 |
| 5  | ntoma                    | jackal berry                   | <i>Diospyros mespiliformis</i>          | 6               | 0.03582      |                 |
| 6  | xikukutsi                | velvet bushwillow              | <i>Combretum molle</i>                  | 4               | 0.02532      |                 |
| 7  | lala                     | lala palm                      | <i>Hyphaene coriacea</i>                | 3               | 0.02477      |                 |
| 8  | nkuwa                    | fig                            | <i>Ficus</i> spp.                       | 7               | 0.02170      |                 |
| 9  | matamani / masonja       | mopane caterpillar             | <i>Imbrasia bellina</i>                 | 1               | 0.01966      |                 |
| 10 | xikhavi                  | red bushwillow                 | <i>Combretum apiculatum</i>             | 5               | 0.01932      | <b>40.9</b>     |
| 11 | konono                   | silver cluster-leaf            | <i>Terminalia sericea</i>               | 5               | 0.01698      |                 |
| 12 | tsengele                 | sour plum                      | <i>Ximenia caffra</i>                   | 3               | 0.01667      |                 |
| 13 | yingwe                   | leopard                        | <i>Panthera pardus</i>                  | 3               | 0.01544      |                 |
| 14 | nkuhlu                   | Natal mahogany                 | <i>Trichilia emetica</i>                | 5               | 0.01293      |                 |
| 15 | xitsalala                | transvaal gardenia             | <i>Gardenia volkensii spatulifolia</i>  | 2               | 0.01259      |                 |
| 16 | nkwakwa                  | black monkey orange            | <i>Strychnos madagascariensis</i>       | 5               | 0.01210      |                 |
| 17 | papa / mbavani?          | blue buffalo grass             | <i>Cenchrus ciliaris</i>                | 1               | 0.01161      |                 |
| 18 | sihami                   | sandpaper raisin               | <i>Grewia flavescens flavescens</i>     | 5               | 0.01144      |                 |
| 19 | mhala                    | impala                         | <i>Aepyceros melampus</i>               | 3               | 0.01102      |                 |
| 20 | xipene                   | steenbok                       | <i>Raphicerus campestris</i>            | 3               | 0.01095      | <b>54.1</b>     |
| 21 | ndzengha                 | sickle bush                    | <i>Dichrostachys cinerea</i>            | 2               | 0.01093      |                 |
| 22 | nyarhi                   | Cape buffalo                   | <i>Syncerus caffer</i>                  | 3               | 0.01073      |                 |
| 23 | biligomo                 | blue gum tree                  | <i>Eucalyptus</i> spp.                  | 3               | 0.01061      |                 |
| 24 | xipalatsi / xilutsi      | zebra-wood                     | <i>Dalbergia melanoxylon</i>            | 4               | 0.01002      |                 |
| 25 | mpfilwa                  | wild medlar                    | <i>Vangueria infausta</i>               | 2               | 0.00971      |                 |
| 26 | mhangani                 | mountain aloe                  | <i>Aloe marlothii marlothii</i>         | 1               | 0.00944      |                 |
| 27 | vurivata                 | false marula                   | <i>Lannea schweinfurthi stuhlmannii</i> | 3               | 0.00942      |                 |
| 28 | xivupfi                  | red grass                      | <i>Themeda triandra</i>                 | 1               | 0.00923      |                 |
| 29 | nhongo                   | kudu                           | <i>Tragelaphus strepsiceros</i>         | 3               | 0.00891      |                 |
| 30 | xikwenga                 | sisal                          | <i>Agave sisalana</i>                   | 3               | 0.00858      | <b>63.8</b>     |
| 31 | tlhongwe / deke          | common thatching grass         | <i>Hyparrhenia</i> spp.                 | 1               | 0.00856      |                 |
| 32 | tuva                     | dove                           | <i>Columbidae</i> family                | 1               | 0.00845      |                 |
| 33 | mhlahlu                  | reed                           | <i>Cyperus textilis</i>                 | 2               | 0.00844      |                 |
| 34 | Nyiya / nyiri            | brown ivory                    | <i>Berchemia discolor</i>               | 1               | 0.00839      |                 |
| 35 | tinjiya / xitsotso       | grasshopper / locust           | <i>Acrididae</i> family                 | 1               | 0.00833      |                 |
| 36 | lumanyama                | Sjambok pod                    | <i>Cassia abbreviata beareana</i>       | 1               | 0.00800      |                 |
| 37 | nhlanga                  | reed                           | <i>Phragmites</i> spp.                  | 4               | 0.00787      |                 |
| 38 | mhuti                    | common duiker                  | <i>Sylvicapra grimmia</i>               | 3               | 0.00785      |                 |
| 39 | khalavatla               | wild watermelon                | <i>Citrullus lanatus</i>                | 2               | 0.00777      |                 |
| 40 | ndlopfu                  | African elephant               | <i>Loxodonta africana</i>               | 3               | 0.00705      | <b>71.9</b>     |
| 41 | majekejeke               | reed                           | <i>Cyperus latifolius</i>               | 3               | 0.00669      |                 |
| 42 | mbulwa                   | mobola plum                    | <i>Parinari curatellifolia</i>          | 2               | 0.00657      |                 |
| 43 | chugulu / nchungulu      | simple-spined/climbing num-num | <i>Carissa edulis</i>                   | 2               | 0.00656      |                 |
| 44 | xenhe                    | pod mahogany                   | <i>Azelia quanzensis</i>                | 2               | 0.00640      |                 |
| 45 | xipapi                   |                                | <i>Cucumis</i> spp.                     | 2               | 0.00636      |                 |
| 46 | xifata                   | common corkwood                | <i>Commiphora pyracanthoides</i>        | 3               | 0.00614      |                 |
| 47 | simba                    | large-spotted genet            | <i>Genetta tigrina</i>                  | 2               | 0.00590      |                 |
| 48 | demo                     |                                | <i>Coccinia</i> spp.                    | 2               | 0.00584      |                 |
| 49 | mpfundla                 | scrub hare                     | <i>Lepus saxatilis</i>                  | 1               | 0.00556      |                 |
| 50 | hlangula                 | magic guarri                   | <i>Euclea divinorum</i>                 | 3               | 0.00539      | <b>78.0</b>     |
| 51 | ndzopfura                | tamboti                        | <i>Spirostachys africanus</i>           | 3               | 0.00531      |                 |



|     |                     |                      |  |   |         |             |
|-----|---------------------|----------------------|--|---|---------|-------------|
| 52  | bawuri              | catfish              | <i>Clarias</i> spp.                      | 1 | 0.00515 |             |
| 53  | sasani              | scented thorn        | <i>Acacia nilotica kraussiana</i>        | 2 | 0.00503 |             |
| 54  | mbhandzu            | apple-leaf           | <i>Lonchocarpus capassa</i>              | 2 | 0.00492 |             |
| 55  | mhangele            | guinea fowl          | <i>Numida meleagris</i>                  | 2 | 0.00490 |             |
| 56  | mthavatsindi        | yellow peeling plane | <i>Brackenridgea zanguebarica</i>        | 1 | 0.00480 |             |
| 57  | chochela mandleni   | weeping boer-bean    | <i>Schotia brachypetala</i>              | 1 | 0.00467 |             |
| 58  | mhisi               | spotted hyena        | <i>Crocuta crocuta</i>                   | 2 | 0.00464 |             |
| 59  | molele              | common false-thorn   | <i>Albizia harveyi</i>                   | 1 | 0.00459 |             |
| 60  | mvuva               | variable bushwillow  | <i>Combretum collinum</i>                | 1 | 0.00448 | <b>82.9</b> |
| 61  | xihlampfurhana      | castor oil plant     | <i>Ricinus communis</i>                  | 1 | 0.00443 |             |
| 62  | gedlhe              | carp                 | <i>Cyprinus carpio</i>                   | 1 | 0.00423 |             |
| 63  | mangwa              | plains zebra         | <i>Equus burchelli</i>                   | 3 | 0.00399 |             |
| 64  | nhlarhu             | African rock python  | <i>Python sebae</i>                      | 1 | 0.00391 |             |
| 65  | tshwukelano         |                      |  | 1 | 0.00389 |             |
| 66  | ncindzu             | wild date palm       | <i>Phoenix reclinata</i>                 | 2 | 0.00375 |             |
| 67  | mpotsa              | russet bushwillow    | <i>Combretum hereroense</i>              | 3 | 0.00362 |             |
| 68  | guvazwivi           | jacket plum          | <i>Pappea capensis</i>                   | 1 | 0.00360 |             |
| 69  | xilungwa            | spear grass          | <i>Heteropogon contortus</i>             | 1 | 0.00351 |             |
| 70  | majenje / titshwa   | termites             | <i>Macrotermes</i> spp.                  | 1 | 0.00338 | <b>86.7</b> |
| 71  | nghala              | lion                 | <i>Panthera leo</i>                      | 2 | 0.00328 |             |
| 72  | ncecenyi            | buffalo thorn        | <i>Ziziphus mucronata</i>                | 3 | 0.00325 |             |
| 73  | xihlangwa           | common spike-thorn   | <i>Gymnosporia buxifolia</i>             | 2 | 0.00322 |             |
| 74  | mhalamhala          | sable antelope       | <i>Hippotragus niger niger</i>           | 2 | 0.00320 |             |
| 75  | rhonge              | snuffbox tree        | <i>Oncoba spinosa</i>                    | 2 | 0.00309 |             |
| 76  | nsala               | green monkey orange  | <i>Strychnos spinosa</i>                 | 3 | 0.00306 |             |
| 77  | yembe               | wild custard-apple   | <i>Annona senegalensis</i>               | 2 | 0.00305 |             |
| 78  | muobadali           | woolly caper bush    | <i>Capparis tomentosa</i>                | 1 | 0.00300 |             |
| 79  | nsihani             | silver raisin        | <i>Grewia monticola</i>                  | 4 | 0.00298 |             |
| 80  | miyatahu            | round-leaved teak    | <i>Pterocarpus rotundifolia</i>          | 3 | 0.00286 | <b>89.8</b> |
| 81  | xibaha              | pepper-bark tree     | <i>Warburgia salutaris</i>               | 1 | 0.00280 |             |
| 82  | mpfimba hongonyi    | tree wisteria        | <i>Bolusanthus speciosus</i>             | 2 | 0.00278 |             |
| 83  | ndhungulu           | tilapia              | <i>Cichlidae</i> family                  | 1 | 0.00270 |             |
| 84  | n'wambu             | lowveld milkberry    | <i>Manilkara mochisia</i>                | 1 | 0.00270 |             |
| 85  | gotso               |                      | <i>Oxytenanthera abyssinica?</i>         | 1 | 0.00244 |             |
| 86  | xuva                | weeping wattle       | <i>Peltophorum africanum</i>             | 2 | 0.00242 |             |
| 87  | xigalaphasi         |                      |  | 1 | 0.00240 |             |
| 88  | yinca / yimbhu      | ostrich              | <i>Sruthio camelus</i>                   | 2 | 0.00234 |             |
| 89  | swinyiyani          | red ivory            | <i>Berchemia zeyheri</i>                 | 1 | 0.00233 |             |
| 90  | mponwani            | snot berry           | <i>Cordia ovalis</i>                     | 2 | 0.00233 | <b>92.3</b> |
| 91  | phaphatani          | blue water lily?     | <i>Nymphaea nouchali caerulea</i>        | 1 | 0.00227 |             |
| 92  | xisasa vafi         | sumach bean?         | <i>Elephantorrhiza burkei</i>            | 1 | 0.00220 |             |
| 93  | nkorho              | hornbill             | <i>Tockus</i> spp.                       | 1 | 0.00217 |             |
| 94  | xowoloti / xojowa   | kudu berry           | <i>Pseudolachnostylis maprouneifolia</i> | 1 | 0.00211 |             |
| 95  | milala              |                      | <i>Cyperus</i> spp.                      | 2 | 0.00208 |             |
| 96  | mkombego            | sand crown-berry     | <i>Crossopteryx febrifugia</i>           | 1 | 0.00207 |             |
| 97  | mdlheve             | dead-man's tree      | <i>Synadenium cupulare</i>               | 1 | 0.00200 |             |
| 98  | mahudinga / nxakama | shakama plum         | <i>Hexalobus monopetalus</i>             | 1 | 0.00199 |             |
| 99  | mhungubye           | black-backed jackal  | <i>Canis mesomelas</i>                   | 1 | 0.00178 |             |
| 100 | mbhovhu             | Cape chestnut        | <i>Calodendrum capense</i>               | 2 | 0.00177 | <b>94.4</b> |
| 101 | muhimbi             | lowveld mangosteen   | <i>Garcinia livingstonei</i>             | 1 | 0.00173 |             |
| 102 | futsu               | leopard tortoise     | <i>Testudo pardalis</i>                  | 1 | 0.00167 |             |
| 103 | dededede            | Zulu round potato    | <i>Solenostemon rotundifolius ?</i>      | 1 | 0.00163 |             |
| 104 | visangasi           | kei-apple            | <i>Dovyalis caffra</i>                   | 1 | 0.00160 |             |
| 105 | nwharhi             | francolin            | <i>Francolinus</i> spp.                  | 1 | 0.00155 |             |
| 106 | nandzani            | caracal              | <i>Caracal caracal</i>                   | 1 | 0.00152 |             |
| 107 | mbavala             | bushbuck             | <i>Tragelaphus scriptus</i>              | 2 | 0.00149 |             |
| 108 | xikwenga nova       | bowstring hemp       | <i>Sansevieria hyacinthoides</i>         | 2 | 0.00144 |             |



|     |                         |                          |   |              |                  |              |
|-----|-------------------------|--------------------------|---|--------------|------------------|--------------|
| 109 | hlapfu                  | knobbly fig              | <i>Ficus sansibarica</i>                  | 1            | 0.00139          |              |
| 110 | xidzidzi                | honey badger             | <i>Mellivora capensis</i>                 | 1            | 0.00139          | <b>95.9</b>  |
| 111 | xinungumafi             | white resin tree         | <i>Ozoroa engleri</i>                     | 2            | 0.00139          |              |
| 112 | swidongodi              | sphinx moth caterpillar  | <i>Sphingidae</i> family                  | 1            | 0.00139          |              |
| 113 | mpetso                  | feather climber          | <i>Acridocarpus natalitius</i>            | 1            | 0.00133          |              |
| 114 | ntinta                  | large hook-berry         | <i>Artabotrys brachypetalus</i>           | 1            | 0.00133          |              |
| 115 | tsovoloti               | climbing cactus          | <i>Cissus quadrangularis</i>              | 1            | 0.00133          |              |
| 116 | xirhungulu              | red spike-thorn          | <i>Gymnosporia senegalensis</i>           | 1            | 0.00133          |              |
| 117 | xilopye                 |                          |   | 1            | 0.00133          |              |
| 118 | hunga                   | eel                      | <i>Anguillidae</i> family                 | 1            | 0.00130          |              |
| 119 | dzimba / xikakaka       | cheetah                  | <i>Acinonyx jubatus</i>                   | 1            | 0.00122          |              |
| 120 | tsumbula                | African osage orange     | <i>Maclura africana</i>                   | 1            | 0.00120          | <b>97.3</b>  |
| 121 | nkowankowa              | white thorn              | <i>Acacia polyacantha</i>                 | 1            | 0.00111          |              |
| 122 | khutla                  | African bullfrog         | <i>Pyxicephalus adspersus</i>             | 1            | 0.00108          |              |
| 123 | mavungwa                | wild apricot             | <i>Landolphia kirkii</i>                  | 1            | 0.00107          |              |
| 124 | ximuwi / ximovu         | baobab                   | <i>Adansonia digitata</i>                 | 1            | 0.00102          |              |
| 125 | ndloti                  | serval cat               | <i>Leptailurus serval</i>                 | 1            | 0.00098          |              |
| 126 | nulu / midley<br>nlovu? | green thorn / torchwood  | <i>Balanites maughamii</i>                | 1            | 0.00093          |              |
| 127 | guxi                    |                          | <i>Corchorus tridens</i>                  | 1            | 0.00093          |              |
| 128 | michikwani              | korhaan                  | <i>Eupodotis</i> spp.                     | 1            | 0.00093          |              |
| 129 | mongovo                 | mongoose                 | <i>Mongoose</i> spp.                      | 2            | 0.00091          |              |
| 130 | hleti                   | greater cane rat         | <i>Thryonomys swinderianus</i>            | 1            | 0.00090          | <b>98.2</b>  |
| 131 | thyeke                  | common pigweed           | <i>Amaranthus thunbergii</i>              | 1            | 0.00087          |              |
| 132 | nsuluwani               |                          | <i>Urginea altissima</i> ?                | 1            | 0.00086          |              |
| 133 | dokomela                |                          |   | 1            | 0.00080          |              |
| 134 | kolokotso               | camel's foot             | <i>Piliostigma thonningii</i>             | 1            | 0.00078          |              |
| 135 | ndawani                 |                          |   | 1            | 0.00073          |              |
| 136 | nsimbisi                | Lebombo ironwood         | <i>Androstachys johnsonii</i>             | 1            | 0.00071          |              |
| 137 | bangala                 | African cabbage          | <i>Cleome gynandra</i>                    | 1            | 0.00068          |              |
| 138 | nsasani                 | umbrella thorn           | <i>Acacia tortilis</i>                    | 1            | 0.00067          |              |
| 139 | njunju                  | mountain mahogany        | <i>Entandrophragma caudata</i>            | 1            | 0.00067          |              |
| 140 | maxinjani / xindzi      | tree squirrel            | <i>Paraxerus cepapi</i>                   | 1            | 0.00067          | <b>99.0</b>  |
| 141 | mbhela                  | evergreen grape          | <i>Rhoicissus tomentosa</i>               | 1            | 0.00067          |              |
| 142 | kanjwa                  |                          |   | 1            | 0.00067          |              |
| 143 | ndangula                | grass                    |   | 1            | 0.00067          |              |
| 144 | rixotse / rixoto        |                          | <i>Cocculus hirsutus</i>                  | 1            | 0.00062          |              |
| 145 | nkwahle                 | savannah monitor         | <i>Varanus exanthematicus</i>             | 1            | 0.00062          |              |
| 146 | hanga/nala              | many-stemmed false-thorn | <i>Albizia petersiana evansii</i>         | 1            | 0.00060          |              |
| 147 | xikhozani / gama        | falcons / hawks          | <i>Falconidae</i> and <i>Accipitridae</i> | 1            | 0.00060          |              |
| 148 | goya                    | African wild cat         | <i>Felis sylvestris</i>                   | 1            | 0.00056          |              |
| 149 | dorho                   | sweet prickly pear       | <i>Opuntia ficus-indica</i>               | 1            | 0.00056          |              |
| 150 | kwahlani                | toad tree                | <i>Tabernaemontana elegans</i>            | 1            | 0.00056          | <b>99.6</b>  |
| 151 | mbamba                  | freshwater mussel        | <i>Unionidae</i> family                   | 1            | 0.00056          |              |
| 152 | kovo                    | grass                    |   | 1            | 0.00056          |              |
| 153 | nkaka                   | gherkin                  | <i>Cucumis anguria anguria</i>            | 1            | 0.00050          |              |
| 154 | xiluvvari               | common wild pear         | <i>Dombeya rotundifolia</i>               | 1            | 0.00044          |              |
| 155 | fungwe                  | African civet            | <i>Civettictis civetta</i>                | 1            | 0.00033          |              |
| 156 | migwiri                 | wild cucumber            | <i>Coccinia sessilifolia?</i>             | 1            | 0.00033          |              |
| 157 | byanyi                  | grass (all)              |   | 1            | 0.00033          |              |
| 158 | xinjengwe               | slender mongoose         | <i>Galerella sanguniea</i>                | 1            | 0.00030          |              |
| 159 | manghawani              | jackal                   | <i>Canis</i> spp.                         | 1            | 0.00027          |              |
| 160 | mikorho                 |                          |   | 2            | 0.00025          | <b>99.9</b>  |
| 161 | maxinjani               | house rat                | <i>Rattus rattus</i>                      | 1            | 0.00017          |              |
| 162 | swifukwa                |                          |   | 1            | 0.00005          | <b>100.0</b> |
|     |                         |                          | <b>Σ</b>                                  | <b>299</b>   | <b>1.00000</b>   |              |
|     |                         |                          | <b>Mean</b>                               | <b>1.85</b>  | <b>.0061728</b>  |              |
|     |                         |                          | <b>S.D.</b>                               | <b>1.317</b> | <b>.01139788</b> |              |

† see Appendix J for list of taxa and all resource categories

As expected, correlation between Local Users Value scores (LUVct) and number of resource categories (ResCat) utilized is highly significant ( $p < 0.001$ ,  $r = 0.734$ ,  $N = 162$ ). The relationship between LUVct values and resource use categories and grouped by kingdom is provided in Figure 4.27. These results indicate that local flora is more widely used for a number of purposes, including a number of especially valued species/taxa, and is on average more highly valued than local fauna (Figure 4.28).

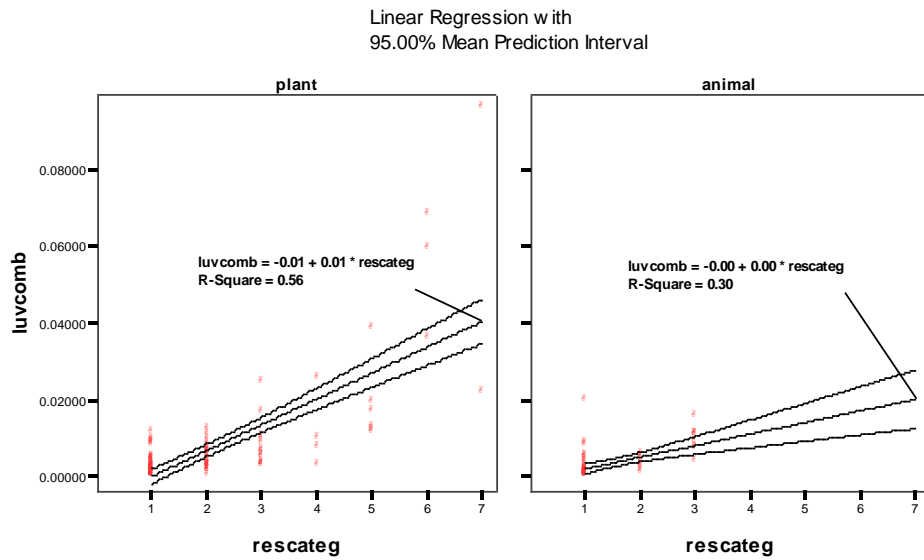


Figure 4.27: Linear regression fit for relationship between LUVct and resource use categories for flora and fauna taxon identified in PDM focus groups.

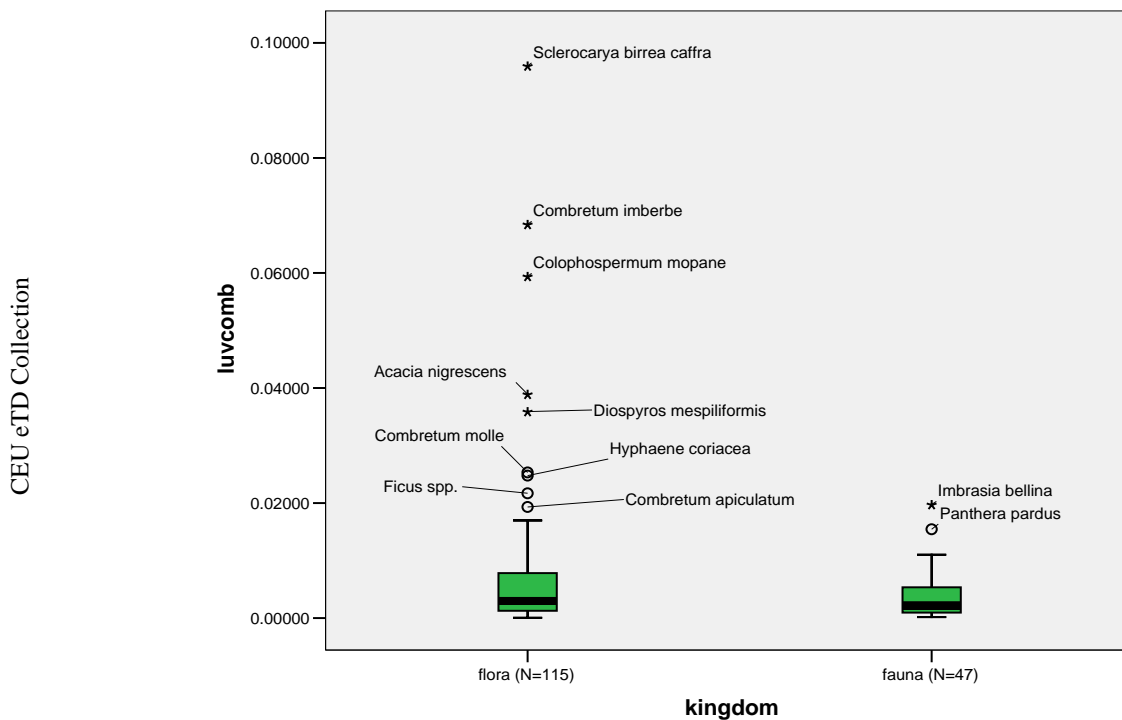


Figure 4.28: Boxplot showing relationship between Local User's Value (LUVct) of flora and fauna taxon identified in PDM focus groups.

Based on data from the PDM exercises, combined with data gained on resource use and collection from the community questionnaire, a total of 180 taxa (127 flora + 53 fauna) were identified as being utilized by communities within the study area (see Figures 4.29 and 4.30). Of these, 34 fauna (64.2%) and 11 flora (8.7%) are listed in either IUCN or national protected species schedules (see Table 4.13). Based on LUVct scores, over 20% of all biodiversity value for local communities comes from protected tree species. Similarly, fauna with enhanced protection constitute almost 12% of all local biodiversity value. This translates into approximately one-third of all local biodiversity value emanating from species under enhanced protection. More noteworthy cases include the a) IUCN endangered pepper-bark tree (*Warburgia salutaris*) which is used for its medicinal properties, b) cheetah (*Acinonyx jubatus*) used for ornamental/religious purposes, c) sable antelope (*Hippotragus niger niger*), which is eaten, and parts utilized for ornamental/religious purposes, d) African elephant (*Loxodonta africana*) which is eaten, and parts utilized for both ornamental/religious and recreation purposes, and e) lion (*Panthera leo*) which is valued both as a source of food and for ornamental/religious purposes.



Figure 4.29: Skins of impala (*Aepyceros melampus*) and genet (*Genetta tigrina*) are used in traditional Tsonga dance costumes.





Figure 4.30: Seeds of the baobab (*Adansonia digitata*) are eaten while the bark is used to make rope and for medicine.

However, knowledge of levels of protection in general, and for specific species, had not been examined in the study area. Concerning nature protection, questionnaire respondents were asked to indicate whether they knew what ‘endangered’ means and, if so, if they could name any South African animals which they considered to be ‘endangered’. Approximately one in seven (14.2%) respondents claimed that they knew what ‘endangered’ meant, although only 4.2% of the sample were able to correctly identify at least one endangered fauna species. Linear regression was conducted to determine strengths of relationships between socio-demographic variables and correctly identifying an endangered animal. Although the sample size of those correctly able to identify an endangered fauna species was small and a low explanation of the variance ( $R^2=0.058$ ), individuals tended to be those who knew of the Hlanganani Forum ( $t=2.487$ ,  $p<0.05$ ) and who had been in the KNP (see Figure 5.4) ( $t=2.330$ ,  $p<0.05$ ). These data suggest that knowledge of nature protection, at least in terms of endangered species, is very poor in the study area.

Table 4.13: Species identified in research as being collected/used by local communities and under enhanced protection according to IUCN and/or national legislation. LUVct scores are provided for taxa identified through PDMs to indicate relative value to overall livelihood.

| <b>FLORA</b>            |                                     |  |   |   |   |                    |
|-------------------------|-------------------------------------|--|---|---|---|--------------------|
| <b>English</b>          | <b>Latin</b>                        | <b>National Forests Act 1998<sup>a</sup></b> | <b>IUCN Classification<sup>b</sup></b>    | <b>LEMA 2003 Classification<sup>c</sup></b> | <b>LUVct Score</b>                      |                    |
| baobab                  | <i>Adansonia digitata</i>           | protected                                    |   | protected                                   | 0.00102                                 |                    |
| pod mahogany            | <i>Azelia quanzensis</i>            | protected                                    |   |   | 0.00640                                 |                    |
| green thorn / torchwood | <i>Balanites maughamii</i>          | protected                                    |   |   | 0.00093                                 |                    |
| shepherd's tree         | <i>Boscia albitrunca</i>            | protected                                    |   |   |   |                    |
| yellow peeling plane    | <i>Brackenridgea zanguebarica</i>   |  |   | protected                                   | 0.00480                                 |                    |
| variable bushwillow     | <i>Combretum collinum taborense</i> |  |   | protected                                   | 0.00448                                 |                    |
| leadwood                | <i>Combretum imberbe</i>            | protected                                    |   |   | 0.06836                                 |                    |
| zebra-wood              | <i>Dalbergia melanoxylon</i>        |  | lower risk; near threatened (1994)        |   | 0.01002                                 |                    |
| marula                  | <i>Sclerocarya birrea caffra</i>    | protected                                    |   |   | 0.09591                                 |                    |
| tamboti                 | <i>Spirostachys africanus</i>       |  |   | protected                                   | 0.00531                                 |                    |
| pepper-bark tree        | <i>Warburgia salutaris</i>          | protected                                    | endangered (1994)                         | protected                                   | 0.00280                                 | > <b>0.20003</b>   |
| <b>FAUNA</b>            |                                     |  |   |   |   |                    |
| <b>English</b>          | <b>Latin</b>                        | <b>IUCN Classification<sup>d</sup></b>       | <b>IUCN Classification<sup>b</sup></b>    | <b>LEMA 2003 Classification<sup>c</sup></b> | <b>DEAT 2005 Draft List<sup>e</sup></b> | <b>LUVct Score</b> |
| <i>Mammalia</i>         |                                     |  |   |   |   |                    |
| cheetah                 | <i>Acinonyx jubatus</i>             | vulnerable                                   | vulnerable (2001)                         | protected                                   | vulnerable                              | 0.00102            |
| impala                  | <i>Aepyceros melampus</i>           | least concern                                | lower risk; conservation dependant (1994) | game  |   | 0.01102            |
| side-striped jackal     | <i>Canis adustus</i>                | near threatened                              | least concern (2001)                      | protected                                   |   | 0.00027            |
| caracal                 | <i>Caracal caracal</i>              | least concern                                | least concern (2001)                      | game  | protected                               | 0.00152            |
| African civet           | <i>Civettictis civetta</i>          | least concern                                | lower risk; least concern (1994)          | protected                                   |   | 0.00033            |
| spotted hyena           | <i>Crocuta crocuta</i>              | near threatened                              | lower risk; conservation dependant (1994) | protected                                   | protected                               | 0.00464            |
| plains zebra            | <i>Equus burchelli</i>              | least concern                                | least concern (2001)                      | game  |   | 0.00399            |
| African wild cat        | <i>Felis silvestris</i>             | least concern                                | least concern (2001)                      | protected                                   |   | 0.00056            |
| hippopotamus            | <i>Hippopotamus amphibius</i>       | least concern                                | lower risk; least concern (1994)          | protected                                   |   |                    |
| sable antelope          | <i>Hippotragus niger niger</i>      | vulnerable                                   | lower risk; conservation dependant (1994) | protected                                   |   | 0.00320            |
| serval cat              | <i>Leptailurus serval</i>           | near threatened                              | least concern (2001)                      | protected                                   | protected                               | 0.00098            |
| scrub hare              | <i>Lepus saxatilis</i>              | least concern                                | lower risk; least concern (1994)          | game  |   | 0.00556            |

|                            |                                  |                 |   |                                     |            |         |                    |
|----------------------------|----------------------------------|-----------------|---|-------------------------------------|------------|---------|--------------------|
| African elephant           | <i>Loxodonta africana</i>        | least concern   | vulnerable (2001)                         | pecially protected                  |            | 0.00705 |                    |
| honey badger               | <i>Mellivora capensis</i>        | near threatened | lower risk; least concern (1994)          | protected                           | protected  | 0.00139 |                    |
| lion                       | <i>Panthera leo</i>              | vulnerable      | vulnerable (2001)                         | protected                           | vulnerable | 0.00328 |                    |
| leopard                    | <i>Panthera pardus</i>           | least concern   | least concern (2001)                      | protected                           | vulnerable | 0.01544 |                    |
| chacma baboon              | <i>Papio ursinus</i>             | least concern   | lower risk; least concern (1994)          | game                                |            |         |                    |
| steenbok                   | <i>Raphicerus campestris</i>     | least concern   | lower risk; least concern (1994)          | protected                           |            | 0.01095 |                    |
| common duiker              | <i>Sylvicapra grimmia</i>        | least concern   | lower risk; least concern (1994)          | game                                | protected  | 0.00785 |                    |
| Cape buffalo               | <i>Syncerus caffer</i>           | least concern   | lower risk; conservation dependant (1994) | protected                           |            | 0.01073 |                    |
| bushbuck                   | <i>Tragelaphus scriptus</i>      | least concern   | lower risk; least concern (1994)          | game                                |            | 0.00149 |                    |
| kudu                       | <i>Tragelaphus strepsiceros</i>  | least concern   | lower risk; conservation dependant (1994) | game                                |            | 0.00891 | <b>&gt;0.01018</b> |
| <b>Aves</b>                |                                  |                 |   |                                     |            |         |                    |
| korhaans                   | <i>Eupodotis spp.</i>            |                 |   | various levels depending on species |            | 0.00093 |                    |
| falcons / hawks            | <i>Falconidae / Accipitridae</i> |                 |   | various levels depending on species |            | 0.00060 |                    |
| francolins                 | <i>Francolinus spp.</i>          |                 |   | game                                |            | 0.00155 |                    |
| glossy starling            | <i>Lamprotornis nitens</i>       |                 |   | protected                           |            |         |                    |
| helmeted guinea-fowl       | <i>Numida meleagris</i>          |                 | least concern (2001)                      | game                                |            | 0.00490 |                    |
| sparrows                   | <i>Passer spp.</i>               |                 |   | various levels depending on species |            |         |                    |
| doves                      | <i>Streptopelia spp.</i>         |                 |   | protected                           |            |         |                    |
| hornbills                  | <i>Tockus spp.</i>               |                 |   | protected                           |            | 0.00217 |                    |
| blue waxbill               | <i>Uraeginthus angolensis</i>    |                 |   | protected                           |            |         | <b>&gt;0.01015</b> |
| <b>Amphibia / Reptilia</b> |                                  |                 |   |                                     |            |         |                    |
| African rock python        | <i>Python sebae</i>              |                 |   | protected                           |            | 0.00391 |                    |
| African bull frog          | <i>Pyxicephalus adspersus</i>    |                 | least concern (2001)                      | protected                           | protected  | 0.00108 |                    |
| leopard tortoise           | <i>Testudo pardalis</i>          |                 |   | protected                           |            | 0.00167 | <b>=0.00666</b>    |

<sup>a</sup> Govt. Gazette Notice 1012 of 27 August 2004, National Forests Act no 84 of 1998.

<sup>b</sup> IUCN. 2004. 2004 IUCN Red List of Threatened Species. [on-line] accessed 4 January 2005 at <http://www.redlist.org>

<sup>c</sup> Limpopo Environmental Management Act No. 7 of 2003

<sup>d</sup> Friedmann, Yolán (chief editor). 2004. Red data book of the mammals of South Africa: a conservation assessment. Endangered Wildlife Trust and CBSG (IUCN/SSC), 716pp.

<sup>e</sup> DEAT. 2005. Draft lists of threatened and protected species issued in terms of Section 56(1) of National Environmental Management: Biodiversity Act 2004. Published 18/02/2005.

#### 4.4.5. Summary

There is extensive use of local resources, with a wide variety of wild flora and fauna being collected across various spatial and temporal scales. Results show that fuelwood and thatch grass are the most frequently collected in terms of percentage of households. Some household members also collect wild fruit, timber poles and medicinal plants. One in 20 households collect wild birds for meat, but only a few collect flora or fauna for cultural/religious purposes, and wild animals for meat. Most households in the study area get their drinking water from either taps within household yards, or from community stands, often greater than 200m from the household. Both water and fuelwood collection is primarily the responsibility of household women and/or children and combined time investment averages about 20 hours per week.

The PDM exercises helped understand both use and value of landscape units and specific taxa within the region. All identified landscape units were utilized to satisfy resource use needs in some way except the household garden (not used for constructing houses or fences). All eight landscape units played equally essential roles in supplying food and drink from wild flora and fauna. Variation was observed between groups according to village and age/gender regarding the perception of how landscape units contribute to sustaining community livelihoods, especially concerning swamp/marsh and grazing area landscape units. The relative importance of both forest/bush and river/stream habitats were found to be extremely valuable in supplying wild natural resources necessary to sustain local communities.

Finally, based on combined data from the PDM exercises and the community questionnaire, a total of 180 taxa were identified as being used by communities for a range of purposes within the study area. Of these, 34 fauna and 11 flora are listed as either IUCN or national protected species, including a number of salient and charismatic species. Based on taxa importance values obtained through the PDMs, approximately one third of all local biodiversity value is from flora and fauna species with enhanced protection.

#### 4.5. Beliefs and attitudes

As discussed in chapter 2.9.4, concepts of nature and its components are often culturally bound, and should be understood in local contexts. South Africa has undergone dramatic socio-political changes in the last decade, with enhanced opportunities for formal education in the rural areas. However, the extent to which education has affected perceptions and attitudes of rural people towards nature and its conservation is still uncertain (see e.g. Els 1994; Mabunda 2004). An attempt to understand the concept of nature (*ntumbuloko*) by community members in the study area was undertaken. In this component of the questionnaire, respondents were asked to indicate whether they believed a number of components were ‘part’ of nature. Results are presented below in Figure 4.31.

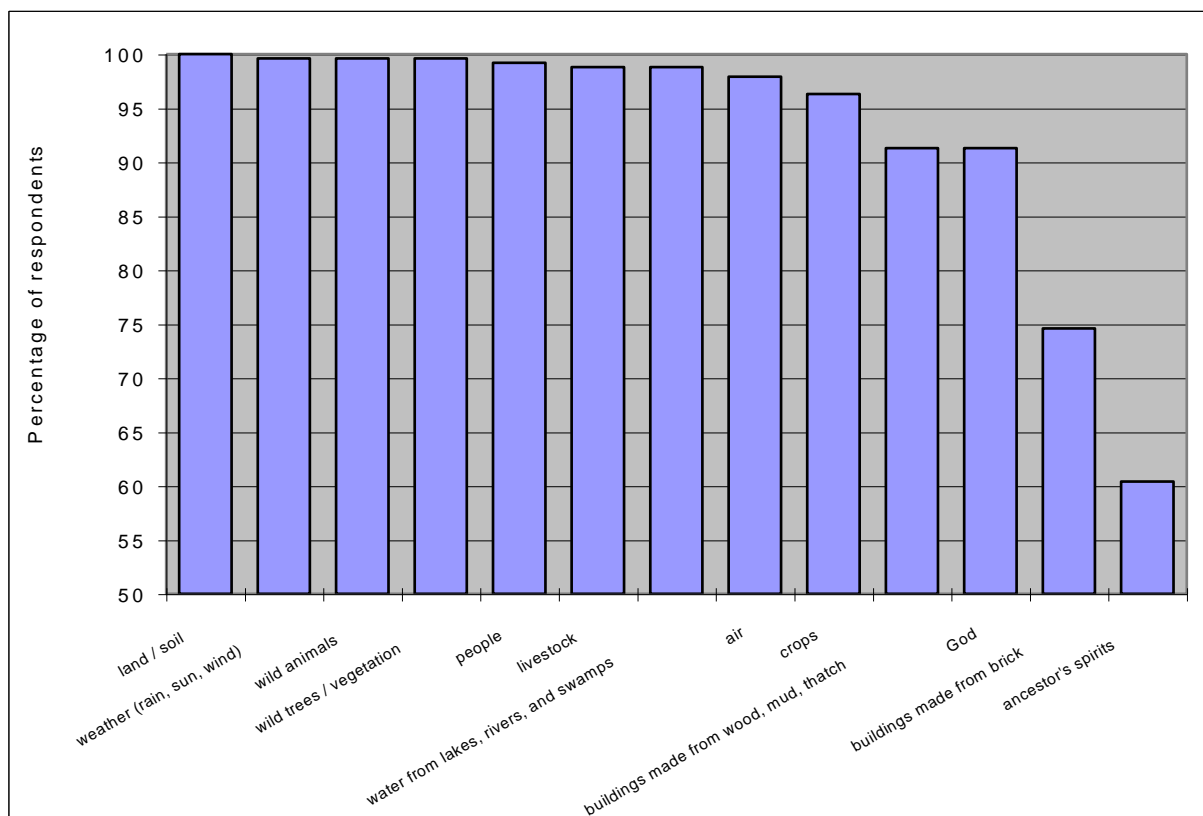


Figure 4.31: Bar graph illustrating belief about components of nature [*ntumbuloko*](N=240)

Chi-square and correlation tests were conducted for gender, age and education level for all responses to belief about nature’s components. No significant associations were found, suggesting that beliefs in the sampled households regarding the different parts of nature are independent of these variables. This concept of nature agrees with Els (2002) in that the Tsonga see nature as more than just the biophysical environment: there is still strong belief that it also embraces people (*vanhu*), God (*Xikwembu*) and to some degree, ancestor’s spirits (*swikembu*).



Based on their concept of nature, it is not surprising that almost all (98.7%) respondents believed that they ‘need’ nature, for a variety of reasons which have been classified according to McNeely *et al.* (1990) (Table 4.14). In addition to more direct utilitarian values, respondents indicated that nature is highly valued for its socio-cultural, educational, spiritual and historical attributes.

Table 4.14: Categorized responses as to why community members ‘need’ nature. Relative percentages of responses are included for each sub-category.

| <b>Direct value</b>   | <b>Indirect value</b>  |
|---|--|
| <p><i>Consumptive (27.5%):</i></p> <ul style="list-style-type: none"> <li>• food</li> <li>• fodder for animals</li> <li>• fuelwood</li> <li>• traditional medicine</li> <li>• construction materials</li> <li>• traditional clothing</li> </ul> | <p><i>Non-consumptive - ecological functions (19.5%):</i></p> <ul style="list-style-type: none"> <li>• storm protection</li> <li>• cleaning air</li> <li>• soil protection</li> <li>• sustains environment</li> </ul>  |
| <p><i>Productive (4.7%):</i></p> <ul style="list-style-type: none"> <li>• fodder for animals</li> <li>• traditional medicine</li> <li>• drawing tourists</li> </ul>   | <p><i>Non-consumptive – non-ecological functions (41.6%):</i></p> <ul style="list-style-type: none"> <li>• part of creation (‘I belong to it’; ‘makes us aware of God’s creation’)</li> <li>• education (‘we can learn much from it’; ‘children learn from it as they grow up’)</li> <li>• historical heritage (‘it serves as a reminder of the past’)</li> <li>• aesthetic (‘brings and brightens life for people’)</li> <li>• cultural (‘it is our culture to love nature’)</li> </ul> |
|   | <p><i>Option (6.7%):</i></p> <ul style="list-style-type: none"> <li>• for future generations, ‘to build the future’.</li> </ul>  |

When respondents were asked whether they believed they needed to protect nature, a majority (85.4%) agreed. The need to maintain and enhance utilitarian use values ranked highest for those responding positively to this question, although socio-cultural and spiritual aspects were also noted. Respondents included the following reasons for the need to protect nature: ‘*it is life*’; ‘*to lose nature is to lose ourselves*’; ‘*nature dictates that we should continue initiation school*<sup>25</sup>’. Ten percent of the respondents stated that they didn’t know whether they should protect nature, claiming that they didn’t know how they could protect it. In contrast, 4.6% indicated that they did not believe they needed to protect nature, citing the fact that ‘*it was created long ago*’ and their exploitation of firewood would continue, despite any environmental degradation.

<sup>25</sup> In traditional Tsonga culture, puberty marks the end of childhood and the beginning of adolescence. During this time young men and women enter initiation schools. Schools vary, but in principle they perform a similar social function, that of a ‘rite of passage’ marking the transition from adolescence to adulthood. This is much more than a physical change, it also represents a change in social status.

When asked the question, ‘*What do you do to protect nature?*’ a variety of responses were given (in priority order):

- by not cutting trees down and/or burning them
- by not killing wild animals
- by not causing veld fires
- by following regulations laid down by KNP and/or our community leaders
- by ploughing
- by rebuking those I see cutting trees
- by educating others about nature
- by planting trees
- by reporting those who destroy nature
- by feeding our livestock
- *by following what our forefathers used to*
- by preventing those who are destroying scarce natural resources
- by reporting problem wild animals to KNP
- by using fences to prevent people from destroying nature
- by using our rights to stop people from hurting animals
- *to follow its rules*
- *by building traditional houses from soil and thatch grass*
- *by dressing the traditional Shangaan way*
- by keeping our environment clean
- by not cutting trees which bear fruit
- by not killing insects
- by reserving it for future generations
- *by teaching my children to behave properly and to maintain our culture*
- by using water efficiently
- *encouraging cultural activities*
- *by respecting God and His creation*
- by replacing plants if we dig out the roots

The statements above bring to light the more wide-ranging view of nature by the Tsonga, and practices which they see as being essential for its protection. In addition to the majority of responses regarding reduced consumption of resources, environmental education, and altering practices to protect flora and fauna (which one might expect in more traditional developed Western societies), a number of statements (in *italics*) particularly reflect the need to maintain cultural and spiritual traditions.

In order to better understand community beliefs regarding sustainability, the following question was asked, ‘*Will nature always provide enough resources (water, soil, wood, etc.) for the people in this community?*’ Responses to this question were varied, with 56.1% of respondents stating ‘yes’, 20.1% ‘no’, and 23.8% ‘don’t know’. Reasons for choices have been categorized in Table 4.15.

Table 4.15: Categorical reasons for opinion on sustainability of local resources

|  |   |
|--|---|
| <p><i>Sustainability ensured</i></p> <ul style="list-style-type: none"> <li>• <i>nature is God's and it will always be available</i></li> <li>• <i>God is clever - he will not let people die of a shortage of natural resources</i></li> <li>• <i>nature will never die</i></li> <li>• <i>it's part of life</i></li> <li>• <i>no one can exhaust nature</i></li> <li>• amount of resources won't change in the future</li> <li>• water will always be available</li> <li>• land will always be available</li> <li>• because it rains a lot showing that it will be there forever</li> <li>• because we have enough land and water</li> <li>• because nature is sustainable despite increasing populations</li> <li>• because you cannot measure nature / natural resources</li> <li>• because animals multiply, trees continue to grow, and there's lots of soil</li> <li>• because trees grow even though we are cutting others</li> </ul> | <p><i>Sustainability threatened</i></p> <ul style="list-style-type: none"> <li>• <i>nature decides - sometimes we have drought, sometimes rain</i></li> <li>• because KNP promised to extend our land into its park</li> <li>• because we need to control the use of water</li> <li>• people and animals will perish; land will always be available</li> <li>• water and firewood will run out if not properly used</li> <li>• water and land will always be available, but firewood will not</li> <li>• when we have water, the soil and all its components will be protected</li> </ul> |
| <p><i>Sustainability conditional</i></p> <ul style="list-style-type: none"> <li>• only where/when we take care of it</li> <li>• provided that it rains</li> <li>• provided that we keep our dams free from filling up</li> <li>• provided there are no strong rains to erode our topsoil</li> </ul>  | <p><i>Uncertain</i></p> <ul style="list-style-type: none"> <li>• <i>only God knows</i></li> <li>• I cannot predict the future</li> <li>• because things always change</li> </ul>  |

Similarly to the preceding question on nature protection practices, responses on sustainability also reflect a more comprehensive view of nature by the Tsonga (see especially *italicized* statements). Most respondents believed that sustainability is guaranteed irrespective of human activities, and a large number believe this is because of *Xikwembu's* role in providing nature and sustaining it. Those who were uncertain claim that 'only God can know such things' and it is not their ability 'to predict the future'.

#### 4.6. Conclusions

This chapter has shown that KNP's neighbours are heavily dependent on local natural resources in meeting their needs, and perceptions on landscape units and local biodiversity varies according to village and age/gender groups. The local population is characteristic of those in developing countries, with over half of the population < 20 yrs of age, higher female:male ratios especially in older age classes, low levels of education and employment and, consequently, household incomes. Livelihoods are primarily land-based, consisting of arable agriculture, animal husbandry and extensive harvesting of over 180 wild taxa (including a number of salient and charismatic protected species) across various spatial and temporal scales for a wide variety of purposes. Fuelwood and thatch grass are the most frequently collected resource, although household members also collect wild fruit, timber poles, medicinal plants, wild birds and game, and various flora and fauna for cultural/religious purposes. Households chiefly source their drinking water from either taps within household yards, or from community stands greater than 200m from the household. Both household

water and fuelwood collection is primarily the responsibility of women and/or children and averages almost 20 hours per week. Environmental and economic constraints mean that almost one half of the households are unable to plant crops annually and thus are more likely dependent on exploiting wild natural resources to meet their subsistence needs. Spatial differences were also noted with the more densely populated Thulamela Municipality experiencing increased problems in terms of land and fuelwood shortages compared with Greater Giyani Municipality to the south. A community needs assessment revealed that employment was ranked highest overall, followed by improved facilities for health care, schools, electricity and drinking water.

Local Traditional Authorities largely govern the control of, and access to, natural resources in the area. The majority of respondents believed that this institution was doing their job well in terms of land use issues compared to local government, which is practically non-recognized. Furthermore, the role of DFED/EA in regulating the use of local resources is little understood in the area, and is facing major criticism for both its incapacity (and alleged corruption) to adequately control DCAs in the communal areas and in failing to compensate affected farmers.

Results indicate that local communities view nature as more than just the biophysical environment: there is still strong belief that it also embraces people, God and to some degree, ancestor's spirits. Consequently, respondents indicated that nature is highly valued and should be protected for both its more direct utilitarian values and its socio-cultural, educational, spiritual and historical attributes. Similarly views on sustainability also reflect a more comprehensive view of nature by the Tsonga. Most respondents believed that sustainability is assured irrespective of anthropogenic intervention, largely because it is *Xikwembu's* role in providing and sustaining nature.

The next chapter will concentrate on the relationship from 'the other side of the fence', i.e. on the KNP and its efforts during transitory times to reach out to its neighbours described in this chapter. The chapter will also highlight current threats to biodiversity both within and adjacent to the Park.

## Chapter 5: The Park

### 5.1. Introduction

The previous chapter focused on KNP's neighbouring communities. In this chapter, results will concentrate on the other side of the fence, i.e. the KNP or 'Park'. The chapter addresses two research questions, namely *'What are the costs and benefits of the KNP for local communities and how are they distributed?'* and *'How do local communities view the various institutions responsible for managing natural resources?'* Data in this chapter was gained from a combination of techniques including the community questionnaire, interviews, non-participant observation and TRAs which assessed threats to biodiversity in the study area.

The chapter is divided into a number of separate yet related sections, each focusing on specific parameters of the KNP and its interaction with its neighbours. The first section introduces the evolution of social ecology within KNP, tracing its inception from 1994 through to present day, and highlighting a number of constraints and challenges it has faced, and continues to face. The second section examines benefits which have accrued to neighbours from the park, emanating from the five pillars of Social Ecology, i.e. community facilitation, economic empowerment, cultural heritage, educational awareness, and research and monitoring. Resource access and utilization are also investigated as are the implications of disease threats. The following section looks at costs associated with some benefits to local communities. The final section examines the threats to biodiversity and the effectiveness of their mitigation, both within the KNP and its adjacent areas, spanning the last decade.

### 5.2. Transition

#### 5.2.1. Evolution of Social Ecology

Prior to 1994, KNP was predominantly a white-dominated institution, including white-held senior positions. Dr. Harold Braack was offered the position as KNP Chief Warden in 1994 as he was thought to be flexible enough to be able to deal with the changes occurring in South Africa at that time, including those within the National Parks Board (NPB). According to Dr. Braack, this was an extremely interesting and challenging phase in the history of both South Africa and the NPB. In an attempt to address the past injustices of Apartheid, one of his functions during his four years in this position was to improve employment equity which meant *"replacing white-held positions with blacks."*

Concomitant with these steps in transformation, KNP was undergoing another change, i.e. of moving from an exclusionary to an embracing approach in relations with its neighbours. Emanating from South Africa's new constitution and driven in part by its commitments to the Convention on Biological Diversity, the NPB vision, mission, and management policy was transformed towards integrating its core objectives of biodiversity conservation with the socio-economic needs of its neighbouring communities under 'Social Ecology'. Social Ecology is defined by SANP (2000: 20) as 'a new philosophy and approach to conservation in which ecological, cultural and socio-economic issues are recognised as critical to the management of national parks'. Within the KNP, the establishment of a Social Ecology Unit in 1995 helped to institutionalize this new philosophy and approach. According to Kobus Wentzel, Far Northern District Ranger in the KNP, however, even earlier in 1994 white KNP rangers were approaching communities in the study area with the intent of establishing open and formal lines of communication. Later, this interaction included the establishment of community fora, and the hiring of social ecologists to deal with neighbour issues under the erstwhile Social Ecology Unit's five broad categories:

1. Community facilitation
2. Economic empowerment
3. Educational awareness
4. Cultural heritage
5. Research and Monitoring

Social Ecology was established as a department within SANP in 1996. Within KNP, social ecology has had a number of structural positions within the organization. Its departmental status was downgraded to a Division in 2001 under Operation Preveil (chapter 2.6.4.), and since November 2003, similar to its organizational position within SANP, is now a separate department known as 'People and Conservation' (PaC), no longer falling under Conservation Services (see Figure 5.1). Thus, within the KNP, the PaC Head of Department (HoD) now sits on the KNP Management Board. Currently, KNP has a corporate PaC body based in Skukuza, consisting of officers responsible for community facilitation, economic empowerment, educational awareness, and cultural heritage. The HoD is an advisor to all of these positions. This corporate team basically provides support for the ground staff in the 4 business regions established during KNP restructuring in 2001, namely far northern, northern, central and southern. Each of these zones has a Social Ecologist as well as one or more education awareness and/or economic empowerment staff (Figure 5.2).

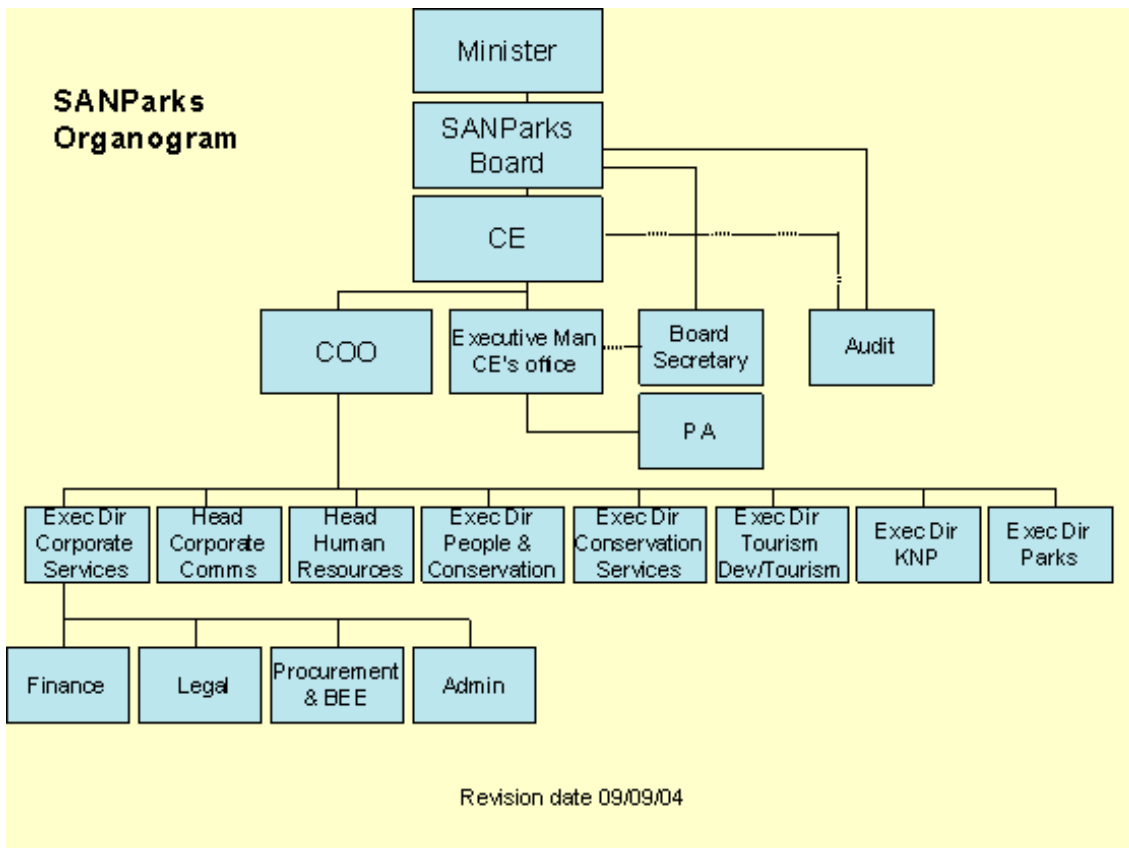


Figure 5.1: SANP organogram as of September 2004 (Source: KNP GIS Laboratory)

Regarding hiring criteria for social ecology staff, the SANP Human Resources Manager in Groenkloof stated in an interview in August 2003 that SANP looks for academic background (at least a degree in social science), local language skills, an understanding of the local culture, and experience working with communities. Staff training, according to the PaC HoD in KNP, is conducted in-house on an annual basis, based partly on their own training requests, and staff are self-evaluated based on their annual work plans.

Concerning future plans and directions, the HoD believes that the PaC will play an increasingly more facilitative role with respect to community interaction, i.e. largely concentrating on capacity-building and driving conservation. Moreover, she feels that the department will be strengthened especially due to both ‘stronger provision for sustainable utilization in the new *Protected Areas Act 2003*’ and ‘our own balancing objectives as they are helping to equalize people-oriented objectives with biodiversity conservation ones’ (see Figure 5.3). Concerning conflicts with opposing approaches and philosophies she stated that this new legislative and organizational power “*is like having a stick when you meet a snake - now you’re not so scared of the snake because you have something to hit it with.*” She added that the new Directorate is currently developing policy at the Board level and, until this is formalized, PaC continues to operate within its five focal areas.

# People And Conservation

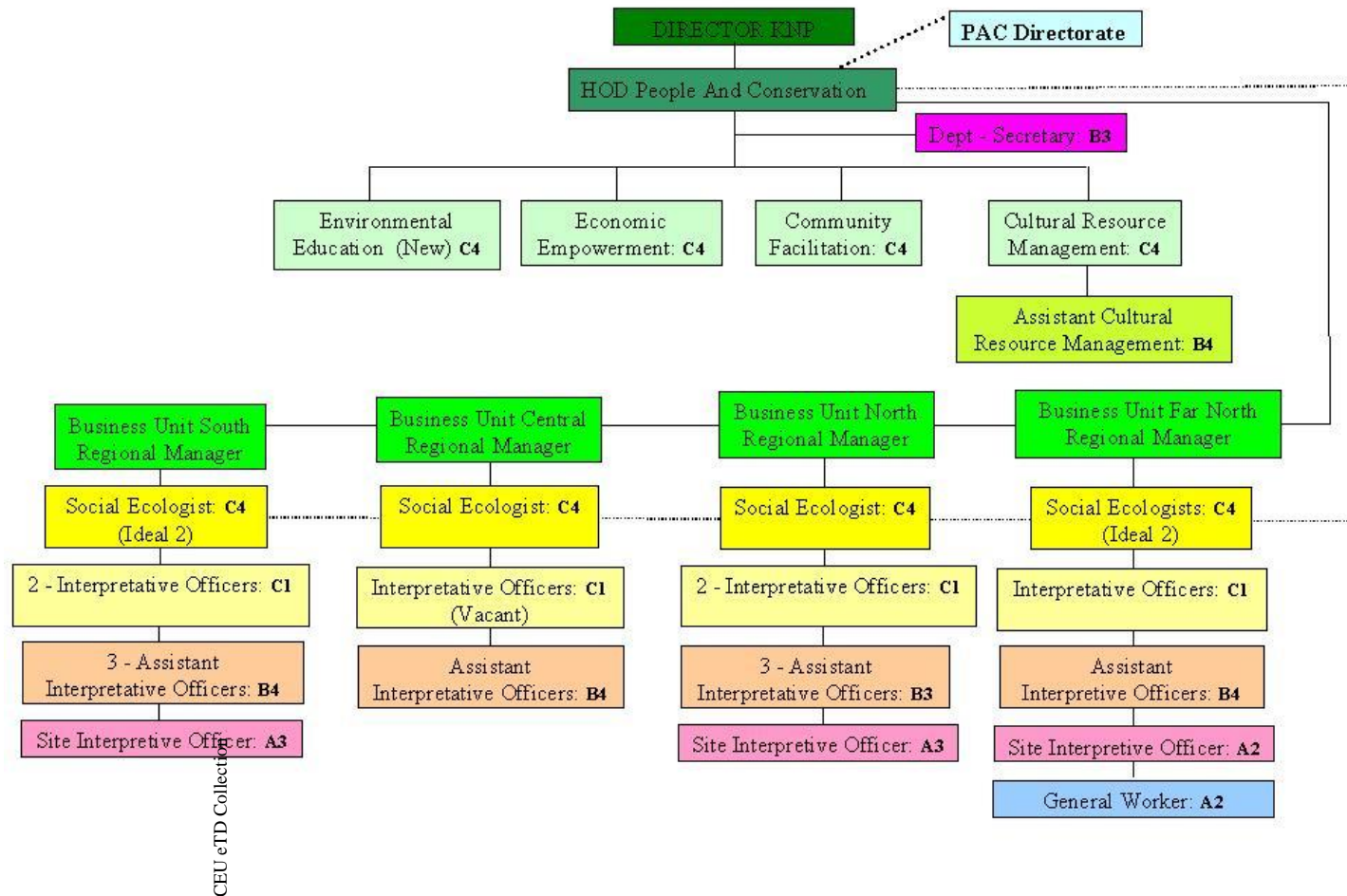


Figure 5.2: Organizational structure of People and Conservation within KNP as of March 2004. (Source: KNP People and Conservation Department)



In this research's study area, social ecology operates on a district level from the Punda Maria rest camp located in the far northern business district. The social ecology office in Punda Maria has two social ecologist positions (one each to deal specifically with the Makuya and Hlanganani Forums), interpretative officers, and research interns. Social ecologists in Punda Maria are to produce monthly and quarterly reports to both the Far Northern District Ranger and to the PaC HoD in Skukuza. Section rangers directly involved with community fora and communities in the study area must also report to the Far Northern District Ranger, who reports to the Far Northern District Manager, and to both Conservation Services and the corporate PaC in Skukuza.

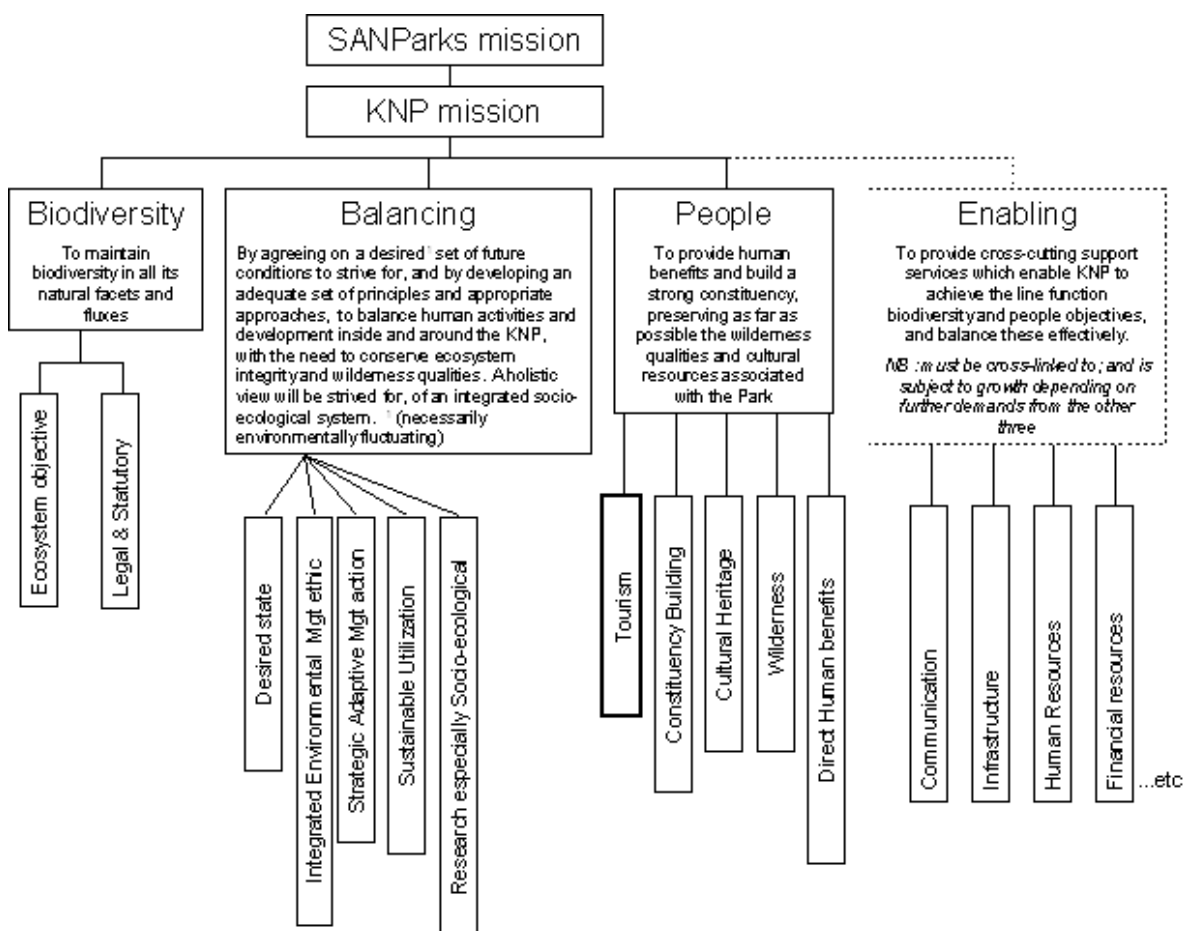


Figure 5.3: SANP Mission and objectives structure as of January 2005 (Source: KNP People and Conservation Department)

### 5.2.2. Constraints

Through non-participant observation and interviews with both corporate and field level SANP and KNP PaC staff, a number of perceived constraints were identified for the department, which have associated implications to the department's mission and to communities. These are grouped around capacity and training, absence, and philosophies (Table 5.1).

Table 5.1: Identified constraints and implications to operation and mission of KNP PaC.

| Constraint                          | Description  | Implications / quotes   |
|-------------------------------------|--|---|
| <i>Capacity &amp; training</i>      |  |   |
| Projects dependent on donor funding | Initial funding to projects (e.g, DANCED, GTZ, DFID and Seagrams) now depleted   | Much time and energy invested in fund raising; some projects fail.  |
| Financial resources                 | KNP has no budget to compensate communities for DCA damage   | Relationship between KNP and communities suffers.<br><i>"KNP is uncaring and isn't committed to its undertakings."</i>  |
| Communications                      | No e-mail, internet, or printer for PaC staff in Punda Maria.  | Poor communication; increased conflict between corporate and district offices.  |
| Transportation                      | Some staff in Punda Maria promised transport, but still use own car with low reimbursement for mileage.  | Low morale; increased conflict between corporate and district offices.<br><i>"Staff are complaining to Skukuza that they want reimbursements raised to the same standard as other governmental departments."</i>  |
| Salaries                            | PaC jobs already inherently demanding due to relationship building, traveling, long hours, and the multi-disciplinary environment. Some staff feel salaries are too low. | High turnover of qualified professionals leaving in search of better opportunities; trust and commitment gained in personal relationships lost.<br><i>"this weakens the process, especially when a new staff member must defend an initiative or process in which they've played no active role."</i> |
| Training                            | Although in-house training is provided, it is minimal and often of low relevance.  | Staff are ill-equipped to deal with unique demands on their positions; research interns unsure of relevance of positions.   |
| Evaluation                          | Staff are self-evaluated, unsystematically, and often 'not on a conscious level.'  | Poor accountability; decreased relevance of training to job needs.  |
| Corruption                          | Misuse of funds by PaC staff   | Staff terminations; trust and commitment gained in personal relationships lost.   |
| Accountability                      | Poor internal accountability   | Poor job performance; high meeting absence; increased risk of corruption.   |
| <i>Absence</i>                      |  |   |
| Staff absent from workplace         | At both SANP and KNP PaC offices, staff absent without notifying co-workers  | Poor communication; meeting absence; poor public relations.<br><i>"nobody was at the [SANP]PaC office, not even any secretaries."</i>   |
| Sickness                            | Corporate and field level staff often on sick leave  | Meeting absence; poor communication; increased workload for co-workers; projects suffer.  |
| <i>Philosophies</i>                 |  |   |
| Role of Social Ecology              | Divisions within the KNP still see social ecology as a minimal / unnecessary part of activities.   | Low attendance in interdepartmental staff meetings; poor dialogue and communication; resistance to proposals.   |
| Structure                           | While Social Ecology was under Conservation Services, there was no direct representation on KNP Management Board.  | Poor PaC representation to KNP Management; increased ambiguity of issues; projects hindered; inconsistencies and confusion caused by regular restructuring.<br><i>"We in PaC are only a small piece of the pie, trying to shake a big cake."</i>  |

Constraints external to PaC, and within Conservation Services, also have implications for the KNP in terms of community relationships. The research study area largely falls adjacent to the operational jurisdiction of the KNP Shangoni Ranger Section. The ranger assigned to this post has also faced a series of constraints, which eventually led to his resignation in September 2005 after being a KNP employee for almost 17 years. In addition to regular administrative

duties, overseeing 13 field rangers, enforcing regulations as per the *National Parks Act* (1976), liaising regularly with neighbouring communities and attending Hlanganani Forum meetings, he remarked that “*a majority of my time has been in connection with DCA control and illegal activities along the KNP border fence*” (see also Chapter 7). Notwithstanding these challenges, however, it was feelings of being personally ostracized by the KNP that was the ‘straw that broke the camel’s back’.

The Shangoni Ranger outpost is in a very remote part of the KNP, poorly serviced, approximately 65 km from the closest KNP rest camp (Shingwedzi) and about 40 km from the closest municipal center with a hospital or school (Giyani). Both these points are only accessible by poorly maintained, unpaved roads. The ranger, who is married with two children, made a request in February 2004 to be transferred to a more suitable post that could accommodate the increasing isolation of his family, and the need to enroll his child(ren) in school. Over one and a half years later, there had still been no formal positive response, only ‘empty promises’, leading to his belief that “*KNP is not serious about our request or the well being of my family.*” According to this Section Ranger, an official SANP transfer policy exists as well as a policy dealing with ranger transfers, especially to accommodate rangers with families to more appropriate areas, but ‘this was not enforced in my case’ and he was denied comparable positions within SANP ‘due to racial imbalances’.

During an interview in June 2004 with a key informant who has had a longstanding relationship with KNP, this conflict was underscored. The informant feels the Shangoni Ranger, although a dedicated man to conservation and the KNP, is fighting a losing battle at the park and attributes the tension to be based on racial discrimination with South Africa’s new transformation, alleging “*Black is black and white is white. [Ranger] doesn’t have a chance at the KNP anymore and has very little support from that side*”. This belief has similar resonance to words from Dr. Harold Braack regarding the early transformation process in KNP during his leadership, stating that “*The whites were scared of this process and were concerned about their own job security; the blacks, on the other hand, were aspiring to the changes.*” Although it is not within the scope of this research to discuss the implications of the transformation process, it should be noted that beliefs of this nature are prevalent amongst employees and that, at least in the case of the Shangoni Ranger, may have significant implications for KNP-neighbour relations. Considering that this ranger has regular contact with KNP’s neighbouring communities and frequently represented KNP during HF meetings,

any trust and relationship building through this interaction will now need to be re-established with new personnel.

### 5.2.3. Communication

Interaction between KNP staff and neighbouring communities is governed in part by communication not only between the KNP and its neighbours via the HF (see Chapter 6), but also amongst KNP staff and between KNP staff and community members directly. These latter components are the focus within this section, with results derived from the community questionnaire and interviews.

During the research, it became clear that the role of social ecology within KNP's primary focus on biodiversity conservation is not only ambiguous, but also contested (see also Table 5.1 above). This divergence of philosophy in PA management is reflected in communication between Conservation Services and PaC. When a Manager within Conservation Services was asked to identify any conflicts or challenges currently existing between the short- and long-term goals of Conservation Services and PaC in KNP, he replied, *"I think there is a lack of dialogue between our departments and intercommunication is breaking down. I really don't know what PaC is doing, even though they're right across the hall from me."* In responding to how to best resolve these conflicts, he added, *"At the Corporate level, we're busy doing our own things and I guess they're busy doing theirs. I think there should be more participation between the two departments in formal meetings. We have meetings every two months where Social Ecology had a seat but they rarely attended. There's still a seat there for them, but they don't come."* Interdepartmental meeting absence has been noted elsewhere as inhibiting the effectiveness of the PaC (see chapter 5.2.2), and was mentioned by one corporate PaC staff member as an indication of the 'divisions within the KNP'. Another corporate PaC staff member in Skukuza further expressed frustration in working with Conservation Services, especially before PaC was a separate department, claiming that *"they [Conservation Services] are mostly a bunch of specialists and have no understanding of social issues"*.

Intradepartmental communication was also mentioned as a constraining factor in terms of benefit-sharing to communities. To illustrate one such example, in July 2004, the Shangoni Section Ranger was asked by his superiors within Conservation Services to commence a thatch grass harvesting program with neighbouring communities. After initiating the program, it ran successfully for two weeks with members of Mtititi, Altein and Muyexe villages. Then, without any reason or explanation, he was ordered to terminate the program. He was given no

idea as to the rationale for such a decision, and feels “*it is indicative of how KNP works, i.e. with either no communication or miscommunication.*” Understandably, affected communities became disgruntled, as they were also not given any explanation for the termination of the program. Later, it was discovered that the rationale for terminating the program hinged on the threat of disease transfer (see chapter 5.3.2).

Media reporting of PaC activities has also resulted in mixed messages to the public at large. For example, in the *Kruger Park Times* (Vol 1, Issue 8, 21 July 2004, pages 1-2), a front page article reported that KNP plans to allow 90 traditional healers from Makuya and 80 from Punda Maria to harvest medicinal plants (and possibly hyena) in KNP, with most of the harvesting to take place in the far northern section of the park. It quotes the PaC HoD as saying, ‘*the new Protected Areas Act...changed KNP’s status from the previous Schedule 1 where nothing could be removed from within the park, to one of sustainable utilization*’. When the HoD was asked to comment on this she stated that she had been misquoted and emphasized that “*although SANP sections of the Protected Areas Act 2003 are still being drafted, it will likely make allowances for sustainable resource utilization within national parks*” [emphasis added]. In fact, at that time KNP was only initiating a program with traditional healers in which they were donating a number of specific trees from their nursery in Skukuza to local healers to plant outside the KNP. To date, there has been no correction of the article in subsequent editions of the *Kruger Park Times*, further fueling the polarization of views regarding the role that PaC is playing in KNP’s activities. Moreover, through this miscommunication, the public and other government departments were led to believe that KNP was opening its doors to the harvesting of plants by local traditional healers, something which Conservation Services staff adamantly deny. During an interview with KNP Nursery staff concerning this proposed venture with traditional healers, one member replied “*I only read about our planned co-operation with traditional healers in the newspaper. That shows you the kind of communication we have here.*”

In order to understand community perceptions of KNP staff with whom they’ve had direct contact, questionnaire respondents were asked if some KNP staff are friendlier than others. Although the majority of respondents (70.2%) were unsure because they had not encountered any staff within their villages, 11.3% stated that indeed some staff were friendlier. Their reasons for saying so include the following:

- because when we talk to them, some co-operate while others do not
- some take time to educate us about animals

- some are more willing to help us than others who are more reluctant
- some don't want to listen to community problems
- because some are more patient with visitors than others
- some respond to our complaints; others don't
- some are more friendly because they were born in the rural villages

#### 5.2.4. Local Social Ecologist

In the study area, interaction between the KNP, local communities and the HF is primarily the responsibility of a social ecologist based in Punda Maria. This position can be described as the KNP's 'face' or 'front-line' liaison person, whose responsibility is to attend HF meetings, build trust with local communities, informing them of KNP policies, benefits including employment and training opportunities, and community-related events. Regarding this relationship, a number of transgressions and complaints surfaced in interviews with village members, HF representatives, and both DFED/EA and KNP staff. These include:

- lateness and/or unexpected absence from HF meetings (see also chapter 6.4.1), and a belief by fellow workers that he 'disappears without a valid explanation';
- miscommunication to KNP Conservation Services staff;
- lack of oversight and response to contractors contravening KNP policy by sourcing employment from outside HF member villages for local projects;
- repeated complaints of unreliability and being difficult to contact;
- unilateral decision-making regarding employment opportunities in which the HF was not informed, causing much confusion to those HF members who were asked to recruit people;
- unfulfilled promises of DCA compensation to village members;
- discrediting the trustworthiness of TA administrations;
- denying job applications to village members based on their TA affiliation; and
- failing to facilitate community elders from Muyexe village wishing to visit ancestral burial sites in KNP.

One can argue that because the social ecologist was also a member of a village within the HF, potential conflicts of interest would inevitably arise, and should have been expected. However, his superiors believe that "*he allowed his position as a community member to override his position as a SANP employee.*" In early 2005, the social ecologist was called before a disciplinary hearing on allegations of embezzlement of funds raised by selling curios made by artisans from rural villages. He was found guilty and subsequently dismissed from

his KNP position. According to the PaC HoD, the ex-social ecologist is “*appealing this decision legally and, therefore, we cannot replace him until a final decision is reached.*” This has meant that KNP Corporate PaC staff have had to attend HF meetings during this interim period. Despite the positive role that social ecologists can have in acting as a liaison, incidents and experiences of this nature only serve to further break down trust between the KNP, local communities and the HF, and tarnish the reputation of the KNP in its neighbouring villages.

#### 5.2.5. *Contradictions in practice*

Although People and Conservation is now a separate department within SANP and KNP with increased powers, and it is believed by some that new Protected Areas legislation and KNP’s ‘balancing objectives’ will assist in harmonizing people and biodiversity objectives, it appears that fundamental differences remain on-the-ground which expose contradictions in practice. The most predominant include those of access to natural resources, land claims, and DCA control.

From 1 November 2005, SANP business is regulated by and will have to be conducted within the parameters of the following legislation, namely:

1. The *National Environmental Management: Protected Areas Act 57 of 2003* (as amended by the *National Environmental Management: Protected Areas Amendment Act No. 31 of 2004*);
2. The Regulations promulgated under the above Act;
3. The *National Environmental Management: Biodiversity Act 10 of 2004*;
4. The *National Environmental Management Act No. 107 of 1998* (as amended by the *National Environmental Management Amendment Act No. 46 of 2003* as well as the *National Environmental Management Amendment Act No. 8 of 2004*).

However, prior to 1 November 2005, KNP was regulated as per the *National Parks Act (1976)* and relevant amendments. This previous Act is believed to be more restrictive than the new legislation concerning access and use of resources by *inter alia* local communities (see e.g. sections 17(h), 50(1)(b) of *Protected Areas Act 2003*). During the time of field research, marked differences were noted by both PaC and Conservation Services with respect to objectives in resource access by community members. At that time, KNP allowed no access to natural resources within the Park, unless it was first negotiated with the neighbouring communities. According to the local social ecologist at Punda Maria, this extraction can only be limited amounts of e.g. mopane caterpillars, fish, thatching grass, and fuelwood, but only

by KNP employees from these communities (see also chapter 5.3.2). Yet, complaints were launched by neighbouring communities of contractors, responsible for the dismantling of the fence between KNP and Mozambique, exiting KNP at the Punda Maria gate in May 2004 with truckloads of fuelwood. These community members found this practice unfair and unjustified, claiming that ‘KNP is supposed to be about protecting nature’. A similar example includes traditional healers wanting to extract resources from KNP (see chapter 5.2.3 above), but this was also prohibited. Finally, an ex-assistant manager of KNP Social Ecology noted that KNP rangers conflict with social ecologists as their respective objectives are regularly incompatible, claiming that “*Rangers find it difficult to build positive relationships with communities from which certain individuals undermine their authority and poach game or cut firewood within the park.*” This dichotomy in objectives not only makes for strained relationships between departments within KNP, but also between KNP and its neighbours.

The perceptions of land claims lodged against the KNP also show differences between PaC and Conservation Services within KNP (see also chapters 2.5.3.3 and 5.3.4). According to the PaC HoD, SANP is not supposed to be judgmental regarding land claims, but rather to have an enabling function. This means, for example, to co-operate with investigations and outcomes of the Land Claims Commission, and to provide protection and guidance during visits to ancestral gravesites. However, some personnel within Conservation Services feel that if all the land claims currently lodged against KNP are successful, there will be a grave danger of threatening national nature conservation by fragmenting KNP, especially the Ba-Phalaborwa claim as it ‘practically cuts KNP in half.’ One manager within Conservation Services, in discussing the implications of existing and potential co-management arrangements with successful land claims, added “*Even now, the Makulekes are focusing only on their own 24,000ha and trying to maximize it for development. There’s a clash of approaches and it’s difficult for us to try and explain the larger KNP conservation concept to them, which is compounded by the fact that I think they still don’t trust us. I think, in the end, land claims will ultimately be a political decision which will either have to favor communities or conservation.*” The firm belief by some staff of inimical differences inherent between biodiversity conservation and socio-economic development of local communities translates into attitudes that drive decision-making into one of the two directions, and rarely seeks compromise.

The control of DCA has also exposed a further contradiction in practice, at least with relevant KNP rangers. DCA originating from KNP, especially lions, often return to the park after



causing damage in the adjacent communal areas. These animals are then believed to experience behavioral changes in regards to prey selection, causing them to become perpetual ‘cattle-killers’. If damage-causing lions return to the park, KNP field rangers must often hunt these animals within KNP borders, in order to prevent further damage in the communal areas. Rangers often use bait to lure these predators, including impala or zebra. Hence, a moral dilemma now faces the ranger(s), i.e. s/he now must kill that which s/he has been assigned to protect, including both predator and prey. One ranger described one such situation this way, *“I’ve killed two impala and a zebra as bait for DCA lions, been up all night for the last four nights, and have had no success in getting the lions. I’m sick of all this.”* On another occasion, the same ranger stated that a small pride of lionesses with 4 month old cubs were lured to the zebra he had shot for bait, but he ‘didn’t have it in him to shoot them.’ He said if he did, he’d ‘burn in hell’. These dilemmas and management considerations are not new to rangers working in such environments, yet the implications for DCA control and biodiversity conservation need to be more fully appreciated against the background of park-neighbour relations.

#### 5.2.6. Summary

This section has shown that the transition since 1994 for SANP generally, and KNP PaC specifically, has involved a number of dramatic and far-reaching policy changes and practices. These include issues of transformation, black economic empowerment, and a movement towards a more embracing approach to neighbouring park communities. The role of social ecology within KNP has been an ambiguous one, as it has struggled to define itself in a changing environment within the broader organizational park structure. This role is also contested, as a divergent philosophies still exist in terms of protected area management, especially between PaC and Conservation Services. In some cases, these differences have resulted in miscommunication and contradictory practices with respect to access to and utilization of park resources, and attitudes towards land claims. It is envisaged that new legislative power combined with KNP’s balancing objectives and PaC’s upgrading to departmental status will alleviate at least some of these conflicts. Concurrently, it has been PaC faces other constraints with respect to capacity, training, accountability, evaluation, and staff absence. The implications of personal conflicts with local section rangers and social ecologists have also been highlighted, signifying the importance of addressing individual tensions within field staff, as these also have ramifications for park-people relationships.

### 5.3. Benefits

Social ecology is central to the SANP's new vision and is described in its 1998 Corporate Plan, as:

*'... a strategy and process that conveys the philosophy and approach of the SANP to neighbouring communities and establishes mutually beneficial dialogues and partnerships with these communities. The process ensures that the views of the community are taken into account to the largest possible extent and are acted upon, that the Parks' existence is a direct benefit to neighbouring communities and that, in turn, communities adjacent to Parks welcome the conservation efforts of the SANP'* (cited in SANP 2000: 20).

In realizing the mission that KNP's existence be a 'direct benefit' to neighbouring communities, social ecology comprises five major functions: community facilitation; economic empowerment; environmental education; cultural resource heritage management; and research and monitoring. Although KNP social ecology activities and benefits extend to all communities adjacent to KNP's borders, this section will present results of benefits accruing to communities confined to this research's study area, i.e. villages located within 15 km of the KNP border and between the Klein Letaba and Luvuvhu Rivers in Limpopo Province.

#### 5.3.1. Community Facilitation

Community facilitation, in theory, promotes the involvement of park neighbours in the overall management and philosophy of the park, usually through advisory structures. In the study area, this facilitation is primarily through the Hlanganani Forum (see Chapter 6), although KNP is also working with other institutions e.g. community trusts and those who have successfully been awarded land claims against the park.

Currently, seven fora representing 188 villages are operating in conjunction with the KNP (SANP Annual Report 2004/05). PaC staff contend that the HF is the most active of these fora, primarily because they are seeking solutions to specific problems in connection with the park. Conversely, inactive fora are believed to have less impact with the park, care less about their relationship with KNP, and this belief is supported by low attendance at monthly meetings. These beliefs suggest that the *modus operandi* of community fora is primarily to resolve conflicts, not to disburse benefits to neighbouring communities. In responding to questions regarding the future of community fora, the PaC HoD stated that community involvement in protected areas management is now becoming the norm. This means that communities will also need to be strengthened, be more independent, and 'become the drivers' of

initiatives. She feels that the PaC will continue to facilitate this process of community empowerment, but not necessarily be driving it.

Concerning input on KNP management and philosophy, community members from the research area have made strides in economic empowerment in terms of preferred hiring practices and reduced entrance tariffs for community members (see chapters 5.3.3 and 6.3). One other particularly notable accomplishment has been their influence concerning elephant management in KNP. Community representatives were invited to participate in the Great Elephant Indaba, a 3-day conference in October 2004 held at the KNP Berg-en-Dal Conference facility. This meeting was part of SANP/KNP efforts to develop a management plan to address the burgeoning elephant population in KNP. In recognition of communities' right to provide input and participate in this process, a session was devoted to the social impact and benefit to communities of elephant management, followed by three separate community workshops in March-April 2005. The outcomes of this conference, combined with a lengthy public participation and consultative process, are summarized in a report titled, *Report to the Minister: Environmental Affairs and Tourism On Developing Elephant Management Plans For National Parks With Recommendations on the Process To be Followed*, submitted in September 2005 by the Chief Executive of SANP. The report advocates that 'application of lethal means, specifically culling, be approved as part and parcel of a range of options for the management of elephant populations' (point 11, Executive Summary). Culling, it is believed by communities bordering the northern section of the KNP, should be the management option of choice as it potentially holds the most benefit for communities. This form of consultation and input was instrumental in developing the report, in which attempts are being made to merge the concerns and aspirations of local communities with biodiversity conservation objectives.

As mentioned above, one benefit that has accrued to local communities has been to facilitate increased visitation to the KNP by reduced entrance fees. In spite of this benefit, however, 175 of the 240 (72.9%) respondents in the community survey reported that they have never been in the KNP. Of those who had been in KNP, most were there to view game (61.9%) or for employment purposes (15.87%). Other activities undertaken while in the KNP are indicated in Figure 5.4.

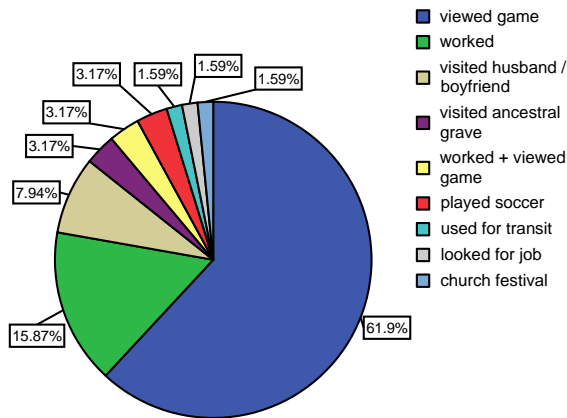


Figure 5.4: Activities undertaken by community respondents who had been in KNP (n=65).

### 5.3.2. Resource Access and Utilization

The restriction of access to resources within KNP to community members has been a contentious issue for decades, and continues to shape attitudes towards the park (see also chapter 5.5). As noted above, the *National Parks Act* of 1976 largely restricted access to and utilization of any resources within the Park. However, it was discovered through interviews, personal observation, SANP Annual Reports, and other documentation that both illegal and legal resource use is taking place in the park adjacent to the study area (Table 5.2).

Table 5.2: Access to and utilization of resources within the KNP

| Type   | Information Source                                      |
|--|---|
| <i>Illegal</i>   |   |
| Stealing of fence materials by outsiders   | DAVS staff  |
| Harvesting game for subsistence by outsiders   | KNP and DFED/EA staff, SANP Annual Reports 97/98, 99/00 |
| Harvesting impala by KNP employees   | <i>Zoutpansberger Mirror</i> , 27 May 2005              |
| Commercial harvesting / luring predators by outsiders                                  | SANP Annual reports 93/94-04/05, KNP staff              |
| Fishing by outsiders   | KNP staff, SANP Annual Report 97/98                     |
| Harvesting of medicinal plants by outsiders  | KNP staff, traditional healers                          |
| Harvesting of medicinal plants by KNP employees  | (Freitag-Ronaldson and Foxcroft 2003)                   |
| Collecting fuelwood by outsiders   | DAVS and KNP staff                                      |
| Grazing of cattle within KNP by outsiders  | KNP staff, personal observation                         |
| <i>Legal</i>   |   |
| Distribution of old fencing material to local communities                              | Community members and DAVS staff                        |
| Thatch grass collection by KNP employees   | KNP staff, personal observation                         |
| Thatch grass collection by outsiders   | KNP and DAVS staff                                      |
| Collection of mopane caterpillars by KNP employees                                     | KNP staff   |
| Fishing by KNP employees   | KNP staff   |
| Fuelwood collection by KNP employees   | KNP staff, personal observation                         |
| Fuelwood collection by contractors working in KNP                                      | KNP staff, personal observation                         |
| Harvesting of impala (monthly) by KNP section rangers and distributed to field rangers | KNP staff, personal observation                         |
| Killing of snakes by KNP employees   | KNP staff, personal observation                         |
| Control of DCA within and/or originating from KNP (lion, buffalo, elephant, hyena)     | KNP and DAVS staff, community members                   |
| Harvesting of impala and zebra as bait for DCA control                                 | KNP staff, personal observation                         |

What is most noteworthy about the results in Table 5.2 above is that some forms of resource use labeled as ‘illegal’ for outsiders (non-park employees), have been ‘legalized’ for park employees and/or contractors working within the park (e.g. collection of fuelwood, mopane caterpillars, fish, impala and thatch grass; see also chapter 5.2.5). According to the KNP Far Northern District Ranger, collections of these resources are allowed for certain employees but only under controlled conditions and in limited quantities. Howard Becker, in his treatise on the studies in the sociology of deviance, analyzes systematic rule-breaking within organizations. He posits that rules, including those governing theft of organizational services and materials, are ‘often not enforced because two competing power groups – management and workers – find mutual advantage in ignoring infractions’ (Becker 1991: 126). However, in the case of the KNP, rule-breaking takes a step further from those described by Becker in that these activities are actually granted to employees and are no longer considered as ‘infractions’. Yet, to the outsider or non-park employee, they are often seen as employee rewards, and contradictory to the main purpose of the park, i.e. to conserve nature (see chapter 5.2.5). Becker further states that informal and customary rules, such as privileged resource collection for employees, are usually vague and open to a wide variety of interpretations. The double standard set by KNP concerning resource use may partially explain why incidents of illegal poaching by some KNP employees occur in the park. For example, Tempelhoff and de Nysschen (2005) reported in the Johannesburg based *Beeld* newspaper in April 2005 that four KNP employees were dismissed after slaying seven impala within the park. In the article, they also stated that KNP’s Head of Liaison and Communication, subsequently issued a memorandum warning park personnel that ‘the theft of game was a serious offence’, and that KNP management recognized that ‘certain personnel were involved in illegal actions, such as the poaching of game for food, from time to time.’ The analysis of perceptions of resource uses deemed illegal for outsiders yet allowed for privileged KNP personnel was not within the scope of this research. However, investigation into the perceptions of both neighbouring communities and KNP employees on what constitutes illegal resource extraction from KNP would be a fruitful undertaking to determine how differential access to resources and the rules governing access are decided.

Resource use practices that benefit communities also include distribution of meat from killed DCAs, after veterinary requirements have been considered (see also chapter 7.5). According to minutes of a meeting between the KNP and GNC on 19 July 1994, any elephant or buffalo that was a problem outside the park and is subsequently shot inside KNP will be given to the communities, but after being cooked first under veterinary supervision. This practice has

continued to present day and, according to the HF Chairman, also includes lion. The distribution of meat to communities was also specifically cited by a number of questionnaire respondents as a form of community development program, and the reason why they believed:

- KNP would help them economically in the future;
- KNP improves local communities;
- KNP staff treats villagers well;
- KNP cares about their village's interests; and
- that living close to the KNP is beneficial.

In addition to veterinary restraints to distributing meat to local communities *outside* KNP, there are unique constraints which limit the access to, and utilization of, natural resources *within* KNP by local communities. Both the KNP Shangoni and Punda Maria Section Rangers stated that much of the difficulty in facilitating access to resources by community members lies in two main constraints. The first concerns logistical problems, especially in ensuring the safety of persons within the KNP, which is notorious for its potentially dangerous animals (buffalo, elephant, lion, leopard, hyena, etc.). The second is the threat of disease transfer.

According to Dr. Roy Bengis, the KNP Chief State Veterinarian, KNP buffalo (*Syncerus caffer*) are maintenance hosts of both bovine tuberculosis or 'BTB' (*Mycobacterium bovis*) and the SAT group of foot-and-mouth-disease (FMD) viruses. These diseases are potentially transferable to cattle located adjacent to KNP in the communal areas, and thus their control is the primary *raison d'être* for the KNP's western boundary fence, originally erected in the late 1950s. This threat and potential of disease transfer between livestock and wildlife has also hampered efforts by KNP to disperse benefits to its neighbours. The initiation of a thatch grass collection program designed to benefit local communities was met with a setback due to veterinary considerations after running for only two weeks in July 2004. The program was forced to be terminated prematurely by KNP after it received a letter from the Department of Animal Health (DAH) stating that the program was actually in contravention to the *Animal Health Act* No. 7 of 2002 (Government Gazette No. 1023), i.e. 'no fodder material can be removed from an infected area and transported to an area where livestock exists' (c.f. section 4(a) under 'Detention and disposal of imported animal or thing, and animal or thing conveyed in transit'). In the DAH letter, it was recognized that there was some complaint by communities that the grass collected was for roofing material, but it was also noted that there

could be no guarantee that it would not also be used for feeding domestic livestock. In the letter's conclusion, the DAH was sympathetic, however, to the KNP's initiative.

The threat of disease was also of grave concern in the study area beginning in late June 2004. During a routine surveillance program, veterinary officials first detected 12 head of cattle with lesions that resembled FMD at two diptank areas near Letaba Ranch (immediately south of study area), which later spread. During her 2005 agriculture budget speech, Ms. D. Magadzi, Member of Executive Council (MEC) for the Limpopo Province Department of Agriculture, stated that this FMD outbreak put approximately 79,000 cattle at risk, the majority of which were in the communal areas. The campaign to control this outbreak, including an extensive vaccination and quarantine program, was mounted with the support of the SANDF, SAPS, Disaster Management and Traffic (Figure 5.5). The affected areas were finally declared free of FMD on 19 February 2005, and the cost of this control, according to minutes of a meeting on 10 March 2005 between SANP/KNP, Limpopo Parks, DFED/EA, and national and provincial departments of agriculture, was estimated at 90 million ZAR (~14 million USD).

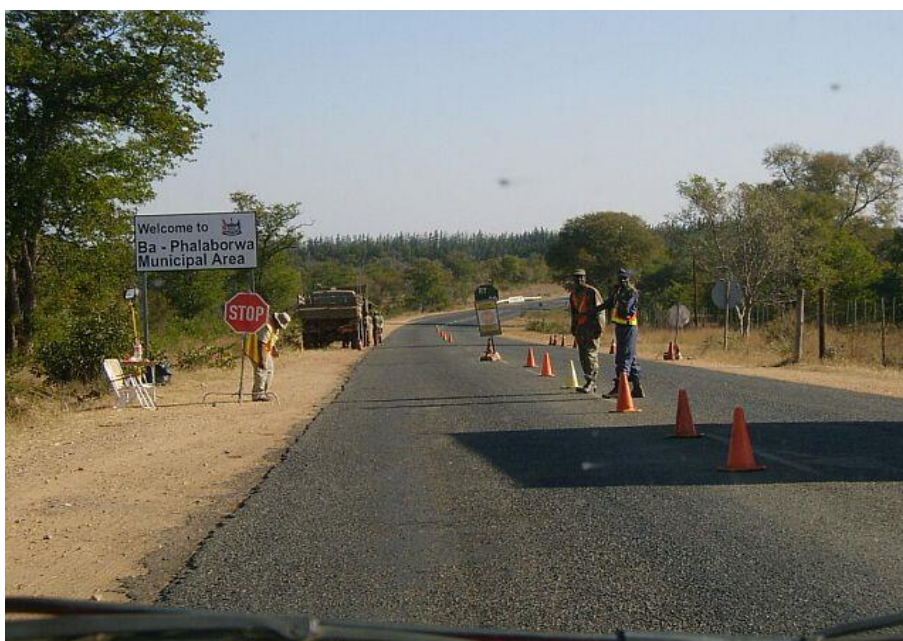


Figure 5.5: FMD checkpoint along road from Giyani to Letsitele (July 2004)

The threat of disease, primarily between potential interaction between KNP animals and domestic livestock, can affect attitudes towards KNP by community members. One female member from Mtititi village stated that because KNP has “*allowed their animals to escape, which have transmitted diseases to our livestock*”, she is unhappy that her village is so close to KNP. Moreover, both a woman respondent from Peninghotsa and a male member from Nkavela believed that wild animals transferring diseases to livestock pose the greatest problem in terms of land use in their respective communities.

### *5.3.3. Economic Empowerment*

Through this function, KNP aims to establish mutually beneficial partnerships with local communities which are economically viable and sustainable. Practically, this includes creating jobs, economically empowering communities to effectively tender for business contracts, and promoting business opportunities.

Unexpectedly, almost one in five (17.9%) questionnaire respondents stated that a household member has been employed within the KNP. This employment includes both past and present positions, and temporary or permanent. In an area with high unemployment, jobs within the KNP, even temporary ones, can make a marked difference in household livelihoods. The influence of this factor on attitudes towards the KNP is noted elsewhere (chapter 5.5). Employment opportunities in the study area included positions within:

- the Working for Water Program (see chapter 6.3);
- hospitality services within KNP rest camps;
- personnel at Punda Maria gate;
- KNP Technical Services (e.g. road, equipment and building maintenance);
- construction and maintenance of the KNP border fence, in a joint effort with KNP Technical Services, sponsored by Department of Environmental Affairs and Tourism (DEAT) through Poverty Relief funding;
- People and Conservation Department (social ecologists); and
- Conservation Services (e.g. section ranger, field rangers, trail guides).

In addition to this job creation, new KNP employment guidelines state that KNP tenders must now stipulate that winning contracts source at least their 'unskilled labour' from local communities, especially those in close proximity to where the work will be undertaken.

KNP-sponsored or facilitated training for local communities in the study area consisted of:

- THETA Leadership training for HF members.
- THETA - INTAC training in tour guiding, game ranging, hospitality and basic literacy.
- Contractor Development Program to empower communities by training skills development to local contractors. As of 2003, 18 contractors have completed the training.
- In February 2005, KNP signed a Memorandum of Understanding with representatives from the Community Public Private Partnership Program (CPPPP) and the Tourism Enterprise Program (TEP), which aims to encourage economic growth in the area around



the Park, particularly for Small, Micro and Medium Enterprises (SMME) in the agriculture and tourism sectors.

- The HF, in partnership with KNP and the Dept. of Welfare, secured 393,000 ZAR from Development Bank South Africa (DBSA) to build a new Art & Craft Centre at the Punda Maria gate. It is envisaged that local artisans will be able to sell their crafts at this Centre.

Finally, direct cash payments by the KNP via the HF were made to local farmers suffering losses from DCAs in the study area in 1998. KNP raised these monies through the sale of two skins of shot lions.

#### 5.3.4. Cultural Heritage Management

Cultural heritage for KNP means safeguarding the diverse historic cultural heritage of South Africa. This is expressed in better understanding neighbouring communities and their associated cultural resources, including promoting reconstruction and understanding land claim issues. A number of land claims in which KNP is actively engaged in were noted by local *tihosi* during interviews in the study area. The claimants and current status of these claims are indicated in Table 5.3.

Table 5.3: Land claims in research study area and current status.

(Source: SANP Land claims coordinator, e-mail correspondence, 8 November 2005).

| Proponent          | Area in KNP   | Current status  |
|--------------------|---|---|
| Makuleke           | Pafuri area of KNP  | <ul style="list-style-type: none"> <li>• Awarded 15 December 1998.</li> <li>• In addition to receiving land back, community also received a Restitution Grant, which funded the electrification and public lighting of Makuleke and Maviligwe villages, and new classrooms in Makahlule village.</li> </ul> |
| Nkotswi            | Makuya Park and part of Punda Maria area.   | Preliminary Investigations  |
| Nkotswi Community  | Stretching from the confluence of Mutale and Levubu Rivers on the east up to the current border of the KNP and Makuya Park on the west. It further stretches to Mutale River on the north and to Levubu River on the south.                         | <ul style="list-style-type: none"> <li>• Accepted on the 07/09/05</li> <li>• Gazetted on the 23/09/05 Notice No. 1753 of 2005</li> </ul>  |
| Makahane-Maratenga | Consists of areas known today as Nyalaland Wilderness Trail (Makahane), Gumbandevhu (Kama), Marithenga, The Landing Strip (Tshihaheni), Punda Maria Rest Camp (Tshikokololo), Tshamavhudzi (Tshipakoni), Matukwale and Maseya sandveld (Magovhani). | <ul style="list-style-type: none"> <li>• It has been consolidated together with the Marithenga land claim</li> <li>• Gazetted: Notice 2391 of 2003</li> <li>• Accepted as a valid claim by RLCC</li> <li>• Referred to the LCC</li> </ul>   |
| Ndindani           | From Naladzi and Shongololo River on the north up to Nyarhi, Nhengo and Shisese streams on the south. It further stretches to Tshende River on the east and Little (Klein) Letaba on the west.  | <ul style="list-style-type: none"> <li>• Gazetted: Notice 794 of 2005</li> <li>• Accepted as a valid claim by the RLCC:04/05/05</li> </ul>  |
| Mahlathi           | From Mphongola to Olifants (Balule) River.  | dismissed   |
| Mapindani          | From Mphongola to Olifants (Balule) River.  | dismissed   |
| Mhinga             | Punda Maria area  | dismissed   |

|         |   |  |
|---------|---|--|
| Muyexe  | From Tshange Mountain on the east and Tshange River on the southeastern, up to the Murhugulwani Rivulet on the west. It further extends to Shingwedzi River on the north and Shangoni Mountain to south.                          | Consolidated with Ndindani and Madonsi claims  |
| Madonsi | From Phugwani river on the north to Shingwedzi river on the south including areas known as Phonda on the southeastern side, Phugwani on the northeastern side up to the current boarder of the KNP on the west (Vhembe district). | <ul style="list-style-type: none"> <li>• Valid claim</li> <li>• Gazette notice 849 of 2005</li> <li>• Consolidated with N'wadzeku-dzeku Community</li> </ul> |

Although the land claims cited above include land *within* KNP, a number of other claims have been launched for lands *outside* the KNP and have resulted in a number of benefits to local communities within the study area. Successful claims include the following:

1. **Mtiti** community received a restitution award of 39 million ZAR, which contributed to the construction of 430 four-roomed rural houses of 51 m<sup>2</sup> each. (*Mopani News*, Vol 2(29), 23 July 2004; *Commission on Restitution of Land Rights Annual Report 2005*).
2. **Hlomela** community received a 14,384,200 ZAR grant for a clinic, community centre, individual housing, and installation of electricity in restitution for land near Louis Trichardt from which they were dispossessed in 1969. Electrification project will cost 4.5 million ZAR and will also serve **Gawula** village (*Mopani News*, Vol 2(31), 6 August 2004; *Zoutpansberger Mirror*, 29 April 2005).
3. The land claims commission built 230 housing units of 45 m<sup>2</sup> each for Dzwerani land claimants at **Lombaard** and Mdavula villages (Figure 5.6).



Figure 5.6: Sign at Lombaard village indicating award of Dzwerani Land Claim and construction of 230 houses.

The potential impact of land claims lodged against KNP cannot be underestimated. During interviews with community members, beliefs about the KNP in some cases are tied very closely with past injustices committed by governments in relocating people from within KNP. For example, Komarisha Marule (Figure 5.7) was born in 1925 within KNP, and was evicted in 1951 to his present location in Matiyani village. He stated, during an interview in August 2003, that his entire *muganga* (village) was evicted, and he even still wishes to visit his grandmother's gravesite within KNP (see Figure 5.8). He, along with others, launched a land claim before the cut-off date in 1998. It was later dismissed by the Land Claims Commission.



Figure 5.7: Komarisha Marule, a 78 year old man from Matiyani village, who was evicted from KNP in 1951.



Figure 5.8: KNP Social Ecologist indicating location of ancestral gravesite within KNP near Punda Maria gate.

A second example involves respondents from Mashobye village who stated that they dislike the KNP because “*we were brought here by force and told that the land was good, only to find that it lacks water*” and “*...they removed us from where we stayed good and brought us here where we are without agricultural land.*” Moreover, when asked whether KNP staff care about village interests, a 60 year old man from Mahlathi village stated, “*No, because they've forgotten that KNP is in land owned by other communities.*” Conversely, respondents from villages in which land claims against KNP have been successfully awarded were more positive in their perceptions of KNP. Respondents from Makuleke village, for example, believed that KNP would help them economically because “*it is willing to give land back to its rightful owners*” and “*...the Makuleke people have land in the park which they can use.*” Other Makuleke village respondents stated that they like KNP staff because “*they electrified our streets from the land claim money*” and “*...they've allowed the Makuleke people access to their ancestor's land.*”

In addition to facilitating land claims, social ecology has also been active in promoting cultural heritage within the study area by:

- inviting community dance groups to do conduct paid performances within the KNP.
- facilitating visits to ancestral gravesites by community members.
- supporting the art and craft project based in Mtititi village, which participated in the National Craft Imbizi Showcase in Pretoria in 2001.
- awarding the local winner of a HF logo competition with a KNP golf shirt, and a night with 3 friends at the Mopani rest camp in July 2004.
- organizing and co-sponsoring a handball and soccer tournament for local teams in August 2004 in Skukuza.
- Re-instituting a Traditional Healers Program in September 2004 at Skukuza, to which traditional healers from the area are invited. This Program will seek to assist healers to propagate their own plant material outside the KNP and/or to sell medicinal plants from the Skukuza Nursery. The KNP / Traditional Healers Program was originally started in 1994, but faced a number of challenges forcing its reorientation.

The value of indirect, non-consumptive benefits are often overlooked in examining park-people relationships. This research revealed that indirect benefits, associated with cultural beliefs, have also accrued to community members from the KNP. A number of community respondents, for example, emphasized that being located so close to KNP has positive

benefits. Reasons for this belief, including respondents' villages, include the following unanticipated statements:

- 'we and our children get to hear the sounds of lions, elephants, buffaloes and zebra' (Peninghotsa, Botsoleni)
- 'we get to see wild animals/nature through the fence, without paying' (Lombaard, Mashobye)
- 'we can see wild animals which have strayed from the park, without paying money' (Josepha, Mtititi, Mashobye).
- 'when they make it rain in KNP, sometimes the rain reaches our village' (Nkavela).
- 'we are fortunate to be so close to nature' (Botsoleni, Mninginisi Block 2)

### 5.3.5. Educational Awareness

This function of social ecology seeks to increase environmental awareness and promote an environmental ethic for all South Africans, but focusing on youth. Within the study area, educational awareness activities by KNP include:

- *Environmental Education program* which, in part, teaches school groups within KNP.
- *Morula Kids Competition* has involved primary school children since 2002. It encourages both students and educators to use art, sculptures, and essays to address challenges facing conservation and sustainability within protected areas.
- *Kids in Kruger* – 5 local schools participated in this program in June 2004. The program is being conducted in cooperation with Environmental Interpretation and Education Units. Children, especially those in adjacent communities, are brought into the park on educational day-trips that integrate history, culture, tourism, and the environment. The project is run within the National Environmental Education Program (NEEP) curriculum framework developed by the South African Department of Education.
- *Take Kruger to Kasies (townships) Project* – in a recently initiated joint venture with Shell South Africa, PaC will use two buses, fitted with screens and televisions, to communicate the message of conservation, tourism, and environmental education to the communities living along the boundaries of the KNP.

Community opinions regarding environmental education, including those programs offered by the KNP, are mixed. On the one hand, community respondents who know of the environmental education programs feel that they benefit the community, improve relations with KNP staff, and show that KNP cares about village interests. On the other hand, however, those who have not benefited from this education expressed critical opinions. One respondent emphasized that KNP doesn't care about his village because "*they [KNP] see us as the devil, yet they fail to educate us about the environment.*" The need for improved environmental education was noted not only by villagers, but also TA representatives as well. Magona TA

specifically were concerned that their relationship with KNP is ‘not good’, in part because “*nobody comes here anymore from the KNP to educate us. They offer no environmental education programs, not even for children. It could be greatly improved by offering the community environmental education and awareness on the role of the KNP in this regard.*” It should be noted, however, that education on nature conservation and environmental issues in the study area is not solely the responsibility of KNP, but also of other government departments including Environmental Affairs, and Education.

Mopani District DFED/EA officials stated that Community Environment Development (CED) was initiated as early as 1982. It was originally called ‘extension’ and then ‘community development’ before obtaining its current name. It involves educating the public within villages on the wise use of natural resources, and employs pamphlets, films, lectures, and now video and television. School programs primarily revolve around holding school clean-up days, celebrating Wetland Day, and promoting conservation activities including not cutting live trees or killing wild animals. These activities are sometimes run in partnership with TAs and schools as part of their curricula. Unfortunately, however, the CED has not been effective in the more remote rural areas due to human resources and financial constraints, and is only now beginning to gain momentum. These original limitations, according to a current CED officer based in Giyani, are now being overcome with increased personnel and CED officers based closer to the rural communities. However, according to many informants both within DFED/EA and school systems within the study area, there is simply too little being done in this regard. One DFED/EA District Manager articulated this belief saying, “*There has been absolutely no improvement in environmental education in the rural areas in the last 10 years*”.

Environmental education within the school system is also varied in the study area. Some schools include nature conservation in their curricula while others completely omit it. Both the physical sciences and biology teachers in Maphophe high school remarked that nature conservation is not taught at all in their school curricula. They stated that neither the TA nor HF conducts any teaching in this regard but “*...only the KNP, who sometimes offer programs for children in the park, undertakes any environmental education.*” The teachers both feel this is why veld fires and cutting of live trees is so widespread in their area. Yet, even where education is taking place, it is not internalized, and does not always result in changed behaviour. During an informal interview with high school students in Peninghotsa village, some stated that despite being taught in school not to kill wild animals, some persist anyway



for a variety of reasons. Some students remarked that ‘it is part of our culture to hunt wild animals’. When one young man was asked why he killed sparrows, he stated “*because they taste good*”. He added that he will continue, and is ‘not afraid of being caught’ and arrested by the Environmental Affairs rangers, although he recognizes that people have been arrested and subsequently tried and fined in the tribal court.

### *5.3.6. Research and Monitoring*

Although research and monitoring is identified as one of five pillars upon which social ecology functions within SANP, unfortunately, this has been the most neglected component within KNP activities. Ideally, a participative monitoring and evaluation system should be implemented which would provide valuable feedback for all PaC projects and programs, including the effectiveness of community fora interacting with the KNP. However, after a decade of operation of the Hlanganani Forum, this research is the first to do so. Indeed, other current PaC-related research projects are limited to documenting community involvement in the Phabeni Gate development, wood use in the Makoko area, and cultural heritage/rock art paintings.

Social Ecology was developed within SANP partly through funding by GTZ and DANCED. This funding also contributed to a conference from 15-19 May 2000 at the Berg-en-Dal conference facility in KNP. The conference was entitled ‘Towards Best Practice: Communities and Conservation’ and brought together over 70 participants to reflect on and share SANP social ecology project experiences. The conference was pioneering in that it was the first major step in compiling research and evaluation on social ecology within SANP. The proceedings list 34 papers presented at the conference, yet few are scholarly in nature and only four deal with KNP specifically. These include brief descriptions only of the Thulamela Heritage site near Pafuri, the Traditional Healers Program started in 1994, the potential of arts and crafts projects with local communities, and a relatively more comprehensive examination of the Makuleke co-management agreement. Moreover, only one of the papers presented at the conference was co-authored by a community representative, i.e. a net fisher involved with the West Coast National Park. Ironically, one of the many emerging issues cited at the conference was the need to acknowledge and incorporate research into project designs.

It is hoped that the SANP social science research unit, established in 2003 with the overall objective being to coordinate relevant research to complement and enhance the functions of PaC on a national and park level, will help to address this paucity in scholarly research. On a

positive note, evidence of an emerging interest in PaC-related research was the inclusion of a separate session on socio-ecological systems at the 3<sup>rd</sup> KNP Science Network Meeting in April 2005. Akin to the SANP journal *Koedoe*, published and presented research within these venues has traditionally, and predominantly, been within the realm of natural sciences and been insular in nature with respect to neighbouring communities.

Monitoring of specific PaC projects and programs within the study area has been practically non-existent. Aside from statistics on schools participating in educational programs and the production of HF meeting minutes (see however chapter 6.4.2), very little evaluation or monitoring is undertaken on the perceived quality or long-term benefits of PaC projects, especially by their intended recipients. Indeed, according to current PaC personnel at KNP, even staff are self-evaluated based only on their annual work plans. The PaC HoD considers that, unfortunately, this evaluation is not always systematic or done on a conscious level and believes that, in addition to more self-evaluation, external evaluation is also needed to improve this aspect of PaC's objectives.

#### 5.3.7. Summary

This section on benefits has provided a description and evaluation of the activities of PaC within the study area. Community facilitation is being realized primarily through its interaction with the HF, although relationships between the KNP and other community groups are also forming. It is believed that community fora are primarily intersections for resolving park-people conflicts, not for disbursing benefits to communities. However, some steps are being made in including the aspirations of local communities in terms of reduced entrance fees for community members and elephant management.

The restriction of accessing and utilizing KNP resources has largely been governed by the now repealed *National Parks Act* (1976). In spite of this, however, both legal and illegal resource use has continued to take place in the park, often giving mixed signals to community members. Moreover, veterinary constraints and safety concerns have also plagued the implementation of resource access to community members, especially the transfer of diseases between wild animals and domestic livestock.

Economic empowerment has consisted primarily of job creation, both within KNP and other park-sponsored and facilitated projects. This aspect has been shown to be a significant factor in promoting knowledge of KNP, and shaping more favourable attitudes towards the park in



general and its forest policies. Other economic empowerment initiatives include THETA training, developing local contractors, and forming partnerships to assist local artisans. Cultural heritage management in the research area has focused on the facilitation of visitation of communities to ancestral gravesites, involving cultural dance groups in park events, and accommodating the needs of traditional healers. In addition, it has involved taking an enabling approach with respect to land claims. In addition to the settled Makuleke claim, nine other claims have been lodged in the area, six of which are still being decided. Land claims have been shown to be a controversial area of conflict and have great potential to reshape the face and management of KNP. Finally, unexpected cultural and spiritual benefits were also introduced, including the sights and sounds of wildlife, and the belief that KNP brings rain to neighbouring villages.

Educational awareness probably receives the most attention to PaC activities, and focuses mainly on educating the youth through park tours, but will now take the park to the communities with the initiation of a new program utilizing specially designed buses. Formal environmental education is sporadic in the area, and its effectiveness questioned even where it does exist. Finally, research and monitoring has been shown to be lacking with respect to PaC internally, social science issues related to park neighbours, and effectiveness of community fora. However, considering the limited history of PaC, some steps are being made to address this paucity including the establishment of a SANP social science research unit in 2003.

#### **5.4. Limitations to Benefits**

*‘There are approximately 300 families, amounting to about 2000 individuals, of native squatters in the park. These natives have been residing in the park for a long time and have proved invaluable to the Rangers in detecting and reporting to them any poaching that may take place. According to the terms of the Act these natives should, however, be removed from the Park, but on the account of the abovementioned reason and also in view of the fact that it would be very difficult to find room for them elsewhere, your Board has decided to allow them to remain in the Park and to charge them a small fee of £1.10.0 per year per each adult male for the privilege. This decision is, as pointed out above, not strictly in accordance with the terms of the Act, but as it will give your Board additional revenue of approximately £800 per annum and, moreover, as nobody will be prejudiced thereby, your Board trusts that a broad view of the Act will be taken by the Authorities concerned.’*

[National Parks Board of Trustees. 1927. *First Annual Report - 1926*. Chairman, The Honourable Minister of Lands, Cape Town. Dated 20<sup>th</sup> January 1927.]

In the very first year of its existence, it was apparent that KNP faced dilemmas with respect to policy and practice. In the quote above from its first Annual Report in 1926, the KNP felt it appropriate that in order to allow ‘invaluable native squatters’ the benefit of remaining within the park, they could only do so at a cost. In this section, the current limitations to benefits to

local communities will be introduced. These limitations relate to promises of DCA compensation which never materialized, thatch grass collection which was prematurely cut short, inequity in employment opportunities and hiring practices, buffer zone restrictions, provisional reduction in entrance fees, unequal access to KNP for school groups, and conditional KNP-sponsored sports activities.

1. Before the KNP border electric fence was erected, local communities were promised that once it is in place, an insurance policy will be taken out by the KNP in order that communities will be compensated for livestock/crop loss due to problem animals. It was later remarked that KNP could not take an insurance policy out on something it doesn't legally own (HF meeting minutes, 21 January 2000). In this case, a promised benefit never materialized.

2. A thatch grass harvesting program was running successfully in KNP for two weeks in July 2004 with members of Mtititi, Altein and Muyexe villages. Then, for veterinary reasons, the program was terminated (see also chapter 5.3.2) (HF meeting, 6 August 2004). Here, community members complained that the benefit was short-lived.

3. Although KNP has extended employment benefits to local communities, in many cases these have not been impartial as community members and TAs criticize KNP for nepotism in their employment advertising and hiring practices. According to community members:

- *'KNP staff's relatives are sometimes hired for jobs with no questions asked.'*
- *'We heard of people getting employed [at KNP] in suspicious ways.'*
- *'KNP should be more fair, and less secretive, when advertising for jobs in the park.'*
- *'We were denied job applications by the KNP [social ecologist] because we're from Magona.'*

4. The idea behind the proposed Mariyeta Buffer Zone was to have communities set aside land for conservation purposes, and KNP would also set aside portions of land that local communities would have some access rights to. KNP representative reports that some of the implications regarding the proposed buffer zone are that the grazing area of the community would be reduced because of the veterinary law which prohibits the mixing of livestock and wild animals because of the danger of foot-and-mouth disease. Some communities responded negatively to this implication (HF meeting minutes, 6 February 1996).

5. HF village members can benefit from a 50% discount on entry fee to KNP until 31 Dec 2004, but not on school or public holidays. This last caveat raised much opposition from members as they felt that these are the times when families would normally go and question why others should have preference over KNP neighbours in accessing the park (HF meeting minutes, 5 March 2004).

6. In a letter from HF Chairperson to PaC HoD, clarification is needed as to why only one school is allowed to enter Punda Maria gate on Fridays, when other gates are allowed more than one school bus. HF Executive felt that this benefit of extending environmental education to local communities is being handled in an unfair fashion (HF meeting, 1 October 2004).

7. HF can invite two high schools to participate in a soccer and handball tournament coordinated and co-sponsored by KNP. The first matches will be held locally, with the finalists competing in Skukuza. Room and board at Skukuza will be provided but transport is not KNP's responsibility, and teams are expected to provide their own transport to Skukuza (HF meeting, 7 May 2004).

These limitations to benefits, i.e. often with conditions attached, have been the source of much controversy in HF meetings and led to the belief by some members that KNP doesn't truly care about the needs of local communities. These conflicts have also led some TA to believe that the HF is dominated by KNP's objectives only and, consequently, have withdrawn their support and formed their own Trusts (see also chapter 6.4.3).

### **5.5. Knowledge, Beliefs and Attitudes**

Knowledge, beliefs and attitudes of KNP's neighbours regarding KNP and its activities were also examined in this research. Knowledge questions in the community questionnaire consisted of whether respondents knew of KNP's activities and if so, where they gained this information. Only about one in three (32.1%) indicated that they did know of KNP's activities and information on these was received primarily from KNP staff, radio, and interpersonal relationships (Figure 5.9). Those with knowledge of KNP activities are likely to have been in KNP ( $R^2=0.240$ ,  $t=6.608$ ,  $p<0.001$ ) and have had a household member employed at KNP ( $t=3.408$ ,  $p\leq 0.001$ ).

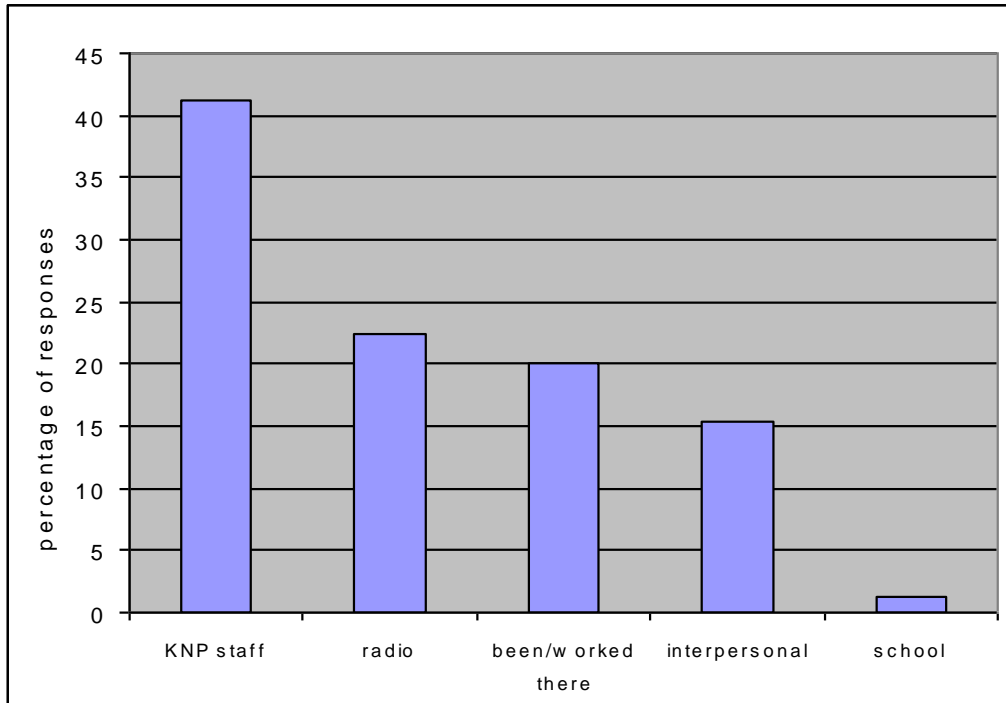


Figure 5.9: Bar graph showing frequency of sources of information regarding KNP activities, for those respondents who know of them (n=77).

Respondents were also asked their belief concerning the purpose of establishing KNP. Most indicated it was to protect wild animals and/or nature (n=210), although a variety of other reasons were noted including national development, job creation and tourism (Figure 5.10).

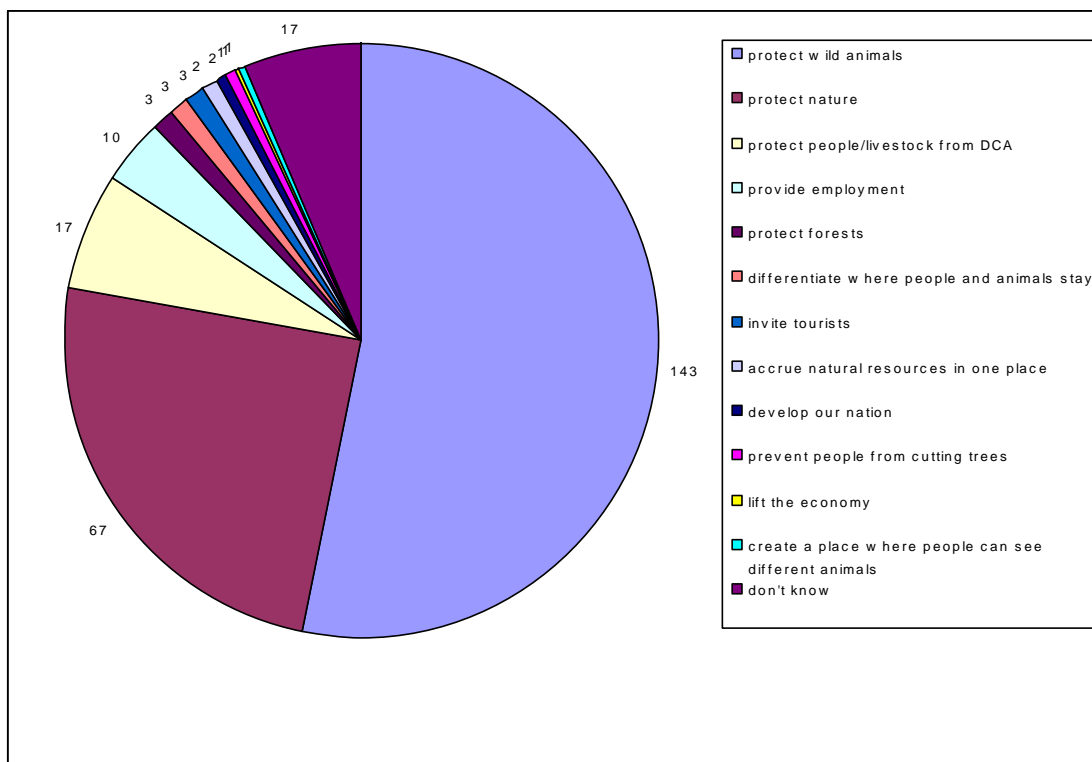


Figure 5.10: Pie chart illustrating frequency of responses to question 'In your opinion, what was the main purpose of establishing the KNP?' (N=240; respondents could provide >1 reason).

Attitudes towards the KNP by community members were measured by responses to 12 related questions with three possible responses, i.e. positive, neutral, or negative. Frequency, mean, and standard deviation for responses for each of the questions are given in Table 5.4.

Table 5.4: Attitudes towards KNP by community respondents

| Attitude question   | Responses (%) |      |      | Mean | S.D. | N   |
|---|---------------|------|------|------|------|-----|
|   | +             | 0    | -    |      |      |     |
| 1. Have you or anyone in your household ever benefited from the KNP?                | 20.4          | 1.7  | 77.9 | 2.58 | .810 | 240 |
| 2. Do you think the KNP will eventually help your household economically?           | 49.7          | 10.6 | 39.7 | 1.90 | .943 | 179 |
| 3. Do you think the KNP will eventually help your community economically?           | 50.6          | 13.9 | 35.6 | 1.85 | .918 | 180 |
| 4. Has the actions of the KNP resulted in any improvement in your community?        | 26.5          | 39.5 | 34.0 | 2.08 | .776 | 238 |
| 5. Does the KNP offer any community development programs?                           | 15.8          | 53.3 | 30.8 | 2.15 | .668 | 240 |
| 6. If you interact with KNP staff, do you like or dislike them?                     | 34.5          | 61.3 | 4.2  | 1.70 | .554 | 238 |
| 7. How does KNP staff treat the local people in your village?                       | 34.3          | 59.4 | 6.3  | 1.72 | .573 | 239 |
| 8. In general, do you think KNP staff care about your village's interests?          | 24.2          | 32.5 | 43.3 | 2.19 | .801 | 240 |
| 9. Are you satisfied or dissatisfied that your village is located near the KNP?     | 70.8          | 12.5 | 16.7 | 1.46 | .764 | 240 |
| 10. Do you agree/disagree that the KNP exists for the betterment of your community? | 59.6          | 23.3 | 17.1 | 1.58 | .767 | 240 |
| 11. Are you getting the help from the KNP which you think they should be giving?    | 52.1          | 1.3  | 46.7 | 1.95 | .994 | 240 |
| 12. Overall, do you like or dislike the KNP?  | 88.7          | 3.3  | 7.9  | 1.19 | .562 | 239 |

Each of these questions also included an open-ended question allowing respondents to indicate why they made the choice they did. By and large the categorical responses provided revolve around three major themes, namely employment, absence of interaction, and DCA. Reasons for positive attitudes to KNP centered on the role that KNP plays in employing local community members. Community respondents equate community improvement, development, treatment, and betterment with access to jobs in the KNP. This concept dovetails with results from the community needs assessment in chapter 4.2.4. In addition, other identified reasons for favourable attitudes towards the KNP include the fact that it seeks to protect villagers from DCA, local artisans are able to sell their crafts in and near KNP, they offer environmental education, and protect nature which would otherwise have been destroyed.

Notwithstanding the positive contributions KNP has made by employing local people, however, many respondents have had no interaction with the KNP. Many of the neutral responses in Table 5.4 above are from those who have never talked with a KNP staff member, believe KNP does nothing in their villages, are unaware of any KNP activities or benefits to its neighbours, and/or believe that KNP 'is a park for animals, not people'.

Negative attitudes toward KNP were also prevalent amongst community members. These primarily centered on DCA problems, i.e. the lack of adequate maintenance of the KNP border fence, control of animals once they've escaped from the park, and the fact that affected farmers have yet to be compensated. Other negative responses focused on the lack of education being provided by the park in the neighbouring areas, KNP 'not reaching out to the villages' nor informing them of any development or employment opportunities. Also noteworthy were responses that accused KNP staff of arresting people for collecting fuelwood and killing wild animals, not just within KNP boundaries, but outside the park. According to KNP section rangers, KNP staff have no legal powers or jurisdiction outside the park. They noted, however, that exceptions to this includes cases when KNP staff witness someone leaving the KNP illegally, at which time they can chase offenders. Secondly, if there is strong suspicion that a person, or persons, is in possession of elephant tusks or rhino horns, KNP personnel can search residences outside the park, usually in cooperation with SAPS officers. Further investigation into allegations of KNP arresting people outside the park revealed that confusion exists amongst many community members in distinguishing differences between KNP and DFED/EA staff. When asked how they distinguish the two, a number of respondents stated that 'KNP wear green or khaki uniforms. DFED/EA wear camouflage.' In fact, it was discovered that rangers of both institutions wear green or khaki uniforms, leading to the false belief by some respondents that DFED/EA officers are KNP staff. This misunderstanding has important implications for both institutions, but especially for the image of the KNP. In a case of mistaken identity, KNP staff are being accused of arresting individuals for illegal resource collection, when in fact it is DFED/EA field officers. This belief has led at least some respondents to subsequently hold less favourable attitudes towards the KNP.

Respondents were asked whether they felt the KNP was appropriately helping local communities (question 11 in Table 5.4). Responses were equally divided between 'no' (46.7%) and 'yes' (52.1%), with 1.3% indicating they 'don't know'. For those respondents who indicated 'no', a follow-up open-ended question allowed them to indicate how they felt KNP should be helping local communities. Responses to this open-ended question focused on creating jobs (53.6%), compensating DCA victims (14.3%), more adequately preventing DCA problems (11.6%), provision of basic services (electricity, water, schools, etc.) in local villages (10.8%), and allowing access to game and fuelwood within KNP (2.7%).

Individual responses to the twelve statements in Table 5.4 were then converted to numeric values (positive = 1; neutral = 2; negative = 3) and summed to create a single community

attitude index. Cronbach's alpha was used to measure internal consistency of the attitude index and resulted in a score of 0.81. The mean attitude index score on a scale from 12 (most favourable) to 36 (least favourable) was 21.86 (S.D.=5.43, N=167) (Figure 5.11).

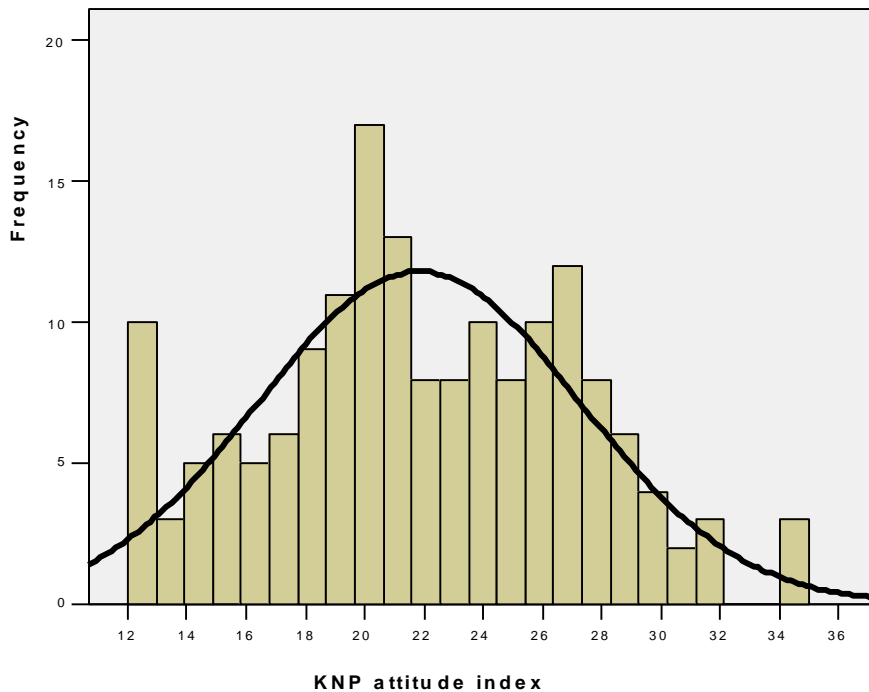


Figure 5.11: Histogram showing frequency and range of index scores for attitudes towards KNP (12 = most favorable; 36 = least favorable).

Linear regression was conducted on the scale to determine which variables helped explain why some respondents held more favourable attitudes than others. Results show that more positive attitudes toward KNP are mainly influenced ( $R^2=0.291$ ) by having a household member employed by KNP ( $t=6.964$ ,  $p<0.001$ ), age [younger] ( $t=2.677$ ,  $p<0.01$ ), and affiliation with Mtititi TA ( $t=2.438$ ,  $p<0.05$ ). Furthermore, although attitude scores for those respondents who have been in KNP (mean=20.94, S.D.=6.264, N=50) were not significantly different ( $p=0.155$ ) from those that have not (mean=22.25, S.D.=5.010, N=117), values were significantly lower ( $p<0.05$ ) for those who have personally worked in KNP (mean=18.73, S.D.=6.420, N=11) compared to those who have either never been in KNP or were there for reasons other than employment.

Although respondents had limited knowledge of KNP's activities, this research also tried to understand community attitudes towards specific KNP policies, including those for wildlife, forestry, and social ecology. The objective here was to understand perceptions towards

various policies, not necessarily whether respondents had accurate knowledge of policy content. Results for this research component are given in Figure 5.12.

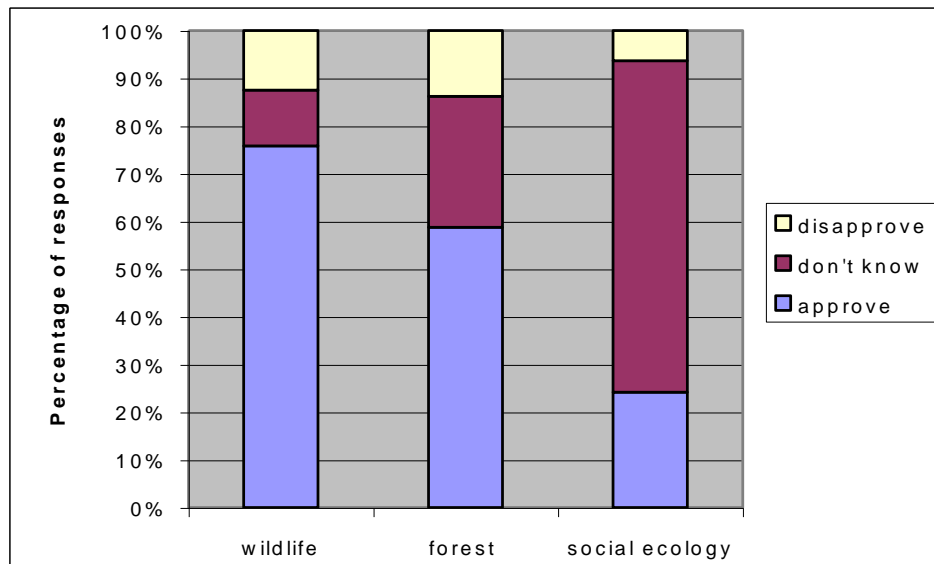


Figure 5.12: Approval of various KNP policies by community respondents (N=240)

Qualitative responses for choice selection revealed that communities believed they know more about KNP wildlife policies than forestry policies, and have little knowledge about social ecology related policies. High approval for KNP wildlife policies is attributable to the function of the park in protecting villagers and their livestock from DCA (n=104), properly protecting wild animals (n=45), conserving nature for future generations (n=17), and preventing the public from slaughtering wild animals (n=10). Reflecting the dual nature of DCA control, negative attitudes towards wildlife policies predominantly rested on the fact that despite control efforts by KNP, DCA are escaping from the park and causing damage in the neighbouring areas. Linear regression analysis revealed that none of the tested variables significantly influence attitudes towards KNP wildlife policy.

Local communities generally approve of KNP forestry policies, although they are less well known. Those in favour credited their reasoning to the role that forests play in performing environmental services such as windbreaks (n=51), providing habitat for wild animals and livestock (n=15), cleaning the air (n=7), and for future generations (n=6). Those who disapproved primarily cited restriction of access to local communities for much-needed fuelwood (n=28). Results of linear regression analysis indicate that at least some of the variance ( $R^2=0.042$ ) is explained in that favorable attitudes towards KNP forest policy is influenced by having a household member employed at KNP ( $t=2.600$ ,  $p=0.010$ ) and having higher education ( $t=1.992$ ,  $p=0.048$ ).



Policies regarding social ecology are the least understood amongst the three policy sectors as most respondents (69.6%) admitted having no knowledge of social ecology. Those who approved of the policies claimed two reasons for their answers: it helps to protect animals and keep people safe (n=28), and creates jobs (n=13). Those who disapprove credit responses chiefly to fear originating from wild animals escaping (n=8), and the fact that KNP ‘is doing nothing for us’ (n=6). Similar to wildlife policy, regression analysis revealed that no variables significantly influence attitudes towards KNP social ecology policy.

In order to understand perceptions of local communities on if, and how, the establishment of the KNP has affected local culture / traditions, respondents were asked two questions. Firstly, ‘Has the establishment of the KNP affected your traditional life and practices?’ and secondly, ‘What are your reasons for saying so?’ Quantitative results were tabulated and are presented in Figure 5.13 according to responses to the first question, and direction (positive, negative, no indication) in responses to the second question. About one in five respondents did not know whether the KNP has affected local culture / traditions. The remainder of respondents were equally divided, with 40.5% believing that it has had an effect, whilst 37.9% believed that it had not. Moreover, 50.1% believed that regardless of whether KNP has affected local culture, the result is positive. In comparison, 17.9% believe the result is negative, and 10.4% indicated no direction.

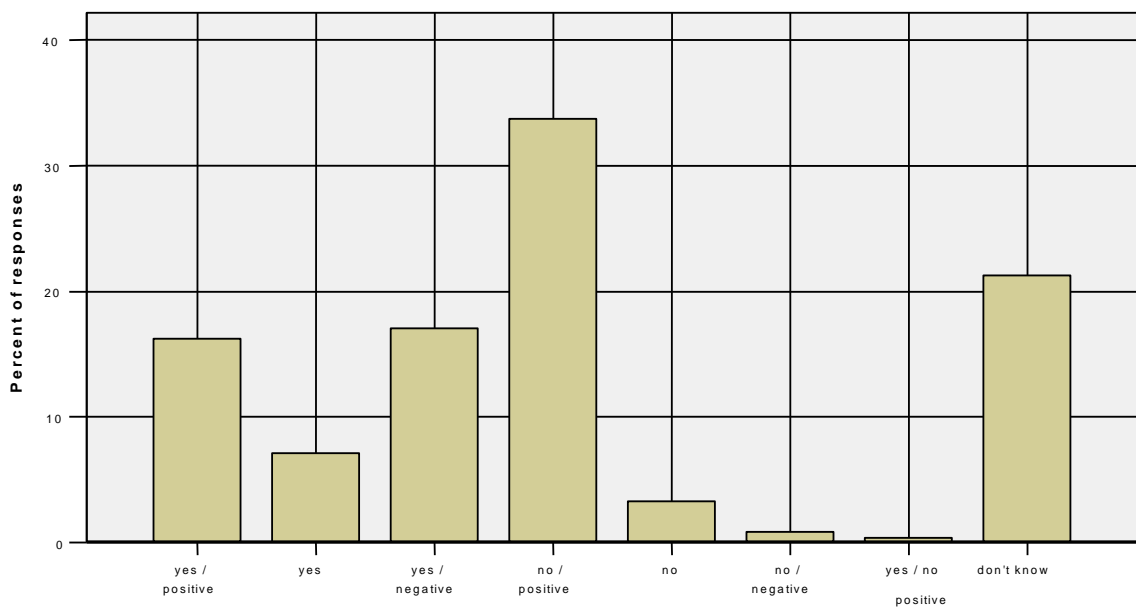


Figure 5.13: Range of responses to question ‘Has establishment of KNP affected local culture / traditions?’ (N=240)

Qualitative responses for reasons behind choices show remarkable variety and are provided in Table 5.5 based on categorical response.

Table 5.5: Reasons for belief on whether KNP establishment has affected local culture / traditions.

| Category     | Response   | Frequency |
|--------------|--|-----------|
| yes +        | • we are less scared to go to areas outside the park because animals are kept inside   | 23        |
|              | • because we now know about/see animals which we would not have otherwise  | 7         |
|              | • unlike before the animals are now well-protected   | 6         |
|              | • unlike before forests are now well-protected   | 2         |
|              | • our people get employed  | 2         |
|              | • because now our relationship with them is better   | 1         |
|              | • because we now have electricity  | 1         |
| yes -        | • because people used to hunt/trap/kill animals; now they don't  | 27        |
|              | • unlike before, we are now restricted from wearing traditional dress (animal skins)   | 4         |
|              | • because we are now scared of the wild animals  | 4         |
|              | • because people were moved from where they used to stay and animals put in  | 3         |
|              | • because we used to collect firewood inside the park but now we are restricted  | 2         |
|              | • because I used to travel to see my aunts along a foot path to Massingir (Mozambique) through what is now KNP. Now, there is no access. | 1         |
|              | • because the animals are in the park, and we're here with scarce resources  | 1         |
|              | • because our livestock were much safer in the olden days before KNP   | 1         |
| yes          | • because in the past we lived with wild animals; now, we're separated   | 15        |
|              | • because they've constructed a fence which didn't exist before  | 1         |
|              | • because many people changed after being employed by KNP  | 1         |
| no +         | • nothing has changed / we still have/continue our traditions  | 93        |
| no -         | • because people are still suffering   | 2         |
| no           | • because we are far from them   | 1         |
|              | • culture is changed by individuals, not KNP   | 1         |
| yes + / no + | • because they don't give us problems  | 2         |
| don't know   | • I don't know   | 20        |
|              | • it was established long before I was born / before we came here  | 7         |
|              | • I don't know how people lived in the olden days  | 3         |
|              | • because I wasn't born in this area   | 1         |

In a related question on the establishment of the KNP, 83.8% of respondents believe that forests and wild animals would not exist if the KNP had not been established, due to their probable exploitation by people. For those who disagreed and felt that forests and wild animals would still exist if KNP did not (7.9%), they cite the following reasons for their responses:

- because animals would continue to breed and/or forests continue to grow.
- animals would have continued to survive in the forests because even now not all animals are in the park.
- because nature is not easily destroyed.
- because nature solves its own problems in unexpected ways.

- because animals are clever and would have survived the dangers of people; forests depend on rains.
- only some animals would have been killed in large number, and God would have intervened to maintain the forest.
- because the animals existed there before the park was created.
- they would still exist, just in lower numbers.
- because the animals would still have been there and supplied us with some food.

### **5.6. Threats to Biodiversity (TRAs)**

The knowledge, beliefs and attitudes of communities mentioned above are instrumental in understanding the Park's interaction with its neighbouring communities. However, it is also crucial to understand whether these attitudes are translating into more resource conserving behaviour. Many authors have posited that conserving habitat in areas surrounding a PA, commonly termed buffer zones, supports wildlife populations within it (Taylor 1982; Western and Gichohi 1993; Homewood *et al.* 2001), one of the reasons driving efforts to maintain biodiversity outside KNP. Indeed, one of the core objectives for both KNP PaC and the HF is to promote an appreciation of conservation amongst local stakeholders. It is believed by these institutions that educating local communities concerning nature conservation will lead to changed behaviour and more sustainable land use practices. Moreover, as Firey (1960) has noted, gain-seekers (either internal or external) may often exploit resources in situations where opportunism is unconstrained, including where social order is in a state of flux (see chapter 2.10). One avenue of testing the effectiveness of efforts to maintain and/or improve biodiversity along KNP's western border is to assess differences in the threats to biodiversity since 1994, i.e. when changes in KNP policies to more effectively involve local communities in its activities occurred and the concurrent inception of the HF.

An evaluation of whether KNP and DFED/EA management has been effective in mitigating identified threats to the KNP and its adjacent areas since 1994 was conducted through a modified threat reduction assessment technique (TRA) (see chapter 3.3.5). TRA monitors threats to the resources rather than changes to biological parameters themselves, as a proxy measurement of conservation impact. Moreover, it is a useful instrument in research such as this where little, if any, baseline data exists on biodiversity threats.

The modified TRA approach was carried out by organizing two group discussions with KNP staff representatives from the management and law enforcement departments as applicable

from each of the two primary KNP ranger sections in the study area (Punda Maria, Shangoni). In addition, to determine if management by DFED/EA has effectively mitigated threats to biodiversity outside the KNP, two modified TRAs were also conducted with DFED/EA staff from the Greater Giyani and Malamulele offices (see Figure 5.14). The assessment areas were defined as follows:

1. ***Punda Maria***: KNP border to 5 km inside park, from Luvuvhu River in north to south end of ranger section.
2. ***Shangoni***: KNP border to 5 km inside park, along entire western edge of ranger section.
3. ***Malamulele***: KNP border fence to 15 km outside park, from Luvuvhu River in north to Shingwedzi River in the south.
4. ***Giyani***: KNP border fence to 15 km outside park, from Shingwedzi River in north to Klein Letaba River in the south.

Each identified threat is comparatively ranked to other area threats according to three criteria: area, intensity, and urgency. For example, if a total of ten threats are identified for a given assessment area, the threat which is greatest in area compared to the other nine threats is assigned a score of 10 under the ‘Area’ column (see Table 5.6). The threat which affects the next greatest area is assigned a score of 9, and so on. The sum of these rankings produces a Total Rank score for each threat within the assessment area, i.e. the higher the Total Rank value, the greater the threat to biodiversity. After the scoring and ranking exercise, total ranking scores were multiplied by the percentage of the threat met (% Threat Reduced) to get a raw score for each threat<sup>26</sup>. Dividing the sum of the raw scores for each threat by the total possible rankings of all the threats and multiplying by 100 produced a threat reduction index (TRA-I). This means that the higher the index, the more successful management has been in mitigating the identified threats. TRA index values for the four areas, and individual rankings for all threats within each assessment area, are listed in Table 5.6 (see also Appendices F through I for itemized scores and explanation of threats).

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<sup>26</sup> In the original assessment (Margoluis and Salafsky 2001), if a threat had not been addressed at all, management would score zero. Where management had fully mitigated a threat, the score would be 100 percent. However, in this research, the option for a negative score was added for cases where threats had worsened and a score of -100 percent if new threats had arisen since 1994 and had not been mitigated.

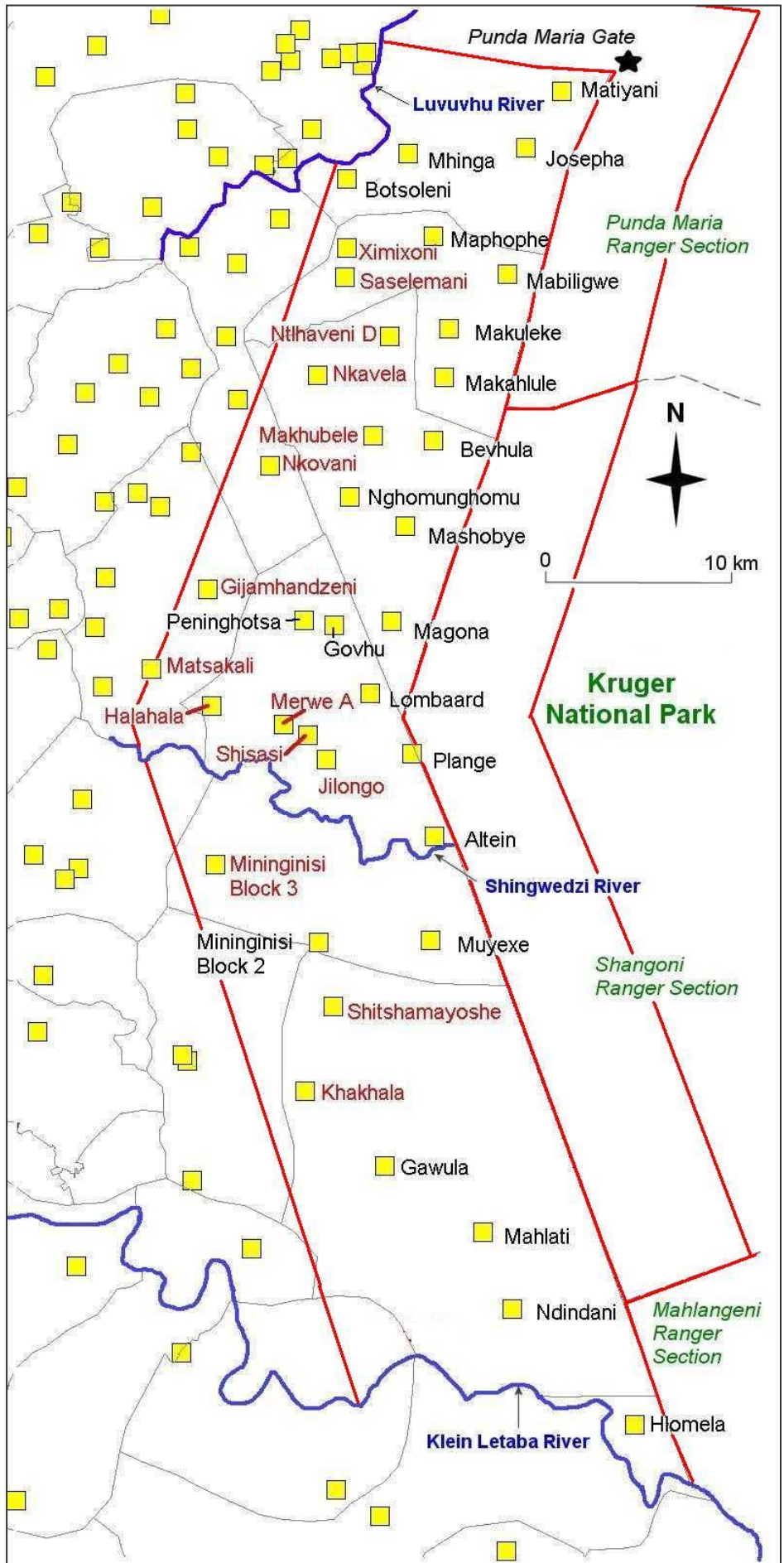


Figure 5.14: Research study area showing focus areas for TRA exercises (bold red lines).

Table 5.6: TRA results for Malamulele, Punda Maria, Giyani, and Shangoni assessment areas.

| Area        | Threat   | Area | Intensity | Urgency | Total Rank <sup>a</sup> | Rank No. | % Threat Reduced <sup>b</sup> | Raw Score | TRA Index   |
|-------------|--|------|-----------|---------|-------------------------|----------|-------------------------------|-----------|-------------|
| Malamulele  | Illegal commercial harvesting of trees           | 10   | 7         | 10      | 27                      | 1        | <b>-50</b>                    | -13.5     | <b>4.0</b>  |
|             | Agricultural expansion                           | 6    | 9         | 8       | 23                      | 2        | <b>-40</b>                    | -9.2      |             |
|             | Illegal harvesting of trees for subsistence      | 7    | 6         | 9       | 22                      | 3        | <b>-10</b>                    | -2.2      |             |
|             | Subsistence poaching                             | 9    | 8         | 4       | 21                      | 4        | 30                            | 6.3       |             |
|             | Mining sand                                      | 2    | 10        | 5       | 17                      | 5        | 40                            | 6.8       |             |
|             | Illegal fire                                     | 4    | 5         | 7       | 16                      | 6        | 60                            | 9.6       |             |
|             | Residential expansion                            | 5    | 4         | 6       | 15                      | 7        | <b>-20</b>                    | -3        |             |
|             | Commercial poaching                              | 8    | 2         | 3       | 13                      | 8        | 40                            | 5.2       |             |
|             | Road construction / maintenance                  | 3    | 3         | 2       | 8                       | 9        | 60                            | 4.8       |             |
|             | Disease transfer                                 | 1    | 1         | 1       | 3                       | 10       | 50                            | 1.5       |             |
| Punda Maria | Poaching with dogs and/or snares                 | 11   | 5         | 10      | 26                      | 1        | <b>-15</b>                    | -3.9      | <b>-5.0</b> |
|             | Poaching fish                                    | 5    | 11        | 8       | 24                      | 2        | <b>-30</b>                    | -7.2      |             |
|             | Alien species                                    | 10   | 7         | 6       | 23                      | 3        | 70                            | 16.1      |             |
|             | Illegal harvesting of trees for medicine         | 2    | 10        | 11      | 23                      | 4        | <b>-60</b>                    | -13.8     |             |
|             | Illegal fire                                     | 9    | 8         | 5       | 22                      | 5        | 0                             | 0         |             |
|             | Poaching with firearms                           | 6    | 4         | 9       | 19                      | 6        | 80                            | 15.2      |             |
|             | Illegal harvesting of live trees and/or dry wood | 3    | 9         | 4       | 16                      | 7        | 0                             | 0         |             |
|             | Increasing elephant population                   | 8    | 6         | 1       | 15                      | 8        | <b>-60</b>                    | -9        |             |
|             | Highly infectious alien diseases                 | 7    | 2         | 3       | 12                      | 9        | <b>-80</b>                    | -9.6      |             |
|             | Commercial hunting – luring lions                | 1    | 3         | 7       | 11                      | 10       | 5                             | 0.55      |             |
|             | Endemic disease transfer                         | 4    | 1         | 2       | 7                       | 11       | 15                            | 1.05      |             |
| Giyani      | Illegal harvesting of trees for subsistence      | 7    | 4         | 8       | 19                      | 1        | 60                            | 11.4      | <b>32.0</b> |
|             | Illegal fire                                     | 4    | 8         | 6       | 18                      | 2        | 30                            | 5.4       |             |
|             | Illegal commercial harvesting of trees           | 5    | 5         | 7       | 17                      | 3        | 20                            | 3.4       |             |
|             | Subsistence poaching                             | 8    | 2         | 4       | 14                      | 4        | 50                            | 7         |             |
|             | Mining sand                                      | 2    | 7         | 5       | 14                      | 5        | <b>-50</b>                    | -7        |             |
|             | Commercial poaching                              | 6    | 3         | 3       | 12                      | 6        | 40                            | 4.8       |             |
|             | Road construction / maintenance                  | 1    | 6         | 2       | 9                       | 7        | 50                            | 4.5       |             |
|             | Disease transfer                                 | 3    | 1         | 1       | 5                       | 8        | 95                            | 4.75      |             |
| Shangoni    | Poaching wild animals                            | 8    | 4         | 8       | 20                      | 1        | 90                            | 18        | <b>31.0</b> |
|             | Poaching fish                                    | 1    | 8         | 7       | 16                      | 2        | 50                            | 8         |             |
|             | Illegal fires                                    | 5    | 7         | 4       | 16                      | 3        | 70                            | 11.2      |             |
|             | Poaching grass/trees                             | 7    | 2         | 5       | 14                      | 4        | 50                            | 7         |             |
|             | Commercial hunting                               | 3    | 5         | 6       | 14                      | 5        | <b>-100</b>                   | -14       |             |
|             | Increasing elephant population                   | 4    | 6         | 2       | 12                      | 6        | <b>-50</b>                    | -6        |             |
|             | Disease transfer                                 | 6    | 3         | 1       | 10                      | 7        | 50                            | 5         |             |
|             | Alien plant species                              | 2    | 1         | 3       | 6                       | 8        | 80                            | 4.8       |             |

<sup>a</sup> Sum of scores for Area, Intensity, and Urgency criteria

<sup>b</sup> Negative values indicate new or worsening threats

It is clear from these results that efforts in the northern areas of the study area (Malamulele, Punda Maria) have been less successful in mitigating the identified threats to biodiversity since 1994 with TRA-index scores of 4.0 and –5.0, respectively. These scores reflect serious implications, with 11 of the 21 threats identified showing no improvement in mitigation.

Particularly problematic threats include the illegal harvesting of trees, some for medicinal purposes, alien infectious diseases, agricultural expansion, poaching fish, and an increasing KNP elephant population. Southern assessment areas (Giyani, Shangoni) show better threat mitigation with scores of 32.0 and 31.0, respectively, although participants in the Shangoni assessment remarked that threats were more acute north of the Shingwedzi River. However, with 100 being an optimum score, even these areas are experiencing worsening trends, especially in terms of illegal removal of sand, commercial hunting, and an increasing elephant population. From a methodological standpoint, these results also demonstrate the need to integrate negative values into the ‘% Threat Reduced’ category of the original assessment design. By including negative values, where appropriate, investigators will be afforded a more accurate picture of biodiversity threats and trends both temporally within assessment areas and spatially across sites.

All threats for the four geographical areas were then combined into general categories based on the nature of the threat (illegal harvesting of flora, illegal harvesting of fauna, illegal fire, disease transfer, etc.). Average TRA-index values were then computed for each category of threat. A prioritized list of categorical threats was then constructed based first on its presence/absence in the four assessed areas and, secondly, its TRA-index value (Table 5.7).

Table 5.7: Combined prioritized ranking of biodiversity threats in assessment areas, according to areas affected, then by TRA index value.

| Priority | Threat to biodiversity          | Assessment Area |          |             |          | Total | TRA Index |
|----------|---------------------------------|-----------------|----------|-------------|----------|-------|-----------|
|          |                                 | Malamulele      | Giyani   | Punda Maria | Shangoni |       |           |
| 1        | illegal harvesting of flora     | 1               | 1        | 1           | 1        | 4     | -6.0      |
| 2        | disease transfer                | 1               | 1        | 1           | 1        | 4     | 7.0       |
| 3        | illegal harvesting of fauna     | 1               | 1        | 1           | 1        | 4     | 21.0      |
| 4        | illegal fire                    | 1               | 1        | 1           | 1        | 4     | 36.0      |
| 5        | increasing elephant population  |                 |          | 1           | 1        | 2     | -56.0     |
| 6        | illegal mining of sand          | 1               | 1        |             |          | 2     | -1.0      |
| 7        | road construction / maintenance | 1               | 1        |             |          | 2     | 55.0      |
| 8        | alien species                   |                 |          | 1           | 1        | 2     | 72.0      |
| 9        | agricultural expansion          | 1               |          |             |          | 1     | -40.0     |
| 10       | residential expansion           | 1               |          |             |          | 1     | -20.0     |
|          | <b>TOTAL</b>                    | <b>8</b>        | <b>6</b> | <b>6</b>    | <b>6</b> |       |           |

Interviews, reports and other documentation, and personal observation were also utilized to corroborate the TRA research findings. Results of this component of the research are included in Table 5.8 below and include the nature of the threat and location (if known). Figures 5.15 to 5.21 also provide photographic evidence of a number of identified threats to biodiversity.

Table 5.8: Nature of threat to biodiversity within research study area, location, and reference.

| Threat to biodiversity / description  | Location   | Reference   |
|---|--|---|
| <i>Illegal harvesting of flora</i>  |  |   |
| High rate and magnitude of deforestation adjacent to KNP. Trucks transporting newly cut poles and wood are often observed along the roads in adjacent areas.  | Areas mostly affected are between Mtititi village and Mphongolo River. | Internal KNP report by Shangoni Section Ranger (September 2002) |
| There is a general observation that trees are being illegally cut and it seems there is no visible law enforcement on behalf of the [provincial] rangers.   |  | HF meeting minutes, 21 January 2000; 27 June 2003               |
| Greatest threat to natural resources are ‘the illegal activities of persons, including cutting of live marula and mopane trees. This even occurs when people from Thohoyandou hire locals to cut the trees for them.’           | Mtititi TA area  | Interview, <i>Hosi Mtititi</i> , 7 June 2004                    |
| ‘Mopane trees are being destroyed unsustainably, which also changes the tree composition in the bush and eventually, alters important wildlife habitat.’  | Magona TA area   | Interview, <i>Hosi Magona</i> , 19 October 2004                 |
| ‘There is heavy illegal harvesting of trees north of the Shingwedzi River.’   | Thulamela Municipality   | Interview, Chief Conservator, DFED/EA 12 August 2004            |
| ‘Cutting live trees is the main LEMA offence along the KNP border.’   |  | Interview, Chief Conservator, Mopani DFED/EA 13 October 2004    |
| ‘People are always in the park and know when to go in as they know the working hours of the rangers. That’s why I was fortunate to arrest a man last Sunday (usually an off-day) for illegally taking firewood out of the KNP.’ | Punda Maria area of KNP  | Interview, Punda Maria Section Ranger, 2 July 2004              |
| ‘People often cut the fence on weekends and enter KNP to steal firewood.’   | Between Phugwane and Shingwedzi Rivers                                 | Interview, DAVS fence maintenance worker, 7 June 2004           |
| ‘Non-sustainable harvesting of firewood a problem’  | Between Giyani and Punda Maria gate                                    | <i>Kruger Park Times</i> , 5 May 2004                           |
| <i>Illegal harvesting of fauna</i>  |  |   |
| ‘Two SAPS officers were arrested in KNP with guns two weeks ago.’   | Punda Maria area of KNP  | Interview, Shangoni Section Ranger, 3 August 2004               |
| ‘Evidence exist that luring lions is taking place, with the consent of the Limpopo Province, over the whole length of Shangoni’s western boundary.’   | Entire length of Shangoni Section’s western boundary.                  | Internal KNP report by Shangoni Section Ranger (September 2002) |
| ‘There was an increase in subsistence poaching with snares and dogs along the western boundary’   |  | SANP Annual report 1999/2000                                    |
| ‘There is heavy poaching of animals south of the Shingwedzi River.’   | Greater Giyani Municipality  | Interview, Chief Conservator, DFED/EA 12 August 2004            |
| ‘People often cut the fence on weekends and enter KNP to hunt animals.’   | Between Phugwane and Shingwedzi Rivers                                 | Interview, DAVS fence maintenance worker, 7 June 2004           |
| ‘I hunt sparrows because they taste good’   | Peninghotsa village  | Interview, 17 year old boy, Peninghotsa village 26 August 2004  |
| ‘There are a few people from this village who locally hunt duiker, impala, warthog, and sometimes kudu.’  | Ndindani village   | Interview, 19 year old boy, Ndindani village 9 September 2004   |



|   |                            |  |
|---|----------------------------|--|
| ‘KNP doesn’t care about us because they arrest us for setting traps for lions that have killed our livestock.’  | Mahlathi village           | Interview, Mahlathi village member, 24 June 2004   |
| ‘Overall numbers of problem animals are decreasing outside KNP because people are killing animals themselves.’  | Gawula                     | Interview, Gawula community member, 22 June 2004   |
| ‘Because the government does nothing, villagers often take the situation into their own hands and kill the DCA themselves.’   | Mininginisi Block 3        | Interview, <i>Hosi</i> Mininginisi, 20 May 2004  |
| ‘Animals are being poached in this area.’   | Magona TA area             | Interview, <i>Hosi</i> Magona, 19 October 2004   |
| <i>Disease transfer</i>   |                            |  |
| ‘...complaint in the Forum is that illegal immigrants from Mozambique are stealing cattle from the local communities and then taking them through the park back to Mozambique.’   | Mahlathi village area      | HF meeting, 7 May 2004   |
| Mozambicans stole our cattle, took them through KNP, and nothing has been done about it.  | Mahlathi village area      | Interview, Mahlathi community member, 24 June 2004   |
| ‘Community members are cutting the KNP fence.’  |                            | HF meeting, 10 May 2002  |
| ‘Foot-and-mouth outbreak in Giyani area   | Communal areas near Giyani | <i>Mopani News</i> , Vol 2(43), 29 October 2004; <i>Zoutpansberger Mirror</i> , 12 November 2004                                   |
| ‘Illegal immigrants are cutting the fence to get across.’   |                            | HF meeting minutes, 21 Jan 2000; 4 August 2000   |
| <i>Illegal fires</i>  |                            |  |
| Illegal fires being caused by local communities and illegal immigrants  |                            | SANP Annual report 1999/2000   |
| ‘The woman who has a maize crop next to the Shangoni Gate was likely the person responsible for a veld fire in 2002 which killed a number of elephants, buffalo, and other herbivores.’   |                            | Interview, Shangoni Section Ranger, 3 August 2004  |
| <i>Illegal mining</i>   |                            |  |
| Removal of river sand - a case was registered with Pafuri SAPS (CR4/08/2001) without any feedback, although suspects names were also forwarded.   |                            | Internal KNP report by Shangoni Section Ranger (September 2002)  |
| ‘I accompanied two officials from the Department of Mines and Energy to investigate the sand removal adjacent to the KNP fence. They found the backhoe and truck on site, and the officials contacted the owner in Pietersburg and terminated the activity immediately as it was illegal and without a permit.’ |                            | Interview, Shangoni Section Ranger, 24 September 2004  |
| KNP raises concern that it was not consulted, approached, nor had its questions satisfactorily answered regarding proposed mining activities within 1.5km of KNP.   | Muyexe area                | Letter from KNP Manager: Integrated Environmental Management to Managing Director of Muyexe Magnesite Mine dated 20 September 2000 |



Figure 5.15: Ring-barking of marula tree (*Sclerocarya birrea caffra*), a nationally protected species, just outside KNP border. Area was also recently burned, with fire spreading into KNP (September 2004).



Figure 5.16: Illegal cutting of live mopani trees (*Colophospermum mopane*) immediately adjacent to KNP border. (Photo taken by Peter Scott)





Figure 5.17: Use of zebra carcass to lure lions from KNP (Photo taken by Peter Scott)



Figure 5.18: Illegal sand removal located on banks of Shingwedzi River near Altein village (August 2004).





Figure 5.19: Illegal road and sand removal at KNP boundary (September 2004)



Figure 5.20: Illegal road / weir across Phugwane River (Photo taken by Peter Scott)



Figure 5.21: Three head of cattle approximately 30km within KNP, east of Hlomela village (October 2004). It was later discovered that these were part of a herd that was stolen and were being taken through KNP to Mozambique. Lions killed one of these animals, and the remaining two were killed by KNP rangers to control the threat of disease transfer.

Mopani District DFED/EA Regulatory Services arrest records also support the TRA findings. Available records from April 2003 to September 2004 show illegal cutting of indigenous trees and illegal transportation of indigenous plants as the most frequent offence in the district, followed by illegal fishing and poaching (Figure 5.22).

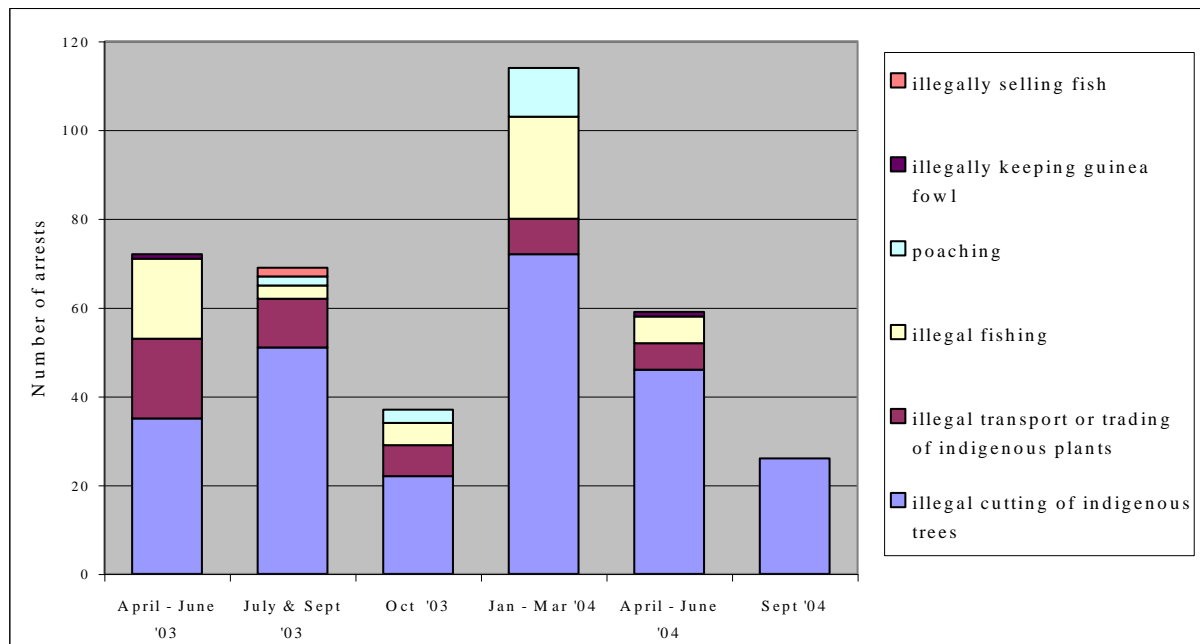


Figure 5.22: Frequency of arrests for LEMA offences in Mopani District from April 2003 to September 2004. Compiled from Mopani District DFED/EA records.

## 5.7. Conclusion

This chapter has focused on the role and effectiveness of the KNP in distributing benefits to local communities. It also highlighted constraints and challenges inherent in benefit sharing including organizational restructuring within KNP and SANP, transforming legislation, communication, opposing management philosophies, and capacity and training needs. Tantamount to these challenges, attention was drawn to the personal dilemmas of two key KNP staff who regularly interacted with neighbouring communities, and how they affect park-neighbour relations. An outline of categorical benefits in the study area, including strengths and weaknesses, was presented which relate to community facilitation, economic empowerment, cultural heritage, educational awareness, and research and monitoring. Resource access and utilization was also investigated including the implications of disease threats. This was followed by a section which described a number of conditions or costs to local communities associated with reduced entrance fees, resource access, employment equity, and access to KNP-sponsored programs.

One of the study's main research questions was to examine how local communities view the institutions responsible for managing natural resources. This was addressed, in part, by a section in which both quantitative and qualitative techniques were used to assess knowledge of the park and its activities, beliefs on the purposes for its establishment, and attitudes towards the park by local communities. This section includes results of regression analyses, which sought to identify which variables best explain why some respondents hold more favourable views than others towards KNP in general and its policies. The final section identified and prioritized threats to biodiversity in the study area, and adjacent areas within the KNP, and the effectiveness of their mitigation since 1994. It showed that threats can be distinct in terms of spatial and temporal scales, and that efforts at mitigating threats are varied within and outside the KNP, between municipal districts and between ranger sections.

## Chapter 6: The Hlanganani Forum (HF)

### 6.1. Introduction

This chapter documents and traces the origin and activities of the HF since 1994, illustrating significant achievements and constraints that it historically and currently faces. Based on a) HF meeting minutes and correspondence, b) interviews, c) non-participant observation, and d) questionnaires administered to community members, HF village and institutional representatives, an evaluation of HF effectiveness is presented (Research Question 4).

### 6.2. Origin

In 1994, the then National Parks Board (NPB), driven by national policy changes and the need to improve its image, issued a directive that parks cannot exist in isolation from their neighbours and thus, dialogue should begin. According to early Social Ecology staff, with this directive, and without a framework nor any planning or objectives, rangers began to use black subordinates to initiate discussions with neighbouring traditional authorities. The focus was to increase the 'sense of ownership' of parks by local communities and, concurrently, create fora that could establish communication regarding park-people issues and alleviate conflicts. At that time, there was much friction between the KNP and communities as the KNP was still very much dominated by whites and followed Apartheid practices. According to Dr. Harold Braack, former Chief Warden of KNP from 1994-1998, fora were initiated with communities within the 'red line'<sup>27</sup> (which was an arbitrary choice) and were partly modeled after community representative frameworks from the Richtersveld National Park.

The HF was initiated by white KNP rangers at a meeting in Punda Maria on 24 February 1994 in which all TAs within the red line were approached and invited. Originally, it was named the 'KNP-Giyani/Malamulele Forum' and was formed to have three major actors 'come together', i.e. KNP, The Northern Province Department of Agricultural Affairs, and neighbouring communities. According to minutes of that meeting, a KNP representative described the relationship between KNP and its neighbouring villages stating that 'KNP has not had a mandate to work in these communities'. Emphasis was placed on 'the changing political and economic circumstances within the country, and the recognition that a good working relationship between KNP and its neighbours is essential for both parties'. Two fora

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<sup>27</sup> The 'red line' is a veterinary demarcation, which runs approx. 15-20 km from the KNP's western border. It is currently managed by the national Department of Agriculture to control foot and mouth disease in terms of the Animal Disease and Parasite Act (No. 13 of 1956). When one leaves the control area, they are obliged to obtain a valid written veterinary permit to transport: cloven-hoofed animals; cooked meat and dry biltong; skins and hides, horns and hooves; blood, manure, grass and fodder; milk and milk products; and bones.

were proposed, i.e. one from Phalaborwa to Klein Letaba River, and one consisting of communities from Klein Letaba River north. According to a KNP Social Ecology staff member from that period, there was a conscious decision to exclude any white communities, vis-à-vis mining operations out of the forum even if they fell within the red line and experienced DCA problems. The reason for this was simple: the focus would be on black, previously disadvantaged communities.

At this initial meeting, it was proposed that:

- a) fora would facilitate representation of neighbouring communities, within the KNP;
- b) communities must elect their own representatives to serve on the fora;
- c) fora would be responsible for solving problem issues as well as facilitating greater involvement of the KNP within its neighbouring communities (environmental education, job creation through small business stimulation, etc.) and greater involvement of the neighbouring communities within KNP (reduced tariffs, free entrance for schools, etc.).
- d) a Community Liaison Officer (CLO) should be appointed by the forum, but employed by KNP.

It was further decided that Mr. F. Mhinga (the current HF Chair and Mhinga village rep), a Gazankulu Nature Conservator, and a District Conservator should contact all communities not represented and invite representatives to a follow-up meeting.

The overall aim of the Forum, according to its first constitution in 1995 was to:

*'build a relationship between Kruger National Park, the Northern Transvaal Department of Environmental Affairs (NTDEA), and the communities bordering on the Park within Giyani and Malamulele regions so as to enhance development and environmental education opportunities within these organizations and villages.'*

(Hlanganani Forum Constitution, approved 9 March 1995)

More specifically, its primary goals were:

1. To build trust and friendship between the KNP, neighbouring villages, and the NTDEA.
2. To resolve mutual problems.
3. To facilitate the establishment of small business development and to support existing business in the communities bordering on the Park by using the infrastructure and economy of the Park.
4. To promote environmental education within the communities.
5. To facilitate development and capacity-building within the region with the support of sponsors and developers not directly involved in the region.



Original membership in the Forum consisted of a) 26 villages with 2 representatives each, b) KNP with 5 official members: 3 local rangers plus 2 head office staff, c) NTDEA with 5 official members, and d) South African Police Service (SAPS) with 5 officers: one each from Pafuri, Venda, Saselamani, Malamulele, and Giyani (SAPS are no longer members in the Forum).

The issues that were central to discussion of the Forum were DCAs escaping from the KNP and the resulting lack of compensation for damage caused by these animals, the poor condition of the Park's border fence, the proposition of installing a new public entrance (Shangoni Gate) to the KNP between Punda Maria and Phalaborwa, and a proposed buffer zone which would comprise both community and KNP land (Mariyeta Park). The Forum is considered by both KNP Social Ecology staff and its Chair to be the most active KNP forum, due primarily to the long history of conflicts in the area.

As the Forum matured, it developed a new Constitution in 2000 with an expanded primary goal to more accurately reflect its priorities:

*'To build a healthy working relationship between Kruger National Park (Park), the Limpopo Province Department of Agriculture, Land and Environmental Affairs (Government), and the communities bordering on the Park within the Mopani and Thulamela municipality (Forum) so as to enhance development, employment opportunities, environmental education opportunities, care of problem animals and compensation on livestock that belong to members communities.'*

Forum objectives were also extended and encompass both primary and secondary objectives:

A. Primary objectives:

1. Deepen and strengthen a healthy relationship between the Forum, the Park, and the Government.
2. To work toward development of the previously disadvantaged communities.
3. To create employment opportunities either in the Park, the Government, or even in the Forum.
4. To help educate member communities about conservation and other environmental matters.
5. To help take care of problem animals either by employing professionals or by participating in the tendering process of the Government and of which the money generated there of shall be made available for the use that will benefit the Forum.
6. To look at compensation of the members who have lost their livestock.

## B. Secondary objectives:

7. Managing different environmental and conservation related projects that are beneficial to the community members. Aimed at community development and empowering the community socially and economically.
8. Creating employment opportunities.
9. Establishing a support center that will look at training of professional hunters, compensation of people who have lost their livestock and also giving information to the relevant law enforcement officers in the Park and the Government about people who transgress the law according to the Nature Conservation Act.

Current perceptions indicate that priority areas for HF activities include addressing DCA problems, relationship building, and development and employment for neighbouring villages. Conservation projects and environmental education play minor roles according to responses from the research questionnaires (Figure 6.1).

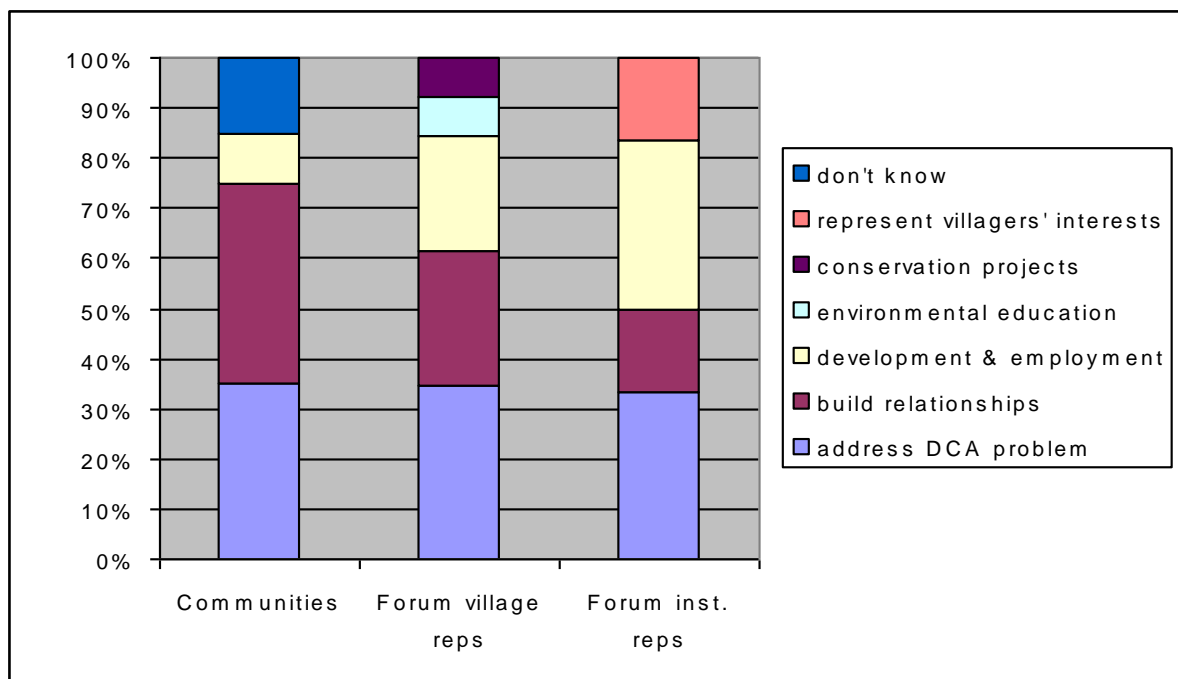


Figure 6.1: Categorical responses to 'What is the main purpose(s) of the HF?' (community: N=19; village reps: N=15; institutional reps: N=4)

### 6.3. Significant achievements

Since its commencement, the HF has been involved in a number of activities related to the objectives listed above. Some of its more significant achievements include:

- 1) Since 2000, the following have reduced entry fees to enter KNP, after first applying to KNP Social Ecology:
  - HF Executive receives free entrance for business-related trips.

- When HF meetings in KNP, all members receive free entrance.
- Elderly people and their children receive free entrance to visit heritage sites.
- School groups receive free entrance if they are from the neighbouring communities (first negotiated by HF). Now this privilege extends to all school groups within South Africa who participate in the KNP's Environmental Education program.

Further, chiefs accompanied by up to 10 people had free entry and Forum village members a 50% discount on entry to KNP until 31 Dec 2004, but *not* on school nor public holidays. This last caveat raised much opposition from Forum members as they felt that these are the times when families would normally go. The KNP representative responded by saying these holidays are when the KNP is usually at full capacity.

- 2) HF obtained Section 21 status (not-for-profit, non-governmental) in 2001.
- 3) In 1998, HF compensated farmers who lost cattle to lions (1500 ZAR/animal). The meat from the lions also went to the communities (to *tindhuna* for distribution).
- 4) HF has 11 people from neighbouring communities who are being trained as professional hunters. In time, they hope to form an 'Outfitter', which can deal with DCA themselves and gain other employment.
- 5) The HF assisted in developing a tourism link for the region through the 'Hlanganani Route' initiative.
- 6) HF secured 175,000 ZAR in 2001-2002 through the community-based and government-supported 'LandCare' program to stabilize streambanks in Matiyani village. This money was partly used for 'unskilled labour' from the community.
- 7) Any KNP tenders must now stipulate that winning tenders source at least their 'unskilled labour' from local communities.
- 8) Community dance groups are paid to do occasional performances within the KNP.
- 9) Employment has been secured for community members in the Working for Water Program<sup>28</sup>, and in KNP border fence construction/maintenance.
- 10) The HF, in partnership with KNP and the Dept. of Welfare, secured 393,000 ZAR from Development Bank South Africa (DBSA) to build a new Art & Craft Centre at the Punda Maria gate.
- 11) HF Chair invited to participate in Vth World Parks Congress in Durban (2003).
- 12) Organizing soccer and handball teams from neighbouring villages to participate in KNP-sponsored tournaments.

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<sup>28</sup> This national program was launched in 1995 to fight alien species and is administered through the Department of Water Affairs and Forestry. It provides employment in its partnerships with local communities.

## 6.4. Complaints and constraints

Notwithstanding these achievements, the HF has had a rocky road since 1994. Not only have they encountered challenges beyond their control, but also perceptions and beliefs of the organization by other institutions (e.g. TAs, KNP, DFED/EA) have not all been affirmative and, in some cases, are extremely critical. Of major concern have been issues of HF meeting absenteeism, management, and representation. An environment where broken promises are not uncommon and the competence of the KNP Social Ecologist questioned exacerbate these concerns.

### 6.4.1. Meeting absenteeism

Assuming that HF has convened eleven times per year since its inception in February 1994, there have been approximately 118 meetings to September 2004. Of these, meeting minutes from both the HF secretariat and KNP Social Ecology combined are available for only 44 (37%) meetings (Figure 6.2). Moreover, only 27 of these 44 (61.4%) had an attendance record, although this has improved somewhat in recent years.

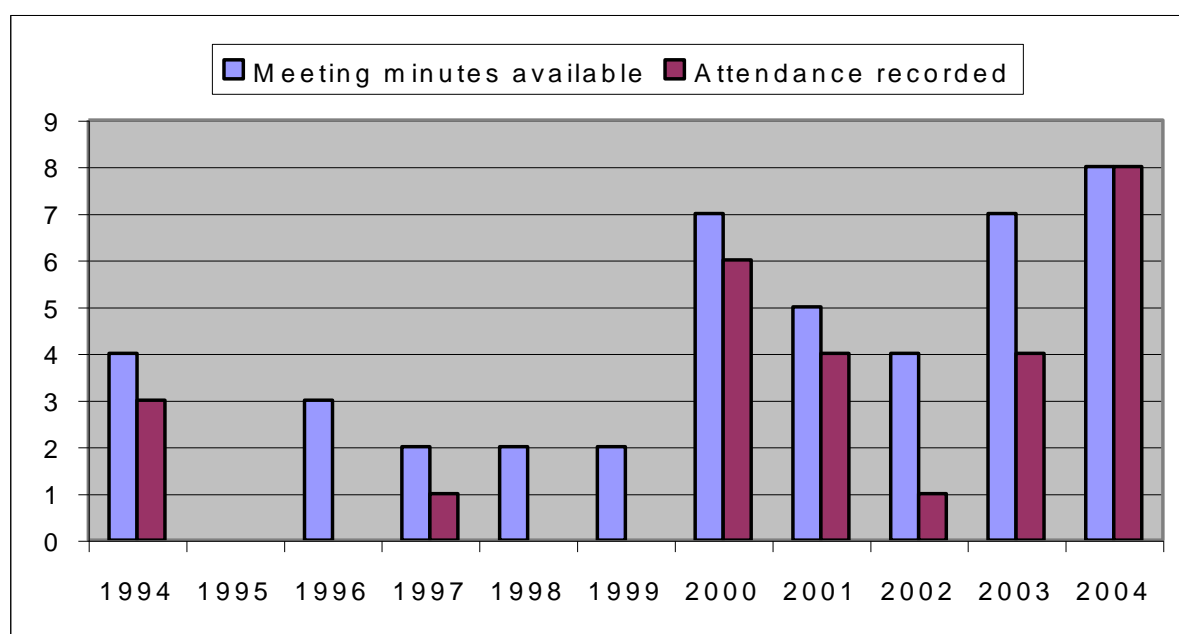


Figure 6.2: Available HF meeting minutes and recorded attendance: Feb 1994 – Sept 2004.

HF members and the DFED/EA have identified meeting absenteeism as a problematic constraint for the operation of the HF. Meeting absenteeism has been of such magnitude that, in some cases, meetings have had to be cancelled (02/1996; 02/2000). Analysis of attendance records at HF meetings since 1994 reveal that only 15 of 27 villages have been represented at a minimum of 50% of meetings, and only 8 have attended 67% of the meetings or more (Table 6.1). If one looks only at 2003-2004, however, 13 villages have had attendees at >66%

of the meetings. If village attendance at HF meetings can be an indicator of representation, there appears to be a growing trend in representation for some villages since 2003, although many villages are under-represented and five have simply not been represented at all. Further, aside from Mininginisi Block 2 and Gawula, all other villages south of the Shingwedzi River have attended  $\leq 17\%$  of HF meetings in the last two years. Despite this high absenteeism rate, the HF's 2000 constitution and its secretariat both maintain that these villages are indeed full-fledged members.

Table 6.1: Village representation at HF meetings 1994-2004.

| Village name              | Meetings attended | As % of minutes with recorded attendance (1994-2004) | As % of minutes with recorded attendance (2003-2004) |
|---------------------------|-------------------|--|--|
| Mhinga (Nkhavi)           | 27                | 100  | 100  |
| Maviligwe*                | 24                | 89   | 92   |
| Mushiro                   | 22                | 81   | 92   |
| Mahlathi                  | 20                | 74   | 75   |
| Mashobye‡                 | 19                | 70   | 75   |
| Peninghotsa‡              | 19                | 70   | 67   |
| Plange (Mtiti) ‡          | 19                | 70   | 92   |
| Makuleke*                 | 18                | 67   | 83   |
| Altein‡                   | 16                | 59   | 75   |
| Govhu‡                    | 16                | 59   | 83   |
| Botsoleni                 | 15                | 56   | 75   |
| Lombaard‡                 | 15                | 56   | 58   |
| Mininginisi Block 2       | 15                | 56   | 83   |
| <i>Muyexe</i> †           | 15                | 56   | 17   |
| Maphophe                  | 14                | 52   | 58   |
| Josepha                   | 11                | 41   | 75   |
| <i>Magona (Gidjana)</i> ‡ | 9                 | 33   | 0  |
| <i>Makahlule</i> *        | 9                 | 33   | 17   |
| <i>Bevhula</i> ‡          | 6                 | 22   | 8  |
| <i>Lambani</i>            | 6                 | 22   | 17   |
| <i>Matiyani</i>           | 6                 | 22   | 17   |
| <i>Nghomunghomu</i> ‡     | 6                 | 22   | 8  |
| <i>Sawulani</i>           | 5                 | 19   | 0  |
| <i>Gawula</i>             | 3                 | 11   | 8  |
| <i>Ndindani</i> †         | 3                 | 11   | 0  |
| <i>Hlomela (Macene)</i> † | 2                 | 7  | 0  |
| <i>Vuyani</i>             | 1                 | 3  | 0  |

**Notes:** villages in *italics* have been absent from HF for  $\geq 3$  consecutive meetings in last 12 months

† TA from these villages formed Nghunghunyani Trust

‡ TA from these villages formed Gazan Trust

\* villages also represented on Makuleke C.P.A.

Even today, confusion as to the number and identity of member villages actually in the HF remains. According to the 1995 HF Constitution, 26 villages are members. In contrast, the revised 2000 Constitution states 27 villages, and in a letter from the HF Chair to KNP Technical Services (10 April 2003), 29 communities are stated as belonging to the HF. When

asked which villages are actually members, there is uncertainty amongst the HF Executive. This uncertainty was addressed at a forum meeting held on 25 July 2003, when the KNP Social Ecologist was mandated to write down HF village membership. The Chair instructed him to ‘ignore villages which are claiming that they are no longer members of the forum because they didn’t do it in writing as the [2000] Constitution of the Forum states in Article 4.3.’ To date, this list has not been produced.

In addition to HF village reps, complaints within the HF were raised about absence of KNP staff at meetings, including those within Social Ecology. Available attendance records show that the KNP Social Ecologist mandated to liaison with the HF has attended only 68% of HF meetings since 2000, and only 50% within the last 12 months. According to HF questionnaires in this research, village representatives attended a mean of 7.4 (of 11) meetings in 2003 (median=9, range=11, N=14), while institutional representatives averaged 6.8 meetings (median=6, range=7, N=4). Reasons for absence by village reps included transport problems (6), attending funerals (2), attending other meetings (2), leaving the HF, and time conflicts with employment. Institutional reps cited pointless discussions with no progress (2), and other work-related commitments (2) as reasons for their absence.

Meeting absence is also affected by years of participation in the HF. Questionnaire results indicate that HF village reps have only participated in the HF for an average of 4.8 yrs (median=3, N=13), and institutional reps slightly longer (mean=6, median=5.5, N=4). Based on interviews conducted with former and current HF village reps, disappointment with the HF, and changes in personal and employment commitments all contribute to reduction in HF participation. Similarly, institutional reps state that high employee turnover and changing positions affect years of participation. Time taken to refill these positions has meant lack of institutional representation at HF meetings during these periods.

Regarding village attendance at HF meetings, the Chair stated that the Constitution stipulates that if there are three consecutive meetings in which a village is not represented, the Executive Committee should request the KNP Social Ecologist to go to the villages ‘and see what’s happening.’ This occurred in November 2003 with Ndindani, Hlomela, Muyexe and Gawula villages, but so far, there has been no report back from the KNP Social Ecologist. On closer examination of the Constitution, however, it states:

‘if a representative does not attend three consecutive meetings, the *Management Committee* of the forum will decide upon the termination of such a membership’  
(Article 4.3.4.a.)

The HF Executive gave no explanation for the transfer of responsibility to investigate village absenteeism from the Management Committee to the KNP Social Ecologist, or for why no village memberships in the HF have been terminated to date, despite high absenteeism.

#### 6.4.2. Meeting and Forum management

Sub-standard financial accounting, quality of meeting management, and organizational structure have been cited by KNP, DFED/EA and HF village representatives as hampering HF effectiveness. As early as 1998, both DFED/EA and KNP staff were frustrated at the lack of HF responsibility in producing authentic audited financial annual reports. In 2000, the HF Executive acknowledged this deficiency and received training in 2001, but this was discontinued due to high costs. More recently, however, some HF members attended a KNP-sponsored THETA Leadership Training Course, which included project management and leadership, tourism, communication, and conflict management. It is hoped that capacity building such as this will improve HF's ability to manage its financial affairs.

Similarly, much discourse regarding HF capacity revolves around meeting management style and its effects. Efficiency of the HF has been obstructed by:

- meetings being cancelled without notification;
- short notices for meetings;
- meeting venue changes without notice;
- lateness by meeting chair;
- insufficient number of meeting minutes being produced;
- meeting minutes not being accepted/approved because of incompleteness;
- letters mandated by HF to be written and forwarded by HF Executive not undertaken.

HF village and institution reps alike have cited hindrances of this sort to be debilitating and conducive to promoting meeting absenteeism (see Chapter 6.4.1). Some current and past members go as far as to proclaim that the apparent *raison d'être* of monthly HF meetings are 'only an excuse to eat meat' during the lunch provided afterwards because 'KNP basically covers all catering'.

Both lack of communication and miscommunication are further constraints on the effectiveness of the HF. Although HF meetings are to be held in both Tsonga and English, in reality the languages are often switched, with little or no translation (personal observation). Although many members are fluent in both languages, some are not. This aspect of communication became especially problematic when the KNP Social Ecologist was absent,

and KNP was being represented only by section rangers, who have limited understanding of Tsonga. This generated much misunderstanding among HF members regarding issues during meetings, exacerbated by reporting of and acting on second-hand information, and lack of clarity when discussing topics. Given that meeting minutes and other written correspondence are sometimes incomplete, and produced in English only (often poor), the flow and quality of information between the KNP, DFED/EA, and HF is in dire need of improvement.

Other criticism of the HF has focused on how well it adheres to its Constitution with respect to organizational structure. Firstly, by Constitutional definition, the HF Executive Committee should be elected annually by secret ballot. According to most institutional and some village reps, however, the current Chair and Executive have been in their positions for ‘as long as they can remember’ and condemn HF election practices. Secondly, of the three bodies that steer and run the Forum, the Management Committee is to be composed of eight members, including one each from the KNP and DFED/EA. Currently, the Management Committee consists solely of Executive Committee members and no institutional representatives. Finally, gender inequality has been quoted as a sign of poor representation in HF, with only 2 of 54 village reps being female.

#### *6.4.3. Community representation and reporting*

Linked with meeting absenteeism, representation of communities and reporting by HF members to their villages has been a contentious issue for the HF for many years. From the community questionnaire only 19 respondents (7.9%) of the sample in the entire study area (12.4% within HF villages) indicated that they had even heard of the HF, let alone knew of its activities (N=240). This low frequency significantly limits the ability of this research’s attempt to compare HF to non-HF villages (see chapter 3.1.1), and is reflected in subsequent correlation analyses. Further, all 19 respondents were from villages purported to be villages with HF membership, although only 11 of these respondents believed their village was actually represented on the HF. When asked the question, ‘*If you know of the Hlanganani Forum, how did you hear about it?*’, 13 indicated ‘interpersonal’, 5 ‘KNP staff’, and one had attended an early HF meeting.

Statistical tests were conducted to identify variables affecting knowledge of the HF by community members (Table 6.2). For bivariate data, responses were analyzed using Pearson’s  $\chi^2$  tests to discern if two variables were independent of each other. If two variables were not independent ( $p < 0.05$ ), Phi, Cramer’s *V*, or Pearson’s *R* was employed as a measure of



association, depending on variable type. Households within particular villages was found to be very highly significant ( $p < 0.001$ ,  $df = 37$ ,  $N = 240$ ) with Bevhula, Govhu, Mashobye, Maviligwe, and Mininginisi Block 2 all having higher observed than expected frequencies. Both being male and from villages represented by the HF were also found to be highly significant in association with knowledge of the HF ( $p < 0.01$ ,  $df = 1$ ,  $N = 240$ ). Although not significant ( $p < 0.067$ ,  $df = 61$ ,  $N = 240$ ), those who knew of HF also tended to be younger in age. These data suggest that knowledge of the HF is very poor in the study area, and where it does exist, is governed largely by village association and gender, and to some extent by age.

Table 6.2: Association between selected variables and knowledge of Hlanganani Forum.

| Variable                  | Pearson $\chi^2$ | continuity correction <sup>1</sup> | N   | df | Phi <sup>1</sup> | Cramer's V | Pearson's R | Asym. sig. (2-tailed) |
|---------------------------|------------------|------------------------------------|-----|----|------------------|------------|-------------|-----------------------|
| village represented on HF | 11.733           | 10.091                             | 240 | 1  | 0.221            |            |             | 0.001**               |
| village                   | 74.806           |                                    | 240 | 37 |                  | 0.558      |             | 0.000***              |
| age                       | 78.335           |                                    | 240 | 61 |                  |            | -0.026      | 0.067                 |
| number in household       | 14.182           |                                    | 240 | 15 |                  |            |             | 0.512                 |
| years in village          | 38.706           |                                    | 225 | 43 |                  |            |             | 0.658                 |
| gender [male]             | 7.447            | 6.138                              | 240 | 1  | 0.176            |            |             | 0.006**               |
| de jure TA                | 5.169            |                                    | 240 | 6  |                  |            |             | 0.522                 |
| de facto TA               | 17.781           |                                    | 240 | 19 |                  |            |             | 0.537                 |
| education                 | 7.918            |                                    | 240 | 5  |                  |            |             | 0.161                 |
| household income          | 1.815            |                                    | 240 | 3  |                  |            |             | 0.612                 |

<sup>1</sup> for 2x2 tables only

\*\*\*  $p < 0.001$

\*\*  $p < 0.01$

HF village members are to be appointed by their respective community and ideally reps must report back to their villages via monthly meetings. On the one hand, spokespersons for the Mhinga TA are pleased with the representation their villages have on the HF, and acknowledge that the TA was part of that decision-making process. In contrast, however, representatives from Makuleke, Magona, Mtititi, Ndindani, Hlomela, and Gawula TAs all expressed concern about the representation of their villages on the HF, and the individuals claiming to represent these areas, many of whom do not report back to the villages on HF activities. One *Hosi*, with three villages in the HF area, stated that originally, the community chose the Forum representatives with the co-operation of the *Hosi*. However, the reps currently '*never report the activities of the Forum to the Hosi*', and '*we have no idea what's going on and this shouldn't be so. The communities are under the Hosi's control and it's incorrect to not involve or consult the Hosi on these matters.*' Although many TAs have

discontinued their association with the HF, a number of representatives from these communities still attend HF meetings and exacerbate tensions between TA and the HF. As maintained by another *Hosi*, “*the HF reps for villages in my area are illegitimate and only out for their own gain*”. In April 2004, even the HF Chair acknowledged publicly at a HF meeting the fact that ‘*some HF members were not elected by communities, nor give reports to their communities nor ndhuna*’. Due to allegations of questionable representation and non-reporting, it was agreed that the forum steering committee should inform all the villages individually ‘*that it is very important that representatives report back and that they be democratically elected by the communities*’ (6 July 2004 HF minutes).

Many TA representatives accuse the HF of gross nepotism, especially when it comes to equity and benefit-sharing in employment opportunities and DCA compensation. For example, one *Hosi*’s own daughter was denied an application when she approached the HF about applying for a job, and was told ‘to go get a job from your father.’ A second case mentioned was the selection of people for employment opportunities only from villages favored by the KNP Social Ecologist. Thirdly, when people were compensated for livestock losses through the HF in 1998, it is alleged that the only people compensated were actually HF members. Finally, some *Hosi* claim that the HF is dominated by KNP objectives only. These experiences with the HF caused serious resentment and a number of TA subsequently decided to pull out of the Forum in mid 2001, and became involved with the Mariyeta Buffer Zone. When they discovered that Mariyeta was much like the HF and not representing the communities, a number of TAs then formed the Gazan Trust (Mtititi, Magona, Madonsi, Bevhula) and the Nghunghunyani Trust (Ndindani, Muyexe, Hlomela).

Given these conflicts, many TA have polarized themselves from the HF and formed their own institutions to deal with land-use issues, negotiate with provincial administrations regarding DCA compensation, and the KNP for potential CBC partnerships. It may also explain why HF members do not report back to their respective villages and thus, why knowledge of the HF and its activities is poor in many communities. For those community members who do know of the HF, 42.1% stated that HF village reps report to their respective communities at least once a month (see Figure 6.3), although a higher proportion of village reps claim this frequency. It must be kept in mind, however, that due to poor knowledge of the HF in its member villages (12.4%, n=183), this translates into only 5.2% of community members learning of HF activities on a monthly basis.

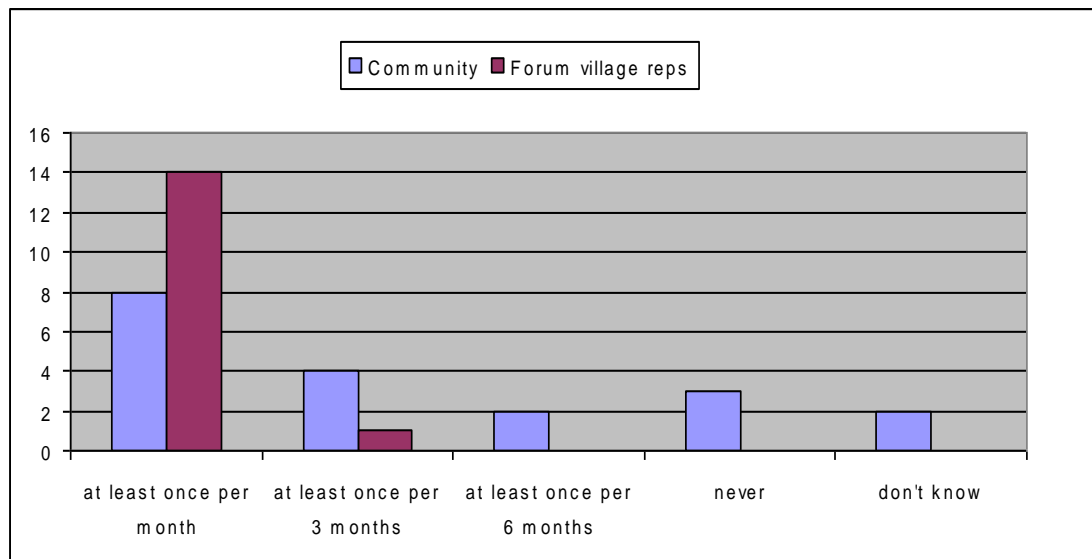


Figure 6.3: Frequency of reporting of HF village reps to communities (Community: N=19; Village reps: N=15)

When asked ‘*How well does HF represent its communities’ interests?*’, 63.2% of community members with knowledge of the HF stated ‘much’ (Figure 6.4). Reasons for saying so included:

- because they call regular meetings
- they respond quickly to our complaints
- they are discussing compensation with the KNP
- they are trying to create harmony
- when there's a problem, they quickly inform us
- jobs are being created and they inform us when there are job vacancies

HF village reps who similarly believe that they represent their communities to this extent cite co-operation between the HF and its communities, education of children, improvement of the environment, reductions in poaching, and the fact that ‘community cries of DCA damage are now reaching the government and KNP’ as reasons for this high level of representation.

In contrast, 31.6% of community respondents claimed ‘not at all’, citing the following reasons for their response: ‘*it does nothing for us and has never reached our expectations*’; ‘*we are not being compensated*’; ‘*because in July this year over 8 cattle were killed and no help was given*’; ‘*we have no knowledge of recent developments*’; and ‘*they were busy fixing the fence but didn't employ our people*’.

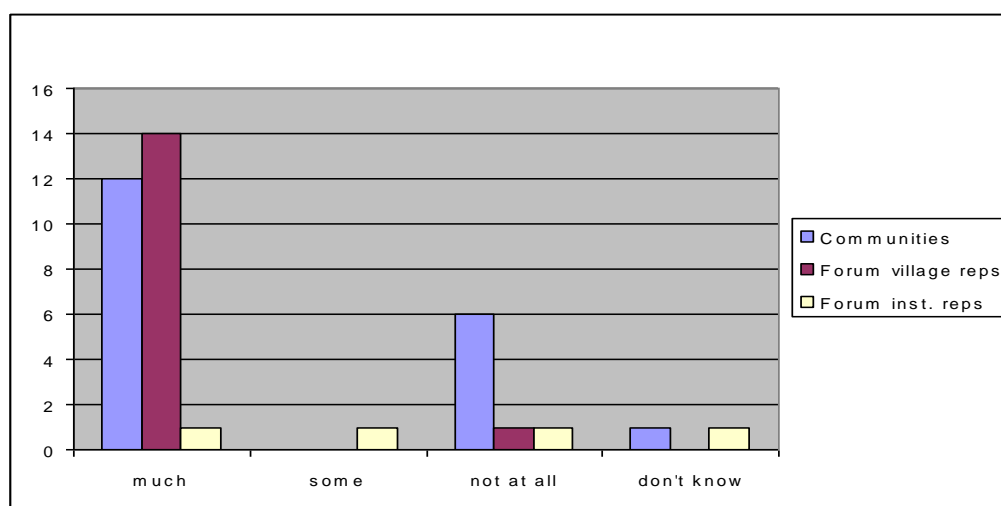


Figure 6.4: Responses to ‘How well does HF represent its communities’ interests?’ (community: N=19; village reps: N=15; institutional reps: N=4)

Issues of representation and management capacity, especially financial, have had repercussions on the extent to which the HF can fulfil its goal in securing DCA compensation. According to the HF Chair, the HF had approached the Province before obtaining its Section 21 status in order to request that it be the main mechanism responsible to disburse DCA compensation to affected parties in its area. At that time, the Province informed the HF Executive that it must first obtain Section 21 status (or be registered as a ‘Trust’<sup>29</sup>). After attaining Section 21 status in 2001, the HF, as part of a delegation with DFED/EA staff and the Deputy Director, Limpopo Province Tourism & Parks Board, met the DFED Member of Executive Council in Polokwane in October 2003 to issue a statement regarding their Section 21 status and the request for withheld funds. They received a verbal promise that all funds would be given by the end of the fiscal year (31 March 2004). However, to date they’ve received no word or any monies. In response, DFED and DLA officials cite ambiguity of HF representation, reflected partly by high meeting absenteeism, and questions of financial management competence as principal reasons why funds are being withheld from the HF (see also chapter 7.8). A DFED/EA high level manager stated that the province is unlikely to forward money to the HF as it “*has serious concerns about the Forum’s legitimacy and representativeness, and there are other institutions vis-à-vis Trusts wanting the same money*”.

<sup>29</sup> According to the Financial Institutions (Protection of Funds) Act No. 28 of 2001, which repealed the Financial Institutions (Investment of funds) Act No. 39 of 1984 and associated amendments.

#### 6.4.4. Broken promises

The HF has existed in a climate of broken promises almost since the day of its inception. Sadly, where promises have been made by KNP to its neighbouring villages via the HF, and later been unfulfilled, it has resulted in mistrust and a loss of legitimacy of both the KNP and the HF. Examples summarized below include promises related to support in attending KNP functions, employment processes, opening of the Shangoni Gate, DCA compensation, and thatch grass collection within KNP.

##### 6.4.4.1. KNP functions

- In 15 April 1998 letter, Headman Nkhavi strongly criticizes KNP Director, complaining of way that representatives from 6 villages waited throughout the night for promised transport to Skukuza for the KNP Centenary Celebrations. They feel that they were ‘left out on purpose because we are taken as not very important to the KNP’. In response to an unsatisfactory apology letter sent by the KNP Director (14 April 1998), it reads, ‘This shows that you do not care about us and this makes us take you as people who want to benefit from us and return nothing to us.’ (15 April 1998).
- One hundred people were to attend the 10 year Democracy Celebration in KNP. KNP informed HF later that the Limpopo Province promised funding, but later reneged, and therefore only a handful of children actually attended. (5 March 2004).

##### 6.4.4.2. Employment processes

- In minutes of meeting between KNP Director and HF Executive (22 June 1998), the HF stated that they are dissatisfied with the employment process of the KNP as they were promised advertisements would be distributed to fora areas but that has stopped.
- KNP promised to send job advertisement to HF, but didn’t. (21 Oct 1999).
- In a letter from HF to KNP Social Ecology in Skukuza, a complaint was launched about the unfair allocation of employment opportunities regarding the Working for Water program for HF villages. The HF believes that other communities (e.g. Bushbuckridge) are favoured over them. The letter states, ‘What we see as our cognitive perception as a Forum, is that the HF are utilized as a road for friends’ enhancements because people are called to an interview for certain posts, but it is a strategy for corruption as friends are earmarked ... those who are connected to the authority get opportunities for better employment, but not in a transparent, efficient, and equitable way...’ (30 October 2000).

#### 6.4.4.3. Shangoni Gate

- The Shangoni Gate was to serve as an incentive for economic development in the area, which would alleviate high unemployment, high dependency ratio and the low human development index. This gate would make KNP more accessible to neighbouring communities who currently need to travel to Punda Maria or Phalaborwa to gain entrance to the Park, and would prove to be a gesture of goodwill to KNP's neighbours and, thus, improve their relationship. The request for the gate was from the communities themselves west of Shangoni: the concern may be that other communities will use this as a precedent and want the same. The HF had written a formal consensus request on this issue on 30 October 1995. The KNP responded positively in the Park Warden's letter dated 13 December 1995, in which it advocated that the opening will be as early as April 1996.
- On-site investigations were done in May 1996. In first draft of an initial ecological impact report by KNP Scientific Services (October 1996), three route options are prescribed. It was also recommended that the Northern Province improve existing roads outside KNP, which lead to the Shangoni Gate. (October 1996).
- In KNP letter to HF (dated 1 April 1999), KNP Director apologizes for prior commitments made by KNP to forum regarding opening of Shangoni Gate. They now state that the KNP Management Committee has agreed in principal to the opening of the gate subjected to a completed feasibility study, full EIA, and that the project be subjected to the development of infrastructure outside the park.
- Park Management says that the gate might not open due to cost. (19 August 1999).
- HF wants to know who stopped the opening of the Shangoni Gate as they had a confirmation letter from KNP that it would be opened. (9 February 2001; 25 April 2003).

#### 6.4.4.4. DCA compensation

- Before the electric fence was erected the communities were promised that once it is in place, an insurance policy will be taken out in order that communities will be compensated for livestock/crop loss due to problem animals. It was remarked later that KNP cannot take an insurance policy out on something it doesn't legally own. (21 January 2000).
- Forum claims that it was promised 6 million ZAR from province after it had registered as a Section 21 company (16 August 2002). Forum informs members that MEC agreed to give the money before March 2004. The funds never materialized.

#### 6.4.4.5. Thatch grass collection program

- KNP section ranger initiated a thatch grass collection program in KNP in July 2004, which was running successfully for two weeks with members of Mtititi, Altein and Muyexe villages. Then, without any reason or explanation, he was ordered to terminate the program.

Broken promises and their consequences to relationships have been identified and publicly acknowledged in HF meetings, where it was noted that the ‘KNP and Forum’s relationship is poor’ (21 October 1999), and ‘communication between the Northern Province, its rangers, and the communities should improve’ (21 January 2000). It must be understood, however, that broken promises are not unique to the HF and its interaction with conservation agencies. Informal interviews with community members revealed that corruption, broken promises, and unfulfilled expectations are widespread, especially between government and people. They have come to expect these types of constraints as commonplace. Despite this culture of broken promises, many questionnaire respondents believe that the HF is improving relationships between the KNP, DFED/EA and local communities (Figure 6.5). Justification for these responses include increased environmental awareness in some rural areas, the fact that the HF is ‘the only mouthpiece between the three parties’, and that it provides a forum by which the parties can meet together, share experiences, and begin to co-operate especially on DCA-related issues.

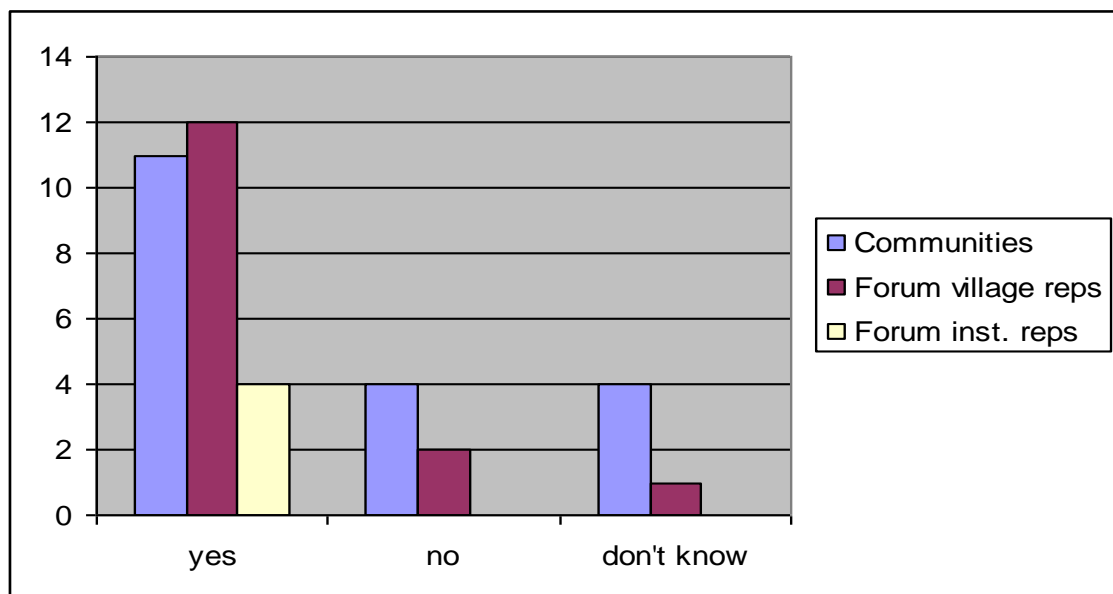


Figure 6.5: Responses to ‘Is the HF improving relationships between KNP, Limpopo Province Environmental Affairs and communities?’ (community: N=19; village reps: N=15; institutional reps: N=4)

#### *6.4.5. Damage-causing animals*

Problems of DCA and the lack of compensation for damages inflicted on neighbouring communities were raised at the very first HF meeting, and continue to be a source of contention today. Although a separate chapter is devoted to understanding this issue (see Chapter 7), implications for the HF specifically are dealt with here.

At the second HF meeting (23 March 1994) it was decided that the following actions should be adhered to regarding DCA and their control:

1. Communities, along with Gazankulu Nature Conservation (GNC) will assign people in communal areas bordering KNP to deal with problem animals. GNC will train and assist these people and, possibly, KNP on request.
2. Tribal Chiefs are to try and make phones available 24 hours a day.
3. GNC will man a radio 24 hours a day to take DCA reports.
4. GNC will assess situation, and will either handle DCA themselves, or ask KNP personnel for assistance, but with GNC staff member present.
5. GNC and KNP will write letters to officially invite each other to work in their respective regions upon request.
6. KNP proposed that any meat or monetary compensation generated from the DCA should be channeled back to the communities troubled.

These actions and proposed responsibilities formed the basis by which communities, informed via the HF, believed DCA would be controlled in their areas. Subsequently, however, organizational and policy changes within the GNC led to corruption and inefficiency in carrying out its duties. A meeting was held between KNP and GNC on 19 July 1994 to discuss DCA control and co-operation between the two institutions. In this meeting, it was noted that KNP had already written a letter inviting GNC staff to assist KNP staff in the park with DCA control, but a reciprocal letter was still expected. The GNC rep stated that due to GNC law enforcement activities they could not attend to every DCA report, and therefore ‘the GNC are not popular among some of the local communities’. He also pointed out that current GNC rules don’t make provision for compensation; however, they are investigating the possibility of diverting some funds generated by trophy hunting to people that have experienced losses. He further noted that hunting permits previously given out to certain Gazankulu officials have now ‘changed hands and are currently being used for illegal hunting’. Finally, he remarked that ‘with the current constitutional changes, many people think the old laws are no longer valid and that this is creating problems.’ Most of these policy



changes were not communicated to communities, who continued to experience DCA damage and build resentment towards the GNC and KNP.

Later, in 1997, the process was changed in that community members should now contact Northern Province Department of Environmental Affairs (replaced the GNC) for assistance. The Province, if necessary, would request the help of KNP in controlling the animal(s). However, inaction and corruption on the part of provincial rangers was again raised at a HF meeting in March 1998, where HF members stated that community members are complaining because the province only attends to DCA when they are buffaloes and not lions<sup>30</sup>. This is confirmed by *Hosi* Muyexe who stated that the province ‘only brought him a hind leg and the rest of the meat was taken by provincial rangers’.

Unhappy with animals escaping from the KNP and perceived inadequacy in controlling DCA once outside the Park, a number of communities in this period felt that KNP was ‘reluctant and uncaring’ and ‘not committed to its undertakings.’ Moreover, a letter from the East African Safaris to Northern Province (7 December 1998) indicated that many villages bordering KNP north of Phalaborwa, were dissatisfied with ways that problem animals are being dealt with by the Province. They point out that from 1985 to Nov. 1998, wild animals in Mbaula and Phalaubeni village areas killed at least 500 cattle, plus one person seriously injured in a lion attack. From Ntlhaveni Community Authority alone, losses due to lion were 18 cattle, and 15 goats and one person by crocodile. Thus, because of the lack of proper attention to this problem, coupled with the promised compensation for livestock loss being delayed, many communities wanted to enter into agreement with East African Safaris to hunt problem animals, whereby income generated would go to communities to compensate farmers suffering livestock loss. This request was denied by the Province, who continued to utilize their own rangers to control DCA, and sought to investigate tendering limited hunts to professional hunting outfitters.

The HF has had limited experience in being able to compensate DCA victims in its member villages. From May 1997 HF meeting minutes, the Deputy Chair informed the HF that a farmer from Matiyani village was compensated 4500 ZAR from the HF for cattle killed by lions. A second case occurred in 1998 when the HF was able to compensate 24,000 ZAR from the sale of two lion skins by the KNP to eight farmers from four villages for livestock loss.

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<sup>30</sup> Buffalo meat is generally preferred to that of lion. It is also believed that there is a higher success rate in tracking and shooting buffalo, which tend to be more gregarious than lion.

Concern at this time was raised, however, that this compensation scheme by HF of 1500 ZAR/head of cattle was not market related as cattle were worth at least 2500 ZAR. Aside from these two cases, there is no further record to date of communities receiving compensation for DCA damage, contributing to the belief by many community members and a number of TA that the HF has been incompetent in its ability to fulfill its goals. In its defense, minutes of an HF meeting in June 2001 state that the government had promised to deposit 6 million ZAR generated from trophy hunting into the HF’s bank account for compensating affected farmers, but only after it was registered as a Section 21 company. Raised expectations from the HF and community members alike were dashed, however, as even after attaining Section 21 status, this money has never materialized (see chapter 7.8). This partially contributed to increasing tension between TAs and the HF, and the decision by many to circumvent the HF, form their own Trusts and seek compensation monies directly from the Province. At the July 2004 HF meeting, the representative of Maviligwe village (also a member of the Makuleke C.P.A.) emphasized this tension, and strongly urged the HF to ‘gain credibility by addressing the problem of compensation for DCAs immediately.’

Despite being unsuccessful in compensating most of its member villages for DCA damage, the HF does, however, have a role in reporting DCA to the DFED/EA and KNP in the rural areas (see also chapter 7.6.1). This fact is well known by HF village reps and those with knowledge of the HF. Although there are mixed questionnaire responses to how well the HF functions in this regard (Figure 6.6), it is acknowledged by a majority of community respondents who know of the HF that it indeed does little in getting compensation to affected farmers (Figure 6.7). Those who did believe HF assists in this respect were primarily those who knew of the compensation received from the HF to farmers in 1998.

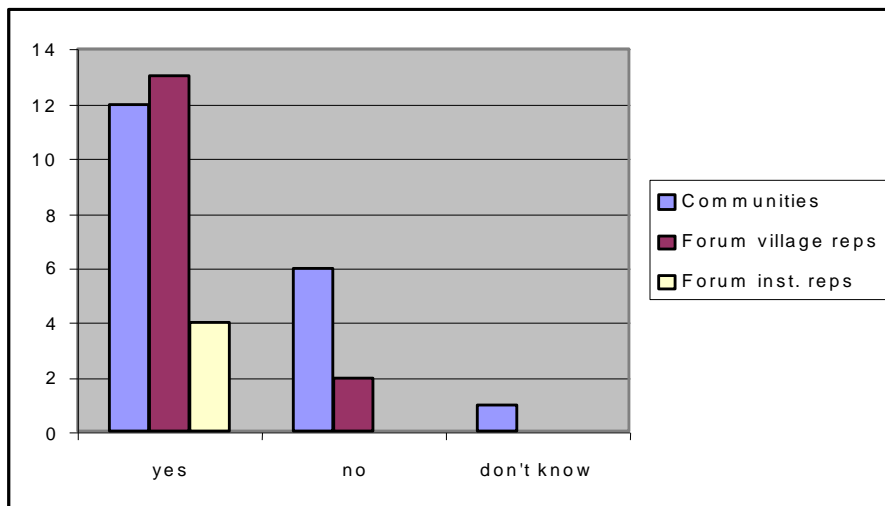


Figure 6.6: Responses to ‘Do you think HF helps in controlling DCAs?’ (community: N=19; village reps: N=15; institutional reps: N=4)

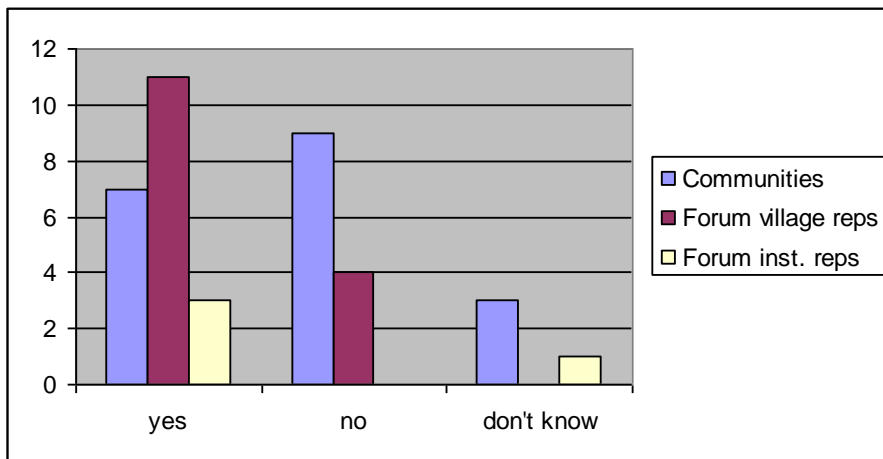


Figure 6.7: Responses to ‘Do you think HF helps community members get compensation for crop and livestock losses from wild animals?’ (community: N=19; village reps: N=15; institutional reps: N=4)

Juxtaposed with continuing questions of the HF’s representation and legitimacy, the ambiguous role of various institutions also continues to cloud the DCA control issue and affect perceptions of the HF outside its control. After almost two years of planning, a high level meeting with SANP, KNP, DAVS, and DFED/EA was convened in March 2005 regarding the issue. In this meeting, the actual ownership and maintenance of the KNP border fence was debated, as well as strategies of DCA compensation. According to the KNP District Ranger, in this meeting SANP/KNP offered to assist with DCA control outside the Park but was denied. Instead, the DFED/EA agreed that, if they feel its necessary, they would request KNP assistance. As institutions continue to debate over their roles and responsibilities, DCA problems persist, as do perceptions of ineffectiveness of the HF in helping community members with DCA compensation. Currently, the HF is meeting with community trusts (Nghunghunyani, Gazan) in order to take a more united front to the DFED in Limpopo Province to receive DCA compensation funds. It waits to be seen how this co-operation will be received.

### 6.5. Evaluation of HF effectiveness

Effectiveness of the HF regarding representation, reporting, building relationships, and DCA problems have been outlined above. This section will summarize perceptions by community members and HF members alike on how successful the HF has been in its other objectives, namely conservation projects, environmental education, development and employment, and overall functioning.

As mentioned in chapter 6.3., the HF was successful in securing funds through the government's LandCare program to stabilize streambanks, utilizing gabion baskets, in Matiyani village (Figure 6.8). This project is a relatively high-profile initiative as the work was done adjacent to the paved road, and clearly visible to all that enter the KNP at the Punda Maria gate. More recently, there has been a proposal by the KNP to provide trees, which will be planted by HF members along the KNP border fence near Altein village to create a small buffer between the Park (and its elephant population) and neighbouring maize crops. Aside from these two conservation projects, available HF meeting minutes and interviews conducted in this research indicated no other 'hands-on' conservation projects undertaken by the HF.



Figure 6.8: Streambank stabilization project near Matiyani village

However, when asked for reasons behind responses to the question, 'Does the HF do good conservation work?' in the three separate questionnaires utilized in this study, respondents indicated that in addition to soil erosion reduction projects, reporting DCAs, and KNP border fence maintenance, they believe education to be part of 'conservation work' (Figure 6.9). Education here was defined as a) discouraging people from cutting trees and poaching within the KNP, b) encouraging nature conservation, and c) educating people on the importance and dangers of wild animals. Negative responses to this question cite poor conservation work on behalf of the HF being evidenced by severe illegal activities and increased threats to biodiversity adjacent to KNP, e.g. illegal hunting, timber removal, erosion, litter, overgrazing, extraction of river sand, and developments undertaken without any EIA (see also chapter 5.6.).

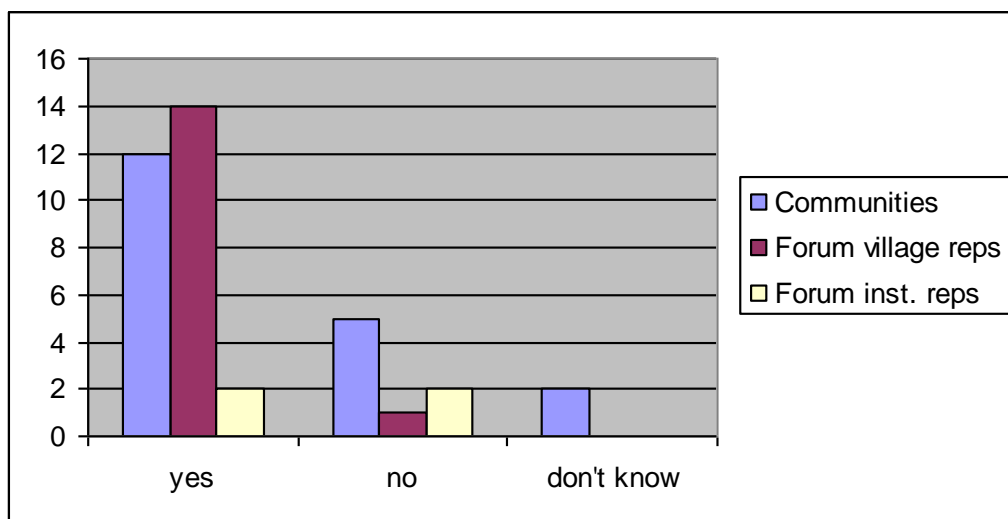


Figure 6.9: Responses to 'Does HF do good conservation work?' (community: N=19; village reps: N=15; institutional reps: N=4)

A similar pattern of responses resulted from a related question on the role of the HF in environmental education in its member villages (Figure 6.10). Responses by HF village representatives were more positive than community members and HF institutional representatives. Responses to open-ended questions on these opinions revealed that HF village representatives claimed that they conduct environmental training and workshops in most member villages, often by co-operating with TA and inviting KNP staff. In contrast, some community members who know of the HF have never heard about these workshops and doubt they've ever been held in their village. Participants in both the Maphophe and Ndindani PDM shared this belief (see chapter 5.3.5). Respondents believing that the HF performs poorly in environmental education again refer to increasing environmental threats in the neighbouring areas as support for their opinions.

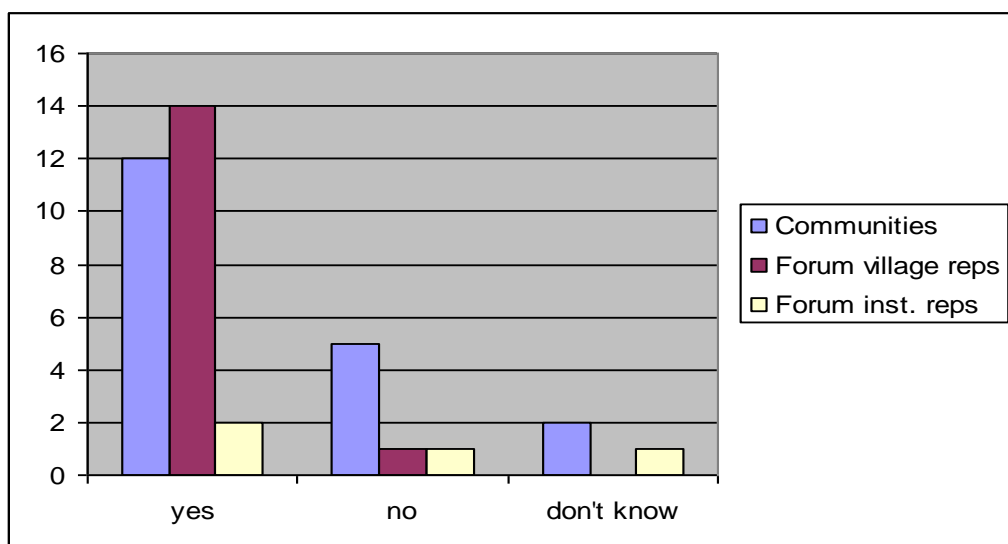


Figure 6.10: Responses to 'Does HF do good environmental education work?' (community: N=19; village reps: N=15; institutional reps: N=4)

Questionnaire respondents were also asked their opinion on the effectiveness of the HF with respect to enhancing employment and development in the region. Again, HF village reps responded more positively compared to the other two groups (Figure 6.11). They mention the fact that the KNP is creating jobs for people in the area as evidence of this contribution, as well as discounted KNP entrance fees, limited DCA compensation, and quicker responses to DCA reports. In contrast, community members and HF institutional reps are more divided on this question, with similar reasons to HF village reps for positive responses. Those who do not share this belief argue reduced employment in some villages and the fact that ‘money is not trickling through to village members’ as reasons for weak performance of the HF.

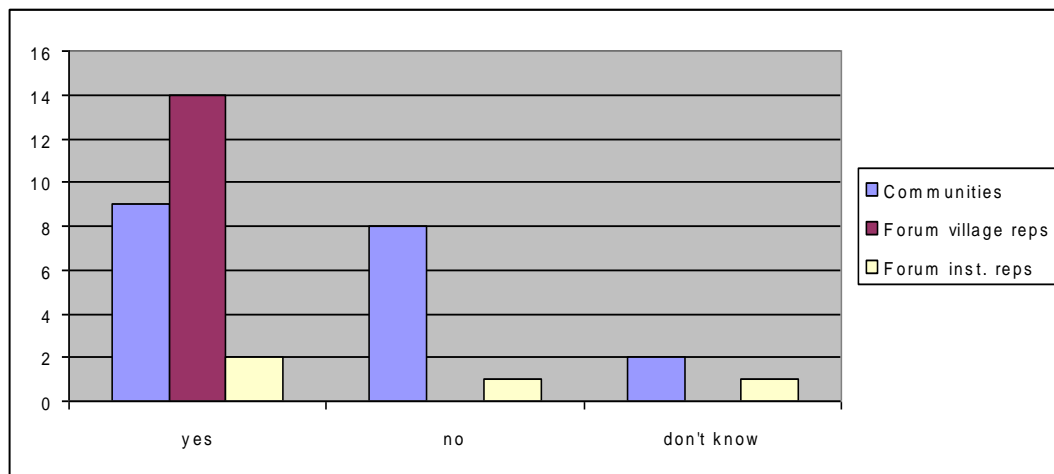


Figure 6.11: Responses to ‘Do you think the living standards of HF villages has improved because of its activities?’

(community: N=19; village reps: N=14; institutional reps: N=4)

In a related question, respondents were asked their opinion as to whether they were satisfied or not with community development programs delivered by KNP through HF (Figure 6.12). Those with positive responses stated co-operation in DCA control, employment, reduced KNP entry fees, free environmental education by KNP, and the thatch grass program as rationale for their choice. Those who think otherwise and are dissatisfied with the programs indicated that their experience with nepotism by HF members in employment practices, broken promises by the HF, and because ‘currently no one is benefiting from this partnership’ all contribute to this belief. One respondent from Bevhula village emphasized lack of communication as particularly problematic, noting “*although the Hlanganani Forum is said to be encouraging KNP to employ our people, unfortunately, there is no information flowing between the Forum and our village.*”

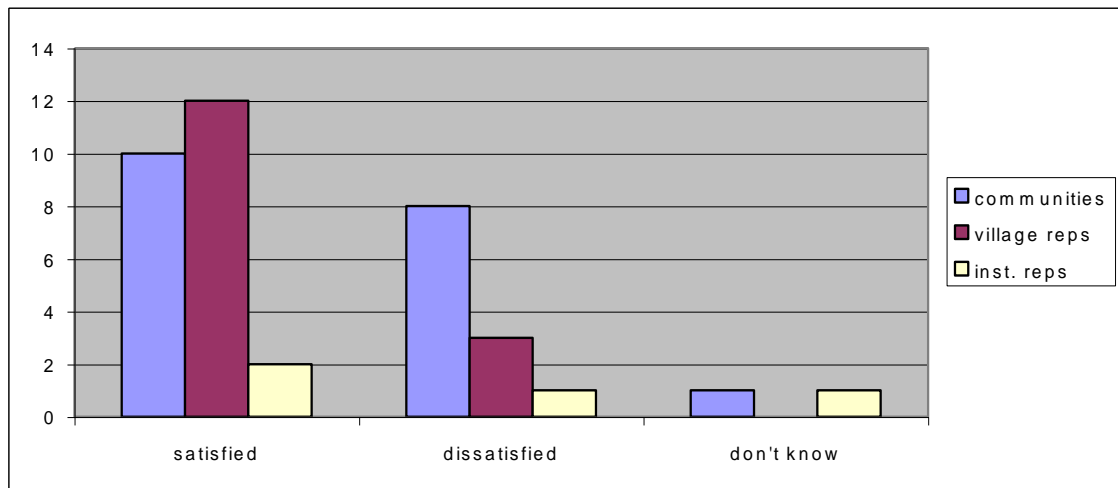


Figure 6.12: Responses to ‘To what extent are you dis/satisfied with community development programs delivered by KNP through HF?’  
(community: N=19; village reps: N=15; institutional reps: N=4)

Effectiveness of the HF was further investigated by addressing whether respondents believed that the HF functioned well or not. Again, responses by community members who knew of the HF were varied, with a slightly higher number of positive responses (Figure 6.13).

Reasons for their belief included:

- it is democratic in its activities
- because they usually give a report back of their activities
- they effectively consult with KNP and the community
- they are encouraging people to behave responsibly
- without it, we couldn't manage what they are doing

Community members who, on the other hand, believe that it fails to function well, justify their position with the following reasons:

- they are unsuccessful in their activities
- we don't even know their representative here
- we are not informed of its activities enough
- they've done nothing
- even though we were promised compensation, we've never received any. This is a failure on their part.

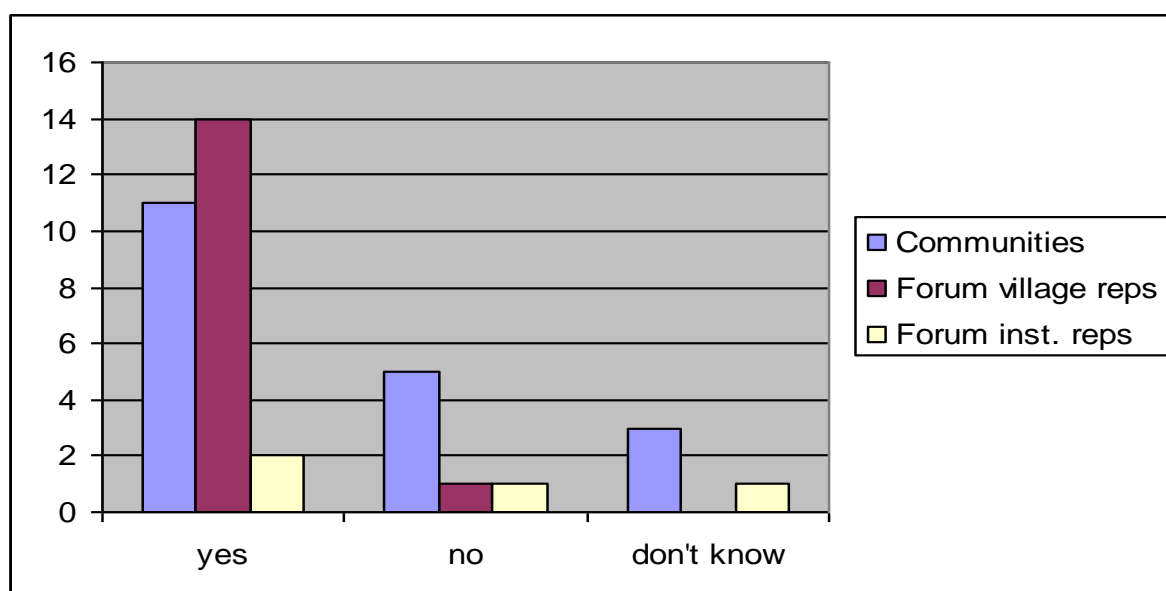


Figure 6.13: Responses to ‘Does HF function well?’  
(community: N=19; village reps: N=15; institutional reps: N=4)

HF village representative respondents were primarily positive in their responses, indicating high community representation, providing feedback and communicating with their villages, being an active voice to the KNP and DFED/EA, and the delivery of KNP jobs to the communities as primary reasons for their belief. The single negative HF village rep response believed the HF fails to function well ‘because it is not working with the chief’. Finally, HF institutional reps claim that although the HF is recognized, and has raised some money for DCA compensation, it could improve greatly because ‘there are no decisions at meetings and no deadlines for their activities’.

In order to understand the current impact of the HF in the neighbouring areas, an open-ended question was also included in the questionnaires regarding expected consequences if the HF were to cease to exist. Responses that indicated negative consequences to such an incident centered on concepts of relationships between communities and the KNP, DCA problems, and benefit flows from the KNP (Table 6.3). In contrast, some respondents felt that nothing would change or that the activities of community Trusts would expand.



Table 6.3: Responses to ‘If HF stopped tomorrow, what would happen?’

| Expected consequence                                     | Survey responses |                           |                        |
|--|------------------|---------------------------|------------------------|
|  | Community (N=19) | Forum village reps (N=15) | Forum inst. reps (N=4) |
| • Relationships with KNP would deteriorate               | 6                | 2                         | 0                      |
| • DCA problems would worsen                              | 1                | 4                         | 1                      |
| • Employment & development opportunities would decrease  | 0                | 4                         | 1                      |
| • People would destroy nature in and out of KNP          | 0                | 4                         | 0                      |
| • Loss of knowledge of KNP activities                    | 2                | 0                         | 1                      |
| • Representation would decrease to service providers     | 1                | 0                         | 1                      |
| • Gazan and Nghunghunyani Trusts would expand activities | 0                | 1                         | 1                      |
| • It would be replaced by another forum                  | 1                | 0                         | 0                      |
| • Nothing, because it bears no fruit                     | 4                | 0                         | 0                      |
| • It would be better                                     | 0                | 1                         | 0                      |
| • Don't know   | 2                | 0                         | 0                      |

To explore perceptions by community members and HF representatives as to whether the HF should be changed and if so, how, was also addressed in the research questionnaires. Responses to the question of whether the HF activities should, in fact, be changed are provided in Figure 6.14.

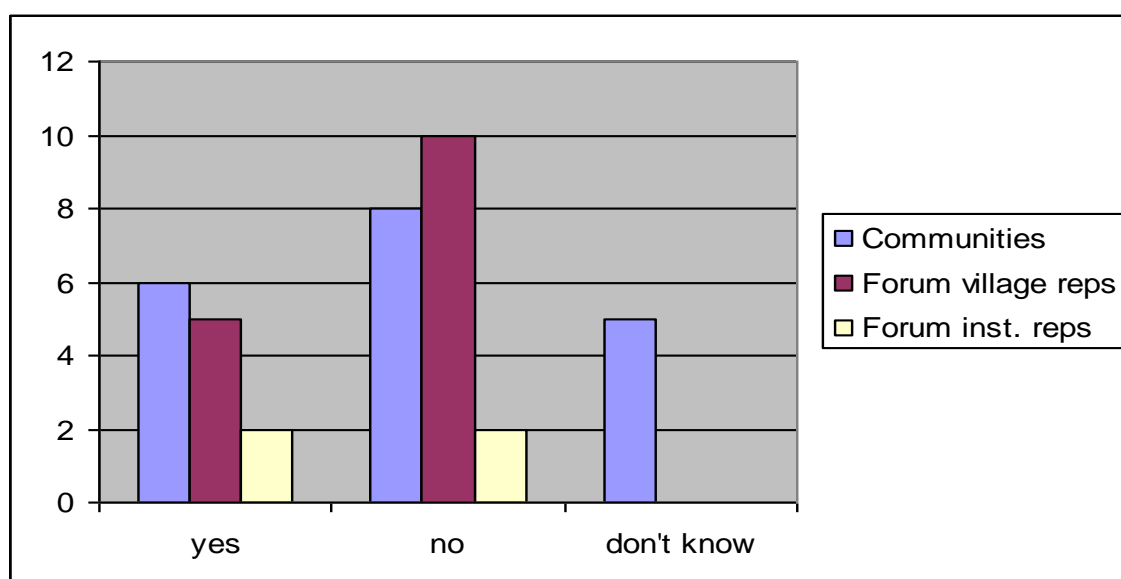


Figure 6.14: Responses to ‘Should HF’s activities be changed?’ (community: N=19; village reps: N=15; institutional reps: N=4)

For those who responded in the affirmative, an open-ended question allowed them to offer their views on how the HF should be changed. These suggestions, ordered in decreasing frequency, are listed below.

The HF should change by:

- better representing communities' interests;
- being replaced by another organization;
- working harder on the DCA problem;
- being more equitable in its benefit-sharing;
- being more transparent;
- providing transport for members to attend meetings;
- keeping their promises;
- involving more people familiar with law;
- having more representatives per village;
- having representatives selected by the community;
- increasing the number of women in its membership.

## **6.6. Conclusion**

Since its foundation in 1994, HF activities have revolved around DCA control and compensation, relationship building, development and employment opportunities, conservation projects and environmental education. With minimal capacity and experience in working with KNP, HF has forged ahead into relatively uncharted territory in realizing a number of significant achievements in relation to its stated objectives. However, a number of constraints outside their control including shifting government policies and questionable competence of KNP Social Ecology staff have affected HF ability in meeting some objectives. In addition to these constraints, internal weaknesses including meeting absenteeism and management, representation, reporting, and accountability in benefit-sharing has led to the questioning of the organization by TA, KNP, and DFED/EA staff.

## Chapter 7. Damage-causing animals (DCAs) and their control

### 7.1. Introduction

*'The general impression left on my mind was that, with civilization closing in on all sides, ultimately something must be done to segregate the game areas from those used for farming; otherwise sooner or later some excuse for liquidation of the wild animals will be found ... North of the Letaba River the country West of the Park consists mainly of native locations and areas. Here the Park itself might be fenced off.*

*Of course, a suitable fence over 200 miles long would be a most expensive undertaking, and its upkeep considerable. It would have to traverse all kinds of country, including stony hill ranges, and dense bush, but to my mind one of the chief difficulties would lie in the wide sand rivers running from west to east, and subject to annual heavy floods, which would carry away any kind of fence, and on their subsidence leave the way open for animals to pass freely up and down the river bed.'*

(National Parks Board of Trustees. 1946. *Annual Report of Warden, Kruger National Park – 1945*. J. Stevenson-Hamilton, KNP Warden. Dated 23rd January 1946, pp 11-12)

The preceding chapter examined the Hlanganani Forum, which is the main mediator between KNP and its neighbouring communities in the study area. One of the main foci of the HF is addressing the acute problem of damage-causing animals (DCAs) in the area, both in terms of their control and securing compensation for their damage. DCA problems are not new. The quote above from KNP's Annual Report of 1945 draws particular attention to the bio-physical constraints in fencing KNP from lands adjacent to the Park along its western boundary. The challenges in fencing this terrain to control the occurrence of DCAs and their resultant damage in neighbouring village areas were raised at the first HF meeting on 24 February 1994, and continue to dominate HF discussions today.

The historical background of many communities in the study area is characterized by a perceived inadequacy of not only compensation for their loss of access to resources within the park, but for *damage caused by wildlife* outside the park. Although damage from wildlife in its various forms occurs from a host of species, DCA damage associated with the KNP primarily is a result of buffalo, lion, hyena, and elephant, creating conflicts of interest between the KNP, public safety and agricultural land use. The mobility of wildlife in and out of the KNP is compounded by the fact that many sections of the western boundary fence, originally intended to control the spread of foot-and-mouth disease, are dismantled and/or need repair. Although there have been extensive studies on the interrelationships between protected areas, problem animals and people elsewhere, little is known about these factors in the study area.

After defining DCAs in the local context, an analysis of DCA incidents and animals destroyed will be provided, stemming primarily from Mopani District DFED/EA records since 1998. The following section will outline the use of professional hunting in controlling DCAs in Limpopo Province. The subsequent section takes this DCA control procedure further, and shows how professional hunting is embedded in current DCA control procedures in the province. By outlining DCA procedures, a number of pitfalls are identified which, when taken individually or in combination, lead to inconsistencies. These inconsistencies affect community perceptions about DCAs and, consequently, towards the agencies responsible for their control. The chapter concludes with a review of factors affecting DCA control both inside and outside KNP, and highlights community concerns regarding the lack of compensation to affected livestock owners.

## **7.2. Definition**

Currently, there is no standard or accepted definition of damage-causing animals in South Africa. For the purpose of this research, DCAs are defined as those animals which cause damage to:

- persons (death, injury, fear);
- livestock and crops; and
- property (fences, buildings, etc.).

Although it is recognized that damage can result from a wide variety of species (see Table 7.1), DCAs in this research largely concentrate on buffalo, elephant, lion, hyena, hippopotamus, and crocodile. It should be noted that wild populations of both hippo and crocodile exist in the study area, and outside of KNP. Thus, not all DCAs occurring in the communal areas originate from KNP.

## **7.3. DFED/EA records**

For this research, Limpopo Province DFED/EA DCA records from October 1998 to October 2004 were compiled from both Mopani District, which extends from the Shingwedzi River south through the study area, and Vhembe District, which includes the northern section of the study area. According to the Chief Nature Conservator for Mopani District DFED/EA, all DCAs were originally handled by the office in Mopani District, but since 1999 Vhembe District also has its own branch. DCA records for the Vhembe District section of the study area are to be kept at the Malamulele Field Office, but only data for 2003 was available. A total of 482 reports have been recorded over this period for Mopani District, involving 16

taxa, including reports of DCA incidents or problems, and reports of DCA being destroyed (Table 7.1).

Table 7.1: Mopani District DFED/EA DCA reports from October 1998 to October 2004

| <b>English name</b> | <b>Latin</b>                  | <b>Incident report</b> | <b>Report of animal(s) destroyed</b> |
|---------------------|-------------------------------|------------------------|--------------------------------------|
| Cape buffalo        | <i>Syncerus caffra</i>        | 152                    | 55                                   |
| lion                | <i>Panthera leo</i>           | 83                     | 23                                   |
| African elephant    | <i>Loxodonta africana</i>     | 56                     | 8                                    |
| hippopotamus        | <i>Hippopotamus amphibius</i> | 41                     | 5                                    |
| Nile crocodile      | <i>Crocodilus niloticus</i>   | 20                     | 1                                    |
| snake               | <i>Serpentes</i> suborder     | 12                     | 2                                    |
| leopard             | <i>Panthera pardus</i>        | 6                      | 1                                    |
| honey badger        | <i>Mellivora capensis</i>     | 3                      | 1                                    |
| Burchell's zebra    | <i>Equus burchelli</i>        | 3                      |                                      |
| spotted hyena       | <i>Crocuta crocuta</i>        | 2                      |                                      |
| vervet monkey       | <i>Cercopithecus aethiops</i> | 2                      |                                      |
| honey bee           | <i>Apidae</i> family          | 2                      |                                      |
| white rhino         | <i>Ceratotherium simum</i>    | 1                      |                                      |
| Chacma baboon       | <i>Papio ursinus</i>          | 1                      |                                      |
| impala              | <i>Aepyceros melampus</i>     | 1                      |                                      |
| common duiker       | <i>Sylvicapra grimmia</i>     | 1                      |                                      |
| <b>TOTAL</b>        | 16 taxa                       | 386                    | 96                                   |

DCA reports from both districts were handwritten and largely incomplete in content, therefore the values indicated in the table above may be gross underestimates, i.e. reports often include more than one animal (indicated only by the plural form of the word, not exact numbers) and may be multi-species. Conversely, there also exist possibilities where more than one report may have been recorded for the same animal(s), especially if reports are temporally and spatially proximate. Moreover, there exist many cases where the data was just not available (e.g. all of 2000), either because it was never transcribed or not centrally compiled at DFED/EA offices. From the data that was available, however, species most frequently reported (e.g. 91.2% of all incident reports) were buffalo, lion, elephant, hippo, and crocodile. Combined reports of these 'Big 5' DCAs from Mopani District are shown in Figure 7.1 over a 6-year period. In the graph, 'R' represents DCA problem or incident reports, whilst 'D' represents a report of DCAs being destroyed.

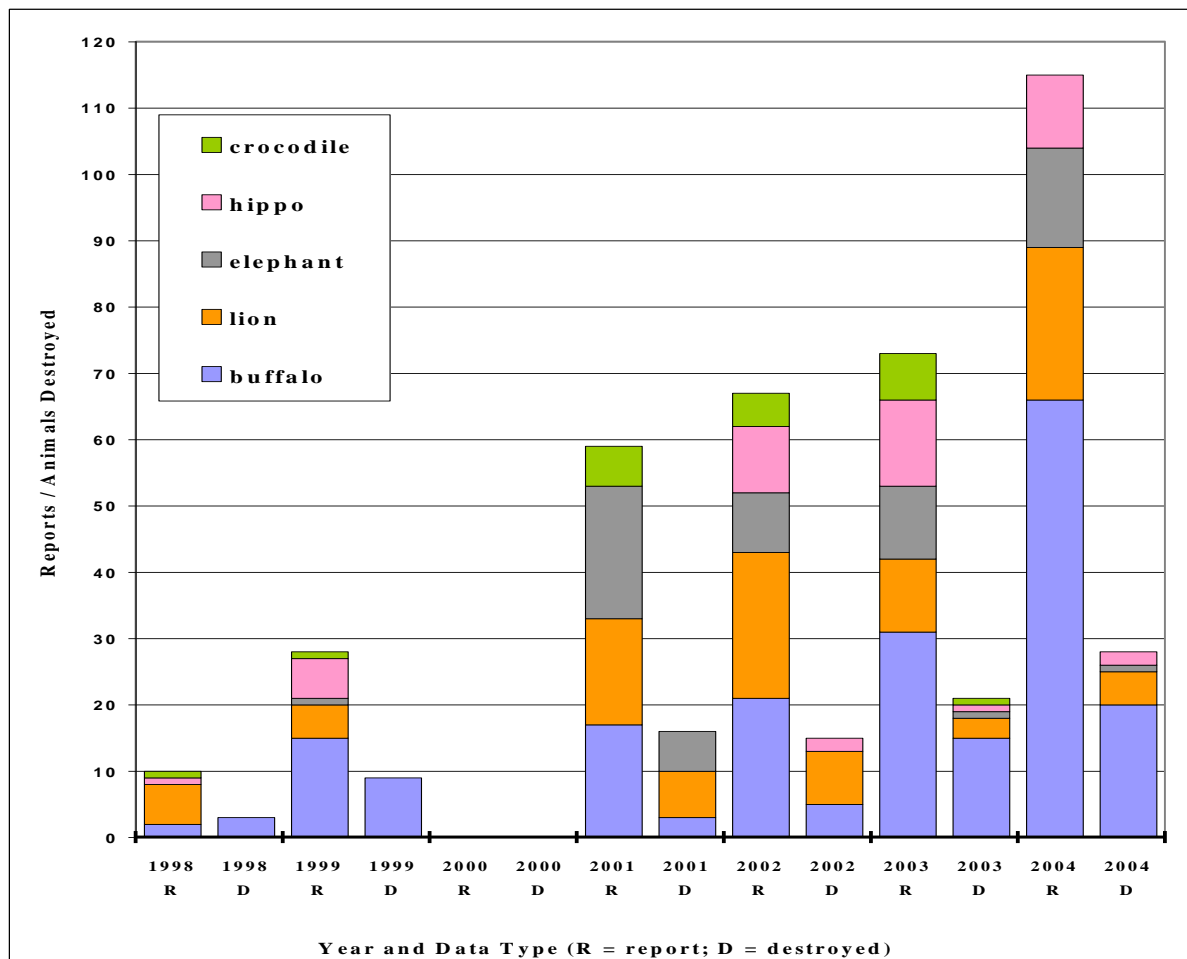


Figure 7.1: Reports of 'Big 5' DCA and animals destroyed in Mopani District (10/98 to 10/04)

Although records were incomplete, what is apparent from the data is that there are an increasing number of DCA incidents being reported to the DFED/EA over the last 6 years, with over 115 reports from January to October 2004 alone. However, reports of DCA being destroyed has not significantly increased relative to the number of reports, especially since 2001.

Figure 7.2 illustrates combined data for both districts for 2003 only. Again, similar to Mopani District, Vhembe District records are largely incomplete, limiting interpretation and analyses. However, compared to Mopani District, Vhembe District to the north appears to have either lower DCA incidents or lower reporting, or both. Moreover, the success of attending to and destroying buffalo appears to be greater than that of other DCA species reported. This may be due to the more gregarious and less elusive behaviour of buffalo, or because, due to the high risk of disease transfer between buffalo and cattle (see also chapter 5.3.2), a greater incentive for control exists, warranting increased efforts.

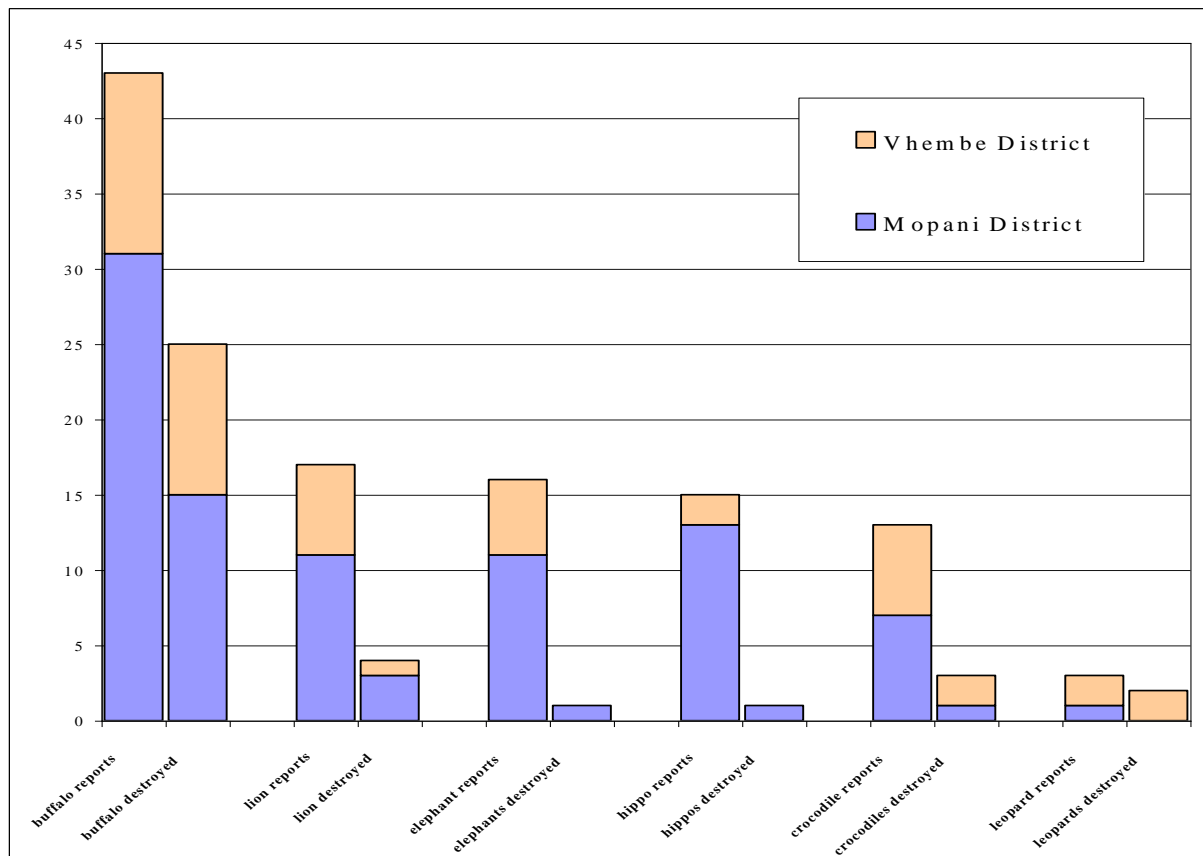


Figure 7.2: Combined DCA reports for 2003 for Mopani District and Vhembe District.

The Mopani District DCA records from 2001-2004 were organized monthly to determine if significant temporal patterns exist across all species or between species. Within this time frame, data were missing for the following months: June (2002), November (2001,2004), and December (2001,2002,2004). Nevertheless, a total of 315 incident reports for the five most problematic species were recorded including 137 buffalo, 72 lion, 55 elephant, 33 hippo, and 18 crocodile. Mean numbers of total incidents per month are shown in figure 7.3, and total monthly incident reports combined for all years for each species are shown in figure 7.4. These figures illustrate that documented DCA incidents from 2001-2004 primarily occur within the wet summer months, and are less frequent in winter. Species-specific data show that incidents of hippo and crocodile are distributed relatively evenly throughout the year. However, there are peaks for both buffalo and elephant in March which, at least for elephant, is likely associated with the local marula (*Sclerocarya birrea caffra*) harvesting season, and raiding of other mature crops (Hoare 1999; Jacobs and Biggs 2002). High reports of buffalo in the late wet season may be explained by the fact that herds are expanding their ranges at this time due to increased water availability, or simply due to the state of the fence. Concurrent herd movements and calving may also explain slightly higher incidents of lion during this period, although determining these relationships were beyond the scope of this research.

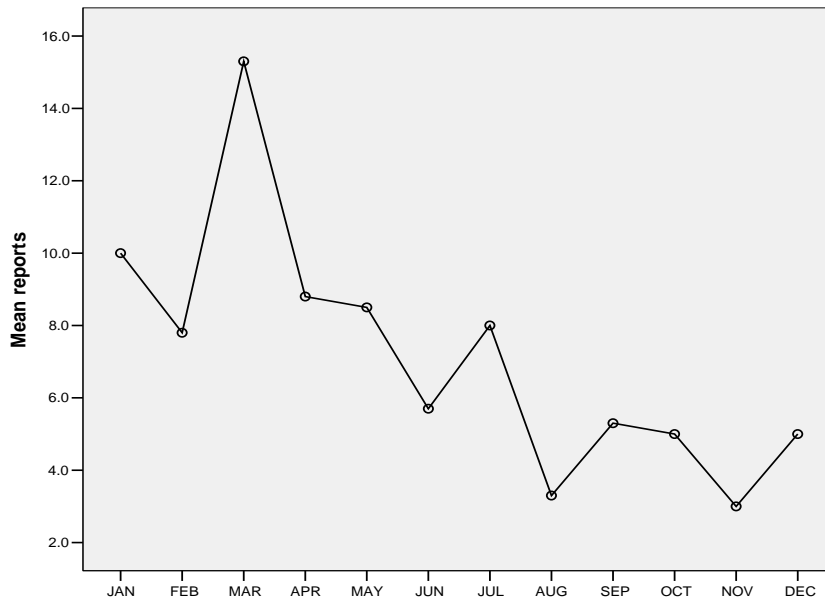


Figure 7.3: Mean number of monthly 'Big 5' DCA reports for Mopani District (2001-2004)

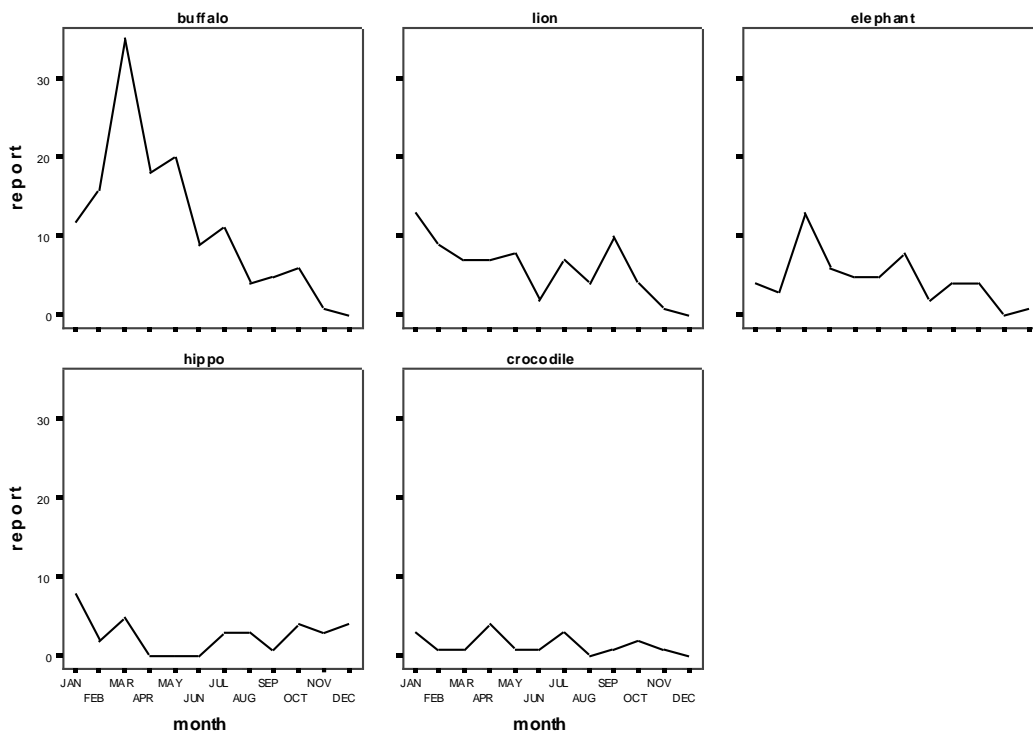


Figure 7.4: Temporal variation of DCA reports for buffalo, lion, elephant, hippo and crocodile in Mopani District (2001-2004).

To illustrate variation between years, monthly incident reports for each species were plotted for each data year (Figure 7.5). The greatest annual variation occurs with buffalo, although this is associated with more frequent reports. Moreover, Dunnett T3 post hoc tests, which compare pairwise differences between means and do not assume equal variances, show that



variation in buffalo is only significantly different than crocodile (mean diff.=0.8992, p=0.000) and hippo (mean diff.=0.7956, p=0.002).

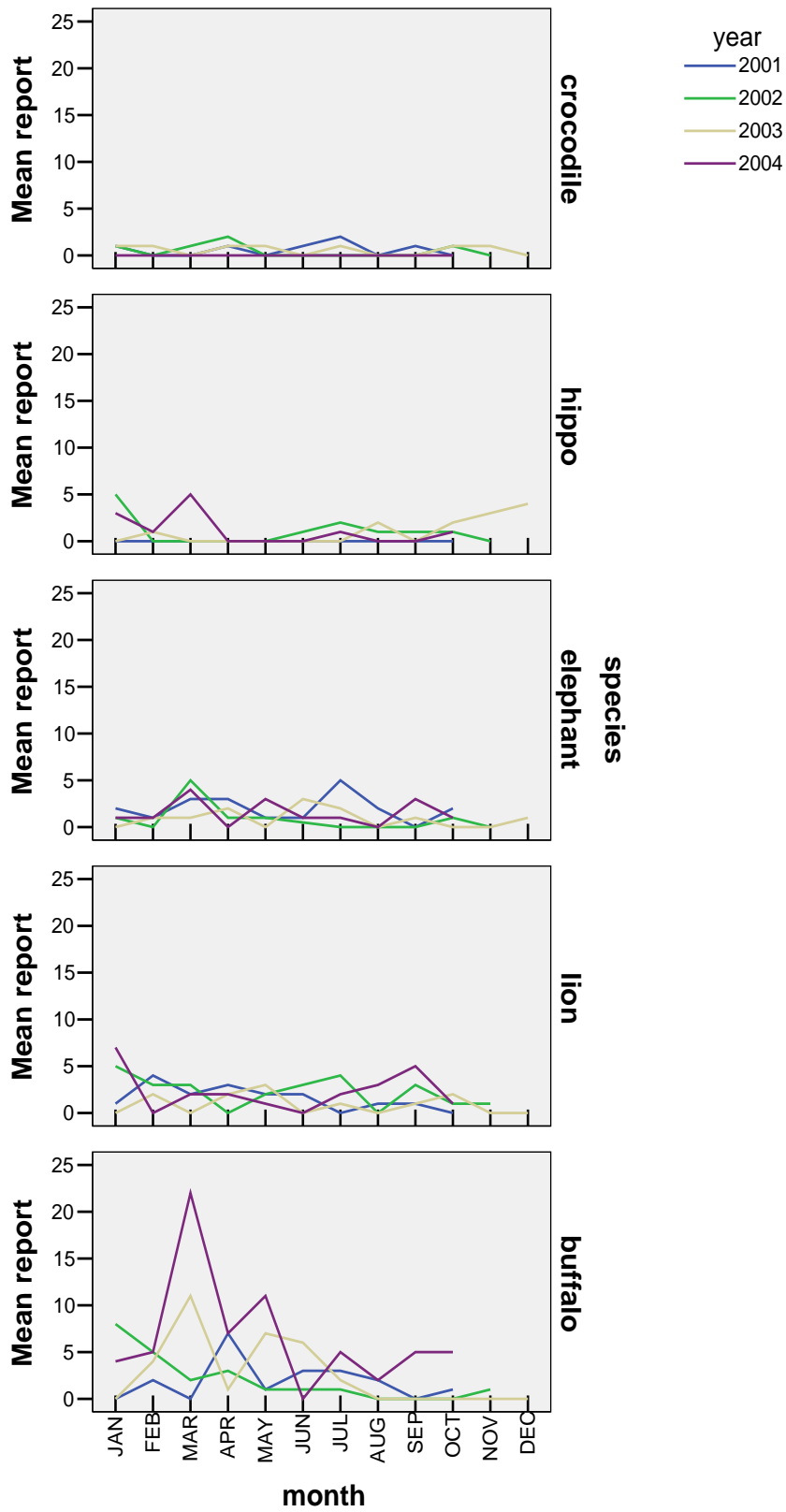


Figure 7.5: Annual variation in mean monthly incident reports for five DCA species in Mopani District (2001-2004)

#### 7.4. Professional Hunting Tenders

The authority to deal with a DCA in Limpopo Province resides with the provincial MEC. In addition to DFED/EA field rangers, DCA control has involved tenders issued by the province to professional hunting outfitters since 2001. According to records obtained from the Mopani District DFED/EA office, four informal and one formal professional hunting tenders to control DCAs were issued by the DFED from August 2001 to August 2004, representing approximately 36% of the period (Table 7.2).

Table 7.2: Trophy hunting tenders issued to control DCA with tender prices (ZAR) for species and sex between August 2001 and August 2004 by Limpopo Province.

| Species/sex | Informal Tenders            |                                |                                |                            | Formal Tender                  |
|-------------|-----------------------------|--------------------------------|--------------------------------|----------------------------|--------------------------------|
|             | 23/08/2001 to<br>31/10/2001 | 16/11/2001<br>to<br>31/01/2002 | 22/04/2002<br>to<br>20/07/2002 | 4/4/2003<br>to<br>4/7/2003 | 11/05/2004<br>to<br>11/08/2004 |
| Elephant    | 85000                       | 88000                          | 102000-120000                  | 75000-171500               | 102000                         |
| Buffalo/M   | 30000                       |                                |                                | 45000                      | 45000                          |
| Buffalo/F   | 30000                       |                                |                                | 41000-45000                | 40000                          |
| Lion/M      | 35000                       | 22500                          | 17500-81000                    | 112000                     | 58500                          |
| Lion/F      | 35000                       | 22500                          | 17500-81001                    | 45000                      | 36000                          |
| Hippo       | 26000                       |                                |                                | 25000                      | 12000                          |
| Crocodile   | 21000                       |                                |                                |                            | 6000                           |

These tenders were generally for 2-3 month periods and, in addition to 90,900 ZAR in license fees, has generated 2,165,000 ZAR in tender payments for successful hunts (current ~350,300 USD) (Figure 7.6; Table 7.3).

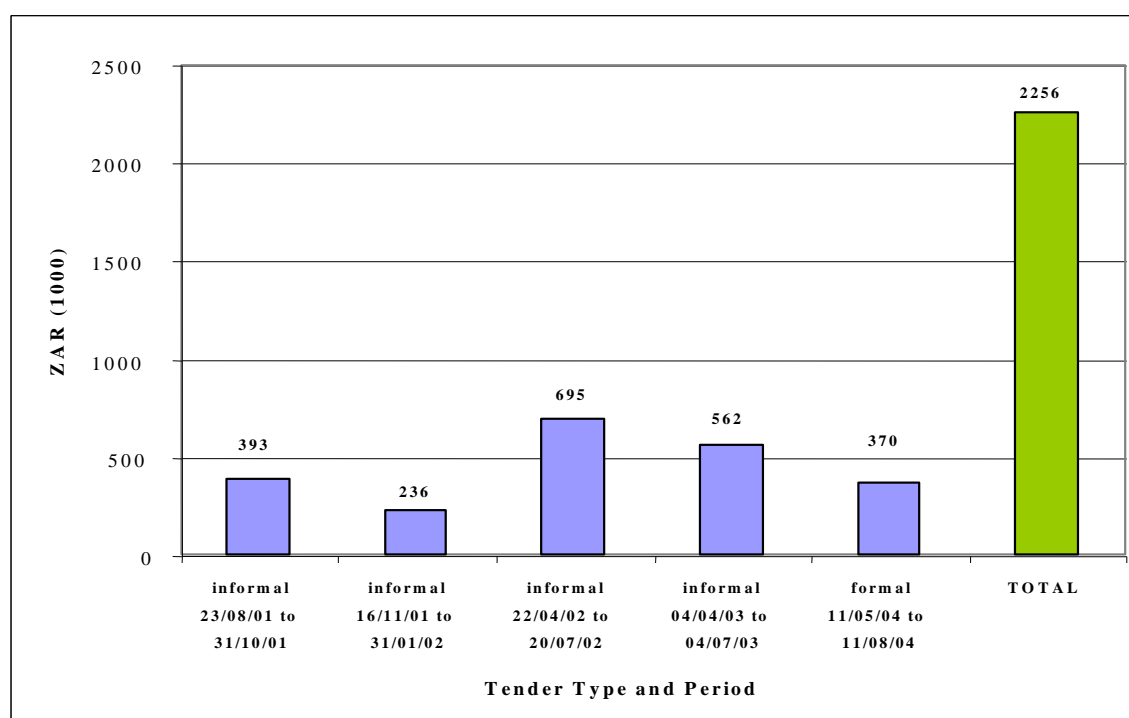


Figure 7.6: Trophy hunting tenders issued to control DCA and revenue generated from license fees and tender payments between August 2001 and August 2004 by Limpopo Province.

Table 7.3: Species-specific statistics for tenders issued to control DCAs in Limpopo Province between August 2001 and August 2004.

| Species      | Licenses issued | Animals successfully hunted | % of hunts successful | Total tender payments (ZAR) | Mean price paid per animal <sup>a</sup> (ZAR) | Mean price paid per animal (current USD) |
|--------------|-----------------|-----------------------------|-----------------------|-----------------------------|---|--|
| lion         | 40              | 14                          | 35.0                  | 439,000                     | 39,909  | 6197                                     |
| elephant     | 20              | 13                          | 65.0                  | 1,320,000                   | 110,000                                       | 17,081                                   |
| buffalo      | 18              | 7                           | 38.9                  | 296,000                     | 42,286  | 6566                                     |
| hippo        | 5               | 4                           | 80.0                  | 89,000                      | 22,250  | 3455                                     |
| crocodile    | 2               | 1                           | 50.0                  | 21,000                      | 21,000  | 3261                                     |
| <b>TOTAL</b> | <b>85</b>       | <b>39</b>                   | <b>45.9</b>           | <b>2,165,000</b>            | <b>61,857</b>                                 | <b>9605</b>                              |

<sup>a</sup> One tender payment was not paid for a successful elephant hunt. A second case exists in which three excess lions were shot apparently for no tender cost. Thus, mean prices are calculated for animals hunted where a payment was received.

These records also show that 78.7% of the hunters involved were from overseas (United States, Spain, France, Italy, Norway, Poland, and Venezuela), 14.8% were South African, and the rest unknown. The recorded hunts were successful in slightly less than half (45.9%) of the occasions (Table 7.3). Over 2 million ZAR was collected in successful hunts of 39 animals including 14 lion, 13 elephant, 7 buffalo, 4 hippo, and one crocodile. As a broad estimate, this represents approximately 62,000 ZAR/animal hunted (~9600 USD). The distribution of successful hunts per tender and total animals hunted is illustrated in Figure 7.7.

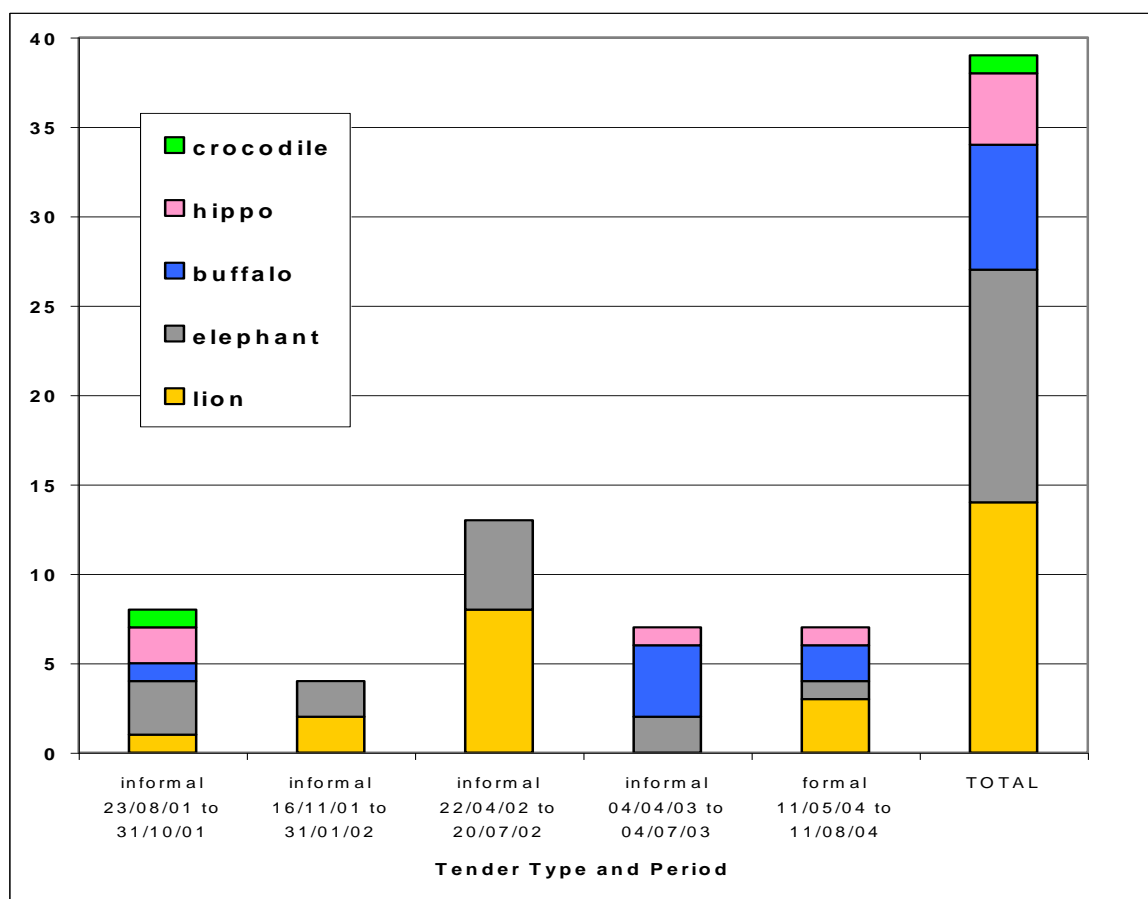


Figure 7.7: Number and species of DCA successfully hunted through trophy hunting tenders issued by Limpopo Province between August 2001 and August 2004.

## 7.5. DCA procedures

As wildlife has *res nullius*<sup>31</sup> status in South Africa (Gibson 1977), Limpopo Province is the legal agency responsible to control DCAs outside KNP. According to KNP rangers, KNP section rangers used to be able to deal with DCAs themselves, but currently their agreement with DFED/EA stipulates that KNP can assist in DCA control, but only after obtaining permission from the Limpopo Province government in each case. This change of practice, coupled with inconsistencies involved with using professional hunters in controlling DCAs, and constraints identified elsewhere (chapter 4.3.3) has meant that DCA control has been hampered in the study area, causing increasing friction between communities, KNP, and the Limpopo provincial government. For example, in a letter dated 7<sup>th</sup> December 1998 from East African Safaris to the Northern Province, many villages bordering KNP are reported as being ‘unhappy with the ways that problem animals are being dealt with.’ The letter summarizes the situation and proposed action as follows:

1. Nature Conservation in control of wildlife in neighbouring lands is unacceptable.
2. From 1985 to present (Nov 1998), wild animals in Mbaula and Phalaubeni have killed at least 500 cattle, plus one person seriously injured in a lion attack on 14 November 1998. From Ntlhaveni Community Authority alone, losses due to lion are 15 cattle, 3 heifers, and 15 goats, and one person by crocodile.
3. No compensation for livestock loss has been paid.
4. Communities (including Mbaula, Phalaubeni, Muyexe, Hlomela, Nsavulani, Mhinga, Mtititi, Makhubele, Bevhula, Ntlhaveni D, and Nkavele) want to enter into agreement with East African Safaris to hunt problem animals; income would go to communities to compensate farmers suffering livestock loss.

A more recent case was reported in the *Capricorn Voice* newspaper (1-3 September 2004), in which communities under *Hosi* Bevhula are ‘*living in fear for their lives since scores of their cattle have fallen prey to marauding lions*’. *Hosi* Bevhula has expressed trepidation because he fears the roaming lions might attack humans, especially young students who travel long distances along wooded footpaths to school. *Hosi* Bevhula is also unhappy with KNP’s management and government agencies charged with the task of looking after lions and people alike, claiming that ‘*They are bickering over whose task it is to deal with the situation*’. Meanwhile, KNP’s spokesperson scoffed at allegations of bickering and stated that KNP is only responsible for animals within the Park. But in the interim, Bevhula and his subjects

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<sup>31</sup> This means that no wild animal in a free-roaming state has a legal owner, i.e. belong to no one in particular but to everyone in general. The State therefore acts as custodian to all wild animals in the best interest of the public.

have threatened ‘to take the law into their own hands to address their grievances, should the authorities be seen to be dilly-dallying while the lions run loose on their home turf. They intend on killing the lions.’

These severe and very tangible conflicts have also contributed to prompting action on a national level. On 6 April 2005, the Minister of Environment Affairs and Tourism, appointed a Panel of Experts (PoE) to review existing professional and recreational hunting activities in South Africa and recommend guiding principles for the drafting of national norms and standards for the hunting industry. The impetus for this initiative was driven in part by media reports of hunting practices adjacent to KNP, ‘canned hunting’<sup>32</sup>, and the recognition that the draft norms and standards for the sustainable use of large predators gazetted in February 2005 were insufficient. The findings and advice of the PoE were informed by both public input and commissioned research and resulted in the PoE’s *Final Draft Report to the Minister of Environmental Affairs and Tourism* (25 October 2005). The Executive Summary of the PoE’s Report emphasizes that the hunting industry is currently regulated on a provincial basis and ‘every province has its own legislation and policies resulting in a complex and fragmented system resulting in gaps, loopholes, and use of provisions that are outdated.’ They further recognize low capacity at the provincial level, and that some provinces are struggling to manage, administer, monitor and enforce their own hunting regulations. The PoE believe that DCAs should be totally decoupled from commercial hunting due to abuses by provincial systems to manage DCAs with private operators. Further, it strongly recommends that ‘...DCAs, which is a provincial wildlife management issue, be dealt with under a separate policy process, and that no DCA should be hunted or be dealt with through a commercial hunting agreement.’

The flow diagram that follows illustrates the procedures to be abided by if DCAs exit KNP (Figure 7.8). The procedures involving buffalo and other cloven-hoofed animals are governed by a different process as KNP senior rangers and/or DAVS can bypass DFED/EA in controlling these animals outside the KNP to minimize disease transfer, including FMD (Figure 7.9). In Figure 7.8, numbered insertions indicate stages in which the process breaks down or faces specific constraints. These are discussed separately following Figure 7.9.

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<sup>32</sup> Canned hunting is defined by the Panel of Experts on Professional and Recreational Hunting in South Africa as ‘the hunting of species that are not self-sustaining (meaning they are unable to feed themselves and produce healthy offspring), or are not able to exercise their natural escape mechanisms (as reflected in the fair chase principles).’ (pp. vii)

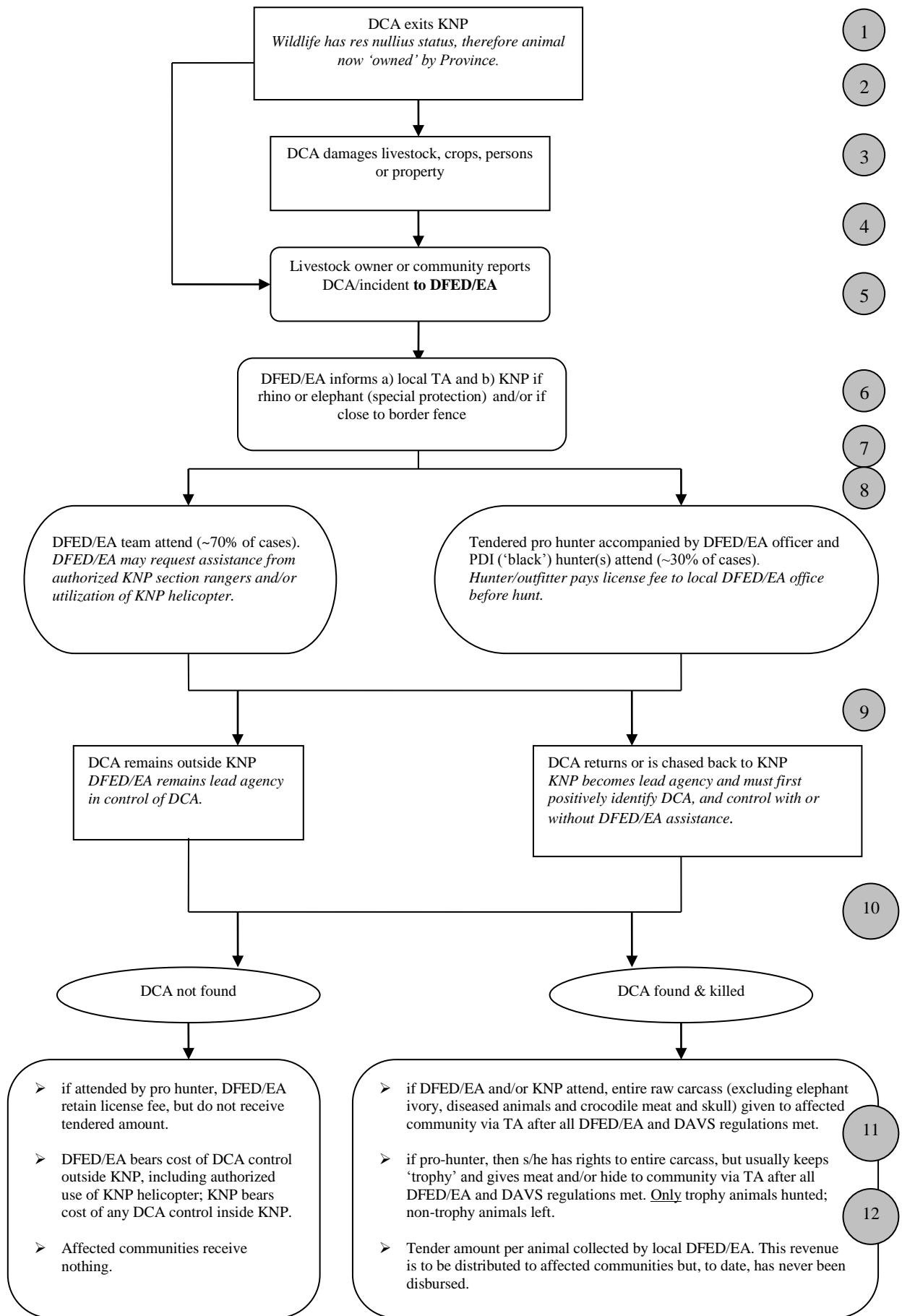


Figure 7.8: DCA procedures (excluding buffalo and other cloven-hoofed animals)

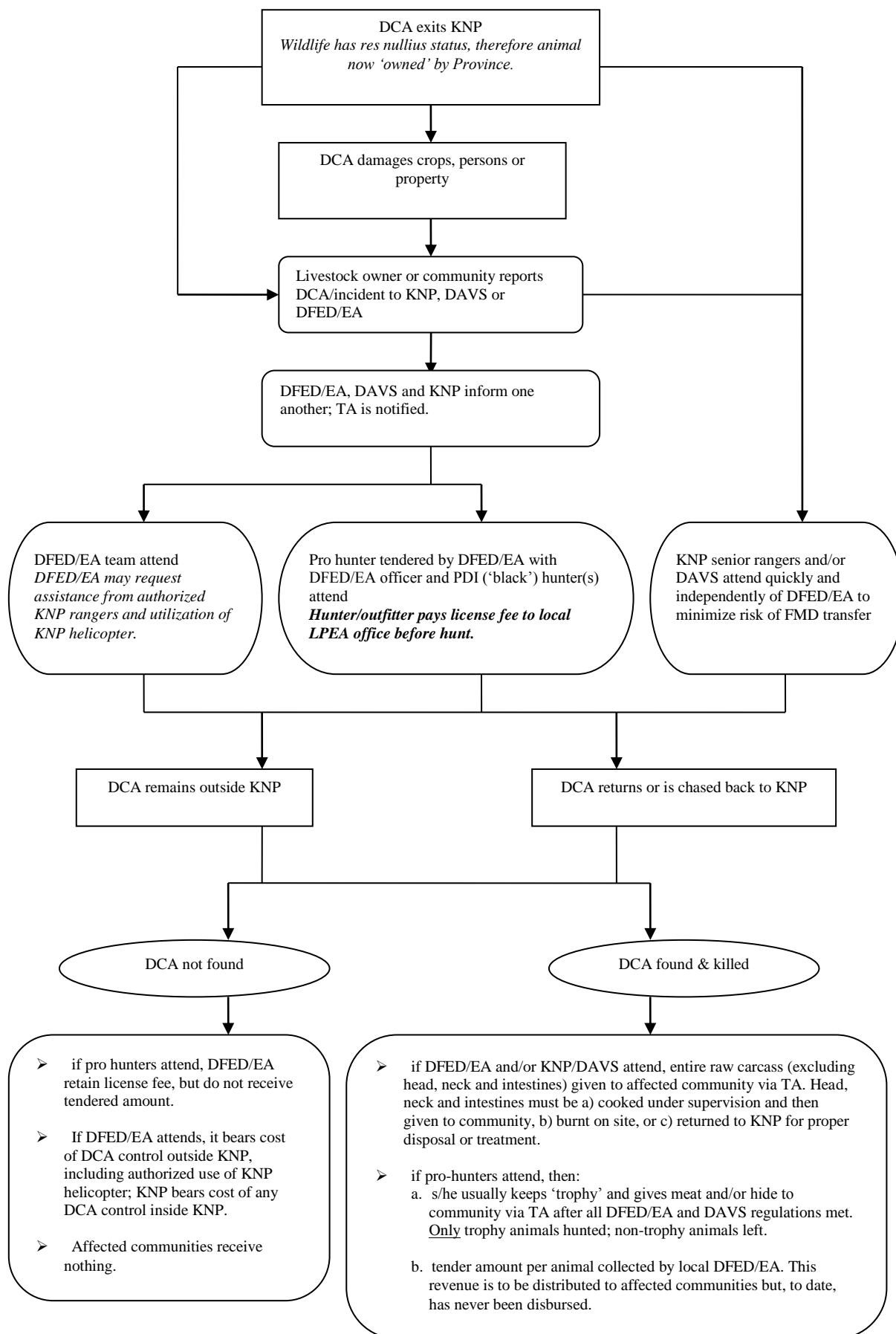


Figure 7.9: DCA procedures (for buffalo and other cloven-hoofed animals)

According to DFED/EA District staff, there is currently no coherent national policy for controlling DCAs in the communal areas, although the PoE Report mentioned above indicated that a DEAT Working Group has recently approved the drafting of norms and standards for DCAs. In the meantime, a system of procedures has been implemented on a provincial level by the DFED/EA in the study area. A number of pitfalls are identified in these procedures, which are indicated as numbered insertions in Figure 7.8 above, and outlined below.

*1. Not all DCAs originate from KNP.*

In the study area, it is widely accepted that species such as buffalo, elephant, hyena and lion do not exist as wild populations outside of KNP or adjacent game reserves. Thus, when these DCAs occur, it is presumed that these animals originated from KNP. However, other species including leopard, crocodile, and hippo do exist in wild populations outside KNP borders. Thus the role and responsibility of KNP is ambiguous when dealing with these DCAs, as the origin of these animals is often unknown.

*2. Wildlife has res nullius status.*

Regarding DCAs and the neighbouring communities, a quandary exists. While within the borders of the KNP, all wildlife is 'owned' by the KNP. Once they have escaped and are outside KNP borders, the ownership changes into the hands of the Limpopo Province. The DFED/EA then has the authority and obligation to control these animals. To complicate matters, the border fence is under the responsibility of the Department of Agriculture - Veterinary Services, who are obliged to maintain it. Furthermore, communal lands where most of the DCAs are reported are owned by the Department of Land Affairs and have yet to be officially returned to the communities under the *Communal Land Rights Act* (No. 11 of 2004), which was only gazetted in July 2004. Finally, a number of land claims are still pending in the study area, and could potentially greatly alter land ownership (see chapter 5.3.4). Confusion in current land tenure and potential wildlife ownership has far-reaching implications for current and future wildlife use, including DCA control.

*3. Not all animals exiting KNP cause damage.*

Although animals that exit KNP and those that naturally reside outside KNP have the potential to cause damage, not all do. Thus, defining both DCAs, and the damage they could cause, should be at the forefront of any policy being formulated to control DCAs. For example, the DCA procedures outlined above make no accommodation for leopards which



may traverse back and forth between the KNP and neighbouring areas, yet not cause damage whilst outside the Park.

4. *Not all DCA damage is discovered.*

Similar to point 3. above, a DCA may cause damage to crops, but it may be so minimal that it is never detected or observed. A second example can occur if livestock falls victim to a DCA (e.g. lion), the carcass is never found, and the owner believes that it is only 'lost'. In these cases, a DCA has caused damage, but the damage itself is undetected.

5. *Not all DCAs are reported.*

Due to experiencing poor action or inaction by provincial rangers, a number of key informants from the neighbouring communities and KNP indicated that they often do not report DCAs to the DFED/EA. These include Maviligwe village members who were upset by broken promises made by a provincial ranger to return to kill a lion after he had witnessed partly eaten cattle. In the end, he didn't return, the lions ate the rest of the cattle, and nothing was done (HF meeting minutes, 26 May 2000). A second case includes a KNP ranger who, after repeated attempts trying to locate DCA lions who had returned to the KNP, stated in an interview that a provincial officer had phoned him to ask, 'What should we do about these lions?' The KNP ranger was furious and stated that he had been out for five nights trying to get the lion and was 'wondering what on earth the province is doing about it outside.' The officer replied that they had tried for one night. The KNP ranger further stressed that he's "*sick of the province's unwillingness and lack of dedication to deal with these problems*", and now "*only rarely reports DCAs to the province.*" Finally, one professional hunter operating in the study area remarked that "*Many locals do not even report DCAs to the DFED/EA anymore, because in the past, there was such a poor response from the province.*" He believes this is why many locals were using snares to handle the problem themselves.

6. *Not all DCA reports communicated between relevant parties.*

According to the procedures outlined above, when a DCA is reported or encountered, all relevant parties should be contacted and informed on the course of action to be followed. However, in practice, this doesn't always occur. Examples include lack of or poor communication between DFED/EA and a) other DFED/EA staff, b) local communities, c) local TAs, and d) relevant KNP staff.

- 'Communication between the Northern Province, its rangers, and the communities should improve.' (HF meeting minutes, 21 January 2000).

- “We are not allowed to hunt any animal unless it has first been reported as a problem animal by the local communities.” (American Hunter)
- DFED/EA rangers often hunt DCAs without informing the local *Hosi*. According to one *Hosi*, “...it would be better if the community itself dealt with the problem in co-operation with the Traditional Authority office as we’re closer.” Another complaint was raised about DFED rangers not informing local *tindhuna / tihosi / HF* reps when hunting DCAs locally. (HF meeting, 2 April 2004)
- “The DFED EA is by-passing Traditional Authorities in its dealings with the DCAs at Makuleke Dam, causing friction between the once harmonious villages of Makuleke and Ntlhaveni Block D.” (Makuleke village rep, HF meeting, 2 July 2004)
- Northern Province DEA promised to give permits to KNP rangers to control wild animals outside KNP, but haven’t. (HF meeting minutes, 21 Oct 1999). In a related case, the KNP said their DCA permit, which is issued by the Limpopo Province, expired 14 May 2004, so they ‘are unable to assist with DCAs outside KNP until a new permit is issued.’ (HF meeting minutes, 4 June 2004, 2 July 2004).
- “Unfortunately, our current handling of DCAs has been hampered by the Limpopo Province’s reluctance to allow us to assist with incidents. We used to be able to control these ourselves in the past.” (KNP Conservation Services staff member, Skukuza)
- KNP section rangers, although requiring permission from the Limpopo Province to control DCAs cannot reach DFED/EA staff at certain times of the day or week. One ranger expressed his frustration this way, “As some problem animals are causing destruction on weekends, there is literally no one to call to complain!”

#### 7. Prior permission required before attending any DCA incident.

Success in hunting DCAs is partially associated with the speed in attending to incidents. With the current practice, field rangers accompanying professional hunters are required to first obtain licenses from field offices before a hunt. Moreover, DFED/EA district staff require authorization from head office in Polokwane (Pietersburg) prior to controlling any DCA. This bureaucratic process has often hindered the ability to quickly attend to DCA incidents. Evidence of this pitfall gained from interviews includes the following:

- “I think the Department should be more decentralized, especially when it comes to DCA control. As it now stands, we must seek prior permission from Head Office to control any DCA.” (DFED/EA District Manager)
- “DFED head office has no policy in controlling DCAs. Because of the recent FMD outbreak, we must shoot lion and buffalo on sight, but must get ‘official’ authorization

*from the permit and site inspection office in Pietersburg before we shoot elephant, leopard, hippo, hyena, or crocodiles.”* (District level DFED/EA staff)

- *“I think involving DFED/EA rangers on hunts is OK. However, they don’t have vehicles and we needed to obtain licenses from the district offices before the hunt as the local rangers could not issue them. This became a problem as I recall one Friday at 2pm we saw an elephant near Punda Maria. We sent a truck to get a license in Thohoyandou, Malamulele, and Giyani but no one was around who could give the license. This happened on weekends as well. The administration in Giyani and Vhembe is a mess. It just doesn’t make sense to have to get a license after one encounters a DCA, especially when it is so difficult administratively to get one.”* (Professional Hunting Outfitter)

8. *Not all DCA reports attended to.*

Due to a number of factors, even when reports are received by DFED/EA, not all of these are attended to. Capacity constraints within DFED/EA are outlined elsewhere (chapter 4.3.3), although specific cases of DFED/EA not attending to DCA reports are noted here.

- A meeting was held between KNP and GNC on 19 July 1994 to discuss DCA control and co-operation between the two institutions. GNC stated that due to the law enforcement activities of the GNC they ‘could not attend to every DCA report.’
- Complaints from Mahlati village of lions killing livestock and when they report matter to province, they do not respond (HF meeting minutes, 19 August 1999; 21 October 1999).
- The control of problem animals by the Northern Province is still below standard, as they are not turning up when called (HF meeting minutes, 9 February 2001; 17 August 2001; 10 May 2002).
- *“Unfortunately, the DFED/EA are usually late in getting to the scene, and much damage has already been caused. Moreover, they don’t have a high rate of success in actually finding and killing the problem animal.”* (Hosi Mtititi)
- ‘According to Gawula representative, two cattle were killed in Gawula last week. The provincial officers came, documented the incident, but then left and have not returned since.’ (HF meeting minutes, 1 October 2004)
- *“I often experience DCAs including elephant, lion, and buffalo at my field located ~2km from the village. I am scared, and even at the moment, buffalo are there. I called the Mopani DFED/EA over a week ago, but still have not had a response yet.”* (Ndindani community member)

- *“Lions killed a cow last week. We called the DFED/EA but they didn’t come. The villagers caught the lion, killed it, and distributed the meat and skin to the livestock owner.”* (Gawula TA rep)
- *“Because the government does nothing in terms of compensation nor controlling the DCAs, villagers often take the situation into their own hands and kill the DCA themselves.”* (Hosi Mininginisi)
- *“DCAs take up about 70% of our staff’s time. To compound problems with understaffing and poor transport, 3-4 staff are needed for each DCA reported.”* (Mopani District DFED/EA staff)
- *“We sometimes do not attend to DCA complaints because the people do not give us enough information, the damage is days old, or we must attend another complaint.”* (Mopani District DFED/EA staff)

#### 9. Not all DCAs remain outside KNP

Not all DCAs that cause damage outside KNP remain outside the park. Rangers from both DFED/EA and KNP, and DAVS fence maintenance staff stated that animals, especially lion and elephant will venture outside the park during the night, but return by dawn (Figure 7.10). Professional hunters who were unsuccessful in finding individual animals also echoed this observation. One hunter expressed his frustration that *“Elephants, lions and buffalo often return to the KNP by the time we get the report and are able to get there.”* Once inside KNP, the KNP becomes the lead agency in finding the animal(s), and must decide whether it needs to be destroyed.



Figure 7.10: Male elephant returning to KNP over border fence from communal area (Photo courtesy of Peter Scott)

#### 10. Not all DCAs ever found or destroyed.

Even if a DCA causes damage, is reported to the DFED/EA and attended to, the animal(s) are not always found and/or destroyed. This has repercussions for both repeated incidents, especially with lions (see chapter 5.2.5), and in terms of potential DCA compensation schemes. Interviews with both field rangers and other actors perceive that this drawback is not only a result of poor communication and slow response time in getting to the scene, but also due to poor tracking and shooting capabilities of field rangers and/or professional hunters.

- Other problems with the proposed HF compensation scheme include that in order to get compensation, the problem animal must be caught (HF meeting minutes, 21 January 2000).
- “*Provincial officers are often slow in investigating a DCA report, so maybe there should be more local control of that.*” (Makuleke C.P.A. representative)
- L.P. Olivier [KNP] states that provincial field rangers are ‘not well trained to destroy DCAs.’ (HF meeting minutes, 25 May 2001).
- “*KNP even set up a training course for Limpopo Province conservation staff to learn how to shoot properly, but this had mixed results.*” (KNP Far Northern District Ranger)
- “*KNP has trained DFED/EA staff once, but they still require further training.*” (Mopani District DFED/EA staff).
- “*Although the DFED/EA have used professional hunters, they often don’t shoot straight.*” (HF chairperson).

#### 11. Not all meat given to communities.

According to the Mopani District DFED/EA Environmental Manager, if an animal is destroyed by the DFED/EA, then the following process for each species is carried out:

- Lion - skin and meat given to the community via the *hosi / ndhuna*.
- Elephant - tusks retained by DFED/EA; carcass given to community.
- Buffalo – head and hooves (FMD) and lungs (BTB) are removed by DAVS and returned to Skukuza for disposal. After certification by DAVS officials, carcass given to communities for consumption. If diseased, carcass is incinerated on the spot.
- Hippo - after certification by DAVS officials, carcass given to communities for consumption. If diseased, carcass is incinerated on the spot.
- Crocodile - usually capture and relocation. When animal is destroyed, meat and skull (brains considered poisonous) taken by DFED/EA to be incinerated or buried. Community receives the hide.

However, discussions with both TA and allegations during HF meetings revealed that meat is not always given to the communities as promised. As early as 1998, an HF meeting in February reported that ‘There is concern from forum members that the province only attends to DCAs when they are buffaloes and not lions. This was confirmed by *Hosi* Muyexe who stated that the province only brought him a hind leg and the rest of the meat was taken by the provincial rangers.’ More recently, a Gawula TA representative remarked that the DFED/EA are “*not trustworthy, however, villagers are bound by the law to report all DCAs to them. When DFED/EA do come and kill DCAs, they leave the meat, although there are occasions when they have left with buffalo meat.*” During the May 2004 HF meeting, the HF chairperson pointedly questioned the DFED/EA reps about reports of DFED/EA rangers taking buffalo meat home, and not to the communities. The response was that the communities should launch formal complaints to the DFED EA office, but added that since they heard about the practice, they now require the signature of the *hosi, ndhuna* or to whom the meat is given.

*12. Only ‘trophy’ animals hunted by pro hunters.*

The incorporation of professional hunters in controlling DCAs by the Limpopo Province has been vehemently criticized by the KNP and the PoE on Professional and Recreational Hunting in South Africa. The abuses of this practice were also highlighted on a national television documentary aired 30 May 2004 on the ‘50/50 Environmental Program’ in South Africa entitled “*On the Other Side of the Fence*”. In this, the narrator stated that “The method used to allocate problem animals to professional hunters for their clients in any case does not work. These guys pay big money to shoot a trophy animal - up to 300,000 ZAR for a good specimen - for a large elephant. They are not interested in an old elephant cow or a sick or injured lion and in many cases younger and smaller animals are left to continue with crop and stock destruction while the hunters and their clients go in search of a large and bigger trophy.”

The consequence of trying to satisfy the demands of trophy hunters in DCA control was also confirmed by a professional hunting outfitter, who was awarded the formal tender to control DCAs in 2004. When asked why he terminated his tender, he stated that “*The bottom line is that it was just not profitable. This is because my overseas clients want trophy animals and most of the DCAs are not trophy animals. Only about 20% of problem lions are trophy animals. I clocked over 20,000 km on my vehicle, often just trying to investigate problems for the DFED/EA guys*”. To rectify the situation, he believes that “*It’s just impossible to involve pro hunters if they can only shoot trophy animals. I know that there are many local South African hunters would be willing to pay a lower price for a non-trophy animal but cannot*

*afford the full trophy fees. In these cases, more DCAs would be dealt with and communities would be able to get more meat.*” Overseas hunters also voiced their frustration in the low success rate, claiming that the current problem with many DCAs is that ‘they are not trophy animals, i.e. they are too small or the wrong sex.’ They also believed that constraints in communication and licensing inhibited their success, declaring “*by the time we could attend to the report, in 70-75% of the cases, the animals were long gone. There were also occasions where the supposed lion problem turned out to be hyena.*”

The need to supply professional hunters with trophy animals has also led to unethical and illegal activities of a related nature. Accusations, supported with documented and photographic evidence, have surfaced of professional hunting outfitters with permanent camps located along the KNP border luring lions out of the KNP with bait, recordings, and/or by cutting the fence (see also chapter 5.6). In the 50/50 documentary mentioned above, the KNP Shangoni Section Ranger, exclaims “The road on the western boundary is full of predator tracks (spoor) and it is clear that there has been a substantial increase in the animals’ activity in the area...It is a clear indication that bait is being put out just outside our boundary fence. Pieces of meat are tied to the fence and are thrown around the area. Blood is smeared on the fence and bait is even placed inside the park. Normally in areas where it is difficult to keep fences maintained such as in dongas<sup>33</sup> or small river streams.” The narrator continues “However it is only when [section ranger] and his rangers follow the spoor out of Kruger that they realize the true extent of the problem. Only 20 m off the fence it seems as if we had just walked into butchery. Here they find hundreds of dead animals along the boundary. Even a dead hyena is tied through his mouth to a tree (Figure 7.11). To prevent their rich clients finding out what is going on, the hunters and their accomplices have hidden away the baits in trees or underneath bushes. Various hides have been erected strategically around the baits.” (Figure 7.12) The section ranger adds, “...In another incident when we investigated some more irregularities we found a live donkey tied to a tree for the entire night. It was about 30 m off a hide with a microphone tied just above the donkey’s head. A cable was running from the microphone directly to the hide (Figure 7.13). Once again they were luring lions from the park and were sleeping in the hide obviously waiting for the lions to arrive in which instance the donkey will perform and they will wake up.”

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<sup>33</sup> term used for an extensive gully system usually resulting from severe erosion





Figure 7.11: Snared hyena, killed with stones, and allegedly used as bait to lure lions outside KNP. (Photo courtesy of Peter Scott)



Figure 7.12: Hunting hide near Dombodzi area in 2002. (Photo courtesy of Peter Scott)



Figure 7.13: Donkey (background left) and microphone used for luring lions out of KNP. (Photo courtesy of Peter Scott)



According to the Manager of Terrestrial Biodiversity and Wilderness Management at KNP, lion luring is a man-induced population sink, which ‘may have an effect on biodiversity over the long-term.’ Although he believes that this activity can be worrying on a localized scale, it has minimal impact over KNP as a whole. On the other hand, however, he added that lions may develop a change of prey preference if they have increased cattle-killing opportunities.

These DCA procedures result in a piece-meal approach to controlling DCAs in the communal areas. The process is fraught with gaps and loopholes that result in increased opportunities for corruption and illegal activity. Moreover, it shows the need for a more improved and streamlined system of control that minimizes risk and damage. Currently, at the end of the day, the process results in the following:

- KNP: bears cost in terms of biodiversity loss, manpower and other resources required to search for DCAs inside park, and deteriorating relationships with neighbouring communities.
- DAVS: bears cost in terms of fence maintenance and poor public image.
- DFED/EA: bears cost in terms of manpower and other resources required to search for DCAs outside park, increased conflict with neighbouring communities, yet has received revenue from tenders issued to professional hunting outfitters.
- Communities: bear cost in terms of loss of life and limb, crops and livestock, psychological damage, increased conflict with conservation agencies, and receive no compensation except occasional meat.

## 7.6. Community perceptions

*“The hunger in my stomach is stronger than my fear of the elephants”*

[Reason why elderly woman from Altein village continues to grow and harvest maize next to KNP border fence, despite being repeatedly chased by marauding elephants.]

Community perceptions of DCAs are an important aspect of KNP’s interaction with its neighbouring communities, and have great capacity in shaping attitudes. Based on the community questionnaire, 12.1% of respondents claimed that they had experienced DCA damage within the last two years. Further respondents perceive that lions, followed by elephant, hyena, buffalo and leopard are the ‘worst DCAs’ (Figure 7.14).

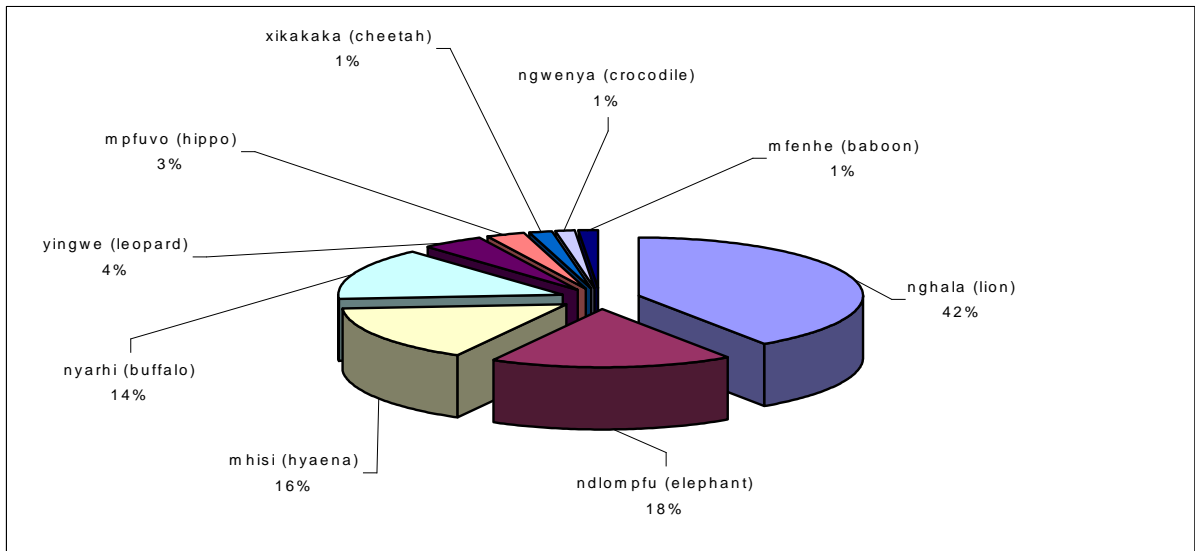


Figure 7.14: Ranking of 'worst' DCAs by community members experiencing DCA damage within the last two years (N=240).

Not surprisingly, a negative and significant relationship ( $r=0.170$ ,  $p<0.01$ ,  $N=240$ ) exists between distance from the KNP border and the incidence of damage caused by DCAs in the adjacent areas. To test for linearity, percentage of sampled households experiencing DCA damage within the past two years was plotted against the distance from KNP (Figure 7.15). The goodness-of-fit measure ( $R^2=0.4382$ ), indicates that almost half of the variation in the distance from KNP can be explained by the regression model.

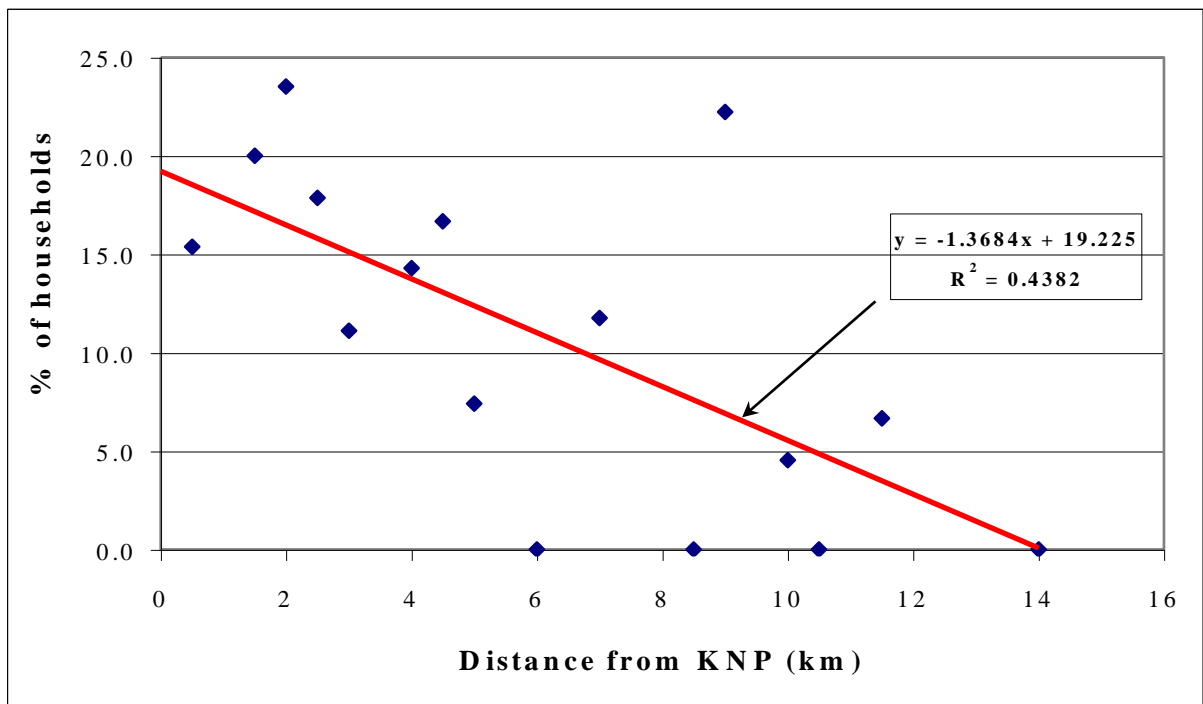


Figure 7.15: Relationship between distance from KNP and percentage of households experiencing DCA damage within past two years (N = 240).

Distance values were then divided into three bands for further analyses (0-3 km, 3.1-7.0 km, and 7.1-15 km). Percentage of sampled households experiencing DCA damage was then calculated for each of these bands, and multiplied by the total number of households within the bands in the study area (Figure 7.16). Within 3 km of KNP's border, almost 1 in 5 households claimed to have suffered DCA damage within the past two years. If extrapolated to the entire population within the study area's 0-3 km band, this would amount to approximately 1100 households. If one considers all households in the study area, an estimated 2216 households have suffered some DCA damage within the last two years, which, obviously, should be reason for concern.

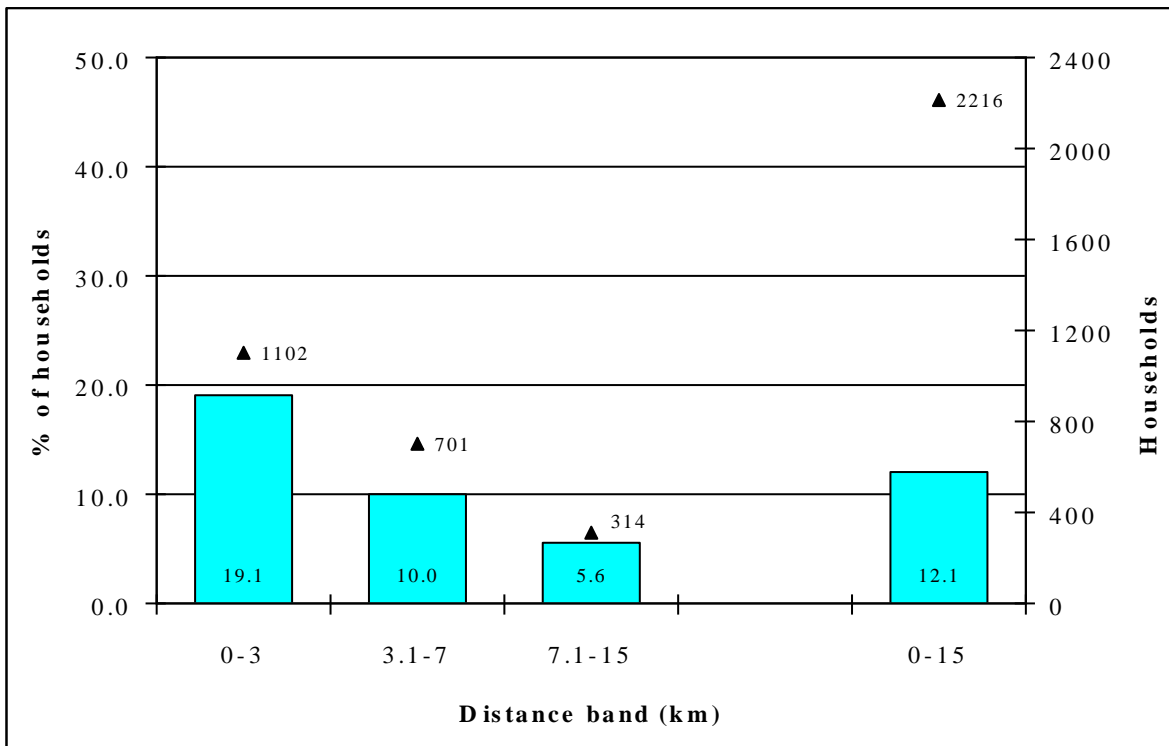


Figure 7.16: Percentage (bars) and total households (▲) experiencing DCA damage within last two years within three distance bands from KNP (N=240).

Logistic regression analysis revealed that households which had higher numbers of mammalian livestock ( $B^{34}=0.109$ ,  $p<0.001$ ) and are closer to the KNP ( $B=0.231$ ,  $p<0.01$ ) could predict occurrences of DCA damage. Fisher's exact test, which tests for independence in 2x2 tables, also showed that, although not significant ( $p=0.065$ , one-sided), households located in Greater Giyani Municipality were more likely to be affected by DCAs. Pearson chi-square tests also show a significant relationship in that those who had suffered DCA damage were less likely to believe that KNP would ever help their household economically ( $\chi^2=7.295$ ,  $df=2$ ,  $p<0.05$ ).

<sup>34</sup> B = regression coefficient

Respondents were also requested to state their opinion as to whether problems with wild animals have increased, stayed the same, or decreased in recent years. More than one in six respondents (17.5%) believed that DCA problems have increased, whilst 58.8% stated ‘decreased’, 9.6% thought they had remained the same, and 14.2% didn’t know. Linear regression analysis ( $R^2=0.103$ ) revealed that those that felt problems had increased were likely to have experienced DCA damage in the last two years ( $B=0.503$ ,  $p<0.01$ ), located in Greater Giyani Municipality ( $B=0.334$ ,  $p<0.05$ ), and live closer to the KNP ( $B=0.032$ ,  $p<0.05$ ). Moreover, almost one in five respondents (24.17%) believe that wild animal populations are increasing in recent years, including elephant ( $n=29$ ), lion ( $n=21$ ), buffalo ( $n=13$ ), and hyena ( $n=7$ ).

Qualitative responses from the community questionnaire also shed light on the extent of the DCA problem within the study area. Below, a selection of statements regarding the interaction between KNP and villagers are shown. Next to the need for job creation, the most often-cited and acute complaint from community members regarding the KNP was related to damage caused by DCAs and lack of compensation for this damage (see also chapter 5.5). Further, for those who stated that they are dissatisfied with their village being so close to KNP, DCAs were cited as the primary reason.

- “... two weeks ago my cow was killed by a lion and last week I had to run for my life from elephants.” (58 year old woman, Ndindani village)
- “We are not interested in keeping livestock because of wild animals” (54 year old woman, Makahlule village)
- “I’m dissatisfied being close to KNP because when their animals escape, we’re the first victims.” (22 year old man, Jilongo village)
- “I like the KNP, but they don’t seem to care about our killed animals” (72 year old man, Magona village)
- “their [KNP’s] fence is in poor shape and they take too long to drive their animals back...” (27 year old man, Matiyani village)
- “...although we’re neighbours, KNP has done nothing for us ...we always live in fear of animals escaping.” (24 year old woman, Matiyani village)
- “... although we’re unhappy with the Park, there’s nothing we can do...” (53 year old woman, Nkovani village)

### 7.6.1. DCA reporting

When respondents in the household survey were asked ‘*What should someone do if they experience a DCA?*’ a total of 245 responses were elicited (respondents could provide more than one answer). Twenty-six different responses were provided, including 24 separate channels of reporting. These include up to 3 levels of information flow and 7 different institutions including the KNP, DFED/EA, TAs, SAPS, local civics, HF and community trusts (Figure 7.17).

Based on results in figure 7.17, respondents who indicated that an institution must be notified when encountering DCA believed that in 53.9% of the cases, action is taken to control DCA at the first level of reporting. This is followed by 42.9% after information reached a second institution and 3.2% after reaching the third. It is believed that KNP takes action to control DCA in 53.9% of cases, followed by TA (17.5%), DFED/EA (15.7%), SAPS (4.6%), HF (1.8%), civics (0.9%), ‘those in charge’ (5.1%), and self (0.5%). Considering that minimizing response time is a critical factor in successfully addressing and controlling DCA, these results strongly suggest that a more streamlined and consistent DCA reporting system is needed in the rural areas. Moreover, it is also noteworthy that no respondents believed that the KNP passes DCA report information on to another institution, including the province, which is the primary agency responsible for DCA control in the communal areas.

When asked the follow-up question ‘*What happens when someone follows this route?*’, 40.0% believe the animal is killed, 36.8% think the animal is chased away, 11.1% believe nothing is done about it, whilst 12.1% don’t know (N=233).

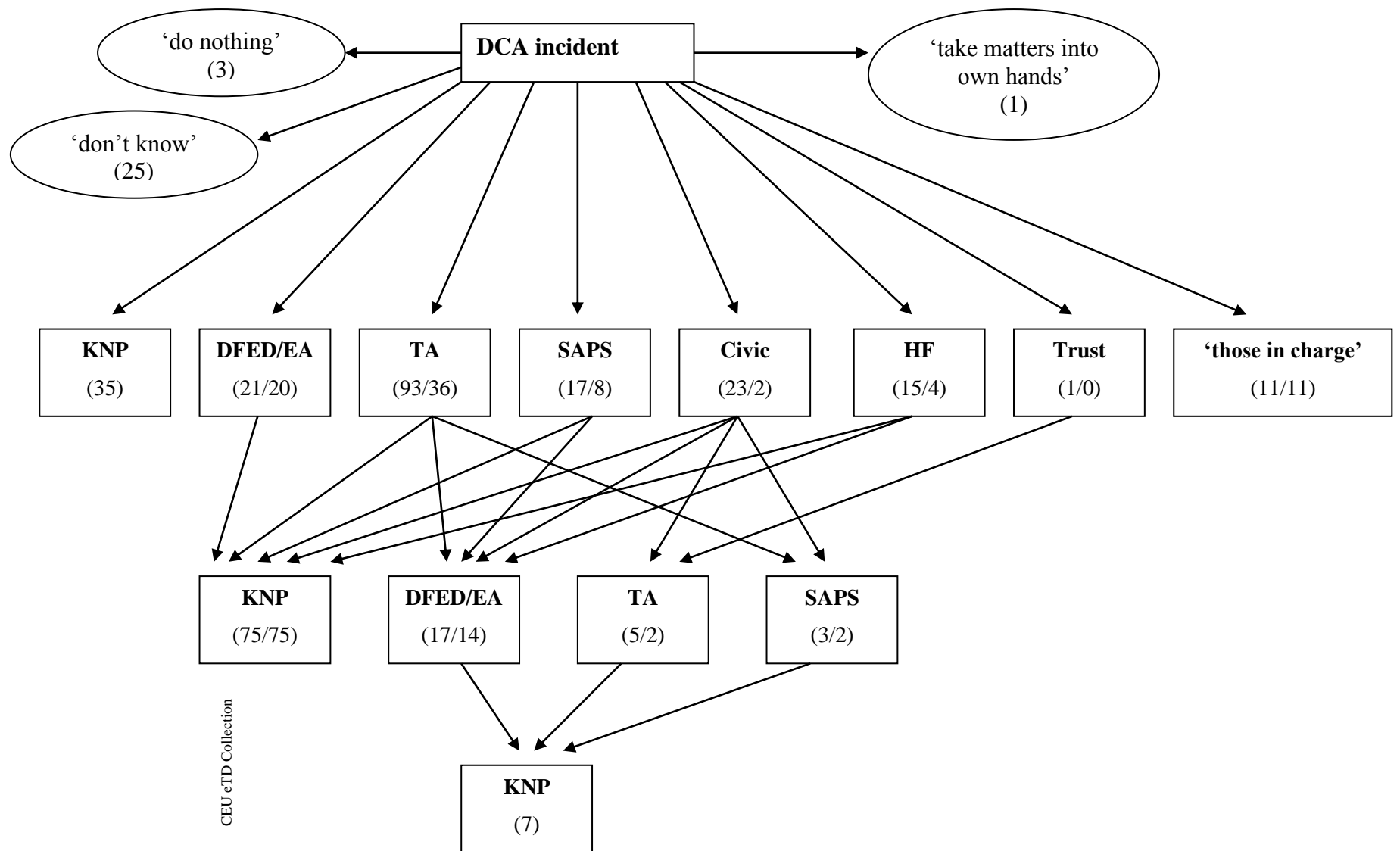


Figure 7.17: Information flow for DCA reporting (frequency of information to institution / frequency that institution controls DCA).

### 7.6.2. Who *is* and who *should be* responsible

Finally, when respondents were asked who *is* responsible for wildlife in their area, almost 80% of community members perceive that the KNP is actively involved, followed by TA (9.2%) and DFED/EA (7.5%). When asked who *should be* responsible, although KNP's involvement decreased, it still remained the preferred institution and was also favored in creating a stronger partnership with TAs on this issue (Table 7.4).

Table 7.4: Frequencies and percentage of responses to questions on who *is* and who *should be* responsible for DCA control.

| institution / partnership | Who is responsible |               |                               | Who should be responsible |               |                               | change of responsibility (%) | change in involvement (%) |
|---------------------------|--------------------|---------------|-------------------------------|---------------------------|---------------|-------------------------------|------------------------------|---------------------------|
|                           | n                  | as % of total | institutional involvement (%) | n                         | as % of total | institutional involvement (%) |                              |                           |
| KNP                       | 181                | 75.4          | 77.9                          | 107                       | 44.6          | 54.2                          | -30.8                        | -27.9                     |
| TA                        | 19                 | 7.9           | 9.2                           | 69                        | 28.8          | 33.8                          | 20.8                         | +24.6                     |
| DFED/EA                   | 17                 | 7.1           | 7.5                           | 22                        | 9.2           | 9.6                           | 2.1                          | +2.1                      |
| HF                        | 4                  | 1.7           | 2.5                           | 12                        | 5.0           | 6.3                           | 3.3                          | +3.8                      |
| Civic                     | 3                  | 1.3           | 1.3                           | 4                         | 1.7           | 2.1                           | 0.4                          | +0.8                      |
| livestock owners          | 0                  | 0.0           | 0                             | 1                         | 0.4           | 0.4                           | 0.4                          | +0.4                      |
| KNP / TA                  | 3                  | 1.3           |                               | 10                        | 4.2           |                               | 2.9                          |                           |
| KNP / HF                  | 2                  | 0.8           |                               | 1                         | 0.4           |                               | -0.4                         |                           |
| KNP / DFED/EA             | 1                  | 0.4           |                               | 0                         | 0.0           |                               | -0.4                         |                           |
| DFED/EA / HF              | 0                  | 0.0           |                               | 1                         | 0.4           |                               | 0.4                          |                           |
| KNP / TA / HF             | 0                  | 0.0           |                               | 1                         | 0.4           |                               | 0.4                          |                           |
| KNP / TA / Civic          | 0                  | 0.0           |                               | 1                         | 0.4           |                               | 0.4                          |                           |
| don't know                | 10                 | 4.2           |                               | 10                        | 4.2           |                               | 0.0                          |                           |
| no one                    | 0                  | 0.0           |                               | 1                         | 0.4           |                               | 0.4                          |                           |

The reasons for choosing who *should be* responsible for DCA control are given in Table 7.5. Opinions of responsibility for control are associated primarily with perceived ownership and legal empowerment.

Table 7.5: Reasons and frequencies for choice of who *should be* responsible for DCA control. (Columns are limited to five most frequent categories from Table 7.4 above.)

| Reason  | KNP | TA | DFED/EA | HF | KNP/TA |
|---|-----|----|---------|----|--------|
| • they are the ones responsible for it                        | 19  | 3  | 5       | 2  | 4      |
| • they own the wild animals                                   | 28  |    |         |    | 1      |
| • they are the ones empowered to do something                 | 12  | 2  | 5       |    | 3      |
| • they are the ones we report to                              | 2   | 8  | 1       | 1  |        |
| • they are closer/more accessible to us                       |     | 3  | 1       | 2  |        |
| • they own the land and are the custodians of it              |     | 20 |         |    |        |
| • the <i>hosi</i> rules/controls/oversees us                  |     | 19 |         |    |        |
| • the chief brings our complaints to the KNP                  |     | 4  |         |    |        |
| • they are our traditional leaders                            |     | 3  |         |    |        |
| • they are responsible to ensure that our problems are solved |     | 2  |         |    |        |
| • the duty of the Park is to protect the animals              | 17  |    |         |    |        |
| • they have the ability and/or experience to protect animals  | 8   |    |         |    |        |
| • we know the KNP people                                      | 2   |    |         |    |        |

### 7.6.3. Influence of media

The media can also shape perception of DCAs and their control. For example, in April 2004, an ongoing problem concerning hippos and crocodiles killing people and livestock at Makuleke Dam, located next to Makuleke and Ntlhaveni D villages, was highlighted in a regional newspaper. In the *Capricorn Voice* (28-30 April 2004), the reporter stated that a provincial tender had been issued for 70 crocodiles and 30 hippos and that the funds generated (an estimated R1.5 million) will be ‘for local development.’ According to Acting CEO of Limpopo Tourism and Parks Board, Mr. Charles Maluleke, ‘the DFED will sell the 70 crocodiles and 30 hippos to game farm operators’ and, if they fail to find buyers, the animals would be ‘relocated to various national parks’. Moreover, the 7<sup>th</sup> May 2004 edition of the *Giyani Mirror*, another local paper, reported that ‘about 70 of these reptiles will be removed and sold to the highest bidders ... thirty hippos also inhabiting the dam will be thrown into the sales deal as well’. The *Giyani Mirror* article also stated that proceeds are ‘to be ploughed into community development projects’.

However, during an interview with the Mopani District DFED/EA Environmental Manager in May 2004, it was discovered that this information was not only misleading, but contrary to that given by DFED/EA in that a tender for only 17 crocodiles had been released. Other DFED/EA staff in Mopani District believe the inconsistency resulted from the department head (from Polokwane), who made a unilateral decision without consulting the relevant people to allow the DCAs to be sold to private people (reserves, etc.) and the monies generated to be given to the Makuleke community. These staff believe that this tender is inconsistent with CITES regulations, and hope that ‘Head Office will be able to deal with it’. In a follow-up interview with the Vhembe District DFED/EA Environmental Manager in August 2004, it was discovered that the tender had gone out, but had only received one bidder who was unsuccessful because his prices were not in the range specified. As of November 2004, the crocodiles and hippos continued to remain a threat to the livelihoods of local people, and their promise of 1.5 million ZAR for community development never materialized. Understandably, this has left many local community members and TA representatives disappointed and has fostered a growing belief that the provincial government ‘does not seriously consider the interests or protection of communities affected by these dangerous animals.’



## **7.7. Factors affecting DCAs and their control**

In addition to procedural difficulties acknowledged in chapter 7.5, three groups of factors have been identified which contribute to animals leaving the KNP and causing damage, namely opportunity, pull and push factors. These are multi-factorial and may be synergistic in nature.

### *7.7.1. Opportunity factors*

Opportunity factors are those which facilitate the movement of animals in and out of KNP. These include inadequate fencing, poor fence maintenance, theft and vandalism, challenges with fencing watercourses, and stochastic events.

According to Dr. Roy Bengis, the KNP Chief State Veterinarian, the erstwhile Department of Agricultural Technical Services decided to erect an animal disease control fence along KNP's southern and western borders in the late 1950s to control the risk of FMD between wild animals and domestic livestock. This fence was 1.8 m high, consisted of 10 strands, and was completed between 1961 and 1963. In 1996, the Directorate of Veterinary Services decided to upgrade this fence to an electrified 2.4 m, 20-strand type. The construction of this fence, approximately 400 km long, began in 1997 and was completed in December 1999 at a cost of 12 million ZAR. However, according to a Draft Discussion Document concerning the fence authored by Dr. Bengis and dated 13 August 2002, the quality of the fence workmanship 'was frequently sub-standard' and the contractor used a 'sub-standard concrete mixture, failed to put in earth spikes, and voltage regulators on the section of the fence between Phalaborwa and Punda Maria [includes this research's study area].'

Inherent in its design to control FMD outbreaks, however, the fence design is also considered to be inadequate in deterring other species such as elephant which easily break it, or lion and hyena which often are able to dig under it (Figures 7.18 to 7.20). In a letter from the National Department of Agriculture Veterinary Services to the HF, dated 24 May 2000, the DAVS emphasizes that the department 'cannot accept liability for any DCA causing damages....It is the responsibility of my Dept. to erect and maintain an animal disease control fence on the boundary of the KNP, and to attempt, to the best of our ability, to separate disease carrying wild animals from neighbouring domestic livestock'. Later, the letter reads, 'My department has sympathies with adjoining communities and farmers who have suffered losses caused by wild animals, but would like to re-emphasize that our responsibility is a disease control

responsibility. The control of the depredation by vagrant lions and elephants can in no way be considered a veterinary function...’



Figure 7.18: Elephant are able to push and/or pull down KNP border fence poles which, due to their hollow design, easily bend or crack.



Figure 7.19: Under-fence causeways facilitate the movement of predators, including lion and hyena, in and out of the KNP.





Figure 7.20: Lion tracks can regularly be seen leading from KNP along stream or riverbeds, which offer easier escape routes.

Constraints associated with the proper maintenance of the fence also contribute to animal escapes. Fence maintenance staff in the study area work in pairs, and must daily patrol a 17 km section by bicycle, with no firearm, minimal equipment, and only work from Monday to Friday (Figure 7.21). Dr. Bengis has also noted understaffing and poor training of maintenance teams, especially in tracing electrical ‘shorts’ as contributing reasons for poor maintenance. Combined, these factors often lead to repairs being patchy and inadequate to deter further outbreaks.



Figure 7.21: DAVS staff member during patrol along KNP Shangoni Ranger Section fence.

Access to the fence is restricted in some areas by rocky outcrops and/or dense vegetation (Figure 7.22). Although there used to be a cleared road on both sides of the border fence which acted as a firebreak, the Department of Agriculture claimed that their ability to clear these roads outside KNP is difficult ‘because all graders are now kept in Pietersburg’ (HF meeting minutes, 21 January 2000). In response, the KNP agreed to make a road inside the Park, but the then Northern Province would only construct one outside the fence ‘if some one can give the diesel and all necessary material which is impossible’ (HF meeting minutes, 26 May 2000).



Figure 7.22: Fence maintenance is hindered by limited access due to dense vegetation.

Exacerbating inadequate fencing and poor maintenance, theft and vandalism have also played a role in providing opportunities for animals to escape from KNP. The newly constructed fence was solar-powered, in part to mitigate lack of access to Escom<sup>35</sup> power, and many of the solar collectors have been vandalized or stolen (Figure 7.23). In addition to solar panels, fence wire, batteries, chargers, fencing standards, and droppers have also been stolen from the fence, rendering it ineffective.

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<sup>35</sup> South Africa’s electricity supplier





Figure 7.23: New solar panels to provide electrification for KNP border fence, protected by barbed wire, were needed to replace stolen panels (empty frames at top of structure).

Vandalism in terms of fence cutting has also been reported in the study area. Suspected parties include community members who cut the fence - usually on weekends when fence maintenance staff are not working - to steal wire, set snares, collect firewood, or poach animals within the park. Other transgressors include individuals involved in luring lions out of KNP (see chapter 5.6), and illegal immigrants who traverse the KNP from Mozambique and short circuit or cut the western boundary fence to gain access to the communal areas. According to Dr. Bengis, ten routes are regularly used by immigrants to cross the park, with three exit points in this research's study area near Maviligwe, Mtititi, and Mahlathi villages.

In addition to anthropogenic causes of breaching the KNP border fence, natural factors have also contributed to increasing opportunities for animals to exit the park. There are intrinsic difficulties in fencing watercourses, especially those that are prone to dramatic river fluctuations and floods (Figure 7.24). In these areas, 'sacrificial' fences are often used which are designed to wash away during heavy storm events without damaging more secure fence sections along upper embankments. After storm events, these sections need to be re-installed. Further, they are usually less robust, and afford greater opportunities for fence transgressions by species associated with riparian habitats, including buffalo and occasionally lion and elephant.



Figure 7.24: Inadequate KNP border fencing across Shingwedzi River, consisting of a mere three strands of barbed wire.

Associated with challenges in fencing watercourses, stochastic storm events can greatly affect fencing effectiveness. Two months after completion of the new electrified fence along KNP's border, torrential rains in February 2000 caused unanticipated flooding in Mozambique and South Africa. This flooding produced water level peaks higher than any flow for the previous four decades (Heritage *et al.* 2001) and destroyed over 170 km of fence along the Crocodile, Sabie and Klein Letaba Rivers. The scope of the damage was immense, and the reconstruction of these fences was only completed in April 2002. According to International Conservation Services (2002), a total of 41 lions, 44 elephants and 147 buffalo were shot during 2000 and 2001 by Mpumalanga Parks Board staff following the flood damage to the fence along the Crocodile River in KNP's southern business district.

In an effort to alleviate these problems, a pilot project involving two fence types is currently underway north from Lombaard village, and utilizes local community members in fence maintenance. This includes a 5 km long human-friendly cable fence<sup>36</sup> (Figure 7.25) followed by a 5 km section of electrified fencing similar to that constructed in 1999, paid for through Poverty Relief funding. Both human and elephant activity are being monitored on these pilot sections to determine their cost effectiveness, as well as how well trained personnel from the communities will perform in maintaining the fence.

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<sup>36</sup> Human-friendly fencing is generally non-electrified, and can be traversed by people without the need to cut wire strands.





Figure 7.25: New 'human-friendly' KNP border fence constructed north of Lombaard village.

In a meeting on 10 March 2005, the SANP/KNP, DFED/EA, Limpopo Parks and Tourism, and DAVS met to explore solutions to problems associated with DCAs and the border fence. According to the meeting minutes, the DAVS stated that due to immense difficulties, it can no longer continue to maintain the fence and is working to share responsibilities with SANP. The meeting also reached the following resolutions:

1. Veterinary Services will continue to transfer responsibilities to KNP provided commitment is made by Public Works via State Vet to also transfer budget.
2. It was noted that, as government paid 90 million ZAR in controlling FMD outbreak (chapter 5.3.2.), it should be relatively easy to come up with the 40 million needed to construct a more robust fence along the entire western boundary.
3. Handing over fence to KNP must be gradual, with a period of co-maintenance between KNP and state vet, and must be driven. Meanwhile, fence maintenance will continue to be responsibility of National Veterinary Services.

#### 7.7.2. Pull factors

Pull factors may be defined as features that draw animals from one area to another. One previously identified pull factor related to DCAs concerns direct lion luring activities which draws animals out of the KNP (see chapter 7.5 above). Not only does this activity attract animals out of the park, but predators (mostly lions and hyenas) are systematically drawn to

the border fence and, according to the KNP Shangoni Section Ranger, increased concentrations of predators have become sedentary on the western boundary.

A second factor, related to luring practices, is poaching within KNP. In addition to utilizing cattle, donkey, and dog carcasses to lure predators out of KNP, wild zebra and hyena have also been poached *within* the park for the sole purpose of being used as bait *outside* the park (see Figures 5.17 and 7.11). Moreover, other forms of poaching, e.g. employing wire snares also threaten the park's biodiversity. Wire snares, due to their design, can be effective for a wide variety of animals, not just targeted species. Reports of snares intended for game species but capturing carnivores, and vice versa, were reported by both KNP and DFED/EA field rangers.

Other 'carrots' outside the KNP that unintentionally draw animals out of the park include unenclosed cattle especially at night (Figure 7.26), marula which is a preferred tree for elephants, and other palatable crops including maize cultivated close to the KNP's border (Figure 7.27).



Figure 7.26: Cattle grazing immediately adjacent to KNP border fence can attract predators, especially if unenclosed at night.





Figure 7.27: Maize, inter-cropped with pumpkin and beans, cultivated adjacent to KNP fence near Altein village. Note elephant path leading from KNP (foreground) towards crop.

### 7.7.3. Push factors

Two push factors were identified which contribute to animals leaving the KNP. These include isolated incidents of animals (e.g. giraffe) being chased out of the park by lions, and more importantly, KNP's burgeoning elephant population. Patrick Sithole, a DAVS fence maintenance staff member maintained that "*the majority of the fence problem is elephants pushing or pulling the fence down.... it is almost a daily occurrence*". Dr. Roy Bengis echoes this sentiment, and raised this contributing factor at a high-level DCA and border fence meeting between SANP/KNP, Limpopo Province and national and provincial departments of Agriculture on 10 March 2005. KNP's increasing elephant population and its associated detrimental effects on rural livelihoods has also recently been addressed in the development of an elephant management plan for SANP. In the SANP Chief Executive's Report to the DEAT Minister *On Developing Elephant Management Plans For National Parks With Recommendations on the Process To be Followed*, dated 8 October 2005, the Executive Summary recognizes that 'along the western boundary of the KNP, elephants at high densities tend to disperse, breaking fences and invading cultivations or allowing other species such as buffalo to leave the park.'

## 7.8. Compensation

In addition to DCA control, compensation for damage caused by DCAs has been a controversial and sensitive issue. Examples of promised compensation from KNP social ecologists, and later the DFED, to affected livestock farmers that never materialized have had serious repercussions in the study area. These include village withdrawals from the HF (chapter 6.4.3), and an increasing belief by HF and a number of TAs that the Limpopo Province is deliberately and illegally withholding money from affected livestock owners. Concerns are also rising internally within the DFED. An internal document from the DFED Auditor (dated March 2004) indicates that some 319,000 ZAR were received from 1 April - 19 July 2003 from DCA control. The auditor is concerned as to why the communities have not received this money, and questions why the Province is not assisting the communities to become organized and collect the finances.

On the other hand, DFED/EA District Managers allege that confusion exists as to whom compensation should be channeled through. According to the Mopani District Manager the HF Executive met with the MEC in 2003, at which time the MEC asked the Forum to produce an audited financial statement. They couldn't produce one, nor could they adequately address the MEC's concerns regarding their representativity (see chapter 6.4.3). The Vhembe District Environmental Manager added in a HF meeting on 6 August 2004 that it is still unclear as to who should be compensating; the DFED, the HF, or KNP as 'they are the owners of the animals', and what amounts for what types of damages. He stated that the province is unlikely to forward money to the HF as it has serious concerns about the Forum's legitimacy and representativeness, and there are other institutions wanting the same money vis-à-vis community trusts.

The General Manager of Parks, Tourism and Community Environment Development at DFED in Polokwane, stated during a telephone interview on 10 August 2004 that all disbursement of government funds must adhere to the *Public Finance Management Act* (1999) which has regulations regarding how funds can be dispensed. Those funds have been placed into a separate government account, but the DFED 'are still formalizing a foolproof mechanism to allow for equitable distribution.' The challenge, according to her, is to know whom to pay, and for what. There is still concern over community institutions (e.g. trusts, forums, *tihosi*) and how they might be able to handle such transactions and financial delivery. She noted that she realizes that communities are frustrated with the lack of compensation, and

added that the DFED should work on a proper and coherent policy and benefit-sharing model to disburse funds to the ‘relevant structures’ in the communities.

The confusion on whom to pay and lack of a coherent compensation policy is also exacerbated by changing legislation regarding land ownership. The DLA Director of Public Land Support Services, when asked about the long-term strategy for DCA control, stated that once the communal areas are legally titled to the communities and they become the true landowners under the *Communal Land Rights Act* (2004), they will be able to handle it themselves, including tendering out professional hunters and having their own DCA control associations. Until such time, however, they must abide by the current practices of the provincial government.

Meanwhile, DCA victims and HF members cannot understand the lengthy delay, with one village representative exclaiming that “*we are sick and tired of the talk about procedure, etc. and are angry that the province and KNP are delaying the compensation.*” He cannot understand why they “*must suffer so much to get back such a relatively small amount of money.*”

## **7.9. Conclusion**

The problems of DCAs and lack of compensation in the study area remains a sore and contentious issue. Although populations of some species exist outside KNP, most DCAs in the area originate from the Park. According to almost 500 DFED/EA records of DCA incidents and DCAs being destroyed since 1998, albeit largely incomplete and unorganized, the most problematic species mentioned is buffalo, followed by lion, elephant, hippo and crocodile. The records show that there are an increasing number of incidents being reported to the DFED/EA in recent years, and the majority of DCA incidents occur in the late wet summer months. The DFED/EA, in part due to resource constraints, has utilized professional hunters in its DCA control responsibilities since 2001, generating over 2 million ZAR. However, widespread abuses in this practice has led to a moratorium on specific hunting practices in South Africa, with a call from DEAT to overhaul the industry and develop a comprehensive set of norms and standards. Current DCA procedures are highly flawed, due to ambiguity with respect to the type, origin and movement of DCAs, unclear definitions, poor reporting of and attending to incidents, overlapping responsibilities, and corruption. These practices have provided ample opportunity for illegal practices to be pursued including the direct luring of lion and other predators from the KNP.

In the study area, over 12% of all questionnaire respondents indicated that they have experienced DCA damage within the past two years. Not surprisingly, damage is positively and significantly correlated with living closer to KNP and having greater numbers of mammalian livestock. Moreover, those who have experienced DCA damage are less likely to believe that KNP would ever help them economically. Although most respondents believe that DCA problems have decreased in recent years, those who think otherwise are likely to have suffered DCA damage within the past two years, be from Greater Giyani Municipality, and live closer to KNP. Almost 80% of respondents believe that KNP is the responsible authority for DCA control in the rural areas, followed by TAs, and then the DFED/EA. When asked who should be responsible, KNP remained the preferred institution, although TAs were also highly recommended, either working solely or in partnership with the KNP. The research identified opportunity, factors, and push factors affecting DCAs and their control, which may be synergistic in nature.

The increasingly contentious issue of DCA compensation is determining negative attitudes by TAs and community members towards institutions who have historically promised compensation, namely the KNP, DFED/EA and HF. As frustration mounts regarding this issue, noted obstacles in disbursing compensation for DCA damage include:

- lack of clear national or provincial DCA policy;
- absence of any DCA compensation policy;
- shifting legislation, especially in terms of land ownership;
- confusion over whom to channel funds through to affected farmers, especially due to questions of legitimacy of vying institutions; and
- ambiguity of institutional responsibility for DCAs.

## Chapter 8: Discussion

This chapter discusses the central research problem identified in chapter 1.2, namely:

*How successfully is Kruger National Park meeting its biodiversity conservation and socio-economic objectives through its interaction with neighbouring communities along its western border?*

The discussion that follows draws from research findings presented in the preceding four chapters which individually concentrated on KNP's neighbours (chapter 4), the KNP (chapter 5), the Hlanganani Forum (chapter 6), and damage-causing animals (chapter 7). Moreover, research results are explained here within the context of prior research introduced in chapter 2, and nested and integrated into the theoretical and conceptual framework laid out in chapter 2.10. The discussion centers on the four primary research questions first presented in chapter 1.2. Although not a central research question, a final section is devoted specifically to the particularly contentious issue of damage-causing animals and their control in the study area.

### 8.1. How do local communities value and use natural resources?

#### 8.1.1. Demographic and socio-economic factors

In order to understand and appreciate local use and value of resources and how these might be integrated into conservation planning, it is imperative to consider background demographic and socio-economic conditions under which people live (MacKinnon *et al.* 1986; Brechin *et al.* 2002; Veech 2003). The population structure within the study area is broad-based with over half of the population < 20 yrs of age, and comprises a higher proportion of females compared to males, especially in age classes above 29 yrs (chapter 4.2.2.). This is likely attributable to outmigration from the rural areas to larger urban centers or mines where opportunities for employment are greater (Bryceson 1999). Male absence in rural areas can create labour vacuums, especially in cases where domestic responsibilities are sharply divided amongst household members (chapter 4.4.2.). Where men have traditionally been responsible for land clearing and collecting timber poles for construction, absence of this labour component may increase pressures on households with only women and children which, in this research, comprise about one in eight. This constraint is exacerbated by time required for carrying out other domestic chores, including almost 20 hours per week for collecting fuelwood and drinking water (Figures 4.17 and 4.19). With water scarcity perceived to be widespread in the study area, and fuelwood becoming scarcer in some areas of Thulamela Municipality (chapter 4.2.4.), the extent of these constraints appears to be worsening. These mutual constraints suggest that opportunities for women and children desiring to secure

formal employment, training, and/or education are severely limited. According to Bird and Shepherd (2003), households (and populations) with low numbers of males present can face multiple disadvantages and experience high dependency ratios, stigma, low reserves of social capital and undermined social security systems. For KNP, recognizing these limitations is an important step in articulating any conservation and/or development programs which seek relevance in the rural communal areas. *Time is a precious commodity which should be understood in its local context, and expecting household members to engage in activities which demand extended time periods are unlikely to succeed unless they are directly related to improving livelihoods.*

Higher levels of education were found to positively influence conservation attitudes in studies from Ecuador (Fiallo and Jacobson 1995), Nepal (Mehta and Heinen 2001), and KwaZulu-Natal, South Africa (Infield 1988). According to this research, level of education is not a significant factor in influencing overall attitudes towards the KNP; however higher levels of education are positively correlated with a higher approval of KNP's forest policy (chapter 5.5.). In addition, even where education is taking place, changed behaviour does not always result, particularly where this education conflicts with traditional norms including the hunting of wild animals, and preferences of taste (chapter 5.3.5.). Strong cultural norms such as these should be understood in the background of formal education and conservation programs which seek to alter resource use behaviour, including the KNP's 'Kids in Kruger' and new 'Park to Communities' initiatives. *If there is no follow-up or continuation of school curricula involving nature conservation, nor any attempt to merge wider concepts of sustainability and local resource use practices, then it is unlikely that these new concepts will be internalized by the young, or that behavior and/or values towards nature conservation will be altered.*

Infield (1988) and Newmark *et al.* (1993) both established that conservation attitudes in their study areas were significantly influenced by household income. In this study area, household incomes are relatively low and are exacerbated by low levels of employment, and a belief by most respondents that their economic situation is worsening (chapter 4.2.2.). Household income is correlated with employment opportunities, which has been identified as the most important community need (Table 4.4). Employment within KNP has been demonstrated to significantly i) increase knowledge about KNP and its activities, ii) improve the approval rating of KNP's forest policies, and iii) shape more favourable overall attitudes towards the KNP (chapter 5.5). *In an area with high unemployment, jobs within the KNP, even temporary ones, can make a marked difference in household livelihoods and thus, employment strategies*

by KNP should reflect this fact. For example, temporary employment for both men and women alike could be offered during periods when households are most vulnerable to shocks and when they are least likely to interfere with other livelihood diversification strategies. In this manner, they can provide an important contribution that complements the diverse livelihood strategies within a household, especially for the poorer sectors of rural society.

*Khwiri ra ndlala a ri na nawu. / A hungry stomach knows no law.*

Meaning: Do not think that people will work well, or respect property, when they are hungry.

Access to agricultural land and livestock keeping were major determinants of conservation attitudes in Uganda (Adams and Infield 2001; Infield and Namara 2001) and Botswana (Parry and Campbell 1992). In this study area, animal husbandry is widely practiced and meaningfully contributes to local livelihoods, with three in four households holding domestic livestock of at least one type. Over one third of respondents state that their livestock numbers have decreased in recent years, primarily due to disease, slaughtered for meat, sold, or killed by DCAs. Certainly, this situation could be improved by addressing the DCA problem more adequately and providing compensation for affected farmers (see chapter 8.5.). In addition, improvements in the construction and maintenance of the KNP boundary fence would also result in reduced disease transfer between these animals and wildlife. Parallel efforts by KNP and the Department of Agriculture in assisting farmers to construct kraals where livestock can be penned away from the park at night may also serve to reduce livestock losses. Indeed, fence material could be offered to local farmers as a good will gesture during reconstruction of the KNP border fence.

Although most households in the study area have land under cultivation, almost half are unable to plant crops annually due to economic and environmental constraints (chapter 4.2.3.), and thus are more predisposed towards exploiting wild natural resources (Table 4.8). In addition, land shortages are believed to be at least twice as prevalent in Thulamela Municipality compared with Greater Giyani Municipality to the south (see chapters 4.2.3. and 4.2.4.). Although most land shortages are due to scarcity of sites for residential and/or cultivation, some respondents from Thulamela Municipality specifically claimed that their grazing and agriculture land is being taken from them by KNP's 'buffer zone', suggesting that there is more resistance to potential buffer zone plans in this area. Considering these facts, *in addition to proposing a buffer zone, it might be useful for KNP, where relevant, to also partner with the Department of Agriculture and development agencies in investigating the*

*growing of alternative, more drought-resistant crops to meet subsistence needs.* Although not a panacea, this might prove to reduce demands on wild products and communicate a deeper concern by KNP for the well being of its neighbours.

Unlike the studies mentioned in the preceding paragraph, this research does not find that access to agricultural land or livestock significantly affects attitudes towards KNP directly. However, negative attitudes toward KNP expressed in qualitative responses amongst community members primarily center on DCA problems, i.e. the inadequate maintenance of the KNP border fence, incompetent control of animals once they've escaped, and affected farmers have yet to be compensated. These aspects of DCAs and their control threaten and, in some cases, prevent the pursuit of sustaining or enhancing livelihoods through agricultural practices. On the other hand, policy constraints associated with DCA control by KNP staff (see chapter 7.5.) re-emphasize the need to address this issue in a more cooperative manner, whereby e.g. authorized KNP rangers are permitted to control DCAs in the communal areas without the need to be accompanied by DFED/EA officers. Reduced problems with DCAs would not only improve livelihoods for livestock owners, but presumably, will also go a long way in improving attitudes towards the park.

### 8.1.2. Landscapes

Akin to demographic and socio-economic variables, how local people use and value landscapes is an important determinant in shaping conservation programs. In Uganda, for example, efforts by Lake Mburo National Park to extend benefits of education, revenue, and provision of dams to local Bahima pastoralists did not alter negative perceptions towards the park (Infield 2002). The reason was simple: the Bahima hold deep historic and cultural values associated with cattle herds grazed by their former king on landscapes now within the park and inaccessible to the Bahima. Similarly, by understanding local perceptions of landscapes and their components within this research's study area, KNP and other conservation agencies are better equipped to prioritize conservation efforts on a number of spatial scales.

A number of observations can be drawn from results concerning landscapes (chapter 4.4.3.). Firstly, almost exclusively, all eight identified landscape units contribute to each resource use category in some way. In instances of food and drink derived from wild resources, all landscape units play equally crucial roles in supplying resources. *It is essential to recognize this widespread use of the natural environment and the wild products utilized by local people: even seemingly insignificant landscape features contribute to sustaining livelihoods.*



Moreover, by understanding how landscape components specifically contribute to sustaining livelihoods, conservation education can focus on the importance of these areas and the need, where applicable, to preserving, maintaining and extending these landscapes for mutual benefits. For example, efforts targeted at maintaining wetland habitats where *Phragmites* species grows can be based on both environmental services (water purification, wildlife habitat, etc.) and livelihood needs including construction, utensils and tools, ornamental and religious, and recreation (see Appendix J). *Integrative approaches which recognize the multiple uses and benefits of both landscape units and their species are more likely to be adopted by local collectors/users.*

Secondly, there is variation between villages and between age/gender groups regarding the perception of how landscape units contribute to sustaining community livelihoods. For example, Maphophe village significantly utilizes swamp/marsh habitats more than the other two villages for drink, utensils and tools, and ornamental and religious purposes (Figure 4.23). This is likely attributable to the close proximity of the large Makuleke Dam and its associated marsh habitat located south of the village. Prominent features of the landscape, including large dams, have multiple benefits in not only ensuring water supplies, but also in providing habitats conducive to hydrophytic plants which can be used for e.g. food and medicine. A second example includes the significant difference between men 35+ and high school mixed groups with respect to grazing land, where mean percent scores by the high school mixed group are higher for almost all use categories (Figure 4.24). This difference may be explained by considering distinct divisions of labour, i.e. the distribution of tasks that men, women and children undertake. High school aged children are often utilized in livestock herding/caretaking in rural villages and thus will spend on average more time in these landscape units than other groups. This increased time may account for the perception that this unit holds relatively greater importance in fulfilling community resource needs. Divisions of labour, including those described above, are characteristic of traditional societies and often result in corresponding divisions of space within the cultural landscape and, thus, to its interpretation (Ombe 2003). These observations underscore the *need to acknowledge inter- and intra-village differences with respect to natural resource use, and emphasize the fallacy of considering groups of villages, or even individual villages, as single homogenous units when devising conservation schemes.*

Thirdly, the high relative importance of forest/bush and river/stream habitats in supplying wild natural resources necessary to sustain local communities must be appreciated (Figure

4.25). If ignored, increasing threats to these habitats including agricultural and residential expansion, over-extraction of water resources, and unsustainable harvesting of fuelwood (see Table 5.7) will have extensive negative impacts on local livelihoods. Although it was beyond the scope of this research to quantitatively assess the sustainability of resource use in the study area, personal observation and anecdotal evidence suggest that areas north of the Shingwedzi River are particularly problematic, where human population densities are higher (see Table 5.8).

### 8.1.3. Flora and fauna

Local realities and externally defined priorities often differ with respect to the way that biological diversity and resources used by local communities are defined and valued. Economic analyses of biodiversity often concentrate on global values and foreign exchange elements (e.g. Costanza *et al.* 1997; de Groot *et al.* 2002) and very little on household uses of e.g. wild fruits or medicines, resulting in biased conventional resource planning in ICDPs in favour of major food crops and species of commercial importance (Pimbert 2003). More comprehensive and participatory local level valuations in understanding what species are utilized for what purposes can help in identifying conservation targets in CBC initiatives, and can inform planners on specific resource needs of local communities.

Local people extract a wide range of species for a variety of uses, including a number of highly valued and formally protected species (chapter 4.4.4.). Further, more than 20% of all local biodiversity value is derived from protected tree species and almost 12% comes from fauna with enhanced protection. *The levels of formal protection afforded to these species are not well understood by local communities, potentially causing resource use conflicts between resource collectors/users, and those mandated to ensuring its legal protection.* Unsustainable exploitation of these species, where it occurs, represents a very grave threat to sustaining viable populations within the region and, consequently, to associated benefits to local livelihoods. This calls for expanded research and opportunities for both the KNP and HF. Recognizing that enforcement of species protection is minimal at best, and knowledge of nature protection is poor in the study area, there is an urgent need to assess current patterns of harvesting protected species within the study area and elsewhere. Secondly, more detailed investigation into how formally protected species might be substituted by alternatives would be a worthwhile undertaking in seeking to preserve those species believed to be under threat. Thirdly, there is an urgent need to investigate how specific plants are harvested for their various uses, and how e.g. regulated cropping of particular species may in fact invigorate its

growth. Research of this nature may also serve to establish guidelines and inform the implementation of the *Forestry Laws Amendment Bill*, recently published in August 2005, which is seeking to assist communities by making provision for utilizing certain indigenous trees by way of an exemption on specific uses, including collection of fruits. Finally, this research indicates that individuals who can correctly identify endangered fauna are those who know of the HF and who have been in the KNP, suggesting that knowledge of nature protection, at least in terms of endangered species, can be enhanced through these two institutions and should be actively pursued.

#### 8.1.4. Beliefs and attitudes

*U nga hleki xikoxa. / Do not deride the old woman.*

Meaning: The law, as transmitted by the ancestors, must be respected.

Concepts of nature, its components, and conservation are often culturally bound and should be understood holistically in local contexts (Junod 1962; Maffi 2001, 2004). South Africa has undergone dramatic socio-political changes in the last decade, with enhanced opportunities for formal education in the rural areas. However, the extent to which formal education and exposure to alternative views has affected perceptions and attitudes of rural people towards nature and its conservation is still uncertain (see e.g. Els 1994; Mabunda 2004). Thus, an attempt to understand the concept of nature (*ntumbuloko*) within the study area was undertaken. *Ntumbuloko* still dominates the Tsonga worldview, unifies all aspects of life under the rubric of tradition, and has been defined by Chitlango and Balcomb (2004:183) as ‘Tsonga cultural and social norms, customs, traditions, and institutions that constitute the basis for existence, self-understanding and identity in Tsonga society’. The concept of nature resulting from this research agrees with Els (2002) in that the Tsonga perceive nature as more than just the biophysical environment: there is still strong belief that it also embraces people (*vanhu*), God (*Xikwembu*) and ancestor’s spirits (*swikembu*), and this belief is independent of gender, age and education level (chapter 4.5.). These results are congruent with a study on perceptions regarding causes and treatment of diseases in Northern Province (Mabunda 2001). Mabunda found that the notion of supernatural causality associated with many diseases and other afflictions predominated among all groups, but was highest among university students. He also found that 89% of the students sampled insist that witchcraft is still practiced in modern societies, and once a person is ‘bewitched’ the only doctor able to heal the victim is a traditional healer. The majority of respondents across all groups maintained that traditional treatment of illness is deeply rooted in African culture, and that modern and traditional

medical ideas and practices are complementary, each with its own strengths and weaknesses. In this study, supernatural causality still prevails and is manifested in the belief of many respondents, even amongst the young and more highly educated, that rain and associated harvests is strongly linked with appeasing ancestors' spirits, and not solely the product of environmental factors. This all-encompassing view of nature emphasizes that *ntumbuloko* is not just the sum of its parts, but also includes the relationships between those parts.

In addition to more direct utilitarian values, *ntumbuloko* is highly valued for its indirect non-consumptive attributes by the rural Tsonga (Table 4.14), including non-ecological functions embracing socio-cultural, educational, spiritual and historical qualities and part of a suite collectively called 'intangible' values by Harmon and Putney (2003). The need to maintain and enhance utilitarian use values ranked highest for those responding positively to the question whether they need to protect *ntumbuloko*, although socio-cultural and spiritual aspects were also noted. In addition to holding a broader view of nature, Tsonga also believe in a plethora of practices which they see as being essential for its protection. In addition to reduced consumption of resources, environmental education, and altering practices to protect flora and fauna (which one might expect in more developed Western societies), the need to maintain cultural and spiritual traditions which are embedded in the broader definition of nature held by the Tsonga were also noted. Similarly, responses on sustainability also reflect a more comprehensive view of nature by the Tsonga (Table 4.15), in which the majority believe that sustainability is guaranteed irrespective of human activities, and a large number think this is because of *Xikwembu*'s role in providing and sustaining nature.

In addition to understanding *ntumbuloko*, identifying community needs and beliefs concerning these needs are important in this research for a number of reasons. Firstly, based on Firey (1960), ecological, economic, and ethnological frames of reference all interact in a form of optimal negotiation and trade-offs, and play a role in shaping local perceptions toward the use and fate of a resource system. These three frames of reference were later encapsulated in the concept of sustainable development, expounded by *Our Common Future*, a report by the World Commission on Environment and Development in 1987. This concept implies that development can only be sustainable if people contribute their own knowledge, techniques and experiences to the development process. Secondly, resource systems are socially constructed and viewed differently by different social groups based partly on personal attributes including perception of community needs. Thirdly, there is a growing body of empirical evidence elsewhere suggesting that attitudes towards PAs and conservation in

general is largely dependent on socio-economic benefits expected from PAs (Infield 1988; Fiallo and Jacobson 1995; Alpert 1996; Mehta and Kellert 1998). For example, Holmes (2003) found in his study in Western Tanzania that positive attitudes towards Katavi National Park were most strongly shaped by the perception of communities regarding village-level services being provided by the park (e.g. school, health, and/or water services) and visitation by park staff. In this research's study area, employment is considered the most important community need overall, followed by facilities for health, school, electricity and drinking water (Table 4.4). Of least importance to respondents from the list provided were protecting forests and wild animals which, in contrast, are of primary concern for conservation agencies.

Based on Firey's theory of resource use, any resource process, to be adopted, must first be valued by people in terms of their own system of activities. Thus, there are some resource complexes which are not valued by a given people and which, consequently, will not be adopted. According to the community needs results, opinions expressed on nature conservation, i.e. protecting trees and wild animals, lag far below more immediate development needs such as employment, health, education, and improving infrastructure. The question thus arises, *If local communities are so dependent on local wild resources, why is their protection ranked so low?* The answer may be found in two related concepts of Tsonga beliefs, i.e. values associated with nature, and the role of man in the environment.

Firstly, according to Els (2002), the Tsonga value nature more for its utilitarian rather than aesthetic qualities, believe that local resources were given by God, and it is their right to use them to maintain human survival. Hence, the negotiations of resource users conceptualized in Firey's theory then become operational: the perceived *aesthetic values* of nature are 'traded off' by more imperative needs of human survival and development. Here, however, distinctions within and between Firey's three frames become blurred, limiting its application in these contexts. Western concepts of the 'ecological frame', developed mainly by ecologists and geographers, are based on the interactions between organisms and their physical, chemical and biological environments (Begon *et al.* 1990). Conversely, the 'ethnological frame' to resource phenomena has principally been developed by anthropologists and sociologists and focuses on a people's culture. Firey's definition and explanation of these frames treats them as separate entities. However, the Tsonga concept of *ntumbuloko* embodies both ecological and cultural frames and decoupling it into two separate frames, at present, is impossible for most Tsonga. Therefore, the tradeoffs outlined by Firey considering resource management concerns two frames only: a combined frame that embraces the Tsonga's

concept of *ntumbuloko* and an economic frame. Practically, this means that understanding decisions that concern land use and its management through Firey's theory of resource use must recognize the concept of *ntumbuloko* and how this conceptual distinction interacts with economic frames. Similarly, *developing nature conservation activities in these contexts have a greater chance of being rejected if they do not incorporate the wider concept of nature constructed by the Tsonga*. This also has implications for current stakeholders and future researchers in similar contexts; research results/findings may have lower relevance and/or be more difficult to communicate locally if these distinctions in conceptual definitions are not recognized. This is especially the case in more participatory research.

Secondly, it is traditionally inconceivable for the Tsonga to believe that protection of forests and wild animals is man's responsibility (Els 2002). On one hand, this research supports Els' view as most respondents believe that it is God's (*Xikwembu*) responsibility to ultimately ensure the sustainability of resources (Table 4.15). On the other hand, this belief might be changing, as a slightly modified picture is reflected in results about nature's components and the role mankind has in protecting *ntumbuloko* (see chapter 4.5). These reveal that although God (*Xikwembu*) and ancestor's spirits (*swikwembu*) are still believed to be components of nature, they are not as widespread as perhaps they were in the past. Moreover, research results showed that many respondents believe they have a personal responsibility in protecting *ntumbuloko*, with a majority including personal obligations to restrict cutting or burning live trees, killing wild animals, and causing veld fires. This transition may be the result of increasing exposure to urban influences, alternative views of nature in educational institutions, and/or restrictions on resource use imposed by government and TAs (chapter 4.3.2.), although these causal relationships were beyond the scope of investigation in this research.

It has been noted that in addition to playing a key role in human-environment interactions (Nietschmann 1992; Smith 2001), cultural elements of nature protection can be viewed as a resource providing insight into development of conservation plans (Alcorn 1994; Stevens 1997), and a tool to reinforce community identity, promote community cohesion and adaptability, and emphasize the urgency of conservation (Goodland 1991; Kleymeyer 1992; Robinson and Redford 1994). The embedded cultural and spiritual beliefs and practices hold value for the Tsonga and should be acknowledged when establishing partnerships in environmental protection in these contexts. This includes the role that nature has for the Tsonga in education, spiritual identity and as historical heritage. Moreover, Milton Rokeach's

(1976) outline of five organized beliefs that make up one's total belief system posits that if more central or 'primitive' beliefs are suddenly and inextricably disrupted by strong external pressure, strong anxiety can result (chapter 2.10.). According to Rokeach, 'Type A' beliefs are fundamental primitive beliefs which people hold and believe all others hold, e.g. man's relation to *Xikwembu* and *swikembu*. These beliefs, still strongly held by the Tsonga, are thus very resistant to change and are likely to persist. It is this set of beliefs which have the greatest potential to conflict with western approaches to conservation, as they claim inherent differences with respect to who is responsible for protecting wild animals and forests, and for whom they were created.

Practically for CBC initiatives, the two concepts regarding Tsonga beliefs explained above translate into the recognition that *conservation programs are unlikely to be accepted in these contexts if they are based primarily on aesthetic values of nature, or if they do not acknowledge the belief by local communities of the role that God and ancestor's spirits play in nature*. Rather, they will have greater chance of acceptance, and eventual adoption, if they are founded on both direct and indirect utilitarian use values that are incorporated within the Tsonga's wider conceptualization of nature.

#### 8.1.5. 'Gain seekers' and resource exploitation

*Nfenhe loko yi nantswile vulombe, a ya ha kandziyi hansu. / Once a baboon has tasted honey, it does not touch earth again.*

Meaning: If a man is not observed in his activities, he does not stop stealing.

In addition to the need to value resource complexes in order for them to be adopted, the Firey model also contends that resource conservation is possible only when people share expectations that others will forego opportunistic practices threatening sustainability. The elements of a resource complex can be viewed as a resultant of two contrary sets of forces: the incentive in every user to employ additional processes that are gainful to him/her; and the incentive in every resource user to employ all those processes which are generally observed in his/her community and to which s/he expects to be held accountable (involves acquiescence and preservation). 'Gain seekers' are, according to Firey, motivated to voluntarily comply with expected non-gainful practices because they require the predictability that comes with shared values and expectations. On the other hand, unconstrained opportunism threatens everyone by risking the loss of natural capital, social order, and future gain seeking. Concisely, resource conservation or sustainability depends on maintenance of a particular

social order, because social order provides common expectations and values that make it possible for a group of people to set limits on environmental change by limiting destructive economic opportunism (Firey 1978).

Firey's predictions may indeed be materializing in South Africa's transition to democracy. A new entity in land use practices is occurring where an increasing number of opportunists and 'gain seekers' are exploiting the environment in unsustainable ways. This entity conflicts with and is contradictory to the Tsonga's traditional communal approach to life and community, which is associated with the concept of *ubuntu*<sup>37</sup> or 'humanity towards others'. According to *ubuntu*, traditional resource management is primarily concerned with the community rather than the individual. In the words of Thorpe (1996: 110), 'without the group, the individual would not exist, but likewise, the group would be null and void without its individual members'. In other words, neither the individual nor his/her interests are more important than the community, which includes its links with ancestors (chapter 2.9.4). Yet, political transformation processes have led in many cases to *de facto* open access systems with new forms of opportunism, manifested by perverse incentives for unsustainable resource extraction, especially by outsiders (see also chapter 5.6.). These are exacerbated by low capacities in the provincial government structures and fueled by the stripping of powers of legitimate TAs. To illustrate, when asked how local behavior has changed towards natural resources in the last 10 years, one *ndhuna* in Magona TA noted that people used to illegally collect fuelwood saying it was because they had no electricity. However, now that there is electricity, he maintains that they collect it illegally to sell it outside the TA. Further, according to KNP internal reports, increasing rates and magnitude of *inter alia* deforestation has also been observed in areas adjacent to KNP claiming that 'trucks transporting newly cut poles and wood are often observed along the roads in adjacent areas'. In its summary, this report emphasized that 'the rate at which the destruction/degeneration is taking place will render the area useless for future CBC projects.'

Concerns about increased extraction and use of fuelwood, sand and medicinal plants by 'outsiders' have been observed elsewhere in Limpopo Province (Twine and Siphugu 2002?). Similar to their findings, there is widespread belief in this research's study area that new political freedoms and democracy, coupled with the disintegration of powers of TAs, imply an uncontrolled liberty in which people are allowed to access and use resources as they wish. As

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<sup>37</sup> *Ubuntu* is a South African ethic or ideology which focuses on people's allegiances and relations with each other.



early as 1994, DFED/EA staff had noted in Hlanganani Forum meetings that with respect to hunting game in rural areas, ‘with the current constitutional changes, many people think the old laws are no longer valid and that this is creating problems.’ In addition to these misconceptions, one of the key issues in the increased exploitation of resources by external harvesters is the control of access to resources by TAs. Although believed to be imperfect by some government staff, and involving corruption by some current TA personnel, the previous permit and enforcement system under TAs was generally recognised as being effective in limiting the impact of external harvesters. With national political changes, however, TAs no longer have the resources to control land as they did in the past and, at best, can only work in co-operation with provincial government departments in enforcing LEMA 2003 regulations in their areas. Concurrently, according to one *ndhuna* in the study area, TAs are also being increasingly marginalised and ignored when it comes to controlling access to resources. Juxtaposed with the decreasing power and ability of TAs to control resource use, local and provincial government is, at present, unable to fill this institutional vacuum, especially given other pressing priorities such as provision of water, sanitation and electricity. Thus, a quandary results in which outside forces enter into the equation and capitalise on the opportunity afforded them by this void.

What has resulted is a situation where, at least in some parts of the study area, external gain seekers have seized the opportunity to either hire locals or harvest resources themselves at convenient times so as to maximize profit and minimize risks of being caught in illegal activities. This includes sand removal, illegal commercial harvesting of trees, and poaching game (see chapter 5.6.). Firey states that in conditions where the social order begins to disintegrate, incentives to inhibit one’s propensity for gainful resource processes may be removed, security will be exchanged for economic efficiency, and resource congeries in the form of calculating opportunism will become the norm. Of further concern is that this new entity, having no determinate structure, can offer little resistance to further change. Therefore, *if left unabated and where sanctions are relatively ineffective, unsustainable resource extraction will continue in these areas and may severely limit future opportunities and environments in which CBC can be implemented or, in a worse scenario, will deplete natural resources from which local communities derive much of their livelihoods. The situation calls for returning social stability to the rural areas and the institutions that de facto govern resources within them.* As Firey (1960: 238) reminds us, development that involves cultural stabilization brings about non-gainful-but-likely practices that ‘insinuate themselves into people’s thinking and, abetted by a stable environment, enter into behavior as elements of a

resource complex.’ Such practices, he adds, ‘become supports for social order, contributing to its maintenance and resisting its change.’

This dilemma can be resolved in the study area through a number of means. Firstly, increasing capacity of provincial nature conservation structures to effectively enforce environmental legislation will likely lead to decreased opportunism, but will not adequately address the cultural conundrum. Resource conservation, according to Firey, depends on the ability to obscure resource users’ perception of private gain, to gratify their incentives for security in personal relationships, and to enlist the willing conformity of all resource users. Plans, including excessive coercion or rule enforcement, which do not win consent on these fronts will usually fail as they are often expensive and considered illegitimate. Indeed, by increasing powers only to municipal and provincial governments and ignoring local customs and traditions in these contexts, a reverse effect may result in which TAs and their devotees may see this as a return to the ‘fences and fines’ approach to conservation (this time outside the KNP), and further polarize themselves from government objectives (cf. Gibson and Marks 1995; Michaelidou *et al.* 2002). A second alternative, which may lead to cultural stabilization, involves devolving all natural resource access and use powers to local TAs. The drawbacks here, however, are that not all TAs are considered legitimate in the study area, and many may not administratively or infrastructurally be able to effectively handle these responsibilities without much-needed support and resources. Moreover, current and potential possibilities of corruption, misrepresentation and elitism are left unabated in devolving powers to this lower level, especially if there are weak mechanisms for accountability (Ribot 2002).

Instead of these more extreme alternatives, *this research advocates a more co-operative approach to natural resource management in the rural areas*. Practically, this means that provincial structures should strive to work more hand-in-hand with local TAs in both communicating and enforcing natural resource legislation. Similarly, *defining what resources should be conserved, how they should be managed and for whom should be based on interactive dialogue between the DFED/EA and local communities*. This has promise for at least three reasons. Firstly, it would promote social democracy by increasing citizen involvement, through traditional structures, in government affairs and redistributing power and resources to enable local people to participate in decisions that directly affect their lives (Luckham *et al.* 2000). Secondly, according to Rokeach’s (1976) theory on the relationship between identity and beliefs, by maintaining and utilizing traditional structures, where believed to be ‘good’ and ‘preferable’ by local communities, may minimize anxiety regarding

proposed changes in natural resource management. Finally, it would be one tangible avenue through which government could effectively harmonize the institution of traditional leadership within the new system of democratic governance as laid out in the *Traditional Leadership and Governance Framework Act* No. 41 of 2003. Provincial structures in this arrangement would continue to play an overseer role especially in managing external threats (cf. Michaelidou *et al.* 2002), but would allow TAs (where legitimate) to continue to exercise traditional resource management powers and, where feasible, decentralize enforcement to TAs coupled with corresponding capacity-building. Areas of conflict (e.g. use of specific protected species) would ideally be mutually agreed upon through interactive dialogue, based on research investigating sustainable harvesting of resources, and supported by flexible policies.

## 8.2. What are the costs and benefits of the KNP and how are they distributed?

*Tindlu leti nga vandzakana ti tshwa swin'we. / Houses built close together, burn together.*

Meaning: Neighbours should help each other.

Social Ecology is defined by SANP (2000: 20) as ‘a new philosophy and approach to conservation in which ecological, cultural and socio-economic issues are recognised as critical to the management of national parks’. This research provides a description and evaluation of the activities of PaC within the study area, based on resource access and utilization and the five pillars of social ecology, i.e. community facilitation; economic empowerment; environmental education; cultural resource heritage management; and research and monitoring (chapter 5.3.).

### 8.2.1. Community facilitation

Community facilitation seeks to involve park neighbours in shaping park management and philosophy. In the study area, this is being realized primarily through its interaction with the HF, although relationships between the KNP and other community groups are also forming. This research argues, however, that community fora are primarily intersections for resolving park-people conflicts, not for disbursing benefits to communities, as evidenced by low attendance at meetings of fora experiencing fewer conflicts with the KNP, and where PaC staff contend that communities care less about the park. Although some steps are being made in involving the aspirations of local communities in park management through reduced entrance fees for community members, preferential hiring, and elephant management (chapters 5.3. and 6.3), community facilitation suffers in the study area. This is in part due to

the limited awareness and effectiveness of the HF, where less than 8% of the sampled households even know of its activities and, of those that do, only about half believe it functions well (chapter 6.5.). Moreover, although reduced tariffs have been granted to local community members, the majority has still never been to the KNP, suggesting that this benefit is underutilized. Possible factors contributing to this include the fact that the reduced tariff is not applicable on school or public holidays when most community members would probably go (see chapter 5.4.), or that even with a reduced tariff, community members may still find it too expensive to visit the park given their low household incomes and need for transportation to/within the park.

### 8.2.2. *Economic empowerment*

Economic empowerment has consisted of limited THETA training, developing local contractors, and forming partnerships to assist local artisans. However, the main activity within this social ecology pillar has been job creation, both within KNP and other park-sponsored and facilitated projects. Although only 5% of community respondents indicated that they have personally worked in KNP (chapter 5.3.1.), employment in KNP has benefited or is currently benefiting about one in five households in the study area (chapter 5.3.3.). This has been shown to be a significant factor in promoting knowledge of KNP, and shaping more favourable attitudes towards the park in general and its forest policies (chapter 5.5). Considering that employment is the most important community need, it is not surprising that this benefit should hold great potential in shaping attitudes (c.f. Holmes 2003). Because employment benefits reach to households and extended families, not just individuals, the implication for KNP is that *more equitable distribution of this benefit can lead to a greater impact in shaping attitudes among household members where only one member gains employment.*

On the flip side, this research argues that KNP can also be a source of economic *disempowerment*, primarily resulting from DCAs (see also chapter 8.6.). Local communities bear cost from DCAs that originate from KNP in terms of loss of life and limb, crops and livestock, psychological damage, and increased conflict with conservation agencies - all without compensation. Community perceptions of DCAs are an important aspect of KNP's interaction with its neighbouring communities and they have great capacity in shaping attitudes, especially in terms of beliefs that KNP will economically empower individual households (chapter 7.6.). Based on the community questionnaire, over 12% of respondents claimed that they had experienced DCA damage within the last two years, including almost 1

in 5 households within 3 km of KNP (chapter 7.6.). If one considers all households in the study area, an estimated 2216 households have suffered some DCA damage within the last two years. This number is probably much higher if one were to include damage stretching further back in time. This acute problem is obviously reason for concern. Considering the value of crops and livestock to household livelihoods (chapters 4.2.3. and 8.1.1.), loss of either of these commodities to DCAs, even in small numbers, can represent substantial losses and have detrimental effects on attempts to escape poverty, especially where no compensation scheme is in place. This research demonstrates that *problems caused by DCAs creates obstacles to improving livelihoods, inhibits the pursuit of economic diversification, and leaves many community members with a sense of hopelessness.*

### 8.2.3. Cultural heritage management

Cultural heritage management in the research area has focused on the facilitation of visitation of communities to ancestral gravesites, involving cultural dance groups in park events, and accommodating the needs of traditional healers through its nursery. Further, it has involved taking an enabling approach with respect to land claims. In addition to the settled Makuleke claim in the Pafuri region of the park, nine other claims have been lodged in the area, six of which are still pending (Table 5.3.). Land claims continue to be a controversial area of conflict and have great potential to reshape the face and management of KNP. On one hand, beliefs about the KNP are tied very closely with past injustices committed by governments in relocating people from within KNP and land claimants see the return of their land to be both a restoration of dignity and an opportunity for economic improvement. On the other hand, there is a fear among many KNP staff, especially within Conservation Services, that awarding land claims within KNP will ultimately lead to the ecological fragmentation of the park, and its eventual demise as a safe haven for biodiversity.

Finally, the value of indirect, non-consumptive benefits is often overlooked in examining park-people relationships. This research revealed that indirect benefits, associated with cultural beliefs, have also accrued to community members from the KNP, including the sights and sounds of wildlife (chapter 5.3.4.). Similar to findings regarding the broader definition of nature by the Tsonga (chapter 8.1.4.), supernatural causality with respect to rain has also been shown to benefit local villagers as the belief exists that ‘when they make it rain on Kruger, we benefit because the rain sometimes reaches us’. Recognizing and emphasizing these types of benefits, often embedded in local cultural and spiritual beliefs, may help KNP, and other PAs elsewhere, in articulating conservation programs to intended beneficiaries.

#### 8.2.4. Environmental education

Educational awareness probably receives the most attention to PaC activities in the study area, although its recognition in the neighbouring villages is mixed (chapter 5.3.5.). It focuses mainly on educating the youth through park tours, but will now take the park to the communities with the initiation of a new program utilizing specially designed buses. The park tours attempt to integrate history, culture, tourism and the environment in the curriculum. Aside from these tours, formal environmental education is sporadic in the area, and its effectiveness questioned even where it does exist. On the one hand, those who know of the environmental education programs feel that they benefit the community, improve relations with KNP staff, and show that KNP cares about village interests. On the other hand, however, those who have not benefited from this education expressed critical opinions. Similar to employment, it seems reasonable that *in order to reach more people with the message of conservation, a strategic approach with the new 'Park to Communities' initiative would be to i) coordinate the environmental education tours with DFED/EA staff to assist in educating the public about conservation issues both inside and outside the KNP, ii) target first those schools within the study area that have not participated in the in-park tours, and iii) in addition to youth, invite other community members to participate in the presentations.*

#### 8.2.5. Research and monitoring

Research and monitoring has been shown in this study to be lacking with respect to social science issues related to park neighbours, PaC internally, and effectiveness of community fora (chapter 5.3.6.). Although research and monitoring is identified as one of five pillars upon which social ecology operates within SANP, unfortunately, this has been the most neglected component within KNP activities and probably contributes to the static functioning of the HF. Ideally, a participative monitoring and evaluation system should be implemented which would provide valuable feedback for all PaC projects and programs, including the effectiveness of community fora interacting with the KNP. However, considering the limited history of PaC and its constraints (see chapter 5.2.2.), some tangible steps are being made to address this paucity of research. It is hoped that further research will build upon this present one in evaluating current PaC activities, and guiding future initiatives. The list of current SANP social science research needs include community economic empowerment, community based natural resources management, environmental education, socio-economic-biodiversity baseline studies, indigenous knowledge and cultural resources management, interplay between natural resources and people, community based tourism, arts-crafts and natural resources, and links between natural resources conservation and sustainable livelihoods.

#### 8.2.6. Resource utilization

The now repealed *National Parks Act* (1976) has largely governed the heavy restriction of accessing and utilizing KNP resources by local communities. In spite of this, however, both legal and illegal resource use has continued to take place in the park (chapter 5.3.2.), often giving mixed signals to community members especially in situations where KNP employees are granted resource use rights which contravene the principles of the park. Moreover, veterinary constraints and safety concerns have also plagued the implementation of resource access to community members, especially the transfer of diseases between wild animals and domestic livestock. Programs intended to extend resource access benefits to neighbours including thatch grass collection (chapter 5.3.2.) and potential buffer zone concepts (chapter 5.4.) have been restricted due to these constraints, and are likely to continue to do so. Although the thatch grass initiative is commendable on the part of KNP on one hand, the adage that ‘it is better not to vow than to make a vow and not fulfill it’ becomes true. By offering the benefit, then taking it away, community members are left with another broken promise (see also chapters 5.4 and 6.4.4.). Although KNP staff did not foresee the veterinary implications of this benefit-sharing, local communities are likely to perceive KNP as being dishonest with its neighbours. *By making promises inter alia through community fora, which later do not materialize, they generate false expectations and create and/or perpetuate negative feelings of communities towards both the KNP and conservation in general* (chapters 5.4. and 6.4.4.). Furthermore, unfulfilled promises are likely to create mistrust which will only serve to make future activities more difficult to be adopted, no matter how well-intentioned.

Being a neighbour to KNP is likely to be affected by new legislation and it is envisioned that benefits will increase. The new *Protected Areas Act* of 2003 and its amendments will likely pave the way for increased sustainable utilization of natural resources by local communities within South Africa’s national parks, including KNP. In addition to this legislative provision, PaC staff believes that KNP’s new balancing objectives (see chapter 5.2.1.) will serve to increase the role of PaC and strengthen people-oriented objectives in KNP activities. Despite this belief, however, this research identified a number of constraints which have associated implications to the mission of the PaC and to communities. These can be grouped around issues of capacity and training, accountability, evaluation, absence from workplace, and competing philosophies (chapter 5.2.2.).

### 8.2.7. People and Conservation

*Mhisi ya mikoka mimbirhi yi ta phatluka nyonga. / The hyena which drags a load on both sides will break its hip.*

Meaning: A person cannot follow both a good and a bad path at once.

The role of social ecology within KNP's primary focus on biodiversity conservation is not only ambiguous, but also contested (chapter 5.2.3.). This divergence of philosophy in PA management is reflected in poor or miscommunication between Conservation Services and PaC, exacerbated by alleged false reporting in the media, and fuels conflicts between KNP rangers and social ecologists. The firm belief by some staff of inimical differences inherent between biodiversity conservation and socio-economic development of local communities, particularly with respect to resource access and outcomes of pending land claims, translates into attitudes that drive decision-making into one of the two directions, and rarely seeks compromise. This dichotomy in objectives not only makes for strained relationships between departments within KNP, but also between KNP and its neighbours. Other constraints include personal conflicts between a KNP section ranger and KNP management leading to his resignation (chapter 5.2.2.), and a case of incompetence and corruption involving the local social ecologist (5.2.4.).

Relevant to the case of the local social ecologist, Rokeach (1976) theorizes that in situations where external pressures to discriminate along racial lines are slight or absent, differences in beliefs on important issues are stronger determinants of prejudice or discrimination than differences in race or ethnic membership. Because the local social ecologist did not share similar beliefs regarding *inter alia* authenticity of certain traditional leadership, and exercised favoritism in advertising and disbursing employment opportunities, animosity resulted amongst affected parties (chapter 5.2.4.). The implications for KNP and other PAs in similar contexts may be that *in order to further bridge the park-people divide, in addition to hiring more 'locals', especially those who will directly interact with local communities, emphasizing a shared vision may be more constructive*, i.e. unless local communities perceive that these staff also share similar beliefs and values to their own, they may continue to hold prejudice against the PA. Considering that both the Shangoni section ranger and local social ecologist were individuals who had regular contact with KNP's neighbouring communities and were key KNP representatives at HF meetings, any trust and relationship building through this interaction will now need to be re-established with new personnel. These findings emphasize



the important role that key individuals play in people-park relations and the need for continual monitoring on behalf of institutions responsible for these relations.

#### 8.2.8. Biodiversity conservation

*Ku kokola a hi ku veka tandza. / To cackle does not mean to lay an egg.*

Meaning: Words cannot equal deeds.

It is believed by KNP and HF that educating local communities concerning nature conservation will lead to changed behaviour and more sustainable land use practices. Moreover, as Firey (1960) has noted, gain seekers (either internal or external) may often exploit resources in situations where opportunism is unconstrained, especially where social order is in a state of flux (chapters 2.10. and 8.1.5.). It is clear from TRA results that efforts in the northern part of the study area (Malamulele, Punda Maria) have been far less successful in mitigating identified threats to biodiversity since 1994 than the south, especially in terms of illegal commercial harvesting of trees and medicine, and poaching (Table 5.6). With more than half of the threats identified showing no improvement in mitigation, these findings reflect serious implications for attempts to alter behaviour towards conserving natural resources. Although southern assessment areas (Giyani, Shangoni) have more than 2.5 times lower population densities (chapter 4.2.2.) and show better threat mitigation, even these areas are experiencing worsening trends, especially in terms of illegal removal of sand and commercial hunting. The increasing magnitude of these threats to biodiversity have been cited as evidence that the HF does not do good conservation work (chapter 6.5.) and that co-operative governance concerning resource use is weak in the study area (chapters 4.3.2. and 4.3.3.).

The findings presented in chapter 5.6. raise a number of points. Firstly, areas north of the Shingwedzi River in the study area show greater levels of threats than the south, perhaps in part due to increasing human populations and associated agricultural and residential expansion. This is also supported by findings concerning land and fuelwood shortages in Thulamela Municipality (chapter 8.1.1.). Secondly, there are distinct differences to the type of threats and their mitigation inside and outside the KNP. Although present in all four assessment areas, poaching of fauna is listed as the greatest threat within KNP, whereas illegal harvesting of trees is considered the greatest threat outside the park. Thirdly, illegal resource use occurs not only for subsistence needs, but also entails an increasing number of commercial activities in the rural areas including the luring of lions out of KNP, mining sand,

and commercial harvesting of trees for markets outside the study area (see also chapter 8.1.5.). Fourthly, efforts at reducing commercial threats to biodiversity appear to be less effective when compared to their subsistence counterparts. This may be explained by limited enforcement capacities of DFED/EA and decreasing powers of TAs in restricting access and use of resources (chapter 8.3.). Fifthly, although threats to biodiversity can affect relatively small areas, they can be locally intense and thus require higher priority (e.g. illegal mining of sand, poaching fish, illegal harvesting of medicinal plants). Finally, both the poor state of the KNP border fence and increasing elephant populations are facilitating the movement of animals in and out of the KNP which, in turn, is contributing to the likelihood of disease transfer between wild animals and domestic livestock (see also chapters 7.7.1 and 8.5.).

It seems clear that policies and their enforcement both within KNP and in the rural communal areas since 1994 have largely failed to reduce threats to biodiversity in the study area. Although it is impossible to determine what outcomes may have resulted from a different trajectory of policy choices, one can reasonably argue that the situation is currently worse than it was prior to South Africa's official switch to democracy. Increased poaching and illegal harvesting of trees for commercial purposes, predicted theoretically by Firey, is particularly worrisome. *Both KNP and DFED/EA must step up enforcement and/or develop new strategies if they hope to curb this trend. Working more co-operatively with local TAs may be one route to accomplish this* (see also chapters 8.1.5. and 8.3.1.).

### **8.3. How do local communities view the various institutions responsible for managing natural resources?**

#### *8.3.1. TAs vs. Municipal Government*

*Tinkunzi timbirhi a ti tshami etshangeni rin'we. / Two bulls cannot remain in the same kraal.*

Meaning: It is not possible to have two chiefs in the same country.

The activities of local government are perceived by most people in the study area to be either non-existent or unknown. Respondents who did report responsibilities for this institution indicated allotment of residential sites, road maintenance, and provision of RDP housing and drinking water supplies as the most prominent. This low awareness and/or lack of activity in the study area is partly responsible for a low rating on the effectiveness of local government in the rural areas. Responses were influenced primarily by *de jure* Traditional Authority affiliation, although positive responses on the effectiveness of local government were

minimal, ranging from as low as 10% to only 35.6%. Negative opinions of the effectiveness of the municipal government were largely governed by housing and water shortages, poor road maintenance, and the belief that it ‘does nothing in our area’ and ‘shows favoritism in its activities’. These data collectively suggest that the performance of municipal government is highly varied in the study area, with specific *de jure* TAs experiencing greater activity than others. In turn, this indicates an unequal distribution of benefits from municipal governments towards their constituencies, which might be expected given their capacity constraints (see chapter 2.5.4.).

In contrast, the roles and responsibilities of Traditional Authorities are much better recognized, with respondents stating that their functions are extensive, ranging from provision of residential and agricultural sites, to protecting forests/wild animals and overseeing people’s concerns. Considering that access to land for cultivation was secure for over 70% of respondents, and more than 85% felt their land was ‘good’, this research suggests that *TAs are perceived as largely competent by local communities in securing access to good quality land for agriculture* (chapter 4.2.3.). Moreover, *TAs have a much higher approval rating compared to local government by respondents*, with less than 12% of respondents reporting negatively overall. No significant relationships were identified with regard to responses towards TA effectiveness, indicating that *de jure* TA, gender, age, village residence time, education, household income, employment at KNP, knowledge of HF, or experiencing DCA problems do not play a deciding role in influencing opinions.

*Hosi i vanhu. / A chief is his people.*

Meaning: No authority can exist without the consent of the people.

The strong role that TAs play in land allocation and resource access and use in the study area has a number of far reaching implications. Chiefly authority is ascribed by lineage rather than achieved through elections, and its patriarchal principles ensure that major decisions on land allocation are almost invariably taken by men only, which is believed by some (see e.g. Goetz 1998, cited in Luckham *et al.* 2000) to stand in the way of women’s equal rights to property ownership. However, this research shows that many tribal people, irrespective of gender, still look to their chiefs for land allocation and are satisfied with it. Indeed, only 10.2% of women respondents felt that their TAs are not doing a good job with respect to land use issues, compared with 14.5% of men. These results agree with Ntsebeza (1999) and Campbell and

Shackleton (2001), who showed that TAs still maintain strong positive influence in South Africa's communal areas.

The role and input of women into land issues in communal areas will also be strengthened through new legislation. Under the promulgation of the recently enacted *Communal Land Rights Act* of 2004, communal lands can, subsequent to a land rights enquiry, be transferred to *inter alia* traditional leadership, communal property associations or persons (including women). The land rights enquiry must adopt measures to ensure that decisions made by a community are the informed and democratic decisions of the majority of community members of 18 years of age or older (§17.2). A Land Administration Committee is to be established for each community and, even where a recognized Traditional Council exists and performs the duties of the Land Administration Committee, its membership composition must include at least one third women (§22.3) and one member representing the interests of vulnerable community members<sup>38</sup> (§22.4). Although it is envisaged that the role of women will be enhanced through these Committees, it is still unclear how the integration of TA and local government will be realized as, once registered, each community must make and adopt community rules which regulate the administration and use of communal land within the framework of law governing spatial planning and *local government* (§19.2.a), which must subsequently be accepted by the Director-General of Land Affairs. In addition, the *Traditional Leadership and Governance Framework Act* of 2003 makes provision for Traditional Councils to enter into service delivery agreements with municipalities (§5.3), which ideally will streamline government service delivery to the communal areas and allow for the continuation of land use functions by TAs where applicable. However, as these Acts are eventually implemented where TAs are active and strong such as within this research's study area, the merging of TA and municipal government powers and responsibilities will likely continue to be an area of conflict as individual communities begin the negotiation and transfer process.

### 8.3.2. DFED/EA

The role of DFED/EA in the rural areas is uncertain and ambiguous. Although it is the primary body responsible for implementing and enforcing LEMA 2003 regulations, its activities are limited in the study area. Research findings indicate that TAs are *de facto* principally controlling access to natural resources and enforcing LEMA 2003 stipulations, with tribal courts functioning in part to fine transgressors (chapter 4.3.2.). Perceptions of the

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<sup>38</sup> including women, children and the youth, the elderly and the disabled

DFED/EA by local TAs are generally negative (chapter 4.3.3.), as this agency is seen only within its role in enforcement. It is also criticized for its weakness in delivering both much-needed environmental education and awareness to communities on the role of the provincial government. In addition, there is widespread criticism on the control, or lack thereof, of DCAs along KNP's western boundary by DFED/EA and the withholding of compensation for damages caused by these animals (see chapter 7). DFED/EA representatives attribute much of this deficiency to low capacities within the organization, although a number also report cumbersome bureaucracy, and poor understanding and communication between head office and local district offices as hindering effectiveness. Finally, there are fundamental discrepancies described by some staff concerning the inclusion of Environmental Affairs within a government department responsible for financial and economic development, claiming that an intrinsic conflict of interest exists between the two.

Similar to criticisms launched at the ineffectiveness of local government, *weakness in co-operative governance between DFED/EA and TAs has been identified through this research as inhibiting resource conservation in the study area, leading to situations in which opportunities are established for 'gain seekers' to exploit resources at unsustainable rates* (see chapter 8.1.4.). DFED/EA managerial staff acknowledge that discussion and co-operation regarding land use, including biodiversity conservation, between provincial and municipal governments and TAs is practically non-existent, and needs to be strengthened. In lieu of the increasing pressures on natural resources and the aspirations of some communities to engage in CBC agreements with the KNP, it would be wise for these institutions to *heed these trends and seek co-operative ways to halt resource over-exploitation before conditions render it practically impossible to effectively pursue any CBC initiatives at all.*

### 8.3.3. KNP

*Saseka fularha, mahlweni i swiginya. / Beautiful from behind, ugly in front.*

Meaning: applied to a person who comes with good words, and then becomes your enemy.

In many ways, the relationship between KNP and local communities is two-sided. Local communities perceive KNP as a potential source of income and a 'protector' of livelihoods, yet at the same time, as the source of much of their anguish.

### 8.3.3.1. KNP and community development

*Hi ta ku, n'timangwa, loko hi vona mavala. / We'll admit they're zebras when we see their stripes.*

Meaning: We will believe your words when we see with our own eyes.

Attitudes towards the KNP by community members are governed by three major themes, namely employment, absence of interaction, and DCAs (chapter 5.5.). *Positive attitudes to KNP center on the benefits that KNP provides in employing local community members* but also include its efforts in protecting villagers from DCAs, enabling local artisans to sell their crafts in and near KNP, offering environmental education, and protecting nature. Notwithstanding these positive contributions, *the vast majority of KNP's neighbours have had no interaction with the park* i.e. have never talked with a KNP staff member, believe KNP does nothing in their villages, and/or are unaware of any KNP activities or benefits for its neighbours. Considering that families have lived in these villages on average for almost 25 years (Table 4.1), and KNP claims to be proactively seeking to involve its neighbours for over a decade, *this low level of awareness is a strong indication that its efforts in this regard need to be improved.*

Negative attitudes toward KNP are also prevalent amongst community members, even those who indicate that they like the KNP overall. These *negative opinions primarily center on DCA problems*, i.e. the lack of adequate maintenance of the KNP border fence, control of animals once they've escaped from the park, and the fact that affected farmers have yet to be compensated. Succinctly stated by a 72-year-old man from Magona village, *"I like the KNP, but they don't seem to care about our killed animals"*. Also noteworthy was the revelation that KNP staff are being accused of arresting individuals for illegal resource collection in the communal areas, when in fact it is DFED/EA field officers. This belief has led at least some respondents to subsequently hold less favourable attitudes towards the KNP, and could be relatively easily rectified through changes in staff uniforms.

Results from the attitude index score (Figure 5.11) fall between those from Els (1995), who found strongly negative opinions towards KNP, and Mabunda (2004) who found mainly positive attitudes within neighbouring communities (chapter 2.7.3.). However, Mabunda admits that because the 'Social Ecology group drew participants [for his survey] from their operational regions' (Mabunda 2004:175), his sample was non-random, and therefore not truly representative. This research argues that attitudes towards KNP are more varied than previously thought, and are influenced by a number of factors discussed below.

Research findings show that more positive attitudes toward KNP are influenced by having a household member employed by KNP, age, and affiliation with Mtititi TA. Although it is usually implied that employment (in this case within KNP) is correlated with increased household income, this research's findings show that these variables are distinct in influencing attitudes. Increased household wealth was shown to positively influence attitudes in similar studies from Tanzania (Newmark *et al.* 1993) and KwaZulu-Natal, South Africa (Infield 1988). However, in this research, household income per se has no significant influence on attitudes towards KNP. On the other hand, having a household member employed by KNP does, indicating that attitudes towards KNP are shaped first and foremost by employment benefits emanating from the park. Although attitude scores for those respondents who have visited the KNP are not significantly different from those that have not, attitudes are significantly more favourable for those who have personally worked in KNP compared to those who have either never been in KNP or were there for reasons other than employment (see Figure 5.4 and chapter 5.5.). These findings indicate that *mere visitation to KNP does not significantly improve attitudes towards the park. Rather, employment in KNP, even for another household member, has greater influence in shaping more positive attitudes.* An alternative explanation may be that KNP employees directly (and their household members indirectly) learn more about the park and its mission through increased exposure to the park and its activities, although this relationship was not examined within this research.

Second to employment benefits, attitudes towards KNP are influenced by age. Congruent to Fiallo and Jacobson's (1995) study on attitudes in Ecuador, this research shows that younger respondents hold more favourable attitudes towards the KNP. This may be explained by two factors. Firstly, greater attempts have been made by KNP to reach young people with environmental education, which includes the positive role that KNP plays in conserving biodiversity and protecting nature for future generations. Secondly, older community members are more likely to have personally experienced past injustices of the park, among other government policies and practices under Apartheid, which might contribute to more negative perceptions of the KNP.

Finally, respondents within the jurisdiction of Mtititi TA (Lombaard, Plange, and Altein villages) hold significantly more favourable attitudes towards the KNP than other TAs in the study area. Possible explanations for this influence include the vital role that the KNP has in employing people from these communities and the relationship built between KNP staff and village members. The proportion of households having a family member employed by KNP is

higher in Mtititi TA (26.7% of questionnaire sample, including 60.0% in Altein village) compared to all other TAs combined (16.7%). Only Mhinga TA, which lies adjacent to the public Punda Maria gate to the north, had a higher proportion of households with members employed at KNP (30.0%), many of whom originate from the three villages comprising the Makuleke C.P.A. (Maviligwe, Makuleke, and Makahlule). This higher employment ratio in Mtititi TA is likely attributable to the access to KNP gained through the private Shangoni Gate adjacent to Altein village, where the Shangoni section ranger post is located and where a number of employees are housed. Employment opportunities in the area will likely increase if the Shangoni Gate will be made open to the public, as was originally proposed (chapter 6.4.4.3.), and is now more imminent given that the road east from Giyani (closest municipal centre) was tarred to Thomo village in 2005, now only approximately 20 km from the gate. Moreover, KNP recently sought employees from these villages when constructing the new border fence just north of Lombaard village (Figure 7.25) which contributed to local employment and in all probability to the belief that KNP is making a tangible effort to protect local communities from DCAs. Considering that the three villages in this TA are relatively remote from any urban or peri-urban centres, employment is extremely limiting and thus jobs within KNP are highly valuable. The second explanation for more favourable attitudes in Mtititi TA lies in the close relationship fostered between the Shangoni Section Ranger and his staff with local communities through employment, and supplying meat to field rangers and their families (see Table 5.2). Only time will tell, however, whether any change in attitudes will develop as a result of his recent resignation (chapter 5.2.2.).

#### 8.3.3.2. KNP policies

Although respondents have limited knowledge of KNP's activities, this research also tried to understand community attitudes towards KNP wildlife, forestry, and social ecology policies (chapter 5.5.). The objective was to understand perceptions towards various policies, not necessarily whether respondents had accurate knowledge of policy content. Research findings show that communities believe they know more about KNP wildlife policies than forestry policies, and have little knowledge about social ecology related policies.

High approval for KNP wildlife policies is attributable primarily to the function of the park in protecting villagers and their livestock from DCAs, but also in properly protecting wild animals, conserving nature for future generations, and preventing the public from slaughtering wild animals. Reflecting the dual nature of DCA control, negative attitudes towards wildlife policies predominantly rested on the fact that despite control efforts by KNP, DCA are



escaping from the park and causing damage in the neighbouring areas. These findings concerning KNP's wildlife policy reflect the more utilitarian view of the Tsonga discussed in chapter 8.1.4. Furthermore, they illustrate the traditional Tsonga world view which holds that man only has a duty to protect domestic livestock, because God (*Xikwembu*) protects wild animals (c.f. Els 2002). Thus, it is natural for the Tsonga to see KNP's wildlife policy in this light, i.e. primarily to provide protection for livestock.

Local communities generally approve of KNP forestry policies, although they are less well known. Respondents who hold favourable responses credit their reasoning chiefly to the role that forests play in performing environmental services such as windbreaks, providing habitat for wild animals and livestock, and cleaning the air. Respondents who disapproved primarily cite restriction of access to local communities for much-needed fuelwood. Els (1994) has shown that the beauty of trees to the Tsonga does not lie in their aesthetic appeal but in their use value for human survival with the most beautiful trees being those trees that are most important for human survival. The opinions on KNP forest policies presented in this research support this concept, as policies which protect forests are seen as favourable mainly in the light of their direct usefulness to man (protecting crops, livestock and property). Similarly, negative opinions are also based on this principle as they reflect the disapproval of KNP in restricting the utilitarian and *Xikwembu*-given right to use local resources for maintaining human survival. For many Tsonga, Western principles of conservation that restrict access to fuelwood come into direct conflict with their world view on man's relationship to the environment. Analysis indicates that favorable attitudes towards KNP forest policy is influenced by having a household member employed at KNP and having higher education, suggesting that these two factors are instrumental in increasing knowledge about the significant function of forests concerning environmental services and provision of habitat, both for the direct and indirect benefit of mankind.

Policies regarding social ecology are the least understood amongst the three policy sectors as most respondents admitted having no knowledge of social ecology. Those who approve of the policies claim two reasons for their answers: social ecology helps to protect animals and keep people safe, and creates jobs. Those who disapprove credit responses chiefly to fear originating from wild animals escaping, and the fact that KNP 'is doing nothing for us'. Parallel with discussions on economic empowerment in chapter 8.2. and low awareness of KNP activities in 8.3.3.1., it is not surprising that social ecology is least recognized amongst the three policy sectors and perceptions of this aspect of KNP's activities should deal with the

two primary issues for local communities, i.e. the social and economic implications regarding employment and DCAs.

This research also made an attempt to understand perceptions of local communities on if, and how, the establishment of the KNP has affected local culture/traditions. About one in five respondents do not know whether the KNP's establishment has affected local culture/traditions (Figure 5.13), with the remainder equally divided on whether it has had an effect or not. Moreover, one half believes that regardless of whether KNP has affected local culture, the result is positive. These positive opinions are based primarily on two perceptions (Table 5.5). Firstly, KNP has not affected local culture/traditions in any way. Although much of the recent research emphasis on KNP's neighbours has focused on the past injustices of the park to local communities, including forced evictions (Tapela and Omara-Ojunga 1999; Steenkamp and Urh 2000; Reid 2001; Ramutsindela 2002), it should be remembered that not all of the communities currently surrounding KNP, including within the study area, were located either in or close to KNP at the time of its establishment in 1926. Much of the relocations of villages undertaken during Apartheid took place in the 1950s and 60s, well after KNP was established. Moreover, many communities currently located adjacent to KNP were relocated from areas much further away including from predominantly Venda areas to the north and west. For these communities, the actual establishment of the KNP had little effect on their lives. Secondly, positive opinions focus on the security some respondents feel in venturing into areas outside the park because of the protective role that KNP plays in keeping dangerous animals within its fences.

In comparison, almost one in five respondents believe the KNP's establishment has negatively affected local culture/traditions. Categorical responses for these respondents principally concern i) the restriction on accessing resources within the park including fuelwood, and wild game for food and dress, and ii) forced evictions from the park to accommodate wild animals. Although these negative responses are minimal overall, they emphasize that at least some community members still hold negative opinions of the KNP and its establishment based on historic injustices of land relocation and restrictions in resource access and use for both economic and cultural purposes.

In summary, community perceptions of the KNP are mixed. Despite KNP directives to extend park benefits beyond its borders, most community members in the study area are unaware of KNP's activities and have had no direct interaction with the park in terms of community

facilitation or development. Exceptions include marginal involvement of local school children through in-park educational tours, and employment benefits which have reached almost one in five households within the study area. Significantly more positive attitudes towards the park are held by individuals who i) have had household members employed within KNP, ii) are younger, and iii) are from villages within Mtititi TA. Negative opinions of the KNP arise primarily from problems associated with DCAs that originate from the park. Finally, knowledge and perceptions of KNP policies vary, with knowledge of social ecology policies lagging far below those regarding wildlife and forest protection. Opinions of all three policy sectors are governed chiefly in their relation to providing direct utilitarian benefits to local communities including protection of livestock, crops and property, securing employment, and access to desired resources.

#### 8.4. How effective has the Hlanganani Forum been in achieving its conservation and socio-economic objectives?

The relational links between interacting stakeholders is conceptualized in Figure 8.1 below. Understanding the circumstances under which these stakeholders are operating is crucial in making any evaluations in intervention success.

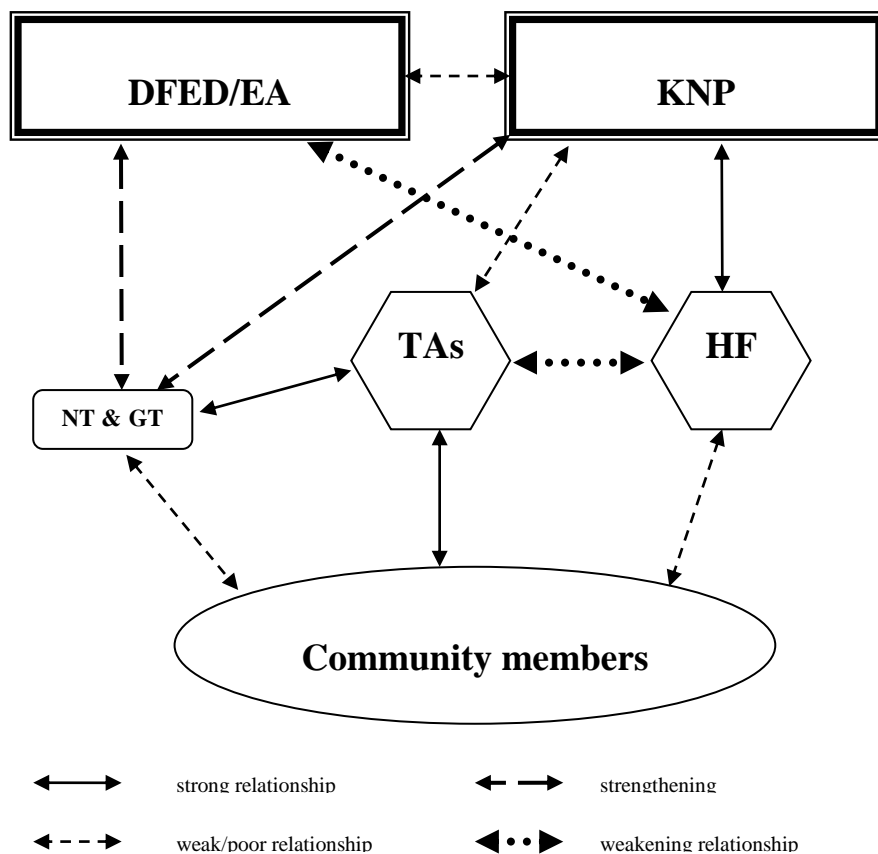


Figure 8.1: Diagram showing temporal changes in relational links between stakeholders.

After dramatic policy changes and the belief that KNP could not exist in isolation from its neighbours in 1994, the KNP sought to develop links with its neighbouring communities and initiated a number of fora, including the HF. It has cultivated its relationship with the HF over the last decade through monthly meetings and co-operating with the HF in establishing a number of benefit-sharing arrangements in terms of reduced entry fees, employment, and training. In addition, the HF has played an instrumental role in DCA reporting to the KNP and the DFED/EA.

However, due to perceived inaction of the HF with respect to DCA control, lack of promised compensation for DCA damage, nepotism, and poor representation and reporting, resentment toward the HF developed amongst a number of TAs. These TAs, which traditionally have had strong ties with community members in the rural areas, subsequently formed their own community trusts, namely the Ngunghunyani Trust (NT) and the Gazan Trust (GT). Complex and dynamic struggles between TAs and local government (see chapters 4.3.2. and 8.3.1.) have also influenced the way in which TAs interact with 'democratic' organizations such as the HF. Concurrently, increased dissatisfaction by DFED/EA staff with the practices of the HF coupled with new relationships being established with Trusts led to confusion as to the validity of claims of village representation within the rural areas. This confusion has contributed to the apprehension of the Limpopo Province in distributing DCA compensation monies, which were originally promised to the HF in 2003.

Although not wanting to sever its long-standing investment in its relationship with the HF, yet recognizing shifting power struggles between the HF and community Trusts, the KNP began to work more with TAs and recognize these registered Trusts both of which are planning CBC activities in conjunction with the private sector that could affect the KNP both directly and indirectly. However, lack of capacity within the PaC affects these relationships. Meaningfully addressing these shortcomings in a timely and sensitive manner with all actors is a must for KNP.

Complicating these relational dynamics has been the relatively weak relationship between the KNP and the DFED/EA, especially regarding DCAs and their control. Despite both being conservation agencies with similar goals in environmental protection, this lack of co-operation has contributed to an increasing belief amongst rural villagers that these institutions do not care about their needs, nor are willing to accept responsibility for damage caused by wild animals that originate both within and outside the KNP.

Evaluation of the effectiveness of the HF described in chapter 6 and the interaction described in this research between the HF, TAs, provincial government, KNP, and community members thoroughly dismisses the mythical concept of cohesive, homogeneous communities that function according to shared norms. Village of residence (Table 6.2), for example, significantly influences knowledge of the HF. KNP's neighbouring communities are socially stratified, and do not necessarily constitute a community of interests in which all members willingly want to participate in the development of their community through the HF. The simplistic model of community and its representation has been challenged by Agrawal and Gibson (1999: 629) who argue that the focus should rather be on the 'multiple interests and actors within communities, on how these actors influence decision-making, and on the internal and external institutions that shape the decision-making process'.

*Mhunti va yi bela endhawini. / The duiker must be hit where it lies.*

Meaning: Deal with a problem at its beginning, and not when it is too late.

Far from a simple exercise, PA outreach to communities via fora is a very complex and dynamic undertaking. In 1994, this was exacerbated by the dramatic socio-political changes in South Africa and expectations were high regarding future outcomes of proposed initiatives, including that of the HF. Grandiose objectives were drafted, evidently without much of a framework or planning, and activities began. However, shifting policies, new legislation and power struggles in the rural communal areas brought challenges to the HF that were unexpected, resulting in a loss of legitimacy. Of course it is impossible to predict all that might occur, but programs of this nature should be conceptualized clearly and in great detail by the full range of stakeholders to anticipate and plan for potential impacts of any new developments before they are implemented. Naturally, this approach is time-consuming and must be based on adaptive management, but is necessary in dealing with such complex relationships.

The process of creating and defining community-based organizations and developing competent institutions, that both represent diverse local interests and are sensitive to the community dynamics and power relations, is often arduous and time-consuming (Shackleton and Campbell 2001). Any attempt to speed up this process can derail the initiative by ignoring important social processes and recognizing the time needed to develop a common language, and an appreciation that people do not all learn easily. Donors and government agencies need to recognize that such processes do not happen over-night and require long-term commitment

and on-going support. After a decade of investment by both KNP and the HF, it would be wise not to ‘throw out the baby with the bathwater’, but rather, to investigate ways of improving existing structures that build relationships between the KNP and its neighbours. In this framework, recommendations based on this research regarding the HF center on issues of membership, accountability, capacity-building, and adaptive management.

#### 8.4.1. Membership

All too frequently, externally derived techniques are applied indiscriminately in poor communities, usually with negative results. Inappropriate public participation methods and practices can be extremely harmful, often either intimidating or alienating the very communities they are attempting to involve. In their evaluation of statutory Local Boards which were instituted in KwaZulu-Natal, South Africa to involve communities in protected area management, Luckett *et al.* (2003) stressed the importance of continuously involving TAs in decision-making processes, especially where these institutions are strong. In the case of the HF, although a bottom-up approach was originally taken in inviting communities and garnering support for community fora through TAs, a ‘hands-off’ approach to conflicts and power struggles with TAs was subsequently taken by KNP. Although one can argue that KNP was not mandated or equipped to mediate these conflicts, the direct consequences have meant that the HF, initiated and supported by the KNP, has suffered in terms of legitimacy and *de facto* membership. In some respects, by relying too heavily on the HF, the KNP has ignored local norms of behaviour with respect to traditional leadership, and as a result now faces additional challenges in terms of initiating dialogue with new structures vis-à-vis community trusts.

The potential representation area of the HF covers approximately 1320 km<sup>2</sup>, encompassing 38 villages. There are no less than seven *de jure* TAs in this area, but upwards of 20 *de facto* TAs recognized. These highly stratified and differentiated communities with multiple interests pose a particular challenge in that such situations create varying incentives and disincentives for participating in CBC or other forms of PA–people interaction. Here, the role played by external facilitators is critical. All local actors, regardless of socio-economic background, need to be brought into *and continuously involved* in the process through equitable and collaborative negotiations ensuring broadly representative involvement of the local populace, including women. Similar to the more diverse Local Boards in Kwa-Zulu-Natal (Luckett *et al.* 2003), the KNP should investigate whether current HF members are truly representing communities and if including other local actors (e.g. local councilors, business, mining

enterprises, farmer groups) might accommodate a wider degree of interests. This would involve re-thinking the KNP's original decision to include only black, previously disadvantaged communities in its community fora, excluding all other stakeholders (chapter 6.2.). The hands-off approach by KNP in identifying and tracking HF membership, and relative unresponsiveness to local conditions may have contributed to the current confusion being experienced by the parties involved. In light of these developments and the current state of uncertainty over HF membership:

- In consultation with community members, TAs and staff from KNP and DFED/EA, *village membership and representatives of HF should be identified, agreed upon, and documented by all parties.*
- If necessary, the HF should *broaden its membership base to include a wider spectrum of people and/or activities.*
- As TAs have traditionally had strong ties with their rural constituencies, and can mobilize communities for the conservation and sustainable use of natural resources (Campbell and Shackleton 2001), it is vital that *closer links be developed between TAs, KNP and DFED/EA.* However, due to questionable legitimacy of some TAs, it is important that community members collectively decide on whom they want represented.
- Current differences in *objectives and conflicts of interest between HF, and Gazan and Nghunghunyani Trusts should be clarified and resolved* through discussion, mediation, and unbiased support by external institutions.
- Local level cooperation is believed to increase with women's participation (Molinas 1998). Moreover, Westermann *et al.* (2005) found in their analysis of rural programs from America, Asia, and Africa that collaboration, solidarity, and conflict resolution all increase in groups where women are present, as do norms of reciprocity and the capacity for self-sustaining collective action. In this research, gender inequality has been cited as a sign of poor representation in HF, with only two female village reps (chapter 6.4.2.). Knowledge of the HF was also shown to be significantly influenced by gender, with women less likely to know of the HF and its activities (Table 6.2). Considering these findings and gender differences in accessing and using resources (chapters 4.4.2. and 4.4.3.), *women representation should be enhanced on the HF.*

#### 8.4.2. Accountability

*U nga vuri, u ku 'N'wananga, ndzi ta ku lavela nyama!' / Don't say, 'Child, I'll get meat!'*

Meaning: Do not promise that which you do not have.

It is believed that if participants are not accountable, not only will communication falter, but they will often reach conclusions or make decisions which are not financially or physically feasible, thus rendering the process futile (Allen 1998). Accusations of poor representation and reporting, inequity in employment and other benefit distribution by HF members, and lack of adherence to its Constitution are serious accountability matters that the HF must tackle in order to regain legitimacy and support from both community members and other institutions with which it interacts.

Knowledge of the HF is poor in the study area, including within villages it claims to represent (chapter 6.4.3.). Further, of the residents interviewed who claimed to know of the HF, about half held a neutral or negative opinion on the effectiveness of the HF. This suggests that (i) the HF has not effectively conveyed its aims to its member villages, (ii) failed in meeting these objectives, or (iii) its recipients see its purpose and objectives as having little relevance.

Recommendations regarding accountability include:

- *Build stronger accountability structures/mechanisms into HF*, which incorporate local forms and understanding of accountability, especially in benefit-sharing arrangements, which should have stricter and more democratic guidelines. These mechanisms can also include TAs as structures through which HF reps can communicate to their respective communities.
- *Provide more clearly constructed policies or procedures* for appointments, reporting, and project management.
- *Follow through on Constitutional policies* for meeting absenteeism.

#### 8.4.3. Capacity-building

‘Capacity’ is often described as a chicken and egg problem (Ribot 2002). There is often reluctance on the part of governments to devolve powers before capacity has been demonstrated, but without powers there is no basis on which local institutions can gain the experience needed to build capacity. Hence, without the necessary capacity to improve its ability to manage funds to the satisfaction of the Limpopo Province, the HF will not receive monies to compensate victims of DCA damage, undermining a central goal of its existence. Here the KNP has an important role to play. If it is serious about empowering communities through community fora, then it must actively recognize constraints in capacity, including managerial and communication, and seek ways and/or support to remove them either directly or involving partnerships with other agencies. However, KNP must allocate more resources to its People and Conservation Department to achieve this objective (see also chapter 5.2.2.).



Without it, the HF is largely left to fend for itself and, like experiences elsewhere, will likely result in project failure and unmet conservation objectives (Pimbert 2003). Based on these concerns, the following recommendations are made with respect to the HF and capacity:

- Historically there has been a tendency for outside law to prescribe the structure of local organizations and the rules by which they operate. This is perverse, since one assumption of CBC management is that it is best to build upon local institutions that is rooted in local values and practices. If law tries to mold these institutions into forms too complex and alien to a local situation, and then standardizes that form across many different social settings, the result could be to create institutions that have little legitimacy among their members (Lindsay 1998). On the other hand, it has been realized in other contexts that social stratification can affect participation in project meetings in that some people can influence opinions based on *inter alia* their relationship with tribal chiefs (Meister 1972; Wasserman 2001). Indeed, Meister (1972) argues that consensus often reached at rural meetings is not based on mutual agreement, but rather on the balance of social forces. Although everyone is encouraged to air their own opinions at HF meetings, not all do. Thus, it is worthwhile in this research context, to *explore and, if necessary, integrate more local types and forms of accountability into HF practices*, including the communication of opinions and ideas.
- *Provide and/or facilitate on-going training for HF membership*, especially those in financial management positions.
- Khan (1998) found that a vital factor in success for community health projects in South Africa was that meeting times and language were suited to local conditions. Moreover, Soeftstad (2004) has emphasized the need to assess the impact that English is having on biodiversity conservation discourse, especially given the cross-cultural variability in perceiving, classifying, and naming the environment and its relationships. Language constraints identified in this research (chapter 6.4.2.) call for the need for *HF meetings to be conducted in a manner which enables those present to express themselves in their mother tongue*. For those village or institutional members who are not fluent in both languages, language training and/or translation should be investigated. HF meeting minutes should similarly be produced in both languages.
- Since 1997 the neighbour relations strategy in KwaZulu-Natal involves both the Local Boards and a Community Levy Fund, which is generated from levies charged to visitors to protected areas (Luckett *et al.* 2003). In addition to funding community development projects, these funds have been used to provide compensation for the expenses of Board members in attending meetings. Thus far, no such service exists for HF members and has

been identified in this research as a constraint to meeting attendance (chapter 6.4.1.). Therefore, avenues should be sought *to provide funding specifically for transport to HF meetings* for village representatives.

- training HF members already involved in customary approaches in *improved personal communication and negotiation skills*.
- training HF members already involved in customary approaches to *more effectively facilitate/mediate conflicts, both at micro- micro and micro-macro levels*.
- *develop partnerships with other development agencies and government departments* (agriculture, education, etc.) in building individual and institutional capacity within HF.

#### 8.4.4. Adaptive management

*La vutisaka ndlela, a nga lahleki. / The one who asks his way will not get lost.*

It has been argued by a number of respondents that the HF has ‘lost sight of its original objectives’ and ‘side-stepped primary issues.’ Given its 10-year history, and the fact that no systematic evaluation of its effectiveness has been made until this research (nor of any other KNP fora), the time is ripe to re-evaluate the mission of the HF, and realign its activities accordingly. Recommendations of this nature include:

- in intensive consultation with community members, the HF should *revise its mission, if necessary, and associated objectives*. This should subsequently be conducted at regular intervals.
- in consultation with KNP staff, the HF should *identify its central issues and place problems and information in their wider context*.
- many projects have failed to develop adequate monitoring and evaluation systems for measuring both the biological or developmental impacts of implementation. Although research and monitoring is identified as a pillar upon which social ecology functions, this has been the most neglected component within KNP activities (chapter 5.3.6.). Thus, it is important to *institutionalize rigorous monitoring and evaluation systems into the activities of the HF*, using appropriate indicators and to respond in a flexible manner to these systems. A procedure whereby data collected can be independently verified would help institute greater transparency.

In summary, the case of the HF should give serious cause for KNP policy makers, and other PAs interested in reaching out to neighbours and shaping CBC schemes, to rethink their strategies. Approaches must be carefully designed to accommodate both internal and external

characteristics of communities that it seeks to interact with, and how these evolve and are redefined over time. It is essential for government to recognize these attributes and identify appropriate strategies such as local level mediation services, adherence to locally made rules and their enforcement, engaging in collaborative research with local communities, and adopting adaptive management approaches, characterized by regular monitoring.

### 8.5. DCAs and their control

*Mhaka a yi bori. / A case does does not rot.*

Meaning: When a matter has been raised, it won't vanish until it has been properly settled.

Although not a central research question, the specific problems of DCAs are included in this discussion due to their nature in the study area. Justification for this is twofold. Firstly, this research shows that DCAs are a highly controversial and long-standing aspect of KNP's interaction with its neighbours, and are influencing attitudes towards the park. Secondly, national efforts are currently underway to develop national Norms and Standards for their control, along with appropriate compensation schemes, substantiating the need to contribute findings from this research to that process.

Conflicts between humans and wildlife are the product of socio-economic and political landscapes and are exceptionally controversial because the resources concerned have economic value and the species involved are often high profile and legally protected (McGregor 2005). While humans and wildlife have co-existed for millennia, the frequency of conflicts has grown in recent decades, mainly because of the exponential increase in human populations and consequential expansion of human activities (Woodroffe 2000). The investigation of DCAs in this research is important for three main reasons. Firstly, attitudes towards protected areas in Africa are often influenced by perceived or real damage caused by wildlife (Els 1995; de Boer and Baquete 1998; Hill 2004). Secondly, wildlife damage represents a very real and tangible threat to livelihoods in terms of personal injury, crop and livestock losses, and property damage (Happold 1995; Emerton 2001; South African Press Assoc. 2002a, b; Choudhury 2004; Dublin and Hoare 2004; Hill 2004; Madden 2004; Graham *et al.* 2005). Finally, active persecution by humans based on wild predator threats to livestock has been identified as an important factor in observed carnivore declines (Woodroffe 2001).

There is a certain paradox concerning KNP's management in that successful wildlife conservation leads to greater conflicts with its neighbours in the form of DCAs. Although the

problem of wildlife escaping from KNP and causing damage outside the park has been highlighted previously (Tapela and Omara-Ojungu 1999; Cock and Fig 2000; Freitag-Ronaldson and Foxcroft 2003), this research was the first attempt to quantify the extent of DCA damage in the study area and to elicit community perceptions on the issue. Many studies on human-wildlife conflicts rely on questionnaires, which provide subjective, and sometimes misleading, information (Graham *et al.* 2005). For instance, there is a recognized tendency for farmers to deliberately exaggerate losses, or fail to distinguish between proximate and ultimate causes (Oli *et al.* 1994; Mishra 1997; Treves *et al.* 2002; Polisar *et al.* 2003). Hence, data from this research's questionnaire was complemented with personal observation, interviews and DCA reports from DFED/EA offices. Further, honesty in responses was enhanced by omitting any mention of financial compensation while administering the questionnaire, and stressing to respondents that the research was not associated with any government agency.

Similar to studies in Nepal (Studsrod and Wegge 1995), Ghana (Aalangdong and Langyintuo 1999), Uganda (Naughton-Treves 1998), and Kenya (Smith and Kasiki 2000), there was a significant relationship between frequency of DCA damage and proximity to the KNP (Figure 7:15). In addition, a strong correlation existed between DCA damage and higher numbers of household mammalian livestock holdings. *Community perceptions of DCAs are an important aspect of KNP's interaction with its neighbouring communities, and have great capacity in shaping attitudes, as this research shows that those who had suffered DCA damage were less likely to believe that KNP would ever help their household economically* (chapter 7.6.). Indeed, second only to the need for job creation, the most often-cited and acute complaint from community members regarding the KNP was related to damage caused by DCAs and lack of compensation for this damage (see also chapters 5.5. and 8.2.2.). Further, for those who stated that they are dissatisfied with their village being so close to KNP, DCAs were cited as the primary reason. This dissatisfaction can also be argued on grounds concerning the sustainable utilization of resources. For example, as competition for marula in the rural areas (the most valued tree of the Tsonga; see Table 4.12) is enhanced when KNP's elephants escape from the park for this resource, the likelihood of unsustainable harvesting of this nationally protected tree species by local communities also increases.

### 8.5.1. Recommendations

*Ku hleka mbuti ya mavendze, loko yi file u ta yi dya. / Even though you may laugh at a toothless goat, when it is dead, you will eat it anyway.*

Meaning: Do not deny your guilt in an affair. When it becomes obvious, you will have to acknowledge it.

The acute problem of DCAs, their control, and the need for compensation identified in this research demands a solution if KNP ever hopes to improve relationships with its neighbouring communities. However, with such a complex issue, one cannot rely on any one solution alone but is more likely to succeed if it employs a battery of flexible instruments and policies. In addition, *systematic and effective reporting and monitoring, record keeping, and quick responses are required to ensure the human-wildlife conflict is being tracked, comprehended, and sufficiently addressed.* Appropriate new, existing, or traditional systems and institutions need to be developed or empowered locally to ensure good management (Madden 2004). Based on this research (see chapter 7), the following recommendations are provided to guide steps towards alleviating the conflict between local communities, DCAs, and conservation agencies. These include activities both inside KNP (especially to minimize animals leaving the park) and outside KNP (to more effectively control DCAs once they've entered the communal areas).

#### Within KNP

- *'Good fences make good neighbours'*: the KNP border fence must be upgraded along the entire length of the western boundary, but especially in areas where animal escapes are most frequent. Possible funding sources include Poverty Relief funding or establishing specific levies from park entrance fees.
- *Increase human resources*: including both DAVS staff responsible for fence maintenance and/or field rangers in reporting/attending to DCA reports.
- *Improve access*: where dense vegetation, steep inclines or rocky areas constitute especially difficult obstacles, access to the border fence in these areas should be improved.
- *Research on livestock depredation*: rates of livestock depredation can be influenced by diurnal patterns (Bauer and Karl 2001), local environmental conditions including rainfall (Patterson *et al.* 2004; Woodroffe and Frank 2005) and natural prey abundance (Mizutani 1999; Polisar *et al.* 2003; Crawshaw Jr. 2004; Kolowski and Holekamp 2006). Research

investigating factors that contribute to livestock depredation by predators should be actively encouraged (behavioral ecology, fence designs, distribution patterns, etc.).

- *Research on crop depredation*: studies have been undertaken to examine forage selection and activity patterns of buffalo (Macandza *et al.* 2004; Ryan and Jordaan 2005). Similar to the recommendation above, research should be pursued which examines how and why wild herbivores leave the KNP.
- *Reduce elephant pressure*: this is currently being pursued within DEAT and SANP, and has direct relevance to KNP's relationship with its neighbours.
- *Strengthen role of PaC*: much confusion exists between KNP and its neighbouring communities regarding the roles of institutions responsible for DCAs and their control. PaC is well positioned to improve communication between KNP and its neighbours, but requires greater capacity in doing so.

#### Outside KNP

- *Increase cooperation amongst institutions*: although high-level talks have taken place recently, more concerted effort and cooperation is required between KNP, TAs, DFED/EA, DVS, SANDF, SAPS, and community groups. Fostering communication and trust, demonstrating effort and a willingness to address the issue, and following through can have a positive effect on the attitudes and actions of people in conflict with wildlife (c.f. Madden 2004).
- *Decentralize authority to control DCAs*: this would help to alleviate bureaucratic delays in attending to incidents and increase the probability that DCAs are found and controlled. It can also offer opportunities for empowering local black hunters.
- *Coherent DCA policy*: this should be coupled with appropriate Norms and Standards for DCAs (currently being undertaken by DEAT).
- *Privatize fence maintenance*: by involving the private sector and/or local communities, this holds promise for creating local employment opportunities and, if accompanied with mechanisms for checks and balances, can improve maintenance efficiency.
- *Streamline DCA reporting*: this should also entail improved record-keeping, and systematic monitoring.
- *Capacity-building to handle DCA control*: includes greater cooperation between DFED/EA and KNP in attending to DCA reports.
- *Develop and implement a DCA compensation scheme*: (currently being undertaken by DEAT and SANP). This could realistically begin with disbursement of revenue gained by Limpopo Province through pro hunting of DCAs.

- *Research on deterrent measures*: depredation can be correlated with human population densities (Newmark *et al.* 1994), livestock husbandry practices (Ciucci and Boitani 1998; Linnell *et al.* 1999; Ogada *et al.* 2003), farm characteristics and livestock enclosure designs (Mech *et al.* 2000; Ogada *et al.* 2003; Jackson and Wangchuk 2004; Kolowski and Holekamp 2006), and crop availability and forage quality (Chiyo and Cochrane 2005). Further, Jacobs and Biggs (2002) showed that elephant density and elephant damage to marula was high in KNP immediately adjacent to the study area, which probably contributes to their motivation to leave the park and forage on wild tree species that are still abundant outside (Osborn 2002a). Research should be undertaken to assess deterrent measures for both carnivores and herbivores to reduce human-wildlife conflicts (e.g. buffer areas, chili peppers (cf. Osborn 2002b), and cattle enclosures).
- *Flexibility*: build mechanism into DCA control that is able to integrate changing land ownership patterns, especially due to eventual implementation of *Communal Land Rights Act* (2004) and outcomes of pending land claims.

#### 8.5.2. DCA Compensation Guidelines

Based on research findings, guidelines for developing a DCA compensation scheme in the study area are provided below. It should be remembered that compensation schemes are generally not a good long-term solution as it creates continuing financial burden and increases expectations (Crawshaw Jr. 2004; Graham *et al.* 2005). Therefore, parallel efforts such as those described in chapter 8.5.1. to minimize DCAs escaping and more effective and timely control of DCAs must be pursued.

1. DCA compensation scheme must be:
  - Environmentally responsible;
  - Economically sustainable within local context;
  - Socially responsible (building on local tradition and cultural values compatible with nature protection – see point 11 below); and
  - Implemented under a mutually agreeable and communally signed agreement that clearly sets forth specific responsibilities, contributions, and obligations of each partner.
2. As not all DCAs reside in the KNP, distinctions must be made regarding their origin, i.e.:
  - KNP;
  - Limpopo Province; or
  - Private game reserves.

3. Distinctions must be made between types of damage, their definition, and what compensation values, if any, should be assigned to each. These include:
  - Persons – death, injury, fear.
  - Livestock – type, death vs injury, disease transfer.
  - Crops – type, extent, maturity of crops.
  - Property – fences, kraals, buildings, etc.
  - Indirect damage through active guarding of crops and livestock – e.g. reduced education for school children, loss of labour, risk of increased exposure to malaria, concern that households could be robbed while they are absent.
4. Compensation must be close to, but not exceed market value. This should be regularly adjusted to reflect price fluctuations.
5. DCA damage should be assessed as soon as possible and an agreed-upon protocol should be designed in assessing damage. Ideally, qualified individuals would base authorizing compensation payment on this assessment.
6. Compensation should ideally reach the household level of affected DCA victim. This aspect obviously requires built-in accountability and monitoring to ensure that those crop or livestock owners who have suffered damage are the ones who receive the compensation.
7. Compensation should be paid out in a timely manner. Studies elsewhere have shown that farmers do not participate in, or report to, schemes that involve lengthy delays in payments (Mishra 1997; Choudhury 2004; Graham *et al.* 2005).
8. Compensation funds should be directly linked to the origin of the animal. This will build incentives to reduce DCAs from escaping. For example, KNP should be responsible for compensation for all animals escaping from the park, but not for e.g. hippo and crocodile originating from natural populations outside the park.
9. Compensation scheme should be flexible and adaptive, involving a feedback system that allows for regular evaluation and monitoring. Relevant parties should adjust scheme annually to reflect this feedback.



10. Communication at all levels is a priority. Livestock and crop owners must be informed to whom and how to report DCAs. This implies the need for a more streamlined reporting system than currently exists.

11. When domestic animals damage crops, rural Tsonga-Shangaan villagers utilize culturally mediated compensation schemes, which rely on 3rd party intervention, or ‘mediators’ through whom the livestock owner compensates the farmer (Figure 8.2).

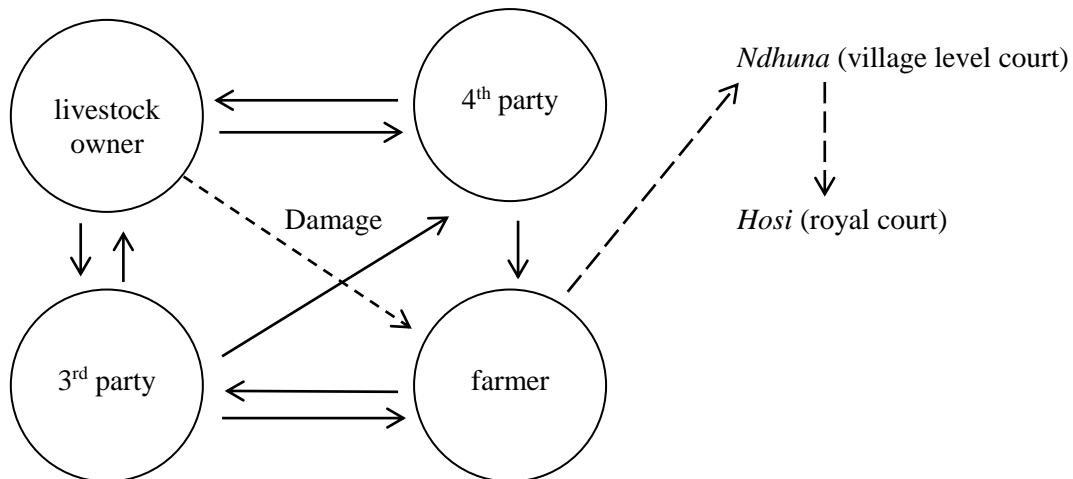


Figure 8.2: Schematic diagram of traditional Tsonga conflict resolution strategy regarding crop depredation due to livestock.

In cases of a neighbour’s livestock raiding a crop (evenly dashed arrow), a farmer can seek restitution by using a 3<sup>rd</sup> party to inform the suspected livestock owner. The 3<sup>rd</sup> party either informs the suspect directly or indirectly through a 4<sup>th</sup> party (solid line). The suspect then either i) admits guilt, and asks for mercy or provides compensation, or ii) denies the charge. This is communicated back to the victim via the 3<sup>rd</sup> or 4<sup>th</sup> party (as anger is usually high). The victim has the option of whether to accept the apology, or to deny the response. If unsatisfied, he/she has the right to take the matter to the *ndhuna* (village level) or even thereafter to the *hosi* at his royal court, where fines are generally heftier (long dashed lines).

This form of conflict resolution should be investigated and, where applicable, built into any proposed compensation scheme. As it builds on local tradition, and reflects current local understanding of how neighbours resolve conflicts, it will have greater potential in adoption. In the study area, one possible scenario utilizing these principles could be as follows:

1. Livestock or crop owner reports DCA incident to authorized representative within local TA;

2. The TA representative would inform DFED/EA and/or KNP depending on species and location of incident;
3. DFED/EA and/or KNP staff would investigate incident and, if confirmed, authorize compensation body to compensate livestock or crop owner;
4. Compensation body disburses payment directly to affected farmer or household.

## **8.6. Summary**

This chapter has discussed the research findings presented in Chapters 4 through 7 in the context of the research problem identified in chapter 1.2. The discussion centered on the four primary research questions and the contentious issue of damage-causing animals and their control in the study area. The following final chapter summarizes the research findings, provides implications for policy and practice, and suggests further avenues for research.

## Chapter 9: Conclusions

### 9.1. Introduction

The preceding discussion focused on how findings of each of the primary research questions have contributed to resolving the research problem. This chapter aims to summarize the research findings including their wider generalizability, show the original contribution of the research, and propose further avenues for investigation.

### 9.2. Resolution of the research problem and its implications

The problem addressed in this research is:

*How successfully is Kruger National Park meeting its biodiversity conservation and socio-economic objectives through its interaction with neighbouring communities along its western border?*

Fundamentally, this thesis argues that KNP's success in merging goals of biodiversity conservation and socio-economic development is largely shaped by, and dependent upon, local perceptions of institutions responsible for resource use and access. Specifically for KNP, stronger and more forthright commitment and dedicated investment towards its neighbouring communities is needed. Moreover, to effectively integrate these objectives, KNP and protected areas in similar contexts must:

- i) involve a thorough understanding by all stakeholders of the ongoing needs and aspirations of relevant parties, including local perceptions of nature and its conservation;
- ii) be supported by strong institutions, and enabling legislation and policies;
- iii) meaningfully address immediate concerns including employment, DCAs, and land claims;  
and
- iv) recognize and accept limitations to partnerships, including those concerning public safety and veterinary risks.

One of the core lessons learned from studies elsewhere is the potential danger in generalizing findings from one study and applying them in other contexts. Cases differ between countries, and even between PAs within countries. In light of this limitation, however, this research's findings do have relevance and resonance beyond the case it examines, which are noteworthy.

At an international level it has been recognized that natural resources cannot be managed effectively without the co-operation and participation of resource users to make laws and regulations work (Baland and Platteau 1996). This makes managing protected areas an even more complex and dynamic undertaking than the traditional 'fences and fines' approach. This

is further compounded in contexts where socio-economic and political forces are also experiencing dramatic transformation, including in South Africa. *The core of natural resource management in the communal areas, including the use and value of resources, often lies in deeply rooted and relatively stable concepts which are unlikely to change in the near future, and are often not aligned with Western conservation principles.* For any degree of long-term sustainability of natural resources, compatibility must be sought between Western concepts of nature conservation and local worldviews of the intended beneficiaries of any conservation and/or development projects. For PAs wishing to engage in extending management options to neighbouring communities, it is critical to both develop a comprehensive understanding of, and recognize, how these communities conceptualize mankind's relationship to the environment, rights to resource access and use, and resource management principles.

Another feature indicative of South Africa's emerging democracy includes the disintegration of Traditional Authorities in the rural areas, exacerbated by institutional non-uniformity, and minimal capacity of provincial government in enforcing environmental legislation. This has created *de facto* open access systems exemplified by escalating opportunities for 'gain seeking' and perverse incentives for illegal exploitation of resources, especially by external forces. If left unabated, these conditions will have increasingly adverse effects on local livelihoods and are likely to jeopardize potential CBC initiatives. *In situations where this is occurring, or is imminent, improving social cohesion and circumventing unsustainable resource practices through a more co-operative and adaptive approach to resource management by relevant institutions is needed.* This includes with those institutions that are *de facto* governing local resource use and access. This principle applies not only to KNP and its interaction with its neighbours, but also to protected areas and conservation agencies elsewhere which face similar challenges, especially in cases characterized by dramatic transformations in institutional responsibilities and increasing financial constraints.

Protected areas have a formidable task, both philosophically and practically, in attempting to integrate biodiversity conservation and socio-economic objectives. For the KNP, in the face of constraints associated with disease transfer, increased threats to biodiversity both within and outside its borders, and new national legislation which embraces park resource utilization by communities, it is attempting to conserve valuable biodiversity and build a better future for its rural neighbours. By redressing *past injustices* through facilitating land claims and extending benefits, especially employment and environmental education, it hopes to integrate more fully into the broader socio-ecological landscape and garner support for its activities

amongst its neighbours. This integrative approach has been hampered by low capacity within PaC and by competing philosophies whereby many KNP staff see these divergent objectives as inimical in the long-term, whereby potential compromises may be too great for the park, and its mission, to bear. Concurrently, KNP is perceived by many as contributing to *current injustices* by harboring dangerous animals which are causing extensive damage and threatening livelihoods of the very communities it seeks to empower. *Real and tangible problems caused by DCAs creates obstacles to improving livelihoods, inhibits the pursuit of economic diversification, and leaves many community members with a sense of hopelessness.* It is imperative that both KNP and DFED/EA strive more diligently in addressing these conflicts if they hope to improve local perceptions of the Park and the goals of conservation in general. For other parks, unless local stakeholders see honest efforts by park authorities in addressing immediate concerns, it is unlikely that trust can grow and co-operation be built.

The dual nature of parks, like that of KNP, can produce mixed perceptions. On one hand, *those who profit from park benefits that directly address community needs, especially in terms of employment opportunities, hold significantly more favorable attitudes towards the park, and extension of these benefits, in addition to locally relevant education, may have the greatest potential in shaping attitudes towards conservation.* On the other hand, this research shows that lack of interaction, poor communication, unfulfilled promises, costs and disadvantages of parks e.g. disease transfer and DCAs, and even misunderstanding over uniforms, can create confusion and mistrust in the rural areas with respect to the purposes of the park and its alleged commitment to improve relationships with its neighbours. These factors have important and far-reaching implications in terms of protected area legitimacy as perceived by local communities, and in negotiating future partnerships. If protected areas wish to move to a more participatory management style, and incorporate the needs and aspirations of local stakeholders, they must recognize the tangible limitations to partnerships, and be vigilant to deliver on their promises, and not promise that which they cannot deliver. It is better to make small promises to stakeholders which can be fulfilled, rather than attempt to drive the relationship through grandiose proposals which may not, or will not, materialize. Akin to most relationships, honesty is a key element that needs to be promoted between parks and people. Otherwise, if promises are broken, current relationships will be tarnished and collaboration derailed, with the prospect of future partnerships seriously jeopardized in the process.

KNP's primary vehicle for extending benefits and engagement with its neighbours in the research area during the last decade has been the Hlanganani Forum. Although realizing a handful of achievements and believed to be improving relationships between local stakeholders, unfortunately, it has been relatively ineffective in delivering on its objectives and experiences low awareness in the study area, even amongst the communities it purportedly represents. This is a result of external forces, its increasing division with TAs, and internal weaknesses including poor management, high meeting absenteeism, nepotism, and low language and financial capacity. These factors have called into question the legitimacy of the HF, especially in terms of its representation. Rather than a single, homogenous unit, the rural Tsonga villages bordering KNP, similar to those elsewhere, are extremely diverse in terms of community needs, interpretations of the landscape, utilizing resources, and attitudes towards the park. These social and spatial differences need to be acknowledged and appreciated in developing partnerships between protected areas and local communities, including the establishment and capacity-building of representative community fora. *These differences also emphasize the need for protected areas in similar contexts to engage all stakeholders in outreach attempts and that this engagement should be continuous, equitable and adaptive.* By not doing so, resentment may foster amongst some stakeholders, and effectively distance the park further from some of its neighbours. Albeit time-consuming and arduous, care and the necessary time must be taken to consider neighbouring communities and the areas they occupy not simply as one bio-physical and socio-economic unit, but rather desegregate them into more distinct components which reflect more localized characteristics.

The research re-emphasizes that PA – people interactions are complex, dynamic, and driven by economic as well as socio-political forces. Embedded within this framework is the need for conservation agencies to encourage the wise and sustainable use of natural resources, which in some cases, are becoming increasingly threatened. Heeding Salafsky and Wollenberg's (2000) conclusion based on their review of 39 project sites, no one strategy works everywhere, and no one strategy can work in isolation at any site. This research offers no single remedy or solution to address conflicts in the study area, but rather a suite of possibilities that should be explored. The question remains as to whether strategies developed by KNP to effectively involve local communities will gain normative weight so that local institutions - either TAs, the HF, or others - will be able to meet their biodiversity conservation and socio-economic objectives, or whether the situation will develop its own dynamic so that these institutions will further lose control to pressures originating from within and from external sources. This research has shed light on these complexities and it is hoped

that its findings will contribute to a more stable and sustainable future for both the KNP and its neighbours, and for those in similar contexts elsewhere.

### **9.3. Research contribution**

One aspect of this research's conclusions is its original contribution on theoretical, methodological and epistemological grounds. These include:

#### Theoretical

- an empirical study towards the conditions necessary for successful community-based conservation, especially in emerging democracies;
- a deeper understanding of the relationship between KNP and its neighbouring communities, including factors which influence the relationship;
- understanding varied results of previous studies concerning attitudes of KNP's neighbours towards the park (c.f. Els 1994; Mabunda 2004); and
- identifying limitations of applying Firey's Theory of Resource Use in cases where operational differences lie in defining frames of reference.

#### Methodological

- applying a mixed-method approach to understanding complex social phenomenon which is cross-disciplinary in nature;
- improving the reliability of Threat Reduction Assessments by building mechanism into technique whereby worsening and/or new threats to biodiversity can be incorporated into the assessment; and
- utilizing the Pebble Distribution Method to understand landscape and resource use and value among the Tsonga in South Africa.

#### Epistemological

- providing strong emphasis on community perceptions towards protected areas and their purpose(s);
- documenting the establishment of the Hlanganani Forum, tracing its history, and evaluating its effectiveness; and
- providing quantitative data and qualitative insight into the contentious issue of damage-causing animals along KNP's western boundary.

### **9.4. Avenues for further research**

This research served to deepen the understanding of relationships between protected areas and neighbouring communities. Some aspects of the research were exploratory, while others were

more explanatory. In both cases, the research findings unearthed further questions and issues that should be covered in subsequent research. These include:

- Similar investigations into the interaction of other community fora with KNP.
- Although God (*Xikwembu*) and ancestor's spirits (*swikwembu*) are still strongly believed to be components of nature, they are not as widespread as perhaps they were in the past. Research from a number of social science perspectives (e.g. sociology, history, anthropology, gender studies) should be undertaken to determine beliefs regarding nature, how prevalent they are, and what causal relationships exist which can explain their stability. Associated with this, investigation into individual beliefs and behaviour towards the protection of nature would be useful.
- Privileged access and use of KNP natural resources for park personnel, in some cases, has been shown to influence perceptions of the park. Investigation into the perceptions of both neighbouring communities and KNP employees on what constitutes illegal resource extraction from KNP would be a fruitful undertaking to determine how differential access to resources and the rules governing access are decided.
- The transformation process in South Africa was briefly touched on in this research. However, it would be useful to understand how this process is affecting personnel internally within KNP, and its implications on relationships with neighbours. Understanding the broader context of this process (both nationally and globally) will be key to a more nuanced understanding of the determinants that might influence the successful implementation of conservation policy.
- By considering a total of 38 villages, combined community needs were assessed in this research. However, further research, which would employ increased sample sizes, should be undertaken to determine community needs within each village of the study area.
- Recognizing that enforcement of species protection is minimal at best, knowledge of formal nature protection is poor in the study area, and local communities derive much of their livelihoods from protected wild flora and fauna, there is an urgent need to assess current patterns of harvesting protected species within the study area.
- Associated with resource use patterns, research is also needed to examine possible alternatives and/or substitutes for currently utilized resources, especially those which are being unsustainably harvested.
- DCA occurrences, perceptions of local communities towards these animals, and the institutions responsible for their control were examined in this research. However, much more needs to be understood in this regard, including:



- behavioural ecology of DCA species, including their distribution patterns and reasons for exiting KNP;
- quantitative studies on the pressure by DCAs to specific resources outside of KNP (e.g. quantities, spatial and temporal attributes); and
- effectiveness of deterrent techniques (e.g. fence designs, buffer zones, non-palatable crops).

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## Appendix A: Quantitative Methods: Statistical Tests Used

(see Maxwell 1983; Fielding and Gilbert 2000)

| Method  | Statistical tests                             | Justification   | Outputs show what?   |
|---|---|---|--|
| Household face-to-face questionnaire          | Univariate analysis – descriptive statistics  | To analyze data regarding each variable separately (e.g. age, gender, education, employment, income, average household size, community needs, amount of resources collected)  | Mean, variance, range, std. dev., frequencies, min/max   |
| Forum questionnaires                          | Principal Component Analysis                  | For reducing data to determine which combination of variables explain the greatest variation in the data.   | Produces principal components which can explain relationships between variables                |
|   | Bivariate analysis–chi-square and correlation | Testing association and/or independence: to discern if two variables are not independent ( $p < 0.05$ ). If so, Phi, Cramer’s V, and Pearson’s R was employed as measures of association.   | Correlations measure how variables or rank orders are related.                                 |
|   | Regression analysis                           | To determine whether e.g. benefits, DCA damage, socioeconomic and demographic variables can explain knowledge, attitudes or groups of attitudes   | Significant differences and relationships between variables compared with other variables      |
|   | One-way ANOVA test                            | To test whether differences exist between mean PDM scores of the various landscape types between villages and age/gender groups.  | Compares one independent variable with a dependent one   |
|   | Tukey HSD post hoc test                       | To identify which means differ from ANOVA results   | Identifies which means differ among groups of means.   |
|   | Dunnet T3 post hoc test                       | To compare pairwise differences between means of temporal variation of DCA species.   | Identifies which means differ among groups of means (does not assume equal variances).         |
|   | Skewness                                      | To determine skewness of household income   | Measures asymmetry of a distribution   |
| Focus Group: Pebble Distribution Method (PDM) | Local User’s Value Index (LUVI)               | Provides extra insights to issues that go beyond what might be achieved from intensive survey work alone. Used to determine ‘importance’ according to local views. ‘Preference’ and ‘importance’ can a) capture local priorities, b) avoids complex quantification, and c) avoids financial associations. | Value placed on species related to use relative to others (according to age, gender, village). |

## Appendix B: Qualitative Methods

(c.f. Cresswell 1994; Krueger 1994; Denzin and Lincoln 1998; Punch 1998; Bless and Higson-Smith 2000)

| Method  | Strengths   | Weaknesses  |
|---|---|---|
| <p><b>Non-participant observation</b><br/>Consists of the recording of events as observed by an outsider. The situation is not contrived for research purposes.</p>   | <ul style="list-style-type: none"> <li>• can obtain rich data in natural contexts, incl. cultural nuances</li> <li>• provides background context for more focus on activities, behaviors, and events</li> <li>• facilitates analysis, validity checks, and triangulation</li> </ul>   | <ul style="list-style-type: none"> <li>• if people know they are being observed, they may change their behavior</li> <li>• cannot observe attitudes/beliefs, private spheres of life, nor temporal changes</li> <li>• interpretation can be inaccurate if local culture is not known</li> </ul>   |
| <p><b>Unstructured and semi-structured interviews</b><br/>Consists of asking respondents to comment on broadly defined issues</p>   | <ul style="list-style-type: none"> <li>• can facilitate the elimination of superfluous questions</li> <li>• can allow for discovery of new issues not previously considered</li> <li>• very useful in exploratory research</li> <li>• can access what subject feels is important</li> </ul>   | <ul style="list-style-type: none"> <li>• quality of data strongly dependent on skills of interviewer (can be highly biased)</li> <li>• can be time-consuming and expensive</li> <li>• bias due to social desirability</li> </ul>  |
| <p><b>Structured interviews</b><br/>Involves direct personal contact with an informant who is asked to answer pre-established questions relating to the research problem</p>  | <ul style="list-style-type: none"> <li>• can obtain large amounts of expansive and contextual data quickly</li> <li>• allows for immediate follow-up questions and clarification</li> <li>• useful for discovering complex interconnections in social relationships</li> <li>• facilitates quantifiable analysis, validity checks, and triangulation</li> </ul>   | <ul style="list-style-type: none"> <li>• must involve personal interaction, thus, involves cooperation</li> <li>• questions and answers may be misunderstood</li> <li>• interviewees may not always be truthful</li> <li>• interviewer bias</li> <li>• cannot capture nuances of social reality</li> </ul>  |
| <p><b>Face-to-face questionnaire</b><br/>Qualitative sections involve Likert-type questions and open-ended questions.</p>   | <ul style="list-style-type: none"> <li>• they can be administered to respondents who are illiterate</li> <li>• a small amount of data from a large number of subjects can be obtained</li> <li>• appropriate for making inferences about a large group of people from a small sample</li> <li>• convenient, relatively easy to administer and manage</li> <li>• Likert scaling is easily accomplished, makes only a few assumptions that generally are plausible, and scaling success can be evaluated through standard techniques of item analysis, reliability analysis and factor analysis.</li> </ul> | <ul style="list-style-type: none"> <li>• must rely on total honesty and accuracy of respondents' response</li> <li>• little value for examining complex social relationships or intricate patterns of interaction</li> <li>• can be time-consuming &amp; expensive</li> <li>• presence of interviewer can affect answers (interviewer bias &amp; bias due to social desirability)</li> <li>• Likert scales are not easily reproducible</li> </ul>   |
| <p><b>Focus groups: TRA &amp; PDM</b><br/>Focus groups are semi-structured discussions with a group of people who share a common feature (e.g. women of reproductive age, shareholders in an irrigation system, users of a particular service). Depending on local conditions, a focus group can include as few as 6 and as many as 12 or more individuals.</p> | <ul style="list-style-type: none"> <li>• participants (especially vulnerable groups) may feel more free to talk when they are in a group of similar people;</li> <li>• group interaction enriches the quality and quantity of information provided.</li> <li>• different points of view between different groups in the community can be identified.</li> <li>• opportunities exist for people to discuss disagreements</li> </ul>  | <ul style="list-style-type: none"> <li>• experience in qualitative research procedures is needed to use this tool effectively;</li> <li>• the facilitator needs to be able to stimulate group interaction during the session, including ensuring that all members contribute;</li> <li>• the tool entails some interpretation of participants responses by the person completing the analysis;</li> <li>• people may be reluctant to share their opinions with an outsider and some responses may not be entirely accurate.</li> <li>• establishing trust in the facilitator and within the group at the beginning of the process is usually needed to collect valid and complete information.</li> <li>• information gathered can not be extrapolated to a larger group</li> </ul> |

## **Appendix C: Questionnaire for local communities (English + XiTsonga)**

**Questionnaire for local communities**

**Questionnaire No.:**

**Stand No:**

**GPS coords:**

**E**

**S**

**Interviewer(s)** \_\_\_\_\_ / \_\_\_\_\_

**Date** \_\_\_\_\_ **Time** \_\_\_\_\_

Hello, my name is \_\_\_\_\_. I am part of a team that is conducting research to learn about the impacts of various policies and programs undertaken by the Hlanganani Forum and Kruger National Park. The research team includes a professor who teaches at a university in Pretoria. We are particularly interested in your views about the policies and programs of this Forum and National Park. Since this is a survey of opinions, it is desired that you indicate your personal opinions regarding the following questions, regardless of whether you think other people might agree or disagree with you. All information is kept strictly confidential.

Your household was selected randomly. We would also like to make it clear to you that we are neither affiliated with the Park nor any other government institutions. Our sole interest is scientific and educational. The questionnaire will take less than an hour. We would very much appreciate your participation in this study. THANK YOU...

**I. Basic Information**

(Do not ask the following three items, just fill out these data once the person agrees to participate in this study.

Only choose adults ≥18 years old)

1. Traditional Authority: \_\_\_\_\_ 2. Village: \_\_\_\_\_  
3. Gender: Female / Male (circle)

**First of all, we need some background information about yourself and your household. This information will remain strictly confidential.**

4. What is your age?

5. What is the total number of people currently in your household? \_\_\_\_  
Note: A household as consisting of a person or a group of persons who:  
- eat together and share resources; and normally resides at least four nights a week at the specific visiting point;  
- a live-in domestic worker is considered to belong to the household.

Ages of male members of household \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_  
Ages of female members of household \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_

6. How many years has your family/household lived in this village?

7. Who is your *hosi* (chief)?

8. What is the highest level of education you have completed?  
 None  some primary  complete primary  secondary  grade 12  higher

9. What is your employment status?  
 Still at school  Working for an employer  Self-employed  Unemployed  pensioner

10. What is the approximate total monthly income for your household?  
R1-500 R501-1000 R1001-5000 R5001-10000 R10000+

11. What is your main occupation?

12. How would you rate your household's current economic condition compared to 2 years ago?

better       worse       don't know

Why do you say so?

13. How many children in your household attend school?

14. How many cattle does your household own?

15. How many pigs does your household own?

16. How many sheep does your household own?

17. How many donkeys does your household own?

18. How many horses does your household own?

19. How many chickens does your household own?

20. How many goats does your household own?

21. How many cats does your household own?

22. How many dogs does your household own?

22.1. How many pigeons does your household own?

23. If you own livestock, has the number of your livestock increased or decreased in the past two years?

Increased       Same       Decreased

Why has it increased / decreased?

24. Do you have a garden (land under cultivation)?     Yes       No (skip to #27)

25. If yes, where is this garden?     in your stand       near your stand       far from your stand

26. Do you plant crops in your garden every year?     yes       no

If no, why don't you plant crops every year?

**II. Needs of local communities: the following questions concern priority of your community needs.**

To what extent do you think the following items are important for your community? Please rank those items listed as 'Important' (1 for most important; 2 for 2<sup>nd</sup> most important, etc.)

|                               | Important                | Not important            | Don't know               | Rank 'Important' |
|-------------------------------|--------------------------|--------------------------|--------------------------|------------------|
| 27. Health facilities         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |
| 27.1. Electrical facilities   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |
| 27.2. Housing                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |
| 28. School facilities         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |
| 29. Drinking water facilities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |
| 30. Road improvement          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | —                |



|                                    |                          |                          |                          |   |
|------------------------------------|--------------------------|--------------------------|--------------------------|---|
| 31. Protection of forest           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 32. Protection of wild animals     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 33. Training opportunities         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 34. Protection of crops/livestock  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 35. Employment                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 36. Tourism development            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 37. Preserving traditional culture | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |
| 38. Other (specify)                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | — |

39. Is the land in this area good?  yes  no  don't know  
Why do you say so?

40. Is there enough land for the people here?  yes  no  don't know  
Why do you say so?

41. Do you and your family have enough land?  yes  no  don't know  
If no, why do you not have enough land?

42. Where does this household get its water? (check all that apply)  
 dwelling (skip to #45)  borehole  water vendor  
 inside yard (skip to #45)  spring  other (specify)  
 community stand  dam / pool  
 community stand over 200m  river / stream

43. Who primarily collects the water (men/women/children) and how many litres do you/they fetch in a week?  
44. How many hours per week do you/they spend fetching water?

45. Does your household collect firewood from the land in this area?  yes  no  
46. If yes, who primarily collects it (men/women/children), and how much do you/they take per week? (bundles)  
47. How many hours per week do you/they spend collecting firewood?

48. Does your household collect thatching grass from the land in this area?  yes  no  
49. If yes, who primarily collects it (men/women/children), and how much do you/they take per year? (bundles)

50. Does your household collect timber poles from the land in this area?  yes  no  
51. If yes, who primarily collects it (men/women/children), and how much do you/they take per year? (no. of poles)

52. Does your household collect wild fruits from the land in this area?  yes  no  
53. If yes, what fruits, who primarily collects it (men/women/children), and how much do you/they take per month? (kilograms)

54. Does your household collect medicinal plants from the land in this area?  yes  no  
 55. If yes, what plants, who primarily collects it (men/women/children), and how much do you/they take per month? (kilograms)

56. Does your household collect wild plants or animals for cultural/religious purposes from the land in this area?  yes  no  
 57. If yes, what plants/animals, who primarily collects it (men/women/children), and how much do you/they collect per month?

58. Does your household collect meat from wild birds in this area?  yes  no  
 59. If yes, who primarily collects it (men/women/children), and how much do you/they collect per month? (no. of birds)  
 60. What wild birds do you collect/hunt?

61. Does your household collect meat from wild animals in this area?  yes  no  
 62. If yes, who primarily collects it (men/women/children), and how much do you/they collect per month? (kilograms)  
 63. What wild animals do you collect/hunt?

**III. Interaction with Kruger National Park**

66. Have you ever been inside the Kruger National Park?  Yes  No (skip to #68)

67. If yes, what did you do when you were inside the Kruger National Park?  
 collected resources (give name of resource – fuelwood, mopane worms, etc.)  
 viewed game  
 looked for a job  
 worked  
 visited ancestor’s grave  
 other (explain)

If you or a member of your household collects resources within the Kruger National Park, who primarily collects these, and how much do you/they take per month? (Check all that apply.) Read all the following categories and place an X in the box beside each of the appropriate answer, then circle whom (men/women/children), and approximate amounts.

- |   |       |           |       |
|---|-------|-----------|-------|
| 68. <input type="checkbox"/> Firewood         | M W C | ‘bundles’ | _____ |
| 69. <input type="checkbox"/> Thatching Grass  | M W C | ‘bundles’ | _____ |
| 70. <input type="checkbox"/> Timber           | M W C | ‘poles’   | _____ |
| 71. <input type="checkbox"/> Wild fruits      | M W C | kilograms | _____ |
| 72. <input type="checkbox"/> Medicinal plants | M W C | kilograms | _____ |

|   |       |                |       |
|---|-------|----------------|-------|
| 73. <input type="checkbox"/> Meat                                     | M W C | kilograms      | _____ |
| 74. <input type="checkbox"/> Products for cultural/religious purposes | M W C | (            ) | _____ |
| 75. <input type="checkbox"/> Other (specify)                          | M W C | (            ) | _____ |

76. Do you think your present need of resources would be fulfilled if the Kruger National Park did not exist?  
 yes  no  
Why or why not?

**Benefits from Tourism**

**The following questions seek your response on whether or not you receive any benefits from tourism.**

77. Have you or any member of your household benefited from tourism?             Yes             No  
If yes, how did you benefit?

78. Do you approve or disapprove of tourists coming to your area?  
 Approve       Disapprove       Don't know  
Why do you say so?

79. How do you think tourism affects local culture and traditions?  
 Positively             Negatively             Don't know  
Why do you say so?

**Benefits from KNP**

**The following questions seek your response on whether or not you receive any benefits from the KNP.**

80. Have you or anyone in your household ever been employed by the Kruger National Park?    Yes       No

81. Have you or anyone in your household ever benefited from the Kruger National Park?  
 Yes     No     don't know  
If so, how did you benefit?

82. To what extent do you think the KNP will eventually help you economically?  
 A great deal             Some             Not at all  
Why do you say so?

83. To what extent do you think the KNP will eventually help your community economically?  
 A great deal       Some       Not at all  
Why do you say so?

Please indicate whether you agree, disagree, or don't know about the following statements.  
84. Some groups in my community obtain more natural resource products from the KNP than other groups.  
 Agree       Disagree       Don't know  
Why do you say so?

85. Some groups in my community obtain more economic benefits from the KNP than other groups.  
 Agree       Disagree       Don't know  
Why do you say so?

**KNP: knowledge**

**The following questions concern the possible impacts of the various programs the KNP may have in your community.**

86. Do you know about the activities of the KNP?       yes       no  
87. If yes, who told you about that?  
 Interpersonal       Park staff       Radio       Other sources (specify)

88. Has the actions of the KNP resulted in any improvement in your community?  yes       no       don't know  
Explain.

89. Does the KNP offer any community development programs?  Yes       No       don't know  
If yes, what do you think of them and why?

**Attitudes toward KNP Staff**

**The following questions seek your response as to how you view KNP staff.**

90. What does KNP staff do in your village?

91. If you interact with KNP staff, do you like or dislike them?  Like       Dislike       Don't know  
Why do you say so?

92. How does KNP staff treat the local people in your village?  
 Good       Bad       Don't know  
Why do you say so?

93. Are some KNP staff friendlier than others?  Yes  No, all are same  Don't know  
Why do you say so?

94. In general, do you think the KNP staff care about your village's interests?  Yes  No  Don't know  
Why do you say so?

**Attitudes toward overall KNP policy**

**In the following questions we are interested in knowing how you view the KNP policy.**

101. Do you approve or disapprove of the overall wildlife protection policy implemented by KNP?  
 Approve  Disapprove  Don't know  
Why do you say so?

102. Do you approve or disapprove of the overall forest protection policy implemented by KNP?  
 Approve  Disapprove  Don't know  
Why do you say so?

103. Do you approve or disapprove of the overall social ecology policy implemented by the KNP?  
 Approve  Disapprove  Don't know  
Why do you say so?

**General opinion about the KNP**

**In the following questions we are interested in knowing your overall attitudes toward the KNP.**

104. In your opinion, what was the main purpose of establishing the KNP?

105. Has the establishment of the KNP affected your traditional life and practices?  Yes  No  Don't know  
Why do say so?

106. Do you think that forests and wild animals would still exist even if the KNP had not been established?  
 Yes  No  Don't know  
Why do you say so?

107. Are you satisfied or dissatisfied that your village is located near the KNP?  Satisfied  Dissatisfied  
 Don't know  
Why do you say so?

108. Do you agree or disagree that the KNP exists for the betterment of your community?  Agree  Disagree  Don't know  
Why do you say so?

109. Overall, do you like or dislike the KNP?  Like it  Dislike it  Don't know  
Why do you say so?

110. What are the main complaints or suggestions, if any, you have about way the KNP manages the people along its borders?

111. Are you getting the help from the KNP which you think they should be giving?  Yes  No  
If no, how do you think the KNP should help you?

#### **IV. Hlanganani Forum**

**These following questions concern your knowledge of, and involvement with, the Hlanganani Forum.**

112. Have you heard about the Hlanganani Forum?  Yes  No (skip to #133)

112.1 Do you know of any group/forum/committee that represents villages in this area to the KNP?  yes  no

112.2 If yes, what is its name?

113. If you know of the Hlanganani Forum, how did you hear about it?  
 Interpersonal  Park staff  Radio  Other sources (specify)

114. Is your village represented on the Hlanganani Forum?  Yes  No  Don't know

115. Are you or any of your household directly involved with the Hlanganani Forum?  No  Yes (specify how)

116. What is the main purpose of the Hlanganani Forum?

Why do you say so?

117. How do/can you bring your concerns to the Hlanganani Forum?

118. How does the Hlanganani Forum inform you of its activities?

119. How often does the Hlanganani Forum inform you of its activities?

at least once a week

at least once a month

at least once every 3 months

at least twice a year

at least once a year

never

120. If the Hlanganani Forum stopped tomorrow, what would happen?

121. Do you think that the living standard of your village(s) has improved because of Hlanganani Forum activities?

Yes  No  Don't know

Why do you say so?

122. How well do you think the Hlanganani Forum represents your community's interests?

much  not at all  don't know

Why do you say so?

123. If the Forum generated funds, would you be willing to begin a small enterprise using those funds on a loan basis?

Not interested

Interested

Don't know

Why do you say so?

124. To what extent are you satisfied with the community development programs delivered by the KNP through the Forum?

Satisfied

Dissatisfied

Don't know

Why do you say so?

125. Do you think the Hlanganani Forum does good conservation work?  Yes  No  Don't know

Why do you say so?

126. Do you think the Hlanganani Forum helps in controlling problem wild animals?  Yes  No  Don't know

Why do you say so?

127. Do you think the Hlanganani Forum helps community members get compensation for crop and livestock losses from wild animals?

Yes  No

Don't know

Why do you say so?

128. Do you think the Hlanganani Forum does good environmental education work?  Yes  No  Don't know

Why do you say so?

129. Do you think that the Hlanganani Forum is improving relationships between the Kruger National Park, the Limpopo Province Environmental Affairs and your community?  
 Yes       No       Don't know  
Why do you say so?

130. In your opinion, does the Hlanganani Forum function well?  Yes       No       Don't know  
Why do you say so?

131. Do you think the activities of the Hlanganani Forum should be changed?  no       yes       don't know  
Why do you say so?

132. If you think the activities of the Hlanganani Forum should be changed, how should it be changed?

#### **V. Conflicts with wild animals**

**The following questions concern problems you may have by depredation by wildlife.**

133. In the past 2 years, has your household ever had problems with wild animals?  Yes       No (skip to #136)

134. If yes, what are they? (check all that apply)  
 eating/destroying crops       chasing/killing livestock       chasing/hurting people  
 damaging buildings/fences       other (specify)

134.1. Where do these animals come from?

How do you know they come from there?

135. What animals are most responsible for these problems and why? Please number from one (most damaging) to five (5<sup>th</sup> most damaging).

136. If crops or livestock are destroyed, or people are attacked by wild animals, what should someone do?

137. What usually happens when someone follows this route?

138. In your opinion, have problems with wild animals in your village increased or decreased in recent years?  
 Increased       has remained same       Decreased       don't know  
Why do you say so?



139. In your observation, do you think the overall number of problem wild animals have increased or decreased in recent years?

Increased                       has remained same                       Decreased                       don't know  
Why do you say so?

140. Are there any particular wild animals whose populations you think have increased in recent years?

No                       Don't know                       Yes (please list those animals)

141. Are there any particular wild animals whose populations you think have decreased in recent years?

No                       Don't know                       Yes (please list those animals)

142. In your opinion, who is primarily responsible for wildlife in your area?

KNP                       Provincial Government                       Traditional Authority                       Hlanganani Forum                       Other (specify)

143. In your opinion, who should be responsible for wildlife in your area?

KNP                       Provincial Government                       Traditional Authority                       Hlanganani Forum                       Other (specify)  
Why do you say so?

#### **VI. Opinion of Local Institutions**

**The following questions concern your opinion of local institutions that are involved in land use issues.**

**Remember that all these results will be kept strictly confidential.**

144. What is the function of your Traditional Authority with respect to land use issues?

145. Does your Traditional Authority do its job well with respect to land use issues?  Yes                       No                       Don't know

Why do you say so?

146. What is the function of your municipal government with respect to land use issues?

147. Does your municipal government do its job well with respect to land use issues?  Yes                       No                       Don't know

Why do you say so?

**VII. Environmental Attitudes, Beliefs, and Values**

**The following questions concern your attitudes, beliefs, and values toward natural resources. There are no right or wrong answers.**

151. Do you know what the term 'endangered' means?  Yes  No  
152. If yes, name some animals that are considered 'endangered' in South Africa and indicate why they are considered endangered.

159. What are the parts that make nature? (check all that apply)

|  |  |
|--|--|
| <input type="checkbox"/> land / soil                         | <input type="checkbox"/> livestock                             |
| <input type="checkbox"/> wild trees/vegetation               | <input type="checkbox"/> crops                                 |
| <input type="checkbox"/> air                                 | <input type="checkbox"/> buildings made from wood, mud, thatch |
| <input type="checkbox"/> water from lakes, rivers and swamps | <input type="checkbox"/> buildings made from brick             |
| <input type="checkbox"/> weather (rain, sun, wind)           | <input type="checkbox"/> God                                   |
| <input type="checkbox"/> people                              | <input type="checkbox"/> ancestor's spirits                    |
| <input type="checkbox"/> wild animals                        | <input type="checkbox"/> other (specify)                       |

160. Do you need nature?  yes  no  don't know  
Why do say so?

161. Do you think you need to protect nature?  yes  no  don't know  
Why do say so?

162. If you think you need to protect nature, what do you do to protect nature?

163. Will nature always provide enough resources (water, soil, wood, etc.) for the people in this community?  
 yes  no  don't know  
Why do you say so?

164. Does the number of people living in your community affect the quality of nature?  yes  no  don't know  
Why do you say so?

165. What are the most important natural resource and land problems in your community?

166. Are there natural resources you need but don't have access to?  yes  no  
Explain.

**THANK YOU AGAIN!!**

**Nhlangelo wa swivutiso swa vaaki va miganga leyi yi nga emindzilekanini ya KNP**

**Nomboro ya Phepha ra swivutiso:**

**Nomboro ya xitandi:**

**GPS coords:**

**E**

**S**

**Mu(va)vutisi:** \_\_\_\_\_ / \_\_\_\_\_

**Siku:** \_\_\_\_\_ **Nkarhi** \_\_\_\_\_

Xewani, vito ra mina i \_\_\_\_\_. Ndzi un'wana wa xipano lexi xi endlaka ndzavisiso wo twisisa nkucetelo lowu maendlele ni minongonoko yo hambana-hambana leyi yi nga endliwa hi Foramu ya Hlanganani na Kruger National Park (KNP) swi nga va na wona. Eka xipano lexi xa ndzavisiso ku na purofesa loyi a dyondzisaka eYunivhesiti ya Pitori. Hi tsakela ku twa vonele ra n'wina mayelana na maendlele ni minongonoko ya Foramu na National Park. Tani hileswi laha hi nga ku hlengeleteni ka mavonele yo hambana-hambana ya vanhu, i swa nkoka leswaku mi boxa vonele ra n'wina n'wexe, mi nga landzeleli mavonele ya van'wana, loko mi hlamula swivutiso leswi landzelaka. Vulani ku titwa ka n'wina ehandle ko ehleketa leswaku van'wana va ta pfumelelana ni miehleketo ya n'wina kumbe va nga ka va nga pfumelelani na yona. Vuxokoxoko hinkwabyo lebyi mi nga ta hi nyika byona byi ta va bya xihundla swinene.

Ndyangu wa ka n'wina wu lo hlawuriwa hi nkateko ku nga ri hi xikongomelo kumbe ku va wu ri na swo karhi. Hi tsakela ni ku mi boxela leswaku a hi tirhisani helo ni Park kumbe ni xiyenge xo karhi xa mfumo. Hina hi tsakisiwa ntsena hi ku endla ndzavisiso wa xisayense ni dyondzo. Nhlangelo lowu wa swivutiso wu nga ka wu nga tluli awara ku va mi swi hlamula. Hi ta amukela ngopfu ku hlamula ka n'wina swivutiso leswi mi nga ku hi pfuneteni ka ku dyondza ka hina. HA MI KHENSA ...

**I. Vuxokoxoko bya Masungulo**

(U nga vutisi leswinharhu swo sungula swi nga laha hansi, tsala vuxokoxoko lebyi lavekaka loko munhu a pfumerile ku vutisiwa eka ndzavisiso lowu. Hlawula ntsena lavakulu  $\geq 18$  wa malembe hi vukhale)

1. Mfumo Xivongo: \_\_\_\_\_ 2. Muganga: \_\_\_\_\_  
3. Rimbewu: Waxisati / Waxinuna (bana xirhendzevutani laha ku fanelaka)

**Xo sungula, hi lava vuxokoxoko bya n'wina ni vandyangu wa n'wina. Vuxokoxoko lebyi bvi ta tshama bvi ri xihundla swinene.**

4. U na malembe mangani?

5. I vanhu vangani hinkwavo lava va tshamaka endyangwini wa n'wina sweswi? \_\_\_\_  
Xiya: Ndyangu wu vumbiwa hi munhu kumbe ntlawa wa vanhu lava va:  
- dyaka swin'we ni ku tirhisa leswi va nga na swona swin'we; naswona va tshama swin'we ku sukela ka masiku ya mune evhikini endhawini leyi va nga endzela ka yona;  
- mutirhi wa le kaya loyi a tirhaka a tshama kwalaho kaya u tekiwa a ri wa kwala ndyangwini.  
Vukhale hi malembe ya swirho swa ndyangu swa xinuna \_\_\_\_\_  
Vukhale hi malembe ya swirho swa ndyangu swa xisati \_\_\_\_\_

6. Xana ku na malembe mangani muti/ndyangu wa ka n'wina wu tshama emugangeni lowu?

7. Xana hosi ya n'wina i mani?

8. Xana u fikelerile ka xiyimo xihlala xa le henhla xa dyondzo lexi u vuyeka u xi heta ke?  
 A ndzi ngenanga xikolo       Ndzi tshikile kun'wana epurayimari       Ndzi hetile purayimari  
 [secondari]       [giredi 12]       ku tlula

9. Xana xiyimo xa wena hi tlhelo ra ntirho hi xihlala?  
 Ndza ha ri xikolweni     Ndzi tirhela muthori     Ndzo titirha mina     Ndzi pfumala ntirho     Ndzi hola mudende

10. Xana i mali muni hinkwayo loko yi hlanganile leyi vandyangu wa ka n'wina va yi kumaka hi nhweti ?  
R1-500                      R501-1000                      R1001-5000                      R5001-10000                      R10000+

11. Xana ntirho wa n'wina wa xidzi hi wihi?

12. Xana xiyimo xa timali xa sweswi endyangwini wa ka n'wina xi njhani loko hi xi pimanisa ni xa malembe mambirhi lawa ya nga hundza?  
 Xa antswa sweswi                       xi bihile sweswi                       A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

13. Xana i vangani vana lava va ngenaka xikolo endyangwini wa ka n'wina?

14. Xana ndyangu wa ka n'wina wu na tihomu tingani?

15. Xana ndyangu wa ka n'wina wu na tinguluve tingani?

16. Xana ndyangu wa ka n'wina wu na tinyimpfu tingani?

17. Xana ndyangu wa ka n'wina wu na timbhongolo tingani?

18. Xana ndyangu wa ka n'wina wu na tihanci tingani?

19. Xana ndyangu wa ka n'wina wu na tihuku tingani?

20. Xana ndyangu wa ka n'wina wu na timbuti tingani?

21. Xana ndyangu wa ka n'wina wu na swimanga swingani?

22. Xana ndyangu wa ka n'wina wu na timbyana tingani?

22.1. Xana ndyangu wa ka n'wina wu na masekwa mangani?

23. Loko mi ri na swifuwo, xana nhlayo ya swona yi engetelekile kumbe yi hungutekile eka malembe mambirhi lawa ya nga hundza ke?  
 Yi engetelekile                       A yi hundzukanga                       Yi hungutekile  
Hikwalaho ka yini yi engetelekile/hungutekile?

24. Xana mi na xirhapa (ndhawu leyi mi yi rimaka) ekaya ka n'wina?     Ina                       E-e (Tlulela ka xivutiso xa 27)

25. Loko nhlamulo ya n'wina ku ri ina, xi kwihi xirhapa xa kona?  
 exitandini xa n'wina                       ekusuhi ni xitandi xa n'wina                       ekule ni xitandi xa n'wina

26. Xana mi byala swirin'wa lembe rin'wana na rin'wana exirhapani xa n'wina?     Ina                       E-e  
Loko nhlamulo ku ri e-e, hikwalaho ka yini u nga byali swirin'wa lembe rin'wana na rin'wana?

## II. Swilaveko swa vaaki va miganga

Swivutiso leswi swi landzelaka swi mayelana na swilaveko swa vaaki va muganga hi ku landzelelana ka swona ku ya hi ku laveka ngopfu ka swona.

Xana hi ku ehleketa ka wena, swilo leswi landzelaka i swa nkoka ku fikela kwihi eka muganga wa ka n'wina? Longoloxa swilo leswi hi ku landza 'nkoka' wa swona (Xa nkoka ngopfu ku tlula hinkwaswo xi nyike nomboro ya 1; lexi xi landzelaka xona hi nkoka ni ntikelo xi nyike nomboro ya 2, swi fambisa sweswo.)

|                                       | I xa nkoka               | Longoloxa ku ya hi 'nkoka' | A hi xa nkoka            | A ndzi tivi              |
|---------------------------------------|--------------------------|----------------------------|--------------------------|--------------------------|
| 27. Switirhisiwa swa rihanyo          | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 27.1. Switirhisiwa swa gezi           | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 27.2. Switirhisiwa swa le ndlwini     | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. Switirhisiwa swa xikolo           | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. Switirhisiwa swo nwa mati         | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 30. Ku antswisa mapatu                | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 31. Ku sirhelela swihlahla            | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 32. Ku sirhelela swihari              | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 33. Ku kuma nkarhi wo leteriwa        | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 34. Ku sirhelela swirin'wa ni swifuwo | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 35. Ku kuma ntirho                    | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 36. Ku kula ka timhaka ta vupfumba    | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 37. Ku hlayisa mfuwo wa ndzhavuko     | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 38. Swin'wana (Boxa ku i ntswini)     | <input type="checkbox"/> | —                          | <input type="checkbox"/> | <input type="checkbox"/> |

39. Xana misava ya ndhawu leyi yi kahle ke?  Ina  e-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

40. Xana ku na misava yo ringana vanhu laha ke?  Ina  e-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

41. Xana wena ni vandyangu wa wena mi na misava yo ringana ke?  Ina  e-e  A ndzi tivi  
Loko nhlamulo ku ri e-e, hikwalaho ka yini mi nga ri na misava yo ringana ke?

42. Xana ndyangu lowu wu ma kuma kwihi mati ke? (Fungha leswi faneleke)  
 eka muako (Tlula u ya ka #45)  pitsi/ka borho  ka muxavisi wa mati  
 endzeni ka jarati (Tlula u ya ka #45)  exihlobyeni  Kun'wana (boxa vito ra kona)  
 xitandi xa vaaki va muganga  edan'wini/ xidan'wana  
 xitandi xa vaaki va muganga lexi xi tlulaka 200 wa timitara  nambu/ xinambyana

43. I mani loyi a (te)kaka mati ya kona (vaxinuna/vaxisati/vana) naswona i tilitara tingani leti va ti (te)kaka hi vhiki?

44. Xana mi/va heta tiawara tingani hi vhiki mi/va lava kumbe ku ka mati ke?

45. Xana vandyangu wa ka n'wina va rhotela tihunyi emisaveni yoleyo endhawini ya ka n'wina?  Ina  E-e

46. Loko ku ri ina, xana i vamani lava rhotelaka (vavanuna/vavasati/vana), naswona va rhotela matshwinga to tala ku fika kwihi hi vhiki? (bundles)

47. Xana va heta tiawara to tala ku fika kwihi va ri ku rhoteleni hi vhiki ke?

48. Xana vandyangu wa ka n'wina va hada byanyi byo fulela tindlu emisaveni ya ndhawu yoleyo ke?  Ina  E-e  
 49. Loko ku ri ina, xana i vamani lava hadaka byanyi bya kona (vavanuna/vavasati/vana), naswona va hada swihula swo tala ku fika kwihi hi lembe ke? (bundles)

50. Xana vandyangu wa ka n'wina va rholela/tsema timhandzi emisaveni ya ndhawu leyi ke?  Ina  E-e  
 51. Loko ku ri ina, xana i mani a rholelaka/tsemaka? (vavanuna/vavasati/vana), xana va rholela/tsema nhlayo yo fika kwihi hi lembe? (nhlayo ya timhandzi)

52. Xana vandyangu wa ka n'wina va kha mihandzu ya nhova emisaveni ya ndhawu leyi ke?  Ina  E-e  
 53. Loko ku ri ina, i mihandzu muni, i vamani lava va yi khaka (vavanuna/vavasati/vana), naswona va kha ya tikhilogiramu tingani hi nhweti ke? (kilograms)

54. Xana vandyangu wa ka n'wina va cela murhi emisaveni ya ndhawu leyi ke?  Ina  E-e  
 55. Loko ku ri ina, xana va cela swimila swihi tani hi murhi ke, naswona i vamani lava va celaka(vavanuna/vavasati/vana), naswona va cela swa tikhilogiramu tingani hi nhweti ke? (kilograms)

56. Xana vandyangu wa ka n'wina va hlengeleta swimila kumbe swihari hi swikongomelo swa ndzhavuko kumbe vukhongereri emisaveni ya ndhawu leyi ke?  Ina  E-e  
 57. Loko ku ri ina, xana va teka swimila/swihari swa muxaka, xana i vamani lava va swi hlengeletaka (vavanuna/vavasati/vana), naswona va hlengeleta swa nhlayo yo fika kwihi hi nhweti ke?

58. Xana vandyangu wa ka n'wina va rhwala nyama ya swinyenyana swa nhova endhawini leyi ke?  Ina  E-e  
 59. Loko ku ri ina, i vamani lava va swi rhwalaka (vavanuna/vavasati/vana), naswona va rhwala swinyenyana swo tala ku fika kwihi hi nhweti ke?

60. Xana hi swihi swinyenyana swa nhova leswi mi swi rhwalaka/hlotaka?

61. Xana vandyangu wa ka n'wina va rhwala nyama ya swihari swa nhova endhawini leyi ke?  Ina  E-e  
 62. Loko ku ri ina, i vamani lava va swi rhwalaka (vavanuna/vavasati/vana), naswona va rhwala tikhilogiramu tingani hi nhweti ke? (kilograms)

63. Xana hi swihi swihari swa nhova leswi mi swi rhwalaka/hlotaka?

### **III. Ntirhisano na Kruger National Park**

66. Xana u tshama u nghena eKruger National Park?  Ina  E-e (tlula u ya ka #68)

67. Loko ku ri ina, u endlile yini loko u ri endzeni ka Kruger National Park?  
 ndzi tekile rifuwo (vula vito ra rifuwo ra kona – tihunyifuelwood, matomani, ni swin'wana.)  
 ndzi vonile swihari ni swinyenyana  
 ndzi lavile ntirho  
 ndzi tirhile  
 ndzi endzerile sirha ra kokwana  
 swin'wana (hlamusela)

Loko wena kumbe xirho xa ndyangu wa wena xi teka rifuwo eKruger National Park, i vamani lava va tekaka rifuwo leri, naswona va teka mali muni hi nhweti? (Xiya hinkwaswo leswi fanelaka.) Hlaya swiyenge hinkwaswo leswi landzelaka ivi u veka X ebokisini leri nga tlhelo ka nhlamulo yin'wana na yin'wana leyi yi faneleke, ivi u ba xirhendzevutani eka muxaka wa vanhu va kona (vavanuna/vavasati/vana), ni ntsengo wa mali lowu wu faneleke.

|   |          |          |      |               |       |
|---|----------|----------|------|---------------|-------|
| 68. <input type="checkbox"/> Tihunyi                        | Vavanuna | Vavasati | Vana | 'matshwinga'  | _____ |
| 69. <input type="checkbox"/> Byanyi byo fulela              | Vavanuna | Vavasati | Vana | 'swihula'     | _____ |
| 70. <input type="checkbox"/> Timhandzi                      | Vavanuna | Vavasati | Vana | 'timhandzi'   | _____ |
| 71. <input type="checkbox"/> Mihandzu ya nhova              | Vavanuna | Vavasati | Vana | tikhilogiremu | _____ |
| 72. <input type="checkbox"/> Swimila swa murhi wo tshungula | Vavanuna | Vavasati | Vana | tikhilogiremu | _____ |
| 73. <input type="checkbox"/> Nyama                          | Vavanuna | Vavasati | Vana | tikhilogiremu | _____ |
| 74. <input type="checkbox"/> Swilo swa ndzhavuko/vukhongeri | Vavanuna | Vavasati | Vana | ( )           | _____ |
| 75. <input type="checkbox"/> Swin'wana (Boxa vito ra swona) | Vavanuna | Vavasati | Vana | ( )           | _____ |

76. Xana u ehleketa leswaku swilaveko swa wena swa rifuwo swa nkarhi wa sweswi a swi ta va swi hetisekile loko a ku nga ri na Kruger National Park ke?  Ina  E-e  
Hikwalaho ka yini swi ri tano kumbe swi nga ri tano?

**Ku vuyeriwa hi tlhelo ra vupfumba**

**Swivutiso leswi landzelaka swi kongomisile eka ku kuma nhlamulo ya wena eka leswaku xana wa vuyeriwa kumbe a wu vuyeriwi loko swi ta eka timhaka ta vupfumba ke?**

77. Xana wena kumbe xirho xin'wana xa ndyangu wa ka n'wina xi vuyeriwile etimhakeni ta vupfumba ke?  Ina  E-e  
Loko ku ri ina, xana u vuyeriwile hi ndlela yihi?

78. Xana wa seketela kumbe a wu seketeli ku va vaendzi kumbe vupfumba va endzela ndhawu ya ka n'wina ke?  
 Ndza seketela  A ndzi seketeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

79. Xana hi ku ehleketa ka wena vupfumba byi ninkucetelo eka mfuwo ni ndzhavuko wa ndhawu ya ka n'wina hi ndlela yihi?  
 Leyinene  Yo ka yi nga ri kahle  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

**Ku vuyeriwa hi tlhelo ra KNP**

**Swivutiso leswi landzelaka swi kongomisile eka ku kuma nhlamulo ya wena leswaku xana wa vuyeriwa kumbe a wu vuyeriwi loko swi ta eka KNP.**

80. Xana wena kumbe un'wana wa vandyangu wa ka n'wina u tshama a thoriwa hi Kruger National Park ke?  
 Ina  E-e

81. Xana wena kumbe un'wana wa vandyangu wa ka n'wina u tshama a vuyeriwa eKruger National Park ke?  
 Ina  E-e  A ndzi tivi  
Loko u vuyeriwile, xana u vuyeriwile hi ndlela yihi?

82. Xana hi ku ehleketa ka wena KNP yi ta ku vuyerisa ku fika kwihi hi tlhelo ra timali?  
 Swinene  Katsongo  Yi nga ka yi nga ndzi vuyerisi  
Hikwalaho ka yini u vula sweswo?

83. Xana hi ku ehleketa ka wena KNP yi ta pfuna vaaki va ndhawu ya ka n'wina hi swa timali ku fikela kwihi?  
 Swinene  Katsongo  Yi nga ka yi nga va pfuni  
Hikwalaho ka yini u vula sweswo?

Kombisa loko u pfumela, u landzula kumbe u nga tivi hi swivulwa leswi swi landzelaka.

84. Mintlawu yo karhi ya vaaki va muganga wa mina yi kuma swo tala leswi swi humaka eka rifuwo ra ntumbuluko swo suka eKNP ku tlula yin'wana mintlawu.  
 Ndza pfumela  Ndza landzula  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

85. Mintlawu yo karhi ya vaaki va muganga wa mina yi kuma swo tala swa timali eka KNP ku tlula yin'wana mintlawu.  
 Ndza pfumela  Ndza landzula  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

**KNP: vutivi**

**Swivutiso leswi landzelaka swi mayelana na nkucetelo wa minongonoko yo hambana-hambana leyi KNP yi nga na yona eka vaaki va muganga wa ka n'wina.**

86. Xana wa yi tiva migingiriko ya KNP?  Ina  E-e  
87. Loko ku ri ina, xana i mani a ku byelege hi yona ke?  
 Hi mbhurisano ni vanhu  Hi vatirhi va le Phakini kumbe ka geme  Xiya-ni-moya  
 Ka swin'wana kumbe kun'wana (Vula ku kwihi kumbe ka yini?)



88. Xana migingiriko ya KNP yi endlile leswaku ku va ni ku hluvuka kumbe ku antswa eka vutomi bya vaaki va muganga wa ka n'wina ke?  ina  e-e  a ndzi tivi  
Hlamusela.

89. Xana KNP yi ni minongonoko yo karhi ya nhluvukiso wa vaaki va muganga ke?  Ina  E-e  A ndzi tivi.  
Loko ku ri ina, u ehleketa yini hi yona na swona hikwalaho ka yini?

**Vonele hi tlhelo ra vatirhi va KNP**

**Swivutiso leswi landzelaka swi kongomisile eka ku kuma nhlamulo ya wena ya mayelana ni ndlela leyi u vonaka vatirhi va KNP ha yona.**

90. Xana vatirhi va KNP va endla yini emugangeni wa ka n'wina?

91. Loko u burisana kumbe u tirhisana ni vatirhi va KNP wa va tsakela kumbe a wu va tsakeli ke?  
 Ndza va tsakela  A ndzi va tsakeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

92. Xana vatirhi va KNP va khoma njhani vanhu va le mugangeni wa ka n'wina ke?  
 Kahle  Ku biha  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

93. Xana vatirhi vo karhi va KNP va na vunghana ku tlula van'wana ke? Ina  E-e, hinkwavo va fana  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

94. Hi ku angarhela, xana u ehleketa leswaku vatirhi va KNP va na mhaka na swilaveko swa muganga wa ka n'wina ke?  
 Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

**Vonele hi tlhelo ra maendlele ya KNP hi ku angarhela**

**Eka swivutiso leswi landzelaka hi tsakela ku tiva ndlela leyi u vonaka maendlele ya KNP hi yona.**

101. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela yo sirhelela swihari ke?  
 Ndza seketela  A ndzi seketeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

102. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela yo sirhelela swihlahla ke?

Ndza seketela  A ndzi seketeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

103. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela ya mayelana ni mahanyelo ya swivumbiwa eka mbangu lowu swi hanyaka ka wona?

Ndza seketela  A ndzi seketeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

**Mavonele ya n'wina hi ku angarhela ya KNP**

**Eka swivutiso leswi swi landzelaka hi tsakela ku tiva mavonele ya n'wina hi ku angarhela ya KNP.**

104. Hi mavonele ya wena, xana xikongomelo-nkulu xo va ku tumbuluxiwile KNP a ku ri xihhi?

105. Xana ku tumbuluxiwa ka KNP swi cincile vutomi ni mintolovelovelo ya n'wina ya ndzhavuko ke?

Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

106. Xana u ehleketa leswaku swihlahla ni swihari swa nhova a swi ta va swa ha ri kona loko a ku nga sunguriwanga KNP ke?

Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

107. Xana wa eneriseka kumbe a wu eneriseki hi ku va muganga wa ka n'wina wu ri kusuhi na KNP?

Ndza eneriseka  A ndzi eneriseki  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

108. Xana wa pfumela kumbe wa landzula leswaku KNP yi kona ku pfuna ku antswisa ndhawu leyi u hanyaka ka yona ke?

Ndza pfumela  Ndza landzula  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

109. Hi ku angarhela, xana u tsakela kumbe a wu tsakeli KNP ke?  Ndza yi tsakela  A ndzi yi tsakeli  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

110. Hi swihi swivilelo ni swiringanyeto swa ntikelo leswi u nga na swona, mayelana ni ndlela leyi KNP yi lawulaka ha yona vanhu lava va tshamaka kumbe va akeke endzilekanini wa yona?

111. Xana mi kuma ku pfuneka eka KNP loku u ehleketaka leswaku a va fanerile va mi pfuna hi kona ke?  
 Ina  E-e  
Loko nhlamulo ya wena ku ri e-e, xana u ehleketa leswaku KNP a yi fanerile yi mi pfuna njhani ke?

#### **IV. Foramu ya Hlanganani**

**Swivutiso leswi landzelaka swi mayelana ni vutivi bya n'wina, ni misingiriko ya n'wina eka Foramu ya Hlanganani.**

112. Xana u twile hi Foramu ya Hlanganani?  Ina  E-e (Tlula u ya ka xivutiso xa #133)

113. Loko ku ri ina, xana u swi twise ku yini ku ri ku na Foramu leyi?  
 Hi mbhurisano ni vanhu  Hi vatirhi va le Phakini  Xiya-ni-moya  
 Ka swin'wana kumbe kun'wana (Vula ku kwihi kumbe ka yini?)

114. Xana muganga wa ka n'wina wu yimeriwile eka Foramu ya Hlanganani?  Ina  E-e  A  
ndzi tivi

115. Xana wena kumbe un'wana wa ndyangu wa ka n'wina u tirha hi ndlela yo kongoma eka Foramu ya Hlanganani ke?  
 E-e  Ina (vula ku hi ndlela yihi)

116. Hi xihhi xikongomelo-nkulu xa Foramu ya Hlanganani?

Hikwalaho ka yini u vula sweswo?

117. Xana mi fikisa njhani kumbe mi nga fikisa njhani swivilelo swa n'wina eka Foramu ya Hlanganani ke?

118. Xana Foramu ya Hlanganani yi mi tivisa njhani hi misingiriko ya yona ke?

119. Xana Foramu ya Hlanganani yi mi tivisa kangani hi ta misingiriko ya yona ke?  
 kan'we hi vhiki  kan'we hi nhweti  kan'we endzhaku ka tinhweti  
tinharhu  
 kambirhi hi lembe  kan'we hi lembe  A yi hi tivisi

120. Xana loko Foramu ya Hlanganani yoyima mundzuku, ku nga humelela yini?

121. Xana u ehleketa leswaku xiyimo xa mahanyele emugangeni wa ka n'wina xi antswile hikwalaho ka misingiriko ya Foramu ya Hlanganani?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

122. Xana hi ku vona ka wena Foramu ya Hlanganani yi yimela swilaveko swa tiko ra ka n'wina kahle njhani?  
 swinene  A yi swi yimeli na katsongo  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

123. Loko Foramu a yi kuma timali, xana a wu ta tsakela ku sungula xibindzwana u tirhisa mali ya kona hi ndlela yo lomba ke?  
 A ndzi swi tsakeli  Ndza swi tsakela  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

124. Xana mi eneriseka ku fika kwihi hi minongonoko ya nhluvukiso wa muganga leyi mi tiseriwaka yona hi KNP hi ku tirhisa Foramu ke?  
 Ha eneriseka  A hi eneriseki  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

125. Xana u ehleketa leswaku Foramu ya Hlanganani yi endla ntirho lowunene wa nhlayiso ke?  
 Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

126. Xana Foramu ya Hlanganani ya pfuna eka ku lawula xiphigo xa swihari ke?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

127. Xana u ehleketa leswaku Foramu ya Hlanganani yi pfuna vaaki va muganga ku kuma ku ririsiwa loko va lahlekeriwile hi swirin'wa kumbe swifuwo hikwalaho ka swihari ke?  
 Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

128. Xana u ehleketa leswaku Foramu ya Hlanganani yi endla ntirho wa kahle wo dyondzisa vanhu hi timhaka ta mbangu ke?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

129. Xana u ehleketa leswaku Foramu ya Hlanganani yi le ku antswiseni ka vuxaka exikarhi ka Kruger National Park, Ndzawulo ya Timhaka ta Mbangu ya xifundza xa Limpopo ni muganga wa ka n'wina?  
 Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

130. Hi mavonele ya wena, xana Foramu ya Hlanganani yi tirha kahle ke?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

131. Xana u ehleketa leswaku migingiriko ya Foramu ya Hlanganani yi fanerile ku hundzuluxiwa ke?  
 E-e       Ina       A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

132. Loko u ehleketa leswaku migingiriko ya Foramu ya Hlanganani yi fanerile ku hundzuluxiwa, xana yi fanerile ku hundzuluxiwa hi ndlela yihi?

#### **V. Mphilumpfilu ni swihari**

**Swivutiso leswi landzelaka swi mayelana ni swiphigo leswi mi nga vaka na swona hikwalaho ka ku onha ka swivumbiwa swa nhova.**

133. Eka malembe mambirhi lama nga hundza, xana ndyangu wa ka n'wina wu kile wu nga hlangana ni swiphigo ni swihari swa nhova ke?     Ina       E-e (Tlula u ya ka xivutiso xa #136)

134. Loko u hlamurile ina eka xivutiso xa 133, xana swiphigo swa kona hi swihi? (fungha hinkwaswo leswi ku nga swona)  
 ku dya/ku onha swirin'wa     ku hlongorisa/ku dlaya swifuwo     ku hlongorisa/ku vavisa vanhu  
 ku onha miako/rihlampfu     Kumbe swin'wana (swi boxe)

134.1. Swihari leswi swi ta hi kwihhi?

U swi tiva njhani (leswaku swi ta hi kwihhi)?

135. Hi swihi swihari leswi swi mi vangela ngopfu swiphigo leswi mi swi vuleke naswona hikwalaho ka yini? Swi longoloxe ku sukela ka xo sungula ku fikela ka xa vuntlhanu ku ya hi ku onha ngopfu ka swona.

136. Loko swirin'wa kumbe swifuwo swi hetiswa hi swihari, kumbe vanhu va hlaseriwa hi swihari, xana munhu u fanerile ku endla yini ke?

137. Xana ku humelela yini loko munhu a landzelela ndlela leyi u yi vuleke eka xivutiso xa 136 leswaku munhu u fanerile ku endla swona?

138. Hi ku vona ka wena, xana swiphiko leswi vangiwaka h swihari swi engetelekile kumbe swi hungutekile eka malembe lawa hi nga ka wona ke?

Swi engetelekile  swa ha ri sweswi a swi ri swona na khale  swi hungutekile

A ndzi tivi

Hikwalaho ka yini u vula sweswo?

139. Hi ku xiya ka wena, xana u vona onge swiphiko leswi swihari swa nhova swi nga na swona swi engetelekile kumbe swi hungutekile eka malembe lawa hi nga ka wona ke?

Swi engetelekile  swa ha ri sweswi a swi ri swona na khale  swi hungutekile  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

140. Xana ku na muxaka wo karhi wa swihari lowu u ehleketaka leswaku nhlayo ya wona yi engetelekile eka malembe lawa hi nga ka wona ke?

E-e  A ndzi tivi  Ina (Longoloxa mavito ya tinxaka ta swihari swa kona)

141. Xana ku na muxaka wa swihari lowu u ehleketaka leswaku nhlayo ya wona yi hungutekile eka malembe lawa hi nga ka wona ke?

E-e  A ndzi tivi  Ina (Longoloxa mavito ya swihari swa kona)

142. Hi ku vona ka wena, i mani loyi **a nga** na vutihlamuleri bya swivumbiwa swa nhova endhawini ya ka n'wina?

KNP  Mfumo wa Xifundza  Mfumo Xivongo  Foramu ya Hlanganani  Van'wana (Boxa vito)

143. Hi ku vona ka wena, i mani loyi **a faneleke** ku va ni vutihlamuleri bya swivumbiwa swa nhova endhawini ya ka n'wina ke?

KNP  Mfumo wa Xifundza  Mfumo Xivongo  Foramu ya Hlanganani  Van'wana (Boxa vito ra vona)

vona)

Hikwalaho ka yini u vula sweswo?

#### **VI. Vonele hi minhlangano ya ndhawu**

**Swivutiso leswi landzelaka swi mayelana ni vonele ra n'wina hi minhlangano ya tindhawu leyi yi tirhanaka na timhaka ta misava. Tsundzuka leswaku tinhlamulo hinkwato ni mimbuyelo hinkwayo leyi yi ta va xihundla.**

144. Xana hi wihhi ntirho wa Mfumo Xivongo wa ka n'wina mayelana na timhaka ta matirhisele ya misava?

145. Xana Mfumo Xivongo wa ka n'wina wu endla ntirho wa wona kahle mayelana ni timhaka ta matirhisele ya misava?

Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

146. Xana hi wihi ntirho wa Mfumo wa Masipala wa ka n'wina mayelana ni timhaka ta matirhisele ya misava?

147. Xana Mfumo wa Masipala wa ka n'wina wu endla ntirho wa wona kahle mayelana ni timhaka ta matirhisele ya misava

YIna  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

**VII. Vonele ra n'wina, ku tshemba ka n'wina ni leswi swi nga swa nkoka hi tlhelo ra mbangu**

**Swivutiso leswi swi landzelaka swi mayelana ni vonele ra n'wina, ku tshemba ka n'winani leswi swi nga swa nkoka hi tlhelo ra rifuwo ra ntumbuluko. Ku hava tinhlamulo leti nga lulama ni leti ti nga hoxeka.**

151. Xana wa swi tiva leswaku rito ra 'leswi nga khombyeni' ri vulaka swona?  Ina  E-e

152. Loko nhlamulo ku ri Ina eka xivutiso xa 151, vula swihari leswi tekiwaka 'swi ri ekhombyeni' laha Afrika-Dzonga, u vula ni swiangelo swo va swihari sweswo swi tekiwa swi ri ekhombyeni.

159. Xana hi swihi swiphemu leswi ntumbuluko wu vumbiweke hi swona ke? (Fungha hinkwaswo leswi faneleke)

Misava

swifuwo

Mirhi ya nhova/swimila

swirin'wa

moya

Tindlu ta misava to fuleriwa hi byanyi

mati ya le ka mativa, milambu ni swibodhlo

Tiyindlu to endliwa hi switina

Maxelo (mpfula, dyambu, moya)

Xikwembu

vanhu

Swikwembu

swihari swa nhova

swin'wana (swi vule)

160. Xana u lava ntumbuluko ke?  Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

161. Xana u lava ku sirhelela ntumbuluko ke?  Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

162. Loko u ehleketa leswaku u fanerile ku sirhelela ntumbuluko, u endla yini ku sirhelela ntumbuluko?

163. Xana ntumbuluko wu ta tshama wu ri na rifuwo ro ringana ra ntumbuluko ro tani hi mati, misava, ni swin'wana swo kota sweswo vanhu va muganga wa ka n'wina ke?

ina  e-e  a ndzi tivi

Hikwalaho ka yini u vula sweswo?

164. Xana nhlayo ya vanhu emugangeni wa ka n'wina yi na nkucetelo eka xiyimo xa ntumbuluko ke?  
 ina  e-e  a ndzi tivi  
Hikwalaho ka yini u vula sweswo?

165. Xana hi swihi swiphiko swa rifuwo ra ntumbuluko ni misava emugangeni wa ka n'wina?

166. Xana ri kona rifuwo ra ntumbuluko leri u nga koteki ku ri fikelela ke?  Ina  E-e  
Hlamusela.

**HA MIKHENSA NAKAMBE!!**



## **Appendix D: Questionnaire for Hlanganani Forum village reps (English + XiTsonga)**

## Questionnaire for Hlanganani Forum members

Hello, my name is Brandon Anthony. I am part of a team that is conducting research to learn about the impacts of various policies and programs undertaken by the Hlanganani Forum and Kruger National Park. The research team includes a professor who teaches at a university in Pretoria. We are particularly interested in your views about the policies and programs of this Forum and National Park. Since this is a survey of opinions, it is desired that you indicate your personal opinions regarding the following questions, regardless of whether you think other people might agree or disagree with you. All information will be kept strictly confidential.

We would also like to make it clear to you that we are neither affiliated with the Park nor any other government institutions. Our sole interest is scientific and educational. The questionnaire will take less than an hour. Feel free to write your answers in either English or Tsonga-Shangaan. We would very much appreciate your participation in this study. **THANK YOU...**

*Please return your completed questionnaire to Brandon at the next Hlanganani Forum meeting, or post it to: Brandon Anthony, PO Box 683, Masingita 0832  
Tel: 015 812-0038, Cell: 073 516-9683*

### I. Basic Information

(This section is optional. Fill out any sections which you like.)

1. Gender: Female Male (circle)
2. Age: \_\_\_\_\_
3. Traditional Authority: \_\_\_\_\_
4. Who is your *hosi* (chief)? \_\_\_\_\_
5. Village(s) you represent on the Forum: \_\_\_\_\_

### II. Hlanganani Forum

These following questions concern your knowledge of, and involvement with, the Hlanganani Forum.

6. How many years have you participated in the Hlanganani Forum?

7. How did you hear about the Hlanganani Forum?

Interpersonal  Park staff  Radio  Other sources (specify)

8. How did you become a representative on the Forum?

9. What is the main purpose of the Hlanganani Forum?

Why do you say so?

10. How often does the Forum meet?

11. How many Forum meetings were there last year?

12. How many of these did you attend?

13. If you do not attend meetings, why do you not?

14. How do you inform village members of the activities of the Forum?

15. How often do you inform your village members of the activities of the Hlanganani Forum?  
 at least once a week                       at least once a month                       at least once every 3 months  
 at least twice a year                       at least once a year                       never

16. How do you know about the problems of the people you represent on the Forum?

17. If the Hlanganani Forum stopped tomorrow, what would happen?

18. Do you think that the living standard of your village(s) has improved because of Hlanganani Forum activities?  
 Yes    No    Don't know  
Why do you say so?

19. How well do you think the Hlanganani Forum represents your community's interests?  
 much    not at all    don't know  
Why do you say so?

20. To what extent are you satisfied with the community development programs delivered by the KNP through the Forum?  
 Satisfied                       Dissatisfied                       Don't know  
Why do you say so?

21. Do you think the Hlanganani Forum does good conservation work?  Yes                       No                       Don't know  
Why do you say so?

22. Do you think the Hlanganani Forum helps in controlling problem wild animals?  Yes    No    Don't know  
Why do you say so?

23. Do you think the Hlanganani Forum helps community members get compensation for crop and livestock losses from wild animals?  
 Yes                       No                       Don't know  
Why do you say so?

24. Do you think the Hlanganani Forum does good environmental education work?  Yes  No  Don't know  
Why do you say so?

25. Do you think the Hlanganani Forum is improving relationships between the Kruger National Park, the Limpopo Province Environmental Affairs and the community you represent?  
 Yes       No       Don't know  
Why do you say so?

26. In your opinion, does the Hlanganani Forum function well?  Yes  No       Don't know  
Why do you say so?

27. Do you think the activities of the Hlanganani Forum should be changed?       no       yes       don't know  
Why do you say so?

28. If you think the activities of the Hlanganani Forum should be changed, how should it be changed?

### III. Attitudes toward Kruger National Park policy

35. Do you approve or disapprove of the overall wildlife protection policy implemented by KNP?  
 Approve       Disapprove       Don't know  
Why do you say so?

36. Do you approve or disapprove of the overall forest protection policy implemented by KNP?  
 Approve       Disapprove       Don't know  
Why do you say so?

37. Do you approve or disapprove of the overall social ecology policy implemented by the KNP?  
 Approve       Disapprove       Don't know  
Why do you say so?

### IV. General opinion about the KNP

**In the following questions we are interested in knowing your overall attitudes toward the KNP.**

38. In your opinion, what was the main purpose of establishing the KNP?

39. Has the establishment of the KNP affected your traditional life and practices?  Yes  No       Don't know  
Why do you say so?

40. Do you think that forests and wild animals would still exist even if the KNP had not been established?  
 Yes  No  Don't know  
Why do you say so?

41. Are you satisfied or dissatisfied that your village is located near the KNP?  
 Satisfied  Dissatisfied  Don't know  
Why do you say so?

42. Do you agree or disagree that the KNP exists for the betterment of your community?  
 Agree  Disagree  Don't know  
Why do you say so?

43. Overall, do you like or dislike the KNP?  Like it  Dislike it  Don't know  
Why do you say so?

44. What are the main complaints or suggestions, if any, you have about way the KNP manages the people along its borders?

45. Are you getting the help from the KNP which you think they should be giving?  
 Yes  No  
If no, how do you think the KNP should help you?

#### **V. Attitudes toward KNP Staff**

46. What do KNP staff do in your villages?

47. If you interact with KNP staff, do you like or dislike them?  Like  Dislike  Don't know  
Why do you say so?

48. How does KNP staff treat the local people in your village(s)?  
 Good  Bad  Don't know  
Why do you say so?

49. Are some KNP staff friendlier than others?  Yes  No, all are same  Don't know  
Why do you say so?

50. In general, do you think the KNP staff care about your villages' interests?  Yes  No  Don't know  
Why do you say so?

## VI. Conflicts with wild animals

The following questions concern problems your villages may have by depredation by wildlife.

51. In the past 2 years, has the village(s) you represent had problems with wild animals?  
 Yes  No (skip to #54)  don't know

52. If yes, what are they? (check all that apply)  
 eating/destroying crops  chasing/killing livestock  chasing/hurting people  
 damaging buildings/fences  other (specify)

52.1. Where do these animals come from?

How do you know the animals come from there?

53. What animals are most responsible for these problems and why? Please number from one (most damaging) to five (5<sup>th</sup> most damaging).

54. If crops or livestock are destroyed, or people are attacked by wild animals, what should someone do?

55. What usually happens when someone follows this route?

56. In your opinion, have problems with wild animals in your village increased or decreased in recent years?  
 Increased  has remained same  Decreased  don't know  
Why do you say so?

57. In your observation, do you think the overall number of problem wild animals have increased or decreased in recent years?  
 Increased  has remained same  Decreased  don't know  
Why do you say so?

58. Are there any particular wild animals whose populations you think have increased in recent years?  
 No  Don't know  Yes (please list those animals)

59. Are there any particular wild animals whose populations you think have decreased in recent years?  
 No             Don't know     Yes (please list those animals)

60. In your opinion, who is primarily responsible for wildlife in your area?  
 KNP             Provincial Government     Traditional Authority     Hlanganani Forum     Other (specify)

61. In your opinion, who should be responsible for wildlife in your area?  
 KNP             Provincial Government     Traditional Authority     Hlanganani Forum     Other (specify)

**VII. Opinion of Local Institutions**

**The following questions concern your opinion of local institutions that are involved in land use issues. Remember that all these results will be kept strictly confidential.**

62. What is the function of your Traditional Authority with respect to land use issues?

63. Does your Traditional Authority do its job well with respect to land use issues?  Yes     No     Don't know  
Why do you say so?

64. What is the function of your municipal government with respect to land use issues?

65. Does your municipal government do its job well with respect to land use issues?  Yes     No     Don't know  
Why do you say so?

**VIII. Endangered**

69. Do you know what the term 'endangered' means?  Yes     No  
70. If yes, name some animals that are considered 'endangered' in South Africa and indicate why they are considered endangered.

**THANK YOU AGAIN!!**

## NHLENGELO WA SWIVUTISO SWA SWIRHHO SWA FORAMU YA HLANGANANI

Xewani, vito ra mina i Brandon Anthony. Ndzi un'wana wa xipano lexi xi endlaka ndzavisiso wo twisisa nkoka ni nhlohlotelolo lowu maendlele ni minongonoko yo hambana-hambana leyi yi nga endliwa hi Foramu ya Hlanganani na Kruger National Park (KNP) swi nga va na wona. Eka xipano lexi xa ndzavisiso ku na purofesa loyi a dyondzisaka eYunivhesiti ya Pitori. Hi tsakela ku twa vonele ra n'wina ra mayelana na maendlele ni minongonoko ya foramu leyi na National Park. Tani hileswi laha hi nga ku hlengeleteni ka mavonele yo hambana-hambana ya vanhu, i swa nkoka leswaku mi boxa vonele ra n'wina n'wexe, mi nga landzeleli mavonele ya va n'wana, loko mi hlamula swivutiso leswi landzelaka. Vulani ku titwa ka n'wina ehandle ko ehleketa leswaku van'wana va ta pfumelelana na miehleketo ya n'wina kumbe va nga ka va nga pfumelelani na yona. **Vuxokoxoko hinkwabvo Lebyi mi nga ta hi nyika byona byi ta va xihundla swinene.**

Hi tsakela ni ku mi boxela leswaku a hi tirhisani helo na Park kumbe xiyenge xo karhi xa mfumo. Hina hi tsakisiwa ntsena hi ku endla ndzavisiso wa xisayense ni dyondzo. Nhlangelo lowu wa swivutiso wu nga ka wu nga tluli awara ku va mi swi hlamula. Titweni mi ntshunxekile ku tsala tinhlamulo ta n'wina hi Xinghezi kumbe hi Xitsonga-Xichangana. Hi ta amukela ngopfu ku hlamula ka n'wina swivutiso leswi ku nga ku va mi ri ku pfuneteni ka ku dyondza ka hina. HA MI KHENSA...

*Mi komberiwa ku ttherisa papila leri ra swivutiso loko mi hlamurile eka Brandon lo yi a nga ta kumeka eka nhlengeletano leyi nga ta landzela ya foramu ya Hlanganani kumbe mi posa kunene, mi posela ka:*

**Brandon Anthony, PO Box 683, Masingita 0832**

**Tel: 015 812-0038, Cell: 073 516-9683**

### I. Vuxokoxoko bya Masungulo

(Xiyenge lexi a xi bohi. Hlamulani swivutiso leswi mi swi tsakelaka ntsena.)

6. Rimbewu: Waxisati Waxinuna (bana xirhendzevutani laha ku fanelaka)
7. Vukhale (Xana u na malembe mangani?): \_\_\_\_\_
8. Mfumo Xivongo lowu u welaka ka wona: \_\_\_\_\_
9. I mani hosi ya n'wina? \_\_\_\_\_
10. Muganga kumbe miganga leyi u yi yimeleke eka Foramu: \_\_\_\_\_

### II. Foramu ya Hlanganani

Swivutiso leswi landzelaka swi mayelana ni vutivi bya n'wina, ni migingiriko ya n'wina eka Foramu ya Hlanganani.

6. U tirhile malembe mangani eka Foramu ya Hlanganani?

7. U swi twise ku yini ku ri ku na Foramu ya Hlanganani?

[ ] Hi mbhurisano ni vanhu [ ] Hi vatirhi va le Phakini kumbe ka Geme. [ ] Xiya-ni-moya

[ ] Ka swin'wana kumbe kun'wana (Vula ku kwihi kumbe ka yini?)

8. Swi tise ku yini leswaku u va muyimeri eka Foramu?

9. Xana hi xihle xikongomelo-nkulu xa Foramu ya Hlanganani ke?

Hikwalaho ka yini u vula sweswo ke?



10. Xana Foramu yi hlangana ka ngani ke?

11. Xana n'wexemu ku vile ni tinhlengeletano tingani ta Foramu ke?  
12. Eka tona, xana wena u kotile ku ya ka tingani ke?  
13. Loko u nga yi etinhlegetanini ta foramu, xana swi va swi vangiwa hi yini?

14. U tivisa njhani muganga hi ta misingiriko ya Foramu ke?

15. U va tivisa kangani va muganga hi ta misingiriko ya Foramu ya Hlanganani ke?  
 kan'we hi vhiki                       kan'we hi nhweti                       kan'we endzhaku ka tinhweti tinharhu  
 kambirhi hi lembe                       kan'we hi lembe                       A va tivisiwi

16. Xana loko lava u va yimelaka eka Foramu va ri na swiphiko va ku tivisa njhani?

17. Xana loko Foramu ya Hlanganani yo yima mundzuku, ku nga humelela yini?

18. Xana u ehleketa leswaku xiyimo xa mahanyeke emugangeni wa n'wina xi antswile hikwalaho ka misingiriko ya Foramu ya Hlanganani ke?  
 Ina!    E-e!    A ndzi tivi.  
Hikwalaho ka yini u vula sweswo ke?

19. Xana hi ku vona ka wena Foramu ya Hlanganani yi yimela swilaveko swa tiko ra ka n'wina kahle njhani?  
 swinene                       A yi swi yimeli na katsongo                       A ndzi tivi.  
Hikwalaho ka yini u vula sweswo?

20. Xana mi eneriseka ku fika kwihi hi minongonoko ya nhluvukiso wa muganga leyi mi tiseriwaka yona hi KNP hi ku tirhisa Foramu ke?  
 Ha eneriseka                       A hi eneriseki                       A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

21. Xana u ehleketa leswaku Foramu ya Hlanganani yi endla ntirho lowunene wa hlayiso ke?    Ina    E-e    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

22. Xana Foramu ya Hlanganani ya pfuna eka ku lawula xiphiko xa swihari ke?    Ina                       E-e                       A ndzi tivi

Hikwalaho ka yini u vula sweswo?

23. Xana u ehleketa leswaku Foramu ya Hlanganani ya pfuna ku va vaaki va muganga ku kuma ku ririsiwa loko va lahlekeriwile hi swirin'wa kumbe swifuwo hikwalaho ka swihari ke?

Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

24. Xana u ehleketa leswaku Foramu ya Hlanganani yi endla ntirho wa kahle wo dyondzisa vanhu hi timhaka ta mbangu ke?

Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

25. Xana u ehleketa leswaku Foramu ya Hlanganani yi le ku antswiseni ka vuxaka exikarhi ka Kruger National Park, Ndzawulo ya Timhaka ta Mbangu ya xifundza xa Limpopo ni muganga lowu u wu yimelaka ke?

Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

26. Hi mavonele ya wena, xana Foramu ya Hlanganani yi tirha kahle ke?  Ina  E-e  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

27. Xana u ehleketa leswaku migingiriko ya Foramu ya Hlanganani yi fanerile ku hundzuluxiwa ke?

E-e  Ina  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

28. Loko u ehleketa leswaku migingiriko ya Foramu ya Hlanganani yi fanerile ku hundzuluxiwa, xana yi fanerile ku hundzuluxiwa hi ndlela yihi?

### III. Vonele hi maendlele ya Kruger National Park

35. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela yo sirhelelaka swihari ke?

Ndza seketela  A ndzi seketeli  A ndzi tivi

Hikwalaho ka yini u vula sweswo?

36. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela yo sirhelela swihlahla ke?

Ndza seketela    A ndzi seketeli    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

37. Xana wa seketela kumbe a wu seketeli maendlele lawa ya tirhisiwaka hi KNP hi ku angarhela ya mayelana ni mahanyele ya swivumbiwa eka mbangu lowu swi kumekaka ka wona ke?

Ndza seketela    A ndzi seketeli    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

#### IV. Mavonele ya n'wina hi ku angarhela ya KNP

**Eka swivutiso leswi swi landzelaka hi tsakela ku tiva mavonele ya n'wina hi ku angarhela mayelana na KNP.**

38. Hi mavonele ya n'wina, xana xikongomelo-nkulu xo va ku tumbuluxiwile KNP a ku ri xihhi?

39. Xana ku tumbuluxiwa ka KNP swi cincile vutomi ni mintolovelovelo ya n'wina ya ndzhavuko ke?

Ina    E-e    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

40. Xana u ehleketa leswaku swihlahla ni swihari swa nhova a swi ta va swa ha ri kona loko a ku nga sunguriwanga KNP ke?

Ina    E-e    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

41. Xana wa eneriseka kumbe a wu eneriseki hi ku va muganga wa ka n'wina wu ri kusuhi na KNP?

Ndza eneriseka    A ndzi eneriseki    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

42. Xana wa pfumela kumbe wa landzula leswaku KNP yi kona ku pfuna ku antswisa ndhawu leyi u hanyaka ka yona ke?

Ndza pfumela    Ndza landzula    A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

43. Hi ku angarhela, xana u tsakela kumbe a wu tsakeli KNP ke?  Ndza yi tsakela    A ndzi yi tsakeli    A ndzi tivi

Hikwalaho ka yini u vula sweswo?

44. Hi swihi swivilelo ni swiringanyeto swa ntikelo leswi u nga na swona, mayelana ni ndlela leyi KNP yi lawulaka ha yona vanhu lava va tshamaka kumbe va akeke endzilekanini wa yona ke?

45. Xana mi kuma ku pfuneka eka KNP loku u ehleketaka leswaku a va fanerile ku va va mi pfuna hi kona ke?  
 Ina  E-e  
Loko nhlamulo ya wena ku ri e-e, xana u ehleketa leswaku KNP a yi fanerile yi mi pfuna njhani ke?

#### V. Vonele mayelana na vatriri va KNP

46. Xana vatriri va KNP va endla yini emugangeni wa ka n'wina ke?

47. Loko u angulana ni vatriri va ka KNP, u twa u va tsakela kumbe u nga va tsakeli ke?  
 Ndzi va tsakela  Ndzi nga va tsakeli  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

48. Xana vatriri va KNP va khoma njhani vanhu va muganga kumbe miganga ya ka n'wina ke?  
 Hi ndlela ya kahle  Hi ndlela yo biha  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

49. Xana vatriri vo karhi va KNP va na xinghana ku tlula van'wana ke?  Ina  E-e, hinkwavo va fana  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

50. Hi ku angarhela, xana u ehleketa leswaku vatriri va KNP va na mhaka na swilaveko swa vaaki va muganga wa ka n'wina ke?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

#### VI. Mphilumpfilu ni swihari

**Swivutiso leswi landzelaka swi mayelana ni swiphiko leswi muganga wa ka n'wina wu nga vaka wu ri na swona hikwalaho ka ku onhla ka swivumbiwa swa nhova.**

51. Eka malembe mabirhi lama nga hundza, xana muganga kumbe miganga leyi u yi yimelaka yi hlanganile ni swiphiko ni swihari swa nhova ke?  
 Ina  E-e (Tlulela ka xivutiso xa 54 loko nhlamulo ya wena ku ri leyi ya e-e)  A ndzi tivi

52. Loko u hlamurile ina eka xivutiso xa 51, xana swiphiko swa kona hi swihi? (fungha hinkwaswo leswi ku nga swona)  
 ku dya/ku onha swirin'wa  ku hlongorisa/ku dlaya swifuwo  ku hlongorisa/ku vavisa vanhu  
 ku onha miako/rihlampfu  Kumbe swin'wana (swi boxe)

52.1. Xana swihari leswi swi ta hi kwihhi?

U swi tiva njhani (leswaku swi ta hi kwihhi)?

53. Hi swihhi swihari leswi swi mi vangelaka ngopfu swiphigo leswi mi swi vuleke naswona hikwalaho ka yini? Swi longoloxe ku sukela ka xo sungula ku fikela ka xa vuntlhanu ku ya hi ku onha ngopfu ka swona.

54. Loko swirin'wa kumbe swifuwo swi hetwa hi swihari, kumbe vanhu va hlaseriwa hi swihari, xana munhu u fanerile ku endla yini ke?

55. Xana ku humelela yini loko munhu a landzelela ndlela leyi u yi vuleke eka xivutiso xa 54 leswaku munhu u fanerile ku endla swona ke?

56. Hi ku vona ka wena, xana swiphigo leswi vangiwaka hi swihari swi engetelekile kumbe swi hungutekile eka malembe lawa hi nga ka wona ke?  
 Swi engetelekile     swa ha ri sweswi a swi ri swona na khale     swi hungutekile     A ndzi tivi  
 Hikwalaho ka yini u vula sweswo?

57. Hi ku xiya ka wena, xana u vona onge swiphigo leswi swihari swa nhova swi nga na swona swi engetelekile kumbe swi hungutekile eka malembe lawa hi nga ka wona ke?  
 Swi engetelekile     swa ha ri sweswi a swi ri swona na khale     swi hungutekile     A ndzi tivi  
 Hikwalaho ka yini u vula sweswo?

58. Xana ku na muxaka wo karhi wa swihari lowu u ehleketaka leswaku nhlayo ya wona yi engetelekile eka malembe lawa hi nga ka wona ke?

E-e     A ndzi tivi     Ina (longoloxa mavito ya tinxaka ta swihari swa kona)

59. Xana ku na muxaka wo karhi wa swihari lowu u ehleketaka leswaku nhlayo ya wona yi hungutekile eka malembe lawa hi nga ka wona ke?

E-e     A ndzi tivi     Ina (longoloxa mavito ya tinxaka ta swihari swa kona)

60. Hi ku vona ka wena, i mani mulanguteri loyi **a nga** na vutihlamuleri bya swivumbiwa swa nhova endhawini ya ka n'wina ke?

KNP     Mfumo wa Xifundza     Mfumo wa Xivongo     Foramu ya Hlanganani  
 Van'wana (Boxa vito ra vona)

61. Hi ku vona ka wena, i mani loyi **a fanelaka** ku va ni vutihlamuleri bya swivumbiwa swa nhova endhawini ya ka n'wina ke?

KNP     Mfumo wa Xifundza     Mfumo wa Xivongo     Foramu ya Hlanganani  
 Van'wana (Boxa vito ra vona)

**VII. Vonele hi minhlango ya ndhawu**

**Swivutiso leswi landzelaka swi mayelana ni vonele ra n'wina hi minhlango ya tindhawu leyi yi tirhanaka na timhaka ta misava. Tsundzuka leswaku tinhlamulo hinkwato ni mimbuyelo hinkwayo leyi yi ta va xihundla.**

62. Xana hi wihi ntirho wa Mfumo Xivongo wa ka n'wina mayelana na timhaka ta matirhisele ya misava?

63. Xana Mfumo Xivongo wa ka n'wina wu endla ntirho wa wona kahle mayelana ni timhaka ta matirhisele ya misava?  Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

64. Xana hi wihi ntirho wa mfumo wa masipala wa ka n'wina mayelana ni timhaka ta matirhisele ya misava?

65. Xana Mfumo wa Masipala wa ka n'wina wu endla ntirho wa wona kahle mayelana ni timhaka ta matirhisele ya misava?  
 Ina  E-e  A ndzi tivi  
Hikwalaho ka yini u vula sweswo?

**VIII. Vonele ra n'wina, ku tshemba ka n'wina ni leswi swi nga swa nkoka hi tlhelo ra mbangu**

**Swivutiso leswi swi landzelaka swi mayelana ni vonele ra n'wina, ku tshemba ka n'wina ni leswi swi nga swa nkoka hi tlhelo ra rifuwo ra ntumbuluko. Ku hava tinhlamulo leti nga lulama ni leti ti nga hoxeka.**

69. Xana wa swi tiva leswi rito ra 'leswi nga khombyeni' ri vulaka swona?  Ina  E-e  
70. Loko nhlamulo ku ri Ina eka xivutiso xa 71, vula swihari leswi tekiwaka 'swi ri ekhombyeni' laha Afrika-Dzonga, u vula ni swivangelo swo va swihari sweswo swi tekiwa swi ri ekhombyeni.

**HA MI KHENSA NAKAMBE!**

## Appendix E: Questionnaire for Hlanganani Forum institution reps (English)

## Questionnaire for Institutions of Hlanganani Forum

Hello, my name is Brandon Anthony. I am part of a team that is conducting research to learn about the impacts of various policies and programs undertaken by the Hlanganani Forum and Kruger National Park. The research team includes a professor who teaches at a university in Pretoria. We are particularly interested in your views about the policies and programs of this Forum and National Park. Since this is a survey of opinions, it is desired that you indicate your personal opinions regarding the following questions, regardless of whether you think other people might agree or disagree with you. All information will be kept strictly confidential.

We would also like to make it clear to you that we are neither affiliated with the Park nor any other government institutions. Our sole interest is scientific and educational. The questionnaire will take less than an hour. We would very much appreciate your participation in this study. **THANK YOU...**

*Please return your completed questionnaire to Brandon at the next Hlanganani Forum meeting, or post/e-mail it by September 30th to: Brandon Anthony, PO Box 683, Masingita 0832  
Tel: 015 812-0038, Cell: 073 516-9683 E-mail: ephanb01@phd.ceu.hu*

### I. Basic Information

11. Gender: Female Male (circle one)
12. Age: \_\_\_\_\_
13. Institution you represent: \_\_\_\_\_
14. Your title/position: \_\_\_\_\_
15. Number of years you have been employed at your current institution: \_\_\_\_\_

### II. Hlanganani Forum

These following questions concern your knowledge of, and involvement with, the Hlanganani Forum.

6. How many years have you participated in the Hlanganani Forum?

7. How did you hear about the Hlanganani Forum?  
 Interpersonal  Park staff  Radio  Other sources (specify)

8. How did you become a representative on the Forum?

9. What is the main purpose(s) of the Hlanganani Forum?

10. How often does the Forum meet?

11. How many Forum meetings were there last year?
12. How many of these did you attend?
13. If you do not attend meetings, why do you not?



14. If the Hlanganani Forum stopped tomorrow, what would happen?

15. Do you think that the living standard of the villages represented on the Hlanganani Forum has improved because of the forum's activities?

Yes  No  Don't know

Why do you say so?

16. How well do you think the Hlanganani Forum represents their communities' interests?

much  not at all  don't know

Why do you say so?

17. To what extent are you satisfied with the community development programs delivered by the KNP through the Forum?

Satisfied  Dissatisfied  Don't know

Why do you say so?

18. Do you think the Hlanganani Forum does good conservation work?  Yes  No  Don't know

Why do you say so?

19. Do you think the Hlanganani Forum helps in controlling problem wild animals?  Yes  No  Don't know

Why do you say so?

20. Do you think the Hlanganani Forum helps its communities get compensation for losses from wild animals?

Yes  No  Don't know

Why do you say so?

21. Do you think the Hlanganani Forum does good environmental education work?  Yes  No  Don't know

Why do you say so?

22. Do you think the Hlanganani Forum is improving relationships between the Kruger National Park, the Limpopo Province Environmental Affairs and the KNP's neighbouring villages?

Yes  No  Don't know

Why do you say so?

23. In your opinion, does the Hlanganani Forum function well?  Yes  No  Don't know  
Why do you say so?

24. Do you think the activities of the Hlanganani Forum should be changed?  no  yes  don't know  
Why do you say so?

25. If you think the activities of the Hlanganani Forum should be changed, How should it be changed?

### III. Opinions regarding Kruger National Park

32. In your opinion, what was the main purpose of establishing the KNP?

33. Do you think that forests and wild animals would still exist even if the KNP had not been established?  
 Yes  No  Don't know  
Why do you say so?

34. Do you agree or disagree that the KNP cares about the interests of its neighbouring communities?  
 Agree  Disagree  Don't know  
Why do you say so?

35. What are the main complaints or suggestions, if any, you have about way the KNP manages the people along its borders?

### IV. Conflicts with wild animals

**The following questions concern problems villages may have by depredation by wildlife.**

40. What are the types of conflicts which communities are facing with respect to wild animals? (check all that apply)  
 eating/destroying crops  chasing/killing livestock  chasing/hurting people  
 damaging buildings/fences  other (specify)

41. What animals are most responsible for these problems and why? Please number from one (most damaging) to five (5<sup>th</sup> most damaging).

42. If crops or livestock are destroyed, or people are attacked by wild animals, what should someone do?

43. What usually happens when someone follows this route (described in question above)?

44. In your opinion, have problems with wild animals increased or decreased in recent years?  
 Increased       remained same       Decreased       don't know  
Why do you say so?

45. In your opinion, who is primarily responsible for wildlife in the area represented by the Hlanganani Forum?  
 KNP       Provincial Government       Traditional Authority       Hlanganani Forum       Other (specify)

46. In your opinion, who should be responsible for wildlife in the area represented by the Hlanganani Forum?  
 KNP       Provincial Government       Traditional Authority       Hlanganani Forum       Other (specify)  
Why do you say so?

#### **V. Opinion of Local Institutions**

**The following questions concern your opinion of local institutions that are involved in land use issues.  
Remember that all these results will be kept strictly confidential.**

47. What is the function of Traditional Authorities with respect to land use issues?

48. Do Traditional Authorities do their job well with respect to land use issues?  Yes       No       Don't know  
Why do you say so?

49. What is the function of municipal/provincial governments with respect to land use issues?

50. Does the municipal/provincial govt. do its job well with respect to land use issues?  
 Yes       No       Don't know  
Why do you say so?

**THANK YOU AGAIN!!**

### Appendix F: TRA Malamulele Worksheet 1

|   |  |
|---|--|
| <b>Site Name:</b> Hlanganani Forum area (Malamulele)  |  |
| <b>Site Description:</b> Luvuvhu River south to Shingwedzi River; <15km from KNP western border |  |
| <b>Assessment Period:</b> 1994 to present   | <b>Completed on:</b> Wednesday, 18 August 2004<br>DFED/EA Office, Giyani |

|              | Threats                                     | Criteria Rankings |           |         | Total Ranking | % Threat Reduced | Raw Score |
|--------------|---|-------------------|-----------|---------|---------------|------------------|-----------|
|              |   | Area              | Intensity | Urgency |               |                  |           |
| <b>A</b>     | Subsistence poaching                        | 9                 | 8         | 4       | 21            | 30               | 6.3       |
| <b>B</b>     | Commercial poaching                         | 8                 | 2         | 3       | 13            | 40               | 5.2       |
| <b>C</b>     | Illegal harvesting of trees for subsistence | 7                 | 6         | 9       | 22            | 0<br>(-10)       | -2.2      |
| <b>D</b>     | Illegal commercial harvesting of trees      | 10                | 7         | 10      | 27            | 0<br>(-50)       | -13.5     |
| <b>E</b>     | Illegal fire                                | 4                 | 5         | 7       | 16            | 60               | 9.6       |
| <b>F</b>     | Mining sand                                 | 2                 | 10        | 5       | 17            | 40               | 6.8       |
| <b>G</b>     | Road construction / maintenance             | 3                 | 3         | 2       | 8             | 60               | 4.8       |
| <b>H</b>     | Disease transfer                            | 1                 | 1         | 1       | 3             | 50               | 1.5       |
| <b>I</b>     | Agricultural expansion                      | 6                 | 9         | 8       | 23            | 0<br>(-40)       | -9.2      |
| <b>J</b>     | Residential expansion                       | 5                 | 4         | 6       | 15            | 0<br>(-20)       | -3        |
| <b>TOTAL</b> |   | 55                | 55        | 55      | 165           |                  | 6.3       |

| TRA Index Formula     | Total Raw Score |   | Total Ranking |   | Convert to Percentage |   |     | TRA Index |
|-----------------------|-----------------|---|---------------|---|-----------------------|---|-----|-----------|
| TRA Index Calculation | 6.3             | ÷ | 165           | = | 0.04                  | x | 100 | = 4 %     |

## TRA Malamulele Worksheet 2: Explanation of Threats

|          |   |
|----------|---|
| <b>A</b> | <b>Threat:</b> Subsistence poaching – includes poaching of wild animals and fish by local persons for subsistence purposes (incl. Mozambican migrants).                     |
|          | <b>100% reduction</b> = clearly defined policy/enforcement to allow for local sustainable utilization of wild game and fish.  |
| <b>B</b> | <b>Threat:</b> Commercial poaching – poaching of wild game by locals, ‘outsiders’ or by locals hired from outside for market purposes (both within and outside study area). |
|          | <b>100% reduction</b> = eliminate all hunting of wild animals by non-residents of study area.   |
| <b>C</b> | <b>Threat:</b> Illegal harvesting of trees for subsistence purposes.  |
|          | <b>100% reduction</b> = a monitored system to be put in place which allows for only a sustainable harvest of live trees.  |
| <b>D</b> | <b>Threat:</b> Illegal commercial harvesting of trees – outside groups hiring locals and/or locals cutting live trees within study area and transporting out of area.       |
|          | <b>100% reduction</b> = eliminate all commercial forms of cutting live trees.   |
| <b>E</b> | <b>Threat:</b> Illegal fires – deliberate and/or accidental fires (e.g. Mozambican refugees, community members).  |
|          | <b>100% reduction</b> = eliminate all illegal fires, but allow properly controlled fires for defined purposes.  |
| <b>F</b> | <b>Threat:</b> Mining sand – illegal removal of river sand and its associated environmental impacts.  |
|          | <b>100% reduction</b> = properly controlled river sand removal subjected to EIA to minimize environmental impact.   |
| <b>G</b> | <b>Threat:</b> Road construction / maintenance – includes fill removal and deposition, especially illegal activities not undertaking an EIA.                                |
|          | <b>100% reduction</b> = to ensure that all activities are subjected to, and adhere to, a proper EIA.  |
| <b>H</b> | <b>Threat:</b> Disease transfer (FMD, BTB, Anthrax) – interaction or contact between livestock and wild animals (esp. buffalo and cattle).                                  |
|          | <b>100% reduction</b> = ensure that there is absolutely no contact between wild animals and livestock, including transport of fodder.                                       |
| <b>I</b> | <b>Threat:</b> expansion of agricultural activities, i.e. area used for cultivation purposes  |
|          | <b>100% reduction</b> = halt all expansion of agricultural areas.   |
| <b>J</b> | <b>Threat:</b> expansion of areas for residential purposes.   |
|          | <b>100% reduction</b> = halt all expansion of residential areas.  |

### Appendix G: TRA Giyani Worksheet 1

|  |   |
|--|---|
| <b>Site Name:</b> Hlanganani Forum area (Giyani)   |   |
| <b>Site Description:</b> Shingwedzi River south to Klein Letaba River; <15km from KNP western border |   |
| <b>Assessment Period:</b> 1994 to present  | <b>Completed on:</b> Thursday, 12 August 2004<br>DFED/EA Office, Giyani |

|              | Threats                                     | Criteria Rankings |           |         | Total Ranking | % Threat Reduced | Raw Score |
|--------------|---|-------------------|-----------|---------|---------------|------------------|-----------|
|              |   | Area              | Intensity | Urgency |               |                  |           |
| <b>A</b>     | Subsistence poaching                        | 8                 | 2         | 4       | 14            | 50               | 7         |
| <b>B</b>     | Commercial poaching                         | 6                 | 3         | 3       | 12            | 40               | 4.8       |
| <b>C</b>     | Illegal harvesting of trees for subsistence | 7                 | 4         | 8       | 19            | 60               | 11.4      |
| <b>D</b>     | Illegal commercial harvesting of trees      | 5                 | 5         | 7       | 17            | 20               | 3.4       |
| <b>E</b>     | Illegal fire                                | 4                 | 8         | 6       | 18            | 30               | 5.4       |
| <b>F</b>     | Mining sand                                 | 2                 | 7         | 5       | 14            | 0<br>(-50)       | -7        |
| <b>G</b>     | Road construction / maintenance             | 1                 | 6         | 2       | 9             | 50               | 4.5       |
| <b>H</b>     | Disease transfer                            | 3                 | 1         | 1       | 5             | 95               | 4.75      |
| <b>TOTAL</b> |   | 36                | 36        | 36      | 108           |                  | 34.25     |

| TRA Index Formula            | Total Raw Score |          | Total Ranking |          | Convert to Percentage |          |            | TRA Index     |
|------------------------------|-----------------|----------|---------------|----------|-----------------------|----------|------------|---------------|
| <b>TRA Index Calculation</b> | <b>34.25</b>    | <b>÷</b> | <b>108</b>    | <b>=</b> | <b>0.32</b>           | <b>x</b> | <b>100</b> | <b>= 32 %</b> |

## TRA Giyani Worksheet 2: Explanation of Threats

|          |   |
|----------|---|
| <b>A</b> | <b>Threat:</b> Subsistence poaching – includes poaching of wild animals and fish by local persons for subsistence purposes (incl. Mozambican migrants).                     |
|          | <b>100%</b> = clearly defined policy/enforcement to allow for local sustainable utilization of wild game and fish.  |
| <b>B</b> | <b>Threat:</b> Commercial poaching – poaching of wild game by locals, ‘outsiders’ or by locals hired from outside for market purposes (both within and outside study area). |
|          | <b>100% reduction</b> = eliminate all hunting of wild animals by non-residents of study area.   |
| <b>C</b> | <b>Threat:</b> Illegal harvesting of trees for subsistence – includes the cutting of live trees either with or without permission of Traditional Authority.                 |
|          | <b>100% reduction</b> = a monitored system to be put in place which allows for only a sustainable harvest of live trees.  |
| <b>D</b> | <b>Threat:</b> Illegal commercial harvesting of trees – outside groups hiring locals and/or locals cutting live trees within study area and transporting out of area.       |
|          | <b>100% reduction</b> = eliminate all commercial forms of cutting live trees.   |
| <b>E</b> | <b>Threat:</b> Illegal fires – deliberate and/or accidental fires (e.g. Mozambican refugees, community members).  |
|          | <b>100% reduction</b> = eliminate all illegal fires, but allow properly controlled fires for defined purposes.  |
| <b>F</b> | <b>Threat:</b> Mining sand – illegal removal of river sand and its associated environmental impacts.  |
|          | <b>100% reduction</b> = properly controlled river sand removal subjected to EIA to minimize environmental impact.   |
| <b>G</b> | <b>Threat:</b> Road construction / maintenance – includes fill removal and deposition, especially illegal activities not undertaking an EIA.                                |
|          | <b>100% reduction</b> = to ensure that all activities are subjected to, and adhere to, a proper EIA.  |
| <b>H</b> | <b>Threat:</b> Disease transfer (FMD, BTB, Anthrax) – interaction or contact between livestock and wild animals (esp. buffalo and cattle).                                  |
|          | <b>100% reduction</b> = ensure that there is absolutely no contact between wild animals and livestock, including transport of fodder.                                       |

### Appendix H: TRA Punda Maria Worksheet 1

|   |  |
|---|--|
| <b>Site Name:</b> KNP Punda Maria south-western section                             |  |
| <b>Site Description:</b> Luvuhu River south to Mpongolo River; <5km from KNP border |  |
| <b>Assessment Period:</b> 1994 to present   | <b>Completed on:</b> Friday, 13th August 2004<br>Punda Maria Section Ranger Office |

|              | Threats  | Criteria Rankings |           |         | Total Ranking | % Threat Reduced | Raw Score |
|--------------|--|-------------------|-----------|---------|---------------|------------------|-----------|
|              |  | Area              | Intensity | Urgency |               |                  |           |
| <b>A</b>     | Alien species                                    | 10                | 7         | 6       | 23            | 70               | 16.1      |
| <b>B</b>     | Poaching with dogs and/or snares                 | 11                | 5         | 10      | 26            | 0<br>(-15)       | -3.9      |
| <b>C</b>     | Poaching with firearms                           | 6                 | 4         | 9       | 19            | 80               | 15.2      |
| <b>D</b>     | Commercial hunting – luring lions                | 1                 | 3         | 7       | 11            | 5                | 0.55      |
| <b>E</b>     | Poaching fish                                    | 5                 | 11        | 8       | 24            | 0<br>(-30)       | -7.2      |
| <b>F</b>     | Illegal harvesting of live trees and/or dry wood | 3                 | 9         | 4       | 16            | 0                | 0         |
| <b>G</b>     | Illegal harvesting of trees for medicine         | 2                 | 10        | 11      | 23            | 0<br>(-60)       | -13.8     |
| <b>H</b>     | Illegal fire                                     | 9                 | 8         | 5       | 22            | 0                | 0         |
| <b>I</b>     | Endemic disease transfer                         | 4                 | 1         | 2       | 7             | 15               | 1.05      |
| <b>J</b>     | Highly infectious alien diseases                 | 7                 | 2         | 3       | 12            | 0<br>(-80)       | -9.6      |
| <b>K</b>     | Increasing elephant population                   | 8                 | 6         | 1       | 15            | 0<br>(-60)       | -9.0      |
| <b>TOTAL</b> |  | 66                | 66        | 66      | 198           |                  | -10.6     |

| TRA Index Formula            | Total Raw Score |          | Total Ranking |          | Convert to Percentage |          |            | TRA Index |             |
|------------------------------|-----------------|----------|---------------|----------|-----------------------|----------|------------|-----------|-------------|
| <b>TRA Index Calculation</b> | <b>-10.6</b>    | <b>÷</b> | <b>198</b>    | <b>=</b> | <b>-0.05</b>          | <b>x</b> | <b>100</b> | <b>=</b>  | <b>-5 %</b> |



## TRA Punda Maria Worksheet 2: Explanation of Threats

|          |  |
|----------|--|
| <b>A</b> | <b>Threat:</b> Alien plant species - anthropogenically propagated/transported and uncontrolled invasive alien plants, or parts thereof, to or within park (incl. honeybee parasite). |
|          | <b>100% reduction</b> = eradicate all alien invasive species in and out of KNP using physical and/or biological control.   |
| <b>B</b> | <b>Threat:</b> Poaching wild animals with dogs and/or snares   |
|          | <b>100% reduction</b> = stop all poaching using dogs and/or snares within KNP.   |
| <b>C</b> | <b>Threat:</b> Poaching with firearms  |
|          | <b>100% reduction</b> = stop all poaching with firearms.   |
| <b>D</b> | <b>Threat:</b> Commercial hunting – luring of lions by bait and/or sound from KNP by commercial hunters/outfitters in adjacent areas.  |
|          | <b>100% reduction</b> = eliminate all luring of lions from KNP.  |
| <b>E</b> | <b>Threat:</b> Illegal poaching of fish within KNP, especially with nets.  |
|          | <b>100% reduction</b> = eliminate all forms of poaching fish within KNP.   |
| <b>F</b> | <b>Threat:</b> Illegal harvesting of live trees and/or collection of dry wood.   |
|          | <b>100% reduction</b> = eliminate all harvesting of live trees and and dry wood collection.  |
| <b>G</b> | <b>Threat:</b> Illegal harvesting of trees, or parts thereof, for medicine (e.g. endangered pepper-bark tree <i>Warburgia salutaris</i> )  |
|          | <b>100% reduction</b> = no harvesting of trees, but allow for seed collection on a sustainable basis.  |
| <b>H</b> | <b>Threat:</b> Illegal fires – deliberate and/or accidental fires (e.g. Mozambican refugees, community members) not sanctioned under KNP’s current fire management policy.           |
|          | <b>100% reduction</b> = eliminate all illegal fires within KNP and ensure that those adjacent to KNP do not ‘run away’ or spread to the park.  |
| <b>I</b> | <b>Threat:</b> Endemic disease transmission (FMD) – contact between wild animals and livestock both within KNP and outside KNP.  |
|          | <b>100% reduction</b> = eliminate all contact between wild animals and livestock both within and outside KNP.  |
| <b>J</b> | <b>Threat:</b> transfer of highly infectious alien disease (e.g. BTB)  |
|          | <b>100% reduction</b> = provide 100% containment of BTB within park, and allow for no expansion/spread.  |
| <b>K</b> | <b>Threat:</b> Increasing elephant population – increase in KNP’s elephant population leading to over-browsing of some plant species, and damage especially by bulls.                |
|          | <b>100% reduction</b> = reduce and manage elephant population to mimic natural population fluctuations.  |

### Appendix I: TRA Shangoni Worksheet 1

|  |   |
|--|---|
| <b>Site Name:</b> KNP Shangoni & Mahlangeni (part) western sections                                |   |
| <b>Site Description:</b> Mphongolo River south to Klein Letaba River; <5km from KNP western border |   |
| <b>Assessment Period:</b> 1994 to present  | <b>Completed on:</b> Tuesday, 3 <sup>rd</sup> August 2004<br>Shangoni Section Ranger Office |

|              | Threats                        | Criteria Rankings |           |         | Total Ranking | % Threat Reduced | Raw Score |
|--------------|--------------------------------|-------------------|-----------|---------|---------------|------------------|-----------|
|              |                                | Area              | Intensity | Urgency |               |                  |           |
| <b>A</b>     | Poaching grass/trees           | 7                 | 2         | 5       | 14            | 50               | 7         |
| <b>B</b>     | Poaching fish                  | 1                 | 8         | 7       | 16            | 50               | 8         |
| <b>C</b>     | Poaching wild animals          | 8                 | 4         | 8       | 20            | 90               | 18        |
| <b>D</b>     | Alien plant species            | 2                 | 1         | 3       | 6             | 80               | 4.8       |
| <b>E</b>     | Disease transfer               | 6                 | 3         | 1       | 10            | 50               | 5         |
| <b>F</b>     | Illegal fires                  | 5                 | 7         | 4       | 16            | 70               | 11.2      |
| <b>G</b>     | Increasing elephant population | 4                 | 6         | 2       | 12            | 0<br>(-50)       | - 6       |
| <b>H</b>     | Commercial hunting             | 3                 | 5         | 6       | 14            | 0<br>(-100)      | - 14      |
| <b>TOTAL</b> |                                | 36                | 36        | 36      | 108           |                  | 34        |

| TRA Index Formula            | Total Raw Score |          | Total Ranking |          | Convert to Percentage |          |            | TRA Index     |
|------------------------------|-----------------|----------|---------------|----------|-----------------------|----------|------------|---------------|
| <b>TRA Index Calculation</b> | <b>34</b>       | <b>÷</b> | <b>108</b>    | <b>=</b> | <b>0.31</b>           | <b>x</b> | <b>100</b> | <b>= 31 %</b> |

## TRA Shangani Worksheet 2: Explanation of Threats

|          |   |
|----------|---|
| <b>A</b> | <b>Threat:</b> Poaching grass/trees – illegal removal of grass, dry wood and live trees from the park   |
|          | <b>100% reduction</b> = create a closely monitored sustainable harvest of grass by community members within KNP; stop all illegal removal of dry/wet wood from park.  |
| <b>B</b> | <b>Threat:</b> Poaching fish – illegal removal of fish from park  |
|          | <b>100% reduction</b> = stop all illegal capture/removal of fish within KNP.  |
| <b>C</b> | <b>Threat:</b> Poaching wild animals – illegal killing and/or removal of wild animals from park (not incl. fish)  |
|          | <b>100% reduction</b> = stop all illegal hunting within KNP.  |
| <b>D</b> | <b>Threat:</b> Alien plant species - anthropogenically propagated/transported invasive alien plants, or parts thereof, to or within park (incl. via watercourses).  |
|          | <b>100% reduction</b> = eliminate all new introductions of invasive alien plant species to park and completely eradicate all existing plants within KNP.  |
| <b>E</b> | <b>Threat:</b> Disease transfer – interaction or contact between livestock outside park and wild animals (esp. buffalo and cattle). Cases include cattle entering the park and wild animals escaping from the park. |
|          | <b>100% reduction</b> = ensure that there is absolutely no contact between wild animals within KNP with livestock and/or wild animals outside KNP.  |
| <b>F</b> | <b>Threat:</b> Illegal fires – deliberate and/or accidental fires (e.g. Mozambican refugees, community members) not sanctioned under KNP’s current fire management policy.  |
|          | <b>100% reduction</b> = eliminate all illegal fires within KNP and ensure that those adjacent to KNP do not ‘run away’ or spread to the park.   |
| <b>G</b> | <b>Threat:</b> Increasing elephant population – increase in KNP’s elephant population leading to over-browsing of some plant species.   |
|          | <b>100% reduction</b> = reduce elephant population to allow more sustainable browsing of vegetation (e.g. umbrella thorn <i>Acacia tortilis</i> in southern section of assessed area).                              |
| <b>H</b> | <b>Threat:</b> Commercial hunting – luring of lions by bait and/or sound from KNP by commercial hunters/outfitters in adjacent areas.   |
|          | <b>100% reduction</b> = eliminate all luring of lions from KNP.   |

## Appendix J: Taxa Identified in PDMs and Community Questionnaire and Categories of Use

|    | Tsonga-Shangaan  | English                        | Latin                                   | food | drink | fuel wood | medicine | construction | utensils / tools | ornaments / religion | recreation | TOTAL |    |
|----|------------------|--------------------------------|---|------|-------|-----------|----------|--------------|------------------|----------------------|------------|-------|----|
| 1  | makuwa           | fig                            | <i>Ficus spp.</i>                       | 1    | 1     | 1         | 1        | 1            | 1                | 1                    | 1          | 7     | 2  |
| 2  | nkanyi           | marula                         | <i>Sclerocarya birrea caffra</i>        | 1    | 1     | 1         | 1        | 1            | 1                |                      | 1          | 7     |    |
| 3  | xanatsi          | mopane                         | <i>Colophospermum mopane</i>            |      |       | 1         | 1        | 1            | 1                | 1                    | 1          | 6     |    |
| 4  | mondo            | leadwood                       | <i>Combretum imberbe</i>                |      |       | 1         | 1        | 1            | 1                | 1                    | 1          | 6     | 3  |
| 5  | ntoma            | jackal berry                   | <i>Diospyros mespiliformis</i>          | 1    |       | 1         | 1        | 1            | 1                |                      | 1          | 6     |    |
| 6  | nkaye            | knob thorn                     | <i>Acacia nigrescens</i>                |      |       | 1         | 1        | 1            | 1                |                      | 1          | 5     |    |
| 7  | xikhavi          | red bushwillow                 | <i>Combretum apiculatum</i>             |      |       | 1         | 1        | 1            | 1                |                      | 1          | 5     | 6  |
| 8  | sihami           | sandpaper raisin               | <i>Grewia flavescens flavescens</i>     | 1    | 1     |           |          | 1            | 1                | 1                    |            | 5     |    |
| 9  | nkwakwa          | black monkey orange            | <i>Strychnos madagascariensis</i>       | 1    | 1     |           |          |              | 1                | 1                    | 1          | 5     |    |
| 10 | konola           | silver cluster-leaf            | <i>Terminalia sericea</i>               |      |       | 1         | 1        | 1            | 1                | 1                    |            | 5     | 4  |
| 11 | nkuhlu           | Natal mahogany                 | <i>Trichilia emetica</i>                | 1    |       |           | 1        | 1            |                  | 1                    | 1          | 5     |    |
| 12 | xikukutsi        | velvet bushwillow              | <i>Combretum molle</i>                  |      |       | 1         | 1        | 1            | 1                |                      |            | 4     |    |
| 13 | xipalatsi        | zebra-wood                     | <i>Dalbergia melanoxylon</i>            |      |       | 1         | 1        |              | 1                |                      | 1          | 4     | 4  |
| 14 | nsihani          | silver raisin                  | <i>Grewia monticola</i>                 |      |       | 1         |          | 1            | 1                |                      | 1          | 4     |    |
| 15 | nhlanga          | reed                           | <i>Phragmites mauritianus/australis</i> |      |       |           |          | 1            | 1                | 1                    | 1          | 4     |    |
| 16 | mhala            | impala                         | <i>Aepyceros melampus</i>               | 1    |       |           |          |              |                  | 1                    | 1          | 3     | 21 |
| 17 | xikwenga         | sisal                          | <i>Agave sisalana</i>                   |      |       |           |          |              | 1                | 1                    | 1          | 3     |    |
| 18 | mpotso           | russet bushwillow              | <i>Combretum hereroense</i>             |      |       | 1         |          | 1            | 1                |                      |            | 3     |    |
| 19 | xifata           | common corkwood                | <i>Commiphora pyracanthoides</i>        |      |       |           |          |              | 1                | 1                    | 1          | 3     | 3  |
| 20 | majekejeke       | reed                           | <i>Cyperus latifolius</i>               |      |       |           |          | 1            | 1                | 1                    |            | 3     |    |
| 21 | mangwa           | plains zebra                   | <i>Equus burchelli</i>                  | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 22 | biligomo         | blue gum tree                  | <i>Eucalyptus spp.</i>                  |      |       |           |          | 1            | 1                |                      | 1          | 3     | 3  |
| 23 | hlangula         | magic guarri                   | <i>Euclea divinorum</i>                 | 1    |       | 1         | 1        |              |                  |                      |            | 3     |    |
| 24 | lala             | lala palm                      | <i>Hyphaene coriacea</i>                |      | 1     |           |          | 1            |                  |                      | 1          | 3     |    |
| 25 | mirivata         | false marula                   | <i>Lannea schweinfurthi stuhlmannii</i> |      |       |           | 1        | 1            | 1                |                      |            | 3     | 3  |
| 26 | ndlopfu          | African elephant               | <i>Loxodonta africana</i>               | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 27 | yingwe           | leopard                        | <i>Panthera pardus</i>                  | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 28 | miyatahu         | round-leaved teak              | <i>Pterocarpus rotundifolia</i>         |      |       | 1         |          |              | 1                |                      | 1          | 3     | 3  |
| 29 | xipene           | steenbok                       | <i>Raphicerus campestris</i>            | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 30 | ndzopfura        | tamboti                        | <i>Spirostachys africanus</i>           |      |       |           | 1        | 1            |                  |                      | 1          | 3     |    |
| 31 | masala           | green monkey orange            | <i>Strychnos spinosa</i>                | 1    | 1     |           |          |              |                  |                      | 1          | 3     | 2  |
| 32 | mhuti            | common duiker                  | <i>Sylvicapra grimmia</i>               | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 33 | nyarhi           | Cape buffalo                   | <i>Syncerus caffer</i>                  | 1    |       |           |          |              |                  | 1                    | 1          | 3     |    |
| 34 | nhongo           | kudu                           | <i>Tragelaphus strepsiceros</i>         | 1    |       |           |          |              |                  | 1                    | 1          | 3     | 2  |
| 35 | tsengele         | sour plum                      | <i>Ximenia caffra</i>                   | 1    | 1     |           | 1        |              |                  |                      |            | 3     |    |
| 36 | ncecenyi         | buffalo thorn                  | <i>Ziziphus mucronata</i>               | 1    |       | 1         | 1        |              |                  |                      |            | 3     |    |
| 37 | sasani           | scented thorn                  | <i>Acacia nilotica kraussiana</i>       |      |       | 1         | 1        |              |                  |                      |            | 2     | 2  |
| 38 | xenhe            | pod mahogany                   | <i>Azelia quanzensis</i>                |      |       |           |          |              | 1                |                      | 1          | 2     |    |
| 39 | yembe            | wild custard-apple             | <i>Annona senegalensis</i>              | 1    |       |           | 1        |              |                  |                      |            | 2     |    |
| 40 | mpfimba hongonyi | tree wisteria                  | <i>Bolusanthus speciosus</i>            |      |       | 1         |          |              | 1                |                      |            | 2     | 2  |
| 41 | mbhovhu          | Cape chestnut                  | <i>Calodendrum capense</i>              |      |       |           |          |              |                  | 1                    | 1          | 2     |    |
| 42 | chugulu          | simple-spined/climbing num-num | <i>Carissa edulis</i>                   | 1    |       |           | 1        |              |                  |                      |            | 2     |    |
| 43 | khalavatla       | wild watermelon                | <i>Citrullus lanatus</i>                |      | 1     |           |          |              |                  |                      | 1          | 2     | 2  |
| 44 | dema             |                                | <i>Coccinia spp.</i>                    |      |       |           | 1        |              |                  |                      | 1          | 2     |    |
| 45 | mponwani         | snot berry                     | <i>Cordia ovalis</i>                    |      |       |           | 1        |              | 1                |                      |            | 2     |    |
| 46 | mhisi            | spotted hyaena                 | <i>Crocuta crocuta</i>                  |      |       |           |          |              |                  | 1                    | 1          | 2     | 2  |
| 47 | xipapi           |                                | <i>Cucumis spp.</i>                     | 1    |       |           |          |              |                  |                      | 1          | 2     |    |
| 48 | milala           |                                | <i>Cyperus spp.</i>                     |      |       |           |          |              | 1                | 1                    |            | 2     |    |
| 49 | mhlahlu          | reed                           | <i>Cyperus textilis</i>                 |      |       |           |          |              | 1                | 1                    |            | 2     | 2  |
| 50 | ndhenga          | sickle bush                    | <i>Dichrostachys cinerea</i>            |      |       | 1         |          |              |                  |                      | 1          | 2     |    |
| 51 | xitsalala        | transvaal gardenia             | <i>Gardenia volkensii spatulifolia</i>  |      |       |           | 1        |              | 1                |                      |            | 2     |    |
| 52 | simba            | large-spotted genet            | <i>Genetta tigrina</i>                  |      |       |           |          |              |                  | 1                    | 1          | 2     | 2  |
| 53 | xihlangwa        | common spike-thorn             | <i>Gymnosporia buxifolia</i>            |      |       |           | 1        |              | 1                |                      |            | 2     |    |
| 54 | mhalamhala       | sable antelope                 | <i>Hippotragus niger niger</i>          | 1    |       |           |          |              |                  | 1                    |            | 2     |    |
| 55 | mbhandzu         | apple-leaf                     | <i>Lonchocarpus capassa</i>             |      |       | 1         |          |              | 1                |                      |            | 2     | 2  |
| 56 | manghovo         | mongoose                       | <i>Mongoose species</i>                 |      |       |           |          |              |                  | 1                    | 1          | 2     |    |
| 57 | mhangele         | guinea fowl                    | <i>Numida meleagris</i>                 | 1    |       |           |          |              |                  | 1                    |            | 2     |    |
| 58 | rhonge           | snuffbox tree                  | <i>Oncoba spinosa</i>                   |      |       |           |          |              |                  | 1                    | 1          | 2     | 2  |
| 59 | xinungumafi      | white resin tree               | <i>Ozoroa engleri</i>                   |      |       |           | 1        |              |                  | 1                    |            | 2     |    |

|     |               |                          |   |   |   |   |   |   |   |   |   |
|-----|---------------|--------------------------|---|---|---|---|---|---|---|---|---|
| 60  | nghala        | lion                     | <i>Panthera leo</i>                       | 1 |   |   |   |   | 1 | 2 |   |
| 61  | mbulwa        | mobola plum              | <i>Parinari curatellifolia</i>            | 1 | 1 |   |   |   |   | 2 |   |
| 62  | xuva          | weeping wattle           | <i>Peltophorum africanum</i>              |   |   | 1 | 1 |   |   | 2 |   |
| 63  | ncindzu       | wild date palm           | <i>Phoenix reclinata</i>                  | 1 | 1 |   |   |   |   | 2 |   |
| 64  | xikwenga nova | bowstring hemp           | <i>Sansevieria hyacinthoides</i>          |   |   |   | 1 | 1 |   | 2 |   |
| 65  | yimbho        | ostrich                  | <i>Sruthio camelus</i>                    |   |   |   |   |   | 1 | 1 | 2 |
| 66  | mhuti         | bushbuck                 | <i>Tragelaphus scriptus</i>               | 1 |   |   |   |   | 1 |   | 2 |
| 67  | mpfilwa       | wild medlar              | <i>Vangueria infausta</i>                 | 1 | 1 |   |   |   |   |   | 2 |
| 68  | mikorho       |                          |   | 1 |   |   | 1 |   |   |   | 2 |
| 69  | nkowankowa    | white thorn              | <i>Acacia polyacantha</i>                 |   |   |   |   |   | 1 |   | 1 |
| 70  | munga         | umbrella thorn           | <i>Acacia tortilis</i>                    |   |   |   |   |   | 1 |   | 1 |
| 71  | dzimba        | cheetah                  | <i>Acinonyx jubatus</i>                   |   |   |   |   |   | 1 |   | 1 |
| 72  | njiya         | grasshopper / locust     | <i>Acrididae</i> family                   | 1 |   |   |   |   |   |   | 1 |
| 73  | mpetso        | feather climber          | <i>Acridocarpus natalitius</i>            |   |   |   | 1 |   |   |   | 1 |
| 74  | ximuwi        | baobab                   | <i>Adansonia digitata</i>                 | 1 |   |   |   |   |   |   | 1 |
| 75  | molele        | common false-thorn       | <i>Albizia harveyi</i>                    |   |   | 1 |   |   |   |   | 1 |
| 76  | hanga/nala    | many-stemmed false-thorn | <i>Albizia petersiana evansii</i>         | 1 |   |   |   |   |   |   | 1 |
| 77  | mhangani      | mountain aloe            | <i>Aloe marlothii marlothii</i>           |   |   |   | 1 |   |   |   | 1 |
| 78  | thyeke        | common pigweed           | <i>Amaranthus thunbergii</i>              | 1 |   |   |   |   |   |   | 1 |
| 79  | nsimbisi      | Lebombo ironwood         | <i>Androstachys johnsonii</i>             |   |   |   |   | 1 |   |   | 1 |
| 80  | hunga         | eel                      | <i>Anguillidae</i> family                 | 1 |   |   |   |   |   |   | 1 |
| 81  | ntinta        | large hook-berry         | <i>Artabotrys brachypetalus</i>           |   | 1 |   |   |   |   |   | 1 |
| 82  | nulu          | green thorn / torchwood  | <i>Balanites maughanii</i>                |   |   |   | 1 |   |   |   | 1 |
| 83  | nyiya         | brown ivory              | <i>Berchemia discolor</i>                 | 1 |   |   |   |   |   |   | 1 |
| 84  | swinyiyani    | red ivory                | <i>Berchemia zeyheri</i>                  |   | 1 |   |   |   |   |   | 1 |
| 85  | mthavatsindi  | yellow peeling plane     | <i>Brackenridgea zanguebarica</i>         |   |   |   | 1 |   |   |   | 1 |
| 86  | mhungubye     | black-backed jackal      | <i>Canis mesomelas</i>                    |   |   |   |   |   | 1 |   | 1 |
| 87  | manghawani    | jackal                   | <i>Canis</i> spp.                         |   |   |   |   |   | 1 |   | 1 |
| 88  | muobadali     | woolly caper bush        | <i>Capparis tomentosa</i>                 |   |   |   | 1 |   |   |   | 1 |
| 89  | nandzani      | caracal                  | <i>Caracal caracal</i>                    |   |   |   |   |   | 1 |   | 1 |
| 90  | lumanyama     | Sjambok pod              | <i>Cassia abbreviata beareana</i>         |   |   |   | 1 |   |   |   | 1 |
| 91  | papa          | blue buffalo grass       | <i>Cenchrus ciliaris</i>                  |   |   |   |   | 1 |   |   | 1 |
| 92  | ndhungulu     | tilapia                  | <i>Cichlidae</i> family                   | 1 |   |   |   |   |   |   | 1 |
| 93  | tsovoloti     | climbing cactus          | <i>Cissus quadrangularis</i>              |   |   |   | 1 |   |   |   | 1 |
| 94  | fungwe        | African civet            | <i>Civettictis civetta</i>                |   |   |   |   |   | 1 |   | 1 |
| 95  | bawuri        | catfish                  | <i>Clarias</i> spp.                       | 1 |   |   |   |   |   |   | 1 |
| 96  | bangala       | African cabbage          | <i>Cleome gynandra</i>                    | 1 |   |   |   |   |   |   | 1 |
| 97  | migwiri       | wild cucumber            | <i>Coccinia sessilifolia?</i>             |   | 1 |   |   |   |   |   | 1 |
| 98  | xotse         |                          | <i>Cocculus hirsutus</i>                  |   |   |   |   |   | 1 |   | 1 |
| 99  | tuva          | dove                     | <i>Columbidae</i> family                  | 1 |   |   |   |   |   |   | 1 |
| 100 | mvuva         | variable bushwillow      | <i>Combretum collinum</i>                 |   |   | 1 |   |   |   |   | 1 |
| 101 | guxi          |                          | <i>Corchorus tridens</i>                  | 1 |   |   |   |   |   |   | 1 |
| 102 | mkombego      | sand crown-berry         | <i>Crossopteryx febrifugia</i>            |   |   |   |   |   | 1 |   | 1 |
| 103 | nkaka         | gherkin                  | <i>Cucumis anguria anguria</i>            | 1 |   |   |   |   |   |   | 1 |
| 104 | gedlhe        | carp                     | <i>Cyprinus carpio</i>                    | 1 |   |   |   |   |   |   | 1 |
| 105 | xiluvani      | common wild pear         | <i>Dombeya rotundifolia</i>               |   |   |   | 1 |   |   |   | 1 |
| 106 | visangasi     | kei-apple                | <i>Dovyalis caffra</i>                    | 1 |   |   |   |   |   |   | 1 |
| 107 | xisasa vafi   | sumach bean?             | <i>Elephantorrhiza burkei</i>             |   |   |   | 1 |   |   |   | 1 |
| 108 | njunju        | mountain mahogany        | <i>Entandrophragma caudata</i>            |   |   |   | 1 |   |   |   | 1 |
| 109 | michikwani    | korhaan                  | <i>Eupodotis</i> spp.                     | 1 |   |   |   |   |   |   | 1 |
| 110 | xikhozani     | falcons / hawks          | <i>Falconidae</i> and <i>Accipitridae</i> |   |   |   | 1 |   |   |   | 1 |
| 111 | goya          | African wild cat         | <i>Felis sylvestris</i>                   |   |   |   |   |   | 1 |   | 1 |
| 112 | hlapfu        | knobbly fig              | <i>Ficus sansibarica</i>                  | 1 |   |   |   |   |   |   | 1 |
| 113 | nwharhi       | francolin                | <i>Francolinus</i> spp.                   | 1 |   |   |   |   |   |   | 1 |
| 114 | xinjengwe     | slender mongoose         | <i>Galerella sanguniea</i>                |   |   |   |   |   | 1 |   | 1 |
| 115 | muhimbi       | lowveld mangosteen       | <i>Garcinia livingstonei</i>              |   | 1 |   |   |   |   |   | 1 |
| 116 | xirhungulu    | red spike-thorn          | <i>Gymnosporia senegalensis</i>           |   |   |   | 1 |   |   |   | 1 |
| 117 | xilungwa      | spear grass              | <i>Heteropogon contortus</i>              |   |   |   |   | 1 |   |   | 1 |
| 118 | mahudinga     | shakama plum             | <i>Hexalobus monopetalus</i>              | 1 |   |   |   |   |   |   | 1 |
| 119 | deke          | common thatching grass   | <i>Hyparrhenia</i> spp.                   |   |   |   |   | 1 |   |   | 1 |
| 120 | matamani      | mopane caterpillar       | <i>Imbrasia bellina</i>                   | 1 |   |   |   |   |   |   | 1 |
| 121 | mavungwa      | wild apricot             | <i>Landolphia kirkii</i>                  |   | 1 |   |   |   |   |   | 1 |
| 122 | ndloti        | serval cat               | <i>Leptailurus serval</i>                 |   |   |   |   |   | 1 |   | 1 |
| 123 | mpfundla      | scrub hare               | <i>Lepus saxatilis</i>                    | 1 |   |   |   |   |   |   | 1 |
| 124 | tsumbula      | African osage orange     | <i>Maclura africana</i>                   |   |   |   | 1 |   |   |   | 1 |
| 125 | majenje       | termites                 | <i>Macrotermes</i> spp.                   | 1 |   |   |   |   |   |   | 1 |
| 126 | nwamba        | lowveld milkberry        | <i>Manilkara mochisia</i>                 | 1 |   |   |   |   |   |   | 1 |

