

KEEPING CATTLE IN A CHANGING RURAL LANDSCAPE

*COMMUNAL RANGELAND MANAGEMENT IN OKHOMBE, KWAZULU-NATAL,
SOUTH AFRICA*

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Declaration of originality

I hereby declare that this thesis, except where indicated to the contrary in the text, is my own original work and has not been submitted for any degree at any other University.

Signed on this 21 th day of October 2011

Monique Louise Salomon

ABSTRACT

A research journey involving people, cattle, and the landscape in rural Okhombe in the western part of the province of KwaZulu-Natal and lying at the foot of the uKhahlamba Drakensberg Mountain Range, South Africa, is the focus of this work. Using action research involving community members as co-researchers, it investigates why a rotational resting system for communal cattle grazing collapsed within six months of its launch. Despite having been designed in a participatory manner, the rotational resting system was not applied by cattle keepers.

As a backdrop to the concern around the rotational resting system, it is necessary to understand how the current landscape of Okhombe was shaped. The history of the uKhahlamba Drakensberg Region over the past two hundred years was, therefore, explored. Four historical episodes were distinguished: economic expansion, nature conservation efforts, colonial and apartheid legislation, and encounters between people all left their imprint on the landscape. Digitized maps of aerial photographs of Okhombe, taken between 1945 and 2004, showed how Government intervention changed people's multifunctional use of the landscape to concentrated settlements and cropping fields in the valley and cattle grazing on the mountain slopes.

A survey in Enhlanokhombe, one of the sub-wards of Okhombe, further investigates how cattle keepers use the rangeland commons, and what determines these practices. People are keeping fewer cattle than in the past. A 24% decrease in cattle numbers was recorded between 2001 and 2008. Cattle keepers perceive stock theft as the most important threat. Yet, figures of stock losses showed that cattle disease resulting in death is an equally pressing problem.

The decline in authority of traditional leaders and the view that herding is a family task have compounded the dominant management practice of continuous grazing by cattle. Rotational

resting was found to be unsuited to the majority of cattle keepers who want to keep a close watch on their herds as they graze on the lower hill slopes. People in Okhombe disagreed about the condition of the range and what comprised appropriate grazing management. A community initiative has emerged to form cattle patrols to address stock theft. If successful, it may further enhance collective action.

The concern with communal grazing management investigated in this research and in the Okhombe Landcare project, of which it was part, aimed to reverse land degradation and overgrazing. An analysis of digitized maps of Okhombe taken in the period between 1945 and 2004, however, showed that soil erosion did not increase rapidly as is commonly assumed by conventional rangeland scientists and extension staff. Rather, an increase in bare soil coincided with a period of drought.

The focus of the Okhombe Landcare project on combatting soil erosion and rehabilitate degraded lands was underpinned by a particular interest in and need to conserve the uKhahlamba Drakensberg as a near-pristine wilderness landscape which provides marketable ecosystem goods and services. As such, cattle keeping in Okhombe can be described as being embedded in a social-ecological system comprising a series of nested, self-organizing sub-systems which are interconnected. Sub-systems include the cattle production system, cattle grazing management practices, the wider ecosystem, and government policies and regulations.

A spatial-temporal and systemic approach is proposed to make meaningful, policy-related decisions regarding communal rangeland management in the future. Such an approach would enable cattle keepers, other rangeland users, and outside stakeholders, such as extension workers and policy makers, to respond effectively to changes in the landscape by taking into consideration and balancing a complex set of biophysical, socio-political, and economic variables.

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DEDICATION

To my parents William Salomon and Monica Salomon-Silano
whose life journey inspires me to always give my best.

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GLOSSARY OF ZULU TERMS

The current spelling of the Zulu language (*isiZulu*) commonly accepted by Zulu linguists is used in this thesis. This spelling may differ from the popular idiom found in daily speech, place names, and phenomena.

<i>amavimbela</i>	<i>vimbela</i> = to block or to protect; name of a group of community members in Okhombe who search for lost cattle. The prefix <i>ama</i> refers to people such as <i>amaZulu</i> and <i>amaZizi</i> .
<i>ibutho</i>	(pl. <i>amabutho</i>) regiment (whether of men or young women), or age grade; in Okhombe it was the name for a community cattle patrol, which was later renamed <i>amavimbela</i> .
<i>ilobolo</i>	popularly known as <i>lobola</i> ; bridewealth; cattle and other goods handed over by a groom's family to his bride's family to formalize a marriage.
<i>iNduna</i>	(pl. <i>iziNduna</i>) village headman.
<i>iNkosi</i>	(pl. <i>amaKosi</i>) chief.
<i>uNdunankulu</i>	Chief <i>iNduna</i> , and adviser to the <i>iNkosi</i> .
<i>isangoma</i>	traditional healer.
<i>ukusisa</i>	to give livestock to the care of another family; in Okhombe it was said that people 'hide cattle' through <i>ukusisa</i> to avoid others making a claim on them, for instance to settle outstanding <i>ilobolo</i> .
<i>uKhahlamba</i>	dragon; uKhahlamba Drakensberg is the name of the mountain range between the western part of Lesotho, and the north-western part of KwaZulu-Natal; <i>Drakensberg</i> means dragon mountain in Afrikaans.

umdibi a camp or other designated part of the rangelands that is used by a group of herders to graze their cattle herd and where the herders spend the night with the herd.

umemulo Girls' coming of age ceremony

Chapter 1 Introduction

Introduction

This thesis describes a research journey involving people, cattle, and the landscape. The journey started with the disconcerting discovery that a participatory project does not always result in community-wide consensus and action and that communal rangeland management is an area of contestation both within rural communities and among external stakeholders.

My desire to reflect on nearly a decade of experience in community-based natural resources management, my interest as an anthropologist in the significance of cattle in contemporary Zulu life, and my ambition to work at the interface of science and society prompted this research in one of the most interesting regions of South Africa.

The uKhahlamba Drakensberg Mountain Region is a UNESCO World Heritage Site, known for its natural and cultural assets (Sandwith, 1998:121-122). Over the past two centuries the uKhahlamba Drakensberg Region has been subjected to tensions between economic development policies and people's relationship with nature. More recent efforts seek to resolve this tension by offering people economic incentives to control soil erosion, improve water flow, and preserve the region's unique collection of rock art (Pfothenauer, 2007; Sandwith, 1998:122). The Okhombe Landcare project that led to this study was one such effort (Sisitka, 2004), and it provided an opportunity to critically reflect on assumptions and challenges in community-based natural resources management in general and communal rangeland management in particular.

This research engages in the debate among scientists, policy makers, and development practitioners on land degradation and its causes. Particular focus is placed on exploring the premise underpinning government policy and practice in South Africa that overstocking and overgrazing by livestock is the main cause of land degradation in rural areas (South Africa, 2007:

8).

Drawing from anthropology, environmental history, resource economics, rangeland management theory, and geographical information systems, this thesis seeks to develop a holistic perspective to understand the current context and wider environment in which cattle keepers operate, and what influences their practices. This study proposes that a spatial-temporal and systemic¹ approach is imperative to analyse, develop policy for, and intervene in the complex and dynamic contexts in which rural people operate.

This research seeks to move beyond the use of a set of participatory appraisal techniques towards a research design in which the locus of control is shifted from academic researchers to 'research subjects' as researchers in their own right. Action research is used to create a space in which scientific and local knowledge can merge, agendas for research and development can be shaped in parallel, and actions can be agreed upon that are appropriate, feasible, and desirable to the people involved.

Thus, although this study focuses on cattle keeping and communal rangeland management and is situated in a rural context, its central argument may appeal to a wider audience interested in development issues.

1.1 Research purpose and approach

This study builds on the work of staff from the University of KwaZulu-Natal in community-based natural resources management and communal rangeland management in Okhombe, KwaZulu-Natal, South Africa.

¹ "*Systems thinking* advocates thinking about real social systems as if they exist in the world" (Flood, 2001:133). *Systemic thinking* assumes that the world can be analysed as if it is a system (Flood, 2001).

The aim of the study is to deepen understanding of the dynamic interrelations within and between communal cattle keeping practices and the social-ecological² landscape, with the intention of informing rangeland management policy and practice. To achieve this overall aim, the objectives of the study are to:

- Investigate current practices of cattle keeping and grazing management in Okhombe;
- Understand how the social-ecological landscape has changed since the 1800s;
- Identify key drivers of landscape changes; and
- Examine whether there is a causal link between management of cattle grazing and soil erosion.

The overarching methodology is action research (Herr & Anderson, 2005), involving myself as a PhD student, two Masters students, and seven community members that were supervised and supported by a team of experts from South Africa and the Netherlands.

1.2 Outline of the thesis

This introductory chapter is followed by a synthesis of literature on the social, economic, and environmental aspects of pastoralism and rangeland management presented in Chapter 2. Salient debates on the cattle economy, land degradation, and managing the commons are highlighted.

In Chapters 3 and 4 the scene is set for the study. In Chapter 3 the project that prompted this research is described. The quality of community participation in the project is questioned, and the rationale of the study is presented. In Chapter 4 the research process and design are outlined using a framework to evaluate validity in action research.

² A social-ecological system is a concept that emphasizes the interdependence of ecosystems and human society (Resilience Alliance, 2007; Leach, 2008).

In Chapters 5 and 6 the research results are presented, starting with a historical review of the uKhahlamba Drakensberg Region in Chapter 5. The motivation of cattle keepers and their grazing management practices are explored in Chapter 6.

In Chapter 7 the research findings are reframed in the light of the debates found in the literature. In Chapter 8 the thesis is brought to a conclusion with a summary of research findings, recommendations for policy makers and implementers, and a reflection on the action research process.

Chapter 2 The battle over cattle: livestock management in a changing rural landscape³

Introduction

In this chapter a synthesis is presented of relevant literature that highlights debates on the socio-cultural, economic, and ecological aspects of livestock keeping and communal rangeland management. Emphasis is placed on the culture of livestock keeping, the dynamic interplay between livestock and the natural environment, and the impact of global trends and policies on pastoralist practice, particularly in Africa.

2.1 People and their cattle

Pastoralists are people for whom livestock are a vital part of their lives and socio-cultural identity (Homewood, 2008). Pastoralism is a key livelihood strategy in arid and semi-arid regions (Rass, undated; Walker & Janssen, 2002). Between 100 and 200 million people worldwide (Hatfield & Davies, 2006; Rass, undated) derive part of their livelihood from livestock and livestock-related activities as mobile pastoralists or agro-pastoralists (Rodriguez, 2008).

The roles and functions that livestock play in a household, village, and society, are as diverse and dynamic as the production systems and localities of which they form part (Fratkin, 1997; Hodgson, 2000). Examples of such systems are dairy farming, beef cattle ranching, sheep wool production, indigenous poultry rearing, crop-livestock combinations, bee keeping, or transhumance with camels. Livestock may be kept on a small- to large-scale, as production for home consumption, may involve processing and/or sales of livestock products, and may be a part-time or full-time occupation. Such livestock-related systems are generally not static but

³ Re-worked and expanded from: Salomon et al. 2008.

dynamic and fluid. “[P]astoralist groups, households and individuals are continuously shifting into and out of livestock-based livelihoods, according to the vagaries of climate, disease, political and economic opportunity and constraint” (Homewood, 2008:1).

In Africa, livestock, particularly cattle, connect people and enhance social cohesion through the many practical, cultural and spiritual functions they fulfil (Hodgson, 2000). For instance, a span of oxen is used to plough a neighbour’s fields, a herder tends someone else’s animals, or a family engaged in ritual slaughter to reach out to the ancestors. Cattle are “the threads of which the social fabric [of pastoralist society] is woven” (Camaroff & Camaroff, 1991:36). Thus, to people who belong to a livestock-centred culture, livestock are an intrinsic part of their identity and way of life, even if they themselves don’t keep livestock (Homewood, 2008; Peters, 2002; Poland *et al.*, 2003).

Another example of how livestock maintains and strengthens social cohesion in a locality is the traditional custom of bride wealth, often found among pastoralists. Bride wealth is not simply an exchange of cattle for wives, nor a financial transaction using ‘cattle currency’. Rather, it is a social exchange to create and strengthen family ties (Galaty & Bonte 1991), and it often involves a sequence of meetings and ceremonies held over several months or years.

Members of a pastoralist household or family, exercise different rights and responsibilities over livestock instead of individual ownership and control (Hodgson, 2000). Debsu (2009) notes that among the Guji people in southern Ethiopia men are responsible for the management and sale of live animals while women control the sales of the animal products, such as milk and butter. Only boys receive a cow gift during birth. However, parents may give a girl the usufruct of a cow to cover small expenses, which animal she must return at marriage (Debsu, 2009). In pastoralist societies organized according to an age grade system, e.g. the Maasai (Ndagala, 1992) and the Guji (Debsu, 2009), a woman’s recognized rights shift as her position in the household and/or larger group changes (Hodgson, 2000).

Cattle are measured qualitatively, and animals are recognized and valued as individuals, rather than counted (Ferguson, 1994). Decisions about livestock such as which to slaughter, sell, select which cow to give for bride wealth, and to determine who gets the profit depend on factors such as the category of livestock, the animal's origin, and purpose of disposal (Hodgson, 2000). In *The bovine mystique*, Ferguson (1994) highlights that for the Basotho people selling an animal is not a simple economic transaction. The price of an animal depends on the social situation, what it is used for, and who is buying it from whom, and not on the external market (Ferguson, 1994).

Pastoralist societies are often assumed to be egalitarian (Borgerhoff Mulder *et al.*, 2010). Egalitarian or rather "near-equal" (Woodburn, 1982:431) societies prevent accumulation of wealth, power, and/or prestige by regulations that allow for direct, individual access to resources and mobility and for norms and rules to share and circulate goods (Woodburn, 1982). In his study of Maasai pastoralists in Tanzania, Ndagala (1992) suggests that political and economic egalitarianism is not typical of tribal pastoral society. Rather, egalitarianism is a coping strategy in the face of prevailing lack of investment alternatives to livestock (Ndagala, 1992) to reduce risk, enhance productivity, and maintain an interdependent group large enough to protect or gain access to often contested resources by livestock raiding (Huysentruyt *et al.*, 2002). Furthermore, livestock are also used to establish and maintain power relations. Ferguson (1994), for example, shows how Basotho migrant labourers maintain strong patron-client relationships in their home village through the cattle they accumulate and keep in the village, while working in the mines in South Africa (Ferguson, 1994).

As illustrated in this section, insight into the social, cultural, and spiritual dimensions of livestock keeping shows that livestock are not mere economic assets to be managed. Rather, livestock, particularly cattle, form an intrinsic part of pastoralist identity and way of life. It is against this background that government efforts to commercialize livestock herds, described in the following section, must be placed.

2.2 The cattle economy

Livestock generate multiple goods and services which are of local, national, and global value (Hatfield & Davies 2006). Such goods include meat, dairy products, and hides for subsistence and export, as well as agricultural inputs, such as manure, and animal traction, and less tangible outputs, such as employment and expertise. Pastoralist services include financial services, such as insurance, investment, and risk management, and ecosystem services. Ecologically sound management of rangelands can enhance plant and animal biodiversity, water regulation and flood reduction, and carbon sequestration (Dutilly-Diane *et al.*, 2007; Hatfield & Davies, 2006; Rodriguez, 2008).

Many pastoralism-related activities and transactions take place in the informal domain and, as a result, often do not appear in economic statistics. New methods have emerged to appraise the value of home use of livestock, sales in informal markets, barter exchanges, maintenance of key resources, and how these contribute to a country's economy (Hesse & MacGregor, 2006). In Ethiopia, for example, pastoralism accounts for 9% of the country's Gross Domestic Product, while in Mali this is 10%, and in Kyrgyzstan up to 20% (Rodriguez, 2008). However, the absence of pertinent and reliable data in many countries puts pastoralism at a disadvantage, especially when compared to alternative land uses, such as export ranching or management of wildlife reserves, that can demonstrate high economic returns (Hesse & MacGregor, 2006).

Commercialization of livestock herds certainly reaps economic benefit and is a means to maintain a pastoral way of life. Trade of livestock and product diversification can expand (Fratkin 1997). The milk economy can grow, as women and men access new markets for their milk (De Bruijn, 1997). Given the right conditions, traditional pastoralist systems have engaged in marketing of meat and milk (Homewood, 2008). However, commercial exploits and market integration of livestock promoted by international development agencies from the 1960s come with ecological and social costs and have benefited mostly elites and large-scale producers (Homewood, 2008; Fratkin, 1997; Lebert & Rohde, 2007) Men increasingly gain control over

livestock as their private property, while women's rights to and control over the animals and animal products have become restricted or lost. In towns, women pastoralists increasingly turn to low status employment (Hodgson, 2000; Fratkin, 1997).

Livestock commercialization programmes are now increasingly overtaken by payment for ecosystem services (PES) initiatives for pastoralists in some countries (Rodriguez, 2008). A user of an 'ecological service' can compensate or reward individuals or groups who offer such 'service'. For example, water users and nature conservationists can reward pastoralists for increased water flows, sediment reduction in rivers, and improved biodiversity, which result from sustainable rangeland management practices. However, the effectiveness of PES programmes to meet both environmental and poverty alleviation goals is yet to be demonstrated. Some of the concerns are that PES may be biased towards the 'lesser poor' with secure resource rights, and that dealing with many smallholders will have high transaction costs (Wunder, 2005).

Pastoralism is a multi-dimensional phenomenon in which access to and benefits from livestock and livestock products are regulated through social and cultural norms. Development interventions to modernize livestock holdings into commercial ranches impose a western-centric view of ownership and control which benefits some and marginalizes others within a pastoralist household and in the wider community.

2.3 Livestock and the natural environment

For decades, rangeland scientists and practitioners have been concerned that high stocking rates exacerbate land degradation in rural areas. Many governments' policies and programmes promote rotational grazing schemes that involve seasonal rest of paddocks, conservative stocking rates, and distribution of water points and fencing to control animal pressure (Briske, 2008; Campbell *et al.*, 2006, Rohde *et al.*, 2006). Rotational grazing forms part of a set of interventions to promote presumed rangeland equilibrium through managing carrying capacity,

and stocking rates, and monitoring range condition (Vetter 2005a). Conventional rangeland science uses guidelines for economic and ecological carrying capacity⁴ to determine the number of livestock that a particular area can hold to retain a healthy herd and ensure plant regeneration. Destocking is advised where livestock numbers exceed the recommended carrying capacity.

However, O'Reagain and Turner (1992) challenged the effectiveness of rotational grazing as a main rangeland management tool as early as the 1990s. Recent analysis by Briske and colleagues (2008) of literature on grazing research experiments over the past sixty years indicates that plant production and animal production were equal or even greater under continuous grazing, compared to rotational grazing. Based on these findings they concluded that no one grazing strategy can be set apart in terms of ecological performance, because they are all constrained by the same set of ecological variables, such as climatic variation, vegetation structure, composition and productivity, prior land use, and livestock characteristics. Rather, the potential of a grazing strategy is largely dependent on the effectiveness of management practices, which involve variables of a different kind, such as commitment, ability, and goals (Briske *et al.*, 2008). Opponents of equilibrium theory thus argue that not overgrazing but rather high climatic and agro-ecological variability determine range condition.

Recent studies focus on how exactly rangelands respond to environmental variation, and whether the patterns and tendencies (Gilson & Hoffman, 2007) observed are a normal part of variable, semi-arid environments, or signs of long-term degradation (Campbell *et al.*, 2006; Derry & Boone, 2010). Using spatial models to simulate variation in rainfall, Derry and Boone (2010) observed “a gradual and continuous increase in decoupling” of rainfall, forage, and animal numbers, rather than discrete states (Derry & Boone, 2010:308). The first simulation shows that as rainfall variation increases, animal mortality reaches a threshold, after which it is

⁴ Hocking & Mattick (1993) define carrying capacity (CC) as the maximum number of animals expressed as a standardised 'Livestock Unit' of 250 kg that an area of land can support on a sustainable basis. This is expressed numerically in a stocking rate (SR).

no longer affected by rainfall variation. The second simulation shows a decoupling of forage availability and stock density as rainfall variation increases.

Thus, rather than describing rangelands either as having an intrinsic stable state (equilibrium) or as being highly variable self-regulating systems with multiple alternate states (disequilibrium) (Everson & Hatch, 1999; Homewood, 2008; Vetter, 2004), rangeland response patterns can be understood as moving on a continuum or an "axis of variation" (Campbell *et al.*, 2006:77) between equilibrium and non-equilibrium. Equilibrium refers to a "tight coupling of resources (plants) and consumers (animals)", while non-equilibrium signifies a "weak coupling" (Derry & Boone, 2010:308).

Over the last decades, studies have shown that pastoralists have developed well-adapted practices to survive in environments with extreme variation in climatic conditions (Hatfield & Davies, 2006; Homewood, 2008). Pastoralists are managing fluctuating and patchy resources typically found in arid and semi-arid environments. They do this through mobility of humans and animals, varying herd size, and diversity of breeds (Fratkin, 1997; Rohde *et al.* 2003; Samuels *et al.*, 2007). Traditionally, pastoral systems have also contributed to ecosystem health and productivity (Dutilly-Diane *et al.*, 2007; Hatfield & Davies, 2006). Trampling and grazing by livestock can stimulate growth and diversity of vegetation, improve soil structure and nutrient cycling, and prevent bush encroachment (Hesse & MacGregor, 2006; Savory & Butterfield, 1999), while other ecosystem benefits of sustainable rangeland management, such as risk management, water regulation, and carbon sequestration are of local, national, and global significance (Dutilly-Diane *et al.*, 2007; 2.2).

An example of strategic grazing management by herders is provided by Samuels and colleagues (2007). Studying spatial patterns of resource use in Namaqualand in South Africa they show how herders apply adaptive grazing management strategies in response to drought and how they reduce pressure on the rangelands. Herders respect each other's right to the commons

and move their herds strategically to avoid overcrowding of parts of the rangelands and herd competition at water points (Samuels *et al.*, 2007).

Another example of strategic herd management is the semi-nomadic Barabaig in Tanzania described by Lane and Scoones (1993). The Barabaig manage their herds through seasonal movement between distinct key resource areas to optimize the use of scarce and variable forage resources and cope with drought. Herds are exposed to different forage regimes as they move throughout the year between the plains, the hills, the lake margins, the mountains, the range/Rift, the bushland, and the river. The Barabaig also apply deliberate burning, intensive grazing, bush clearing, and shifting cultivation to stimulate vegetative growth, reduce the incidence of ticks and the deadly tsetse fly, and to expand areas for dry season grazing (Lane & Scoones, 1993).

Rangelands can be viewed as having an intrinsic stable state, having multiple alternate states, or showing fluctuating patterns in response to a set of variables. Each perspective generates distinct management options to improve rangeland condition, with differing success. In the past few decades, studies have recognized traditional pastoralists' rationality in managing their herds in complex, diverse, and risk prone environments (Chambers, 1993; Allsopp *et al.*, 2007), and which have informed the debate on managing the commons discussed below.

Government programmes to promote rotational grazing schemes in rural villages, such as for example in South Africa, serve a modernization agenda. Such programmes ignore extensive research that show that rotational grazing is not superior over continuous grazing and they deny the sophistication of pastoralist practice in managing a volatile environment, typical of marginal dryland regions where pastoralism prevails.

2.4 Grazing the commons

In the 1800s, livestock keepers in Lesotho used various parts of the village and lowland areas for grazing their stock (Turner, 2003). Herders practised rotation and resting and used harvested fields to supplement feed in winter. Management of the commons was enacted through the chiefs, who were guided by community counsel and acted as representatives of the King, who was the custodian of the land on behalf of his people. Chiefs regulated the seasonal opening and closing of grazing areas, negotiated access to higher pastures and other range resources, and imposed fines for trespassing and other offences. Transhumance into the more remote mountain areas emerged in the 1860s when parts of the Basotho territory were annexed by Afrikaners and the British crown and reduced to what is now Lesotho. Seasonal stock posts and permanent villages were established in the mountains, still under the jurisdiction of chiefs. Stock owners derived access to the commons, in the lowland villages, and remote summer stock posts based on group membership and rights to access resources. Turner (2003) characterizes this system as "nested community ownership" (Turner, 2003:1560).

For the earlier mentioned Barabaig in Tanzania, custom prescribes that everyone has access to the rangelands and that this land must be protected (Lane & Scoones, 1993). Rights of use and access to land, water, and trees, and prevention of degradation were regulated through a tripartite judicial structure that operated at community level, clan level, and individual household level respectively. Relevant councils, including a council of women, issued endorsements and sanctions, interpreted customary rules, and adjudicated in conflict (Lane & Scoones, 1993).

Allsopp *et al.* (2007) show that tacit norms and informal institutions still largely govern resource use on the commons of Namaqualand, despite different formal governing structures attempting to impose management structures and rules which conflict with these tacit norms over the years.

The above examples illustrate how traditional rangeland management practices regulated the use of range and forage resources (Fratkin, 1997; McCann, 1999). Rangeland users distinguished specific areas for use, monitored resource users, applied sanctions, resolved conflict, and adapted rules where needed. Thus, traditional pastoralist practices seemed aligned with Ostrom's (1990) design principles of stable management of common pool resources:

- Clearly defined boundaries
- Fair proportionality between benefits enjoyed and contributions made by users
- Participation in decision-making and regulating use
- Effective monitoring
- Graduated sanctions
- Accessible mechanisms of conflict resolution
- The self-determination of communities that is recognized by authorities
- A nested system of common property organizations at different scales (Ostrom, 1999; Anderies *et al.*, 2004).

Fernandez-Gimenez *et al.* (2008) argue that common property regimes in traditional communities are based on norms and social pressure to control members' behavior, and promote cooperation and reconciliation rather than monitoring and punishment. They suggest that instead of drafting formal written rules and management plans which are often resisted by such communities, local resource use could be regulated through alternative means:

- Education through which resource use norms are conveyed and internalized;
- Strengthening existing institutions by reinforcing their positive aspects; and
- New organizations and institutions to help communities build new relationships and networks, and which can provide a neutral space to discuss sensitive issues.

Both these rules-based (Ostrom, 1990 & 1999) and norm-based design principles (Fernandez-Gimenez *et al.*, 2008) challenge the tragedy of the commons parable (Hardin, 1968; Hardin,

1998) that the only way to solve problems in the management of common pool resources is for external authorities to impose private property rights and/or centralized regulation.

However, local and global socio-economic and political forces have impacted on and changed traditional pastoralist practices. Recent studies emphasize the dynamic processes and complex contexts in which rights of access to and control of resources are exercised (Peters, 2002; Sithole, 2003; Mwangi 2008; Bennett *et al.*, 2009). Governance of natural resources are characterized by legal pluralism, involving an - often uneasy and ambiguous – co-existence of customary law, colonial law, modern State law, religious law, private property law, and free access (Sithole, 2003; Alinon, 2004; Mwangi, 2008). Highly heterogeneous user groups operate within flexible and fluid resource system boundaries, exercising multiple and overlapping uses, claims, rights (Peters, 2002), and obligations (Mwangi, 2008). Rather than absolute dominance by a particular interest group, there are often a number of different ways of using resources at the same place at the same time. This means that the use of natural resources at a particular place and time is the outcome of negotiations between groups, contestation among groups, or the seizure of rights by one group over others (Peters, 2002; Alinon, 2004). Therefore, analyses of social and political relations must take centre stage (Peters, 2002) in coming to grips with the essentially “wicked nature” (Mwangi, 2008:962) of governance of the commons.

Alinon (2004) describes the efforts of West African governments to manage the legal pluralism in land tenure, prevalent on the continent. Countries use different strategies to associate and harmonize traditional rules with official state law, with varying degrees of success. Burkina Faso, Togo, and Nigeria define and enforce customary rules within the official legal framework (codification), which allow local communities to retain control of natural resources. Such integration, however, requires a simplification of and moral choice between a diversity of local customary practices. Land registration is a strategy employed by Cote d’Ivoire and Guinea-Conakry. A systematic survey of land uses using cartography, which includes surveying of traditional access rights, is followed by the issuing of title deeds. This is not only a costly but also a contentious process as, again, it requires that choices are made about whose rights of

access and use will prevail over whose. Niger, Ghana, and Madagascar delegate land management powers to local institutional structures (subsidiarity), a model also practised in Tanzania, where customary institutions are legitimized, while Uganda requires new local level institutions. In practice, however, civil servants find it very difficult to relinquish decision-making authority and financial powers to local level institutions and traditional leadership (Mwangi, 2008). Alinon (2004) further notes that privatization of land has merely strengthened the power of urban elites over rural lands, while nationalization has failed in weak and non-accountable states.

According to Mwangi (2008) many Sahelian countries have developed national laws that recognize the rights of way for pastoralists within and between countries, regulate animal movement, apply different categories of pasture, and assign user rights and obligations. Implementation plans, however, have not yet been developed in most of these countries.

In South Africa, legal pluralism is modeled on Ghana's subsidiarity approach and regulated through the Constitution and several pieces of legislation⁵ (Sithole & Mbele, 2008). Traditional leaders are recognized as "the custodians of culture, tradition and custom" (Sithole & Mbele, 2008:19). National and regional houses of traditional leadership are established who fulfill an advisory role, and facilitate development and service delivery in partnership with municipalities (Sithole & Mbele, 2008:19).

Alinon (2004) suggests that legal pluralism should be managed by clarifying tenure systems, recognizing and introducing formal elements into local customary systems, and that this is done through a systematic process of "compromise and consensus between the different systems" (Alinon, 2004:46).

⁵ The National House of Traditional Leaders Act (1997), the Municipal Structures Act (1998), the White Paper on Traditional Leadership and Governance (2003), the Communal Land Rights Act (2004) [which was declared unconstitutional and invalid in 2009] and a number of provincial statutes (Sithole & Mbele, 2008:18).

2.5 Keeping cattle in a changing rural landscape

For centuries, pastoralists and cultivators have co-existed and maintained reciprocal relations. But global and local economic and socio-political forces have triggered more ferocious competition over resources and increased the intensity of tension and conflict (Fratkin, 1997). This is particularly evident in areas where different production systems interface, such as livestock-cropping, livestock-wildlife, mobile pastoralism-ranching. Mwangi (2008) argues that pastoralists are at a disadvantage because tenure rules are often biased towards cultivators and cultivation. For example, individualized property rights are privileged over collective rights for sustainable land management, and clearing land for cultivation is recognized as a productive activity, unlike herding and grazing. This has increasingly resulted in the privatization of grazing routes, camp sites, and watering holes for farming activities (Mwangi, 2008).

Ndagala (1992) shows that, as the Maasai people in Tanzania become absorbed into the global economy, pastoral society becomes more stratified. Pastoralist groups who traditionally held less power can now also build capital and choose to sell their livestock rather than splitting their herds to assist their poorer fellow villagers.

In Lesotho the increase in off-farm income from migrant labour in South Africa and from other wage employment has become a disincentive to committed range management (Turner, 2003). Government interventions and legal pluralism have affected traditional social authority structures, while declining veld productivity, stock theft, and the difficulty in securing herding labour have resulted in a loss of interest in managing livestock.

Accelerated processes of population growth, urbanization, agricultural expansion, urban migration, sedentarization, and commoditization of the rural (livestock) economy and wage labour all have varying effects on pastoralists and pastoralist practices (Galaty & Bonte, 1991; Fratkin, 1997). Increased competition over land, loss of traditional grazing rights, climatic stresses, political conflict, and new economic opportunities are the push and pull factors that

drive increasing numbers of nomadic and semi-nomadic people to settle down in and around towns (Fratkin, 1997).

Problems of degradation and over use occur due to restricted mobility, political boundaries, demarcated grazing areas, loss of traditional rangelands, uneven population distribution, and competition of resources between pastoralists and agriculturalists (Fratkin, 1997).

2.6 The politics of policy

In 1935, Alan Pim, a British colonial official, launched a large soil conservation programme throughout Lesotho (Showers & Malahlela, 1992; McCann, 1999). The colonial “degradation narrative” (Rohde *et al.*, 2006: 303) viewed the many eroded gullies that scarred the landscape as being the result of unproductive and destructive African farming techniques. What the landscape showed, however, was that this degradation was the cumulative result of a century of plough agriculture, colonial and missionary settlement, large-scale production of wheat and maize for the South African mining economy, combined with extreme drought (McCann, 1999). Pim’s own field survey had shown that erosion was a main concern around mission stations, government camps, roads, paths, and hill slopes. Nevertheless, Basotho villagers in the lowlands were forced to build and maintain terraces - also called contour banks - in their fields and pastures, which had been largely free from erosion. At a time when soil conservation engineering was still in its infancy and anti-erosion technology had hardly been tested, thousands of terraces, diversion furrows, and meadow strips were built. The British Colonial Administration admitted the programme’s failure, but rather than remedying the situation they blamed the Basotho people for not maintaining the system. The Basotho people responded by adjusting, moving or removing the contour banks which had caused water logging, gullies, and soil erosion in their fields (Showers & Malahlela, 1992).

Keeley and Scoones (2000) narrate how the story of Africa’s soil fertility crisis was sold to highly influential international aid agencies. A well-resourced, continent-wide campaign was launched

that lacked solid scientific grounding. The Soil Fertility Initiative's simple yet compelling message was that soil fertility was pivotal in solving Africa's food and land degradation crises, which required international action. Soil maps and nutrient balance information illustrated the message, significantly with the omission of the researchers' provisos on quality of data and limited scale of research. The interaction between a range of actors and networks of scientific staff, aid officials, politicians, and industry resulted in directing international aid "to recapitalize Africa's soils" (Keeley & Scoones, 2000:12), including the use of scientifically contested rock phosphate applications. The initiative faltered, however, as a result of a re-focus on farmer-driven development, the unstable scientific foundation of the programme, and the disjointedness of the global mission in relation to local realities (Keeley & Scoones, 2000).

Scoones (1996) describes how two influential scientists in the 1930s, passionate about vegetation conservation (i.e. Illyd Pole-Evans) and successional dynamics of forest and rangeland vegetation (i.e. Professor John Phillips), initiated a large body of research to demonstrate the need for rotational grazing and destocking to remedy degradation of rangelands under communal tenure. Beinart (1996:57) notes that this concern with degradation dates back to the period of the Dutch East Indian Company. Despite growing scientific evidence of the complex, disequilibrium and non-equilibrium, dynamics of ecosystems and rangeland systems that emerged from the 1970s onward, mainstream scientific and policy thinking on rangeland management in Southern Africa has remained unchanged and continues to advocate "the need for modernization and the need to avoid environmental degradation" in rural areas (Scoones, 1996:38-39).

The above examples illustrate that knowledge-to-policy processes are not necessarily neutral or essentially good, but involve erratic and opportunistic processes between actors (Jones, 2009). Tensions occur between the objectives of scientific research and those of policy; between what comprises 'good science' and 'bad science' in the eyes of either; and between the trade-off of scientific rigour and messages that can propel action. But, foremost, the cases reveal how processes of knowledge generation and uptake are "infused with power" (Jones, 2009:11), and

how these can serve to sustain existing power structures.

Keeley and Scoones (2000) point out that references to 'the environment', 'land degradation', or even 'soil fertility' are value-laden because they reflect historically situated social and political concerns. Peters (2002) reminds us that environmentalism took centre stage in development policy and practice less than three decades ago. Following the World Summit on Sustainable Development in Rio de Janeiro in 1992, mechanisms for global governance of the environment were set up. Doom and gloom scenarios grew more popular (Keeley & Scoones, 2000), and they resembled the 'Africa's Garden of Eden faced with Armageddon' metaphor of nature devastated by human hands (Draper & Wels, 2002:6-7) so popular in colonial times, and which prompted initiatives, such as the earlier mentioned soil conservation intervention in Lesotho during colonial rule.

In his book, *The political ecology of soil erosion*, Blaikie (1985) argues that soil erosion is not the result of mismanagement, overpopulation, or ecological factors, but rather the outcome of pressures by the political economy on farmers, and he traces land degradation in Africa back to colonial policies of land expropriation. Nevertheless, the "selfish herder ruining the commons" (Hardin 1968) has proven to be the most compelling or "sticky" (Gladwell, 2000:92) message in rangeland research, policy, and practice.

The fact that little had been written on the topic until then (Dietz *et al.*, 2003) cannot explain the pervasiveness of the tragedy-of-the-commons thinking in current policy and practice, despite many studies having disproved its premise (Rohde *et al.*, 2006). The appeal of Hardin's (1968) seven page opinion piece lies in its much ignored sub-title "The population problem has no technical solution; it requires a fundamental extension in morality" (Hardin, 1968:1243). The argument that the world's resources are finite and cannot sustain its ever-growing population and that people's "freedom to breed" (Hardin, 1968:1246) should be restricted to counteract overpopulation was made in a period of recurring famine and concern about desertification. The "stickiness" (Gladwell, 2000:92) of Hardin's message lay in the link he made between

overpopulation and environmental degradation and gave credence to the efforts of international aid agencies to privatize land, commercialize livestock, and limit herd size (Fratkin, 1997). These interventions form part of the modernization model of development which has been promoted among former colonies and new independent states since the 1960s and which continue to dominate policies governing rangeland management (Rohde *et al.*, 2006).

In South Africa, a villagization programme also known as the Betterment Scheme was implemented in the 1950s to modernize rural areas. Land use practices were reorganized through the concentration of people in nucleated settlements, reallocation of arable lands near residences, and grazing on supposedly unutilized lands with rotational resting and forced stock reduction (South Africa, 1955). Destocking programmes were met with great resistance among communal cattle keepers and, where implemented, did not yield significant improvements in rangeland condition or livestock production (Benjaminsen *et al.*, 2005). Although the redrafted Range and Forage Policy for South Africa has shifted in emphasis from monitoring and control to promoting sustainable management of range and forage resources (South Africa, 2005; South Africa, 2007), the policy remains blind to the keeping of communal cattle as essentially a social practice.

In sum, research-into-Policy processes are not neutral but are steered by actors and networks, with varying interests and differences in power, who try to influence and direct policy. The tragedy-of-the-commons thesis, which dominates theory and practice of rangeland management, is so pervasive because it connects environmental issues with overpopulation concerns and serves the modernization agenda of international aid agencies and governments, including the South African national government.

2.7 Pastoralism as a complex system

“In South Africa, agricultural research and development have generally remained focused on sustainable yields and reducing the effects of environmental variability, and

agricultural policies and interventions still lack an integrated approach which incorporates ecological and social dimensions of rangelands use” (Vetter, 2009:32).

The previous section highlighted that pastoralist practices are affected by ecological, economic, socio-cultural, and political factors at macro and micro level. In Section 2.3 rangelands were described as being dynamic systems that shift between varying states, triggered by a range of interacting variables (Campbell *et al.*, 2006; Derry & Boone, 2010). In communal rangeland management, rangeland users and other stakeholders, such as extension staff and policy-makers, are faced with a complex set of biophysical, social, and economic considerations (Gross *et al.*, 2005). As such, pastoralism can be described as being embedded in a social-ecological system comprising a series of nested, self-organizing sub-systems which are interconnected. Sub-systems include, for example, the cattle production system, cattle grazing management practices, the wider ecosystem, and government policies and regulations.

Complex systems thinking is about “relationships, patterns, processes, and context” (Blaikie, 2007:206). The concept of social-ecological systems (Resilience Alliance, 2007; Holling, 2008) offers a holistic view of “life’s biological, cognitive and social dimensions” (Blaikie, 2007:206).

The following characteristics can be distinguished (Blaikie, 2007: 208,209):

1. Social-ecological systems are open systems that interact with their environment;
2. They consist of a large number of components, many of which may be quite simple;
3. Social-ecological systems have a history, and generally follow a path-dependent trajectory (Enfors, 2009);
4. They require a constant flow of activity to maintain their structure and ensure their survival;
5. Interactions usually have a fairly short range, but, given the richness of the interactions, influence can be wide-ranging;
6. Some sequences of interaction involve feedback loops, long and short as well as positive (enhancing activity) and negative (restricting activity);
7. Human action to meet specific goals can lead to unexpected results because humans are

just one component within the system (Resilience Alliance, 2007).

Flood (2001) distinguishes two schools of thought in discussions around complex systems thinking. The first school of thought understands systems as if they exist in the world, which he calls *systems thinking*. The second 'school' views systems as being social constructs (or a concept) to analyse the world, called *systemic thinking* (Flood, 2001:133). The present research falls within the second school of thought, because it seeks to employ a holistic, systemic view of the complex and dynamic processes and interactions at play in communal rangeland management in a rural South African context.

Summary

The traditional debates on livestock management seem stuck within a singular view of livestock management and its impact on the land. The 'battle over cattle' is a 'battle over perspectives'. People have mind pictures of what the landscape should look like, and how cattle should be managed within such a landscape.

Despite Ostrom's critique (1990) and the body of research that followed, the tragedy-of-the-commons thesis continues to dominate policies to regulate the management of rangelands. The image of the 'selfish herder ruining the commons' is so pervasive because it connects environmental issues with overpopulation concerns and serves the modernization agenda of international aid agencies and governments, including the South African government.

Development interventions to privatize rangeland commons, manipulate animal numbers to maintain presumed rangeland equilibrium, and integrate pastoralist products into global markets, are aimed at turning pastoralist livestock holdings into commercial ranches. Such modernization efforts have met with little success because they ignore:

- that pastoralism is a multi-dimensional phenomenon in which access to and benefits from livestock products are regulated through social and cultural norms; and
- that rotational grazing is not superior over continuous grazing;

and deny:

- the sophistication of pastoralist practice in dealing with fluctuating climatic, agro-ecological, economic, and political conditions, typical of marginal dryland regions; and
- that problems of degradation and over use occur as a result of policies – at local and global level - that favour agriculturalists and sedentarization, and marginalize pastoralists and mobility.

A more holistic, systemic view is needed that enables scientists and practitioners to understand the complexities of livestock keepers and livestock management as a practice that is continuously shifting in a rapidly changing world.

In the following two chapters, the background to this research and the research design are presented.

Chapter 3 Research setting and rationale

Introduction

In this chapter the scene is set for the research and the research area and its regional and national significance are introduced. An earlier project, which aimed at engaging community members in managing their natural and cultural resources, is described. A specific aspect of this project, which aimed to improve communal grazing management in the area, is focused on. Informed by the issues raised, the rationale for the current study is presented at the end of this chapter.

3.1 Okhombe – a rural setting

The uKhahlamba Maloti-Drakensberg Mountain region covers an area of approximately 5 000 km², extending over 300 km along the frontier between the Kingdom of Lesotho and the Province of KwaZulu-Natal in South Africa (Sandwith, 1997). The region is a recognized centre of biodiversity and endemism, and its mountains are the principal source of water for the sub-region (Sandwith, 1997).

The research site, Okhombe (Figure 1), falls within the administrative boundaries of the uThukela District Municipality (or DC23) which is one of ten District Municipalities in the KwaZulu-Natal Province. The District Municipality covers an estimated 11 500 km² with a population of over 715 000 and is named after one of the major rivers, the uThukela (previously called Tugela) river, that originate in the uKhahlamba Drakensberg mountains, and this river supplies water to a large part of KwaZulu-Natal and Gauteng (South Africa, 2010:11-16). The uThukela District Municipality is predominantly rural and experiences high levels of poverty, an unemployment rate of over 49%, a low revenue base, with 36% of the population earning between 6 000 and 18 000 Rand or US\$ 750 to 2 250 per annum, limited access to services, poor infrastructure, and low investment (South Africa, 2010: 17-19). The uThukela District

Municipality consists of five Local Municipalities and one District Management Area (DMA), and it has 24 Traditional Administrative Councils.

The most northern part of the uKhahlamba Drakensberg mountain range falls within the boundaries of the Okhahlamba Local Municipality (KZ235). This Local Municipality has a population of over 152 000 - or close to 29 000 households - spread over 13 Wards, with an ethnic composition of around 65% African, 23% Indian, 7% white, and 2% coloured people (South Africa, 2010:13). Ward 7 comprises the five communal⁶ areas that fall under the jurisdiction of the *amaZizi* Traditional Administrative Council. These areas are Obonjaneni, Busingatha, Newstand, iNkosini, and Okhombe (South Africa, 2010: 11-16). The traditional governance structure commonly found in areas under communal land tenure in KwaZulu-Natal is presented in Figure 2.

Okhombe (28⁰ 42' S; 29⁰ 4' E), the site of research, is situated 50 km from Bergville and 5 km from Royal Natal National Park. Okhombe is approximately 6 km long and 2 km to 3 km wide, and covers 3 024 hectare (Tau, 2006:59) (Figure 1, Plates 1 and 2). The area is surrounded by a horseshoe of ridges, with altitudes varying between 1200 and 1800 metres, and which form part of the uKhahlamba Drakensberg Mountain range. Mdlankomo Mountain borders the west of Okhombe, and in the south are the Skidi and Maqoqo mountains, from where the uKhombe and uMgeni rivers flow down into the valley. Both rivers join the uThukela river that provides water to a large part of KwaZulu-Natal province and Gauteng province through three inter-basin transfer schemes into the Vaal (Chapter 5), uMhlatuze, and uMgeni Rivers (Diederichs & Mander, 2004). Okhombe's neighbours are Obonjaneni in the west, Ogade in the east, and Mnweni (*amaNgwane*) in the south.

Okhombe has a sub-humid climate with summer rains that make up over 80% of the 800 mm mean annual rainfall (Tau, 2006; Dolleris, 2002). Although Okhombe receives double the national mean precipitation, rainfall is erratic, and the area experiences drought periods that

⁶ In South Africa, areas under customary land tenure are generally referred to as 'communal areas'.

affect grazing animals (Dolleris, 2002; Tau, 2006). Sonneveld (2004) observes a ten year cyclical pattern of increasing and decreasing precipitation, with flash floods, hail and thunderstorms in summer (Dolleris, 2002:74), and frost and drought in winter (Tau, 2006).

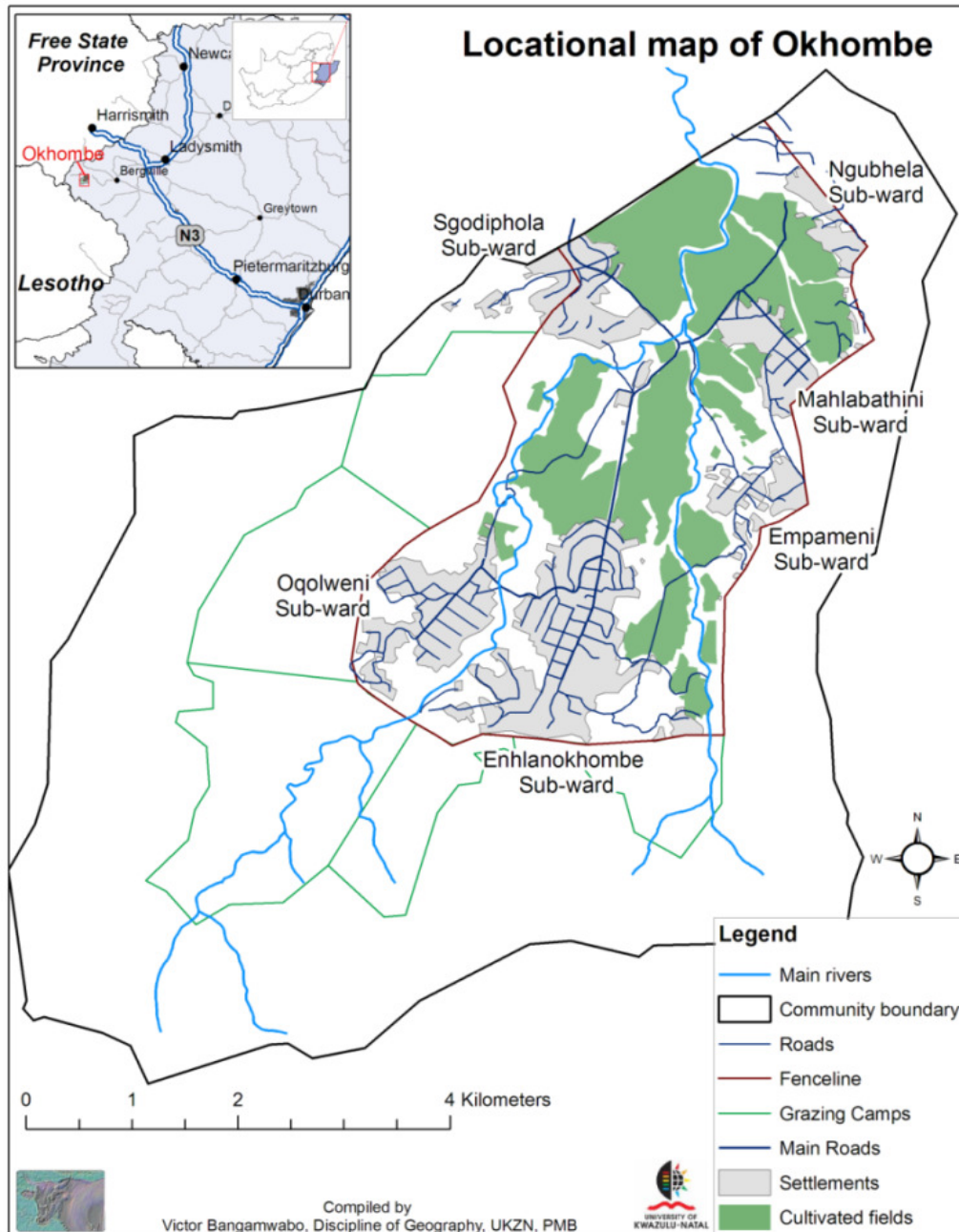


Figure 1 Location of research site Okhombe and insert of western KwaZulu-Natal



Plate 1 The Okhombe valley and the Maqoqa and Skidi mountains (from left to right)



Plate 2 Part of Okhombe and Skidi Mountain viewed from the main access road (R616)

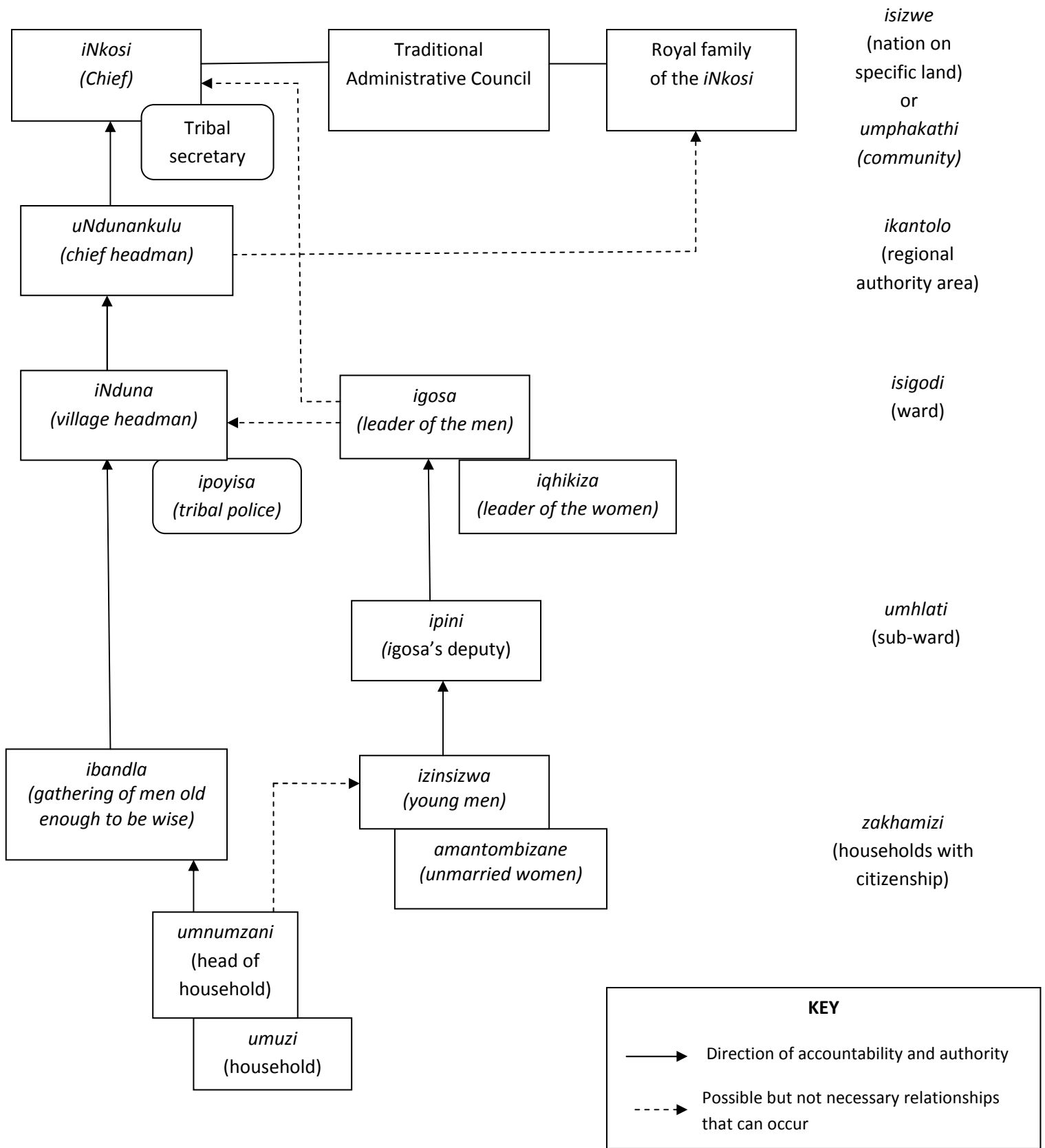


Figure 2 Traditional governance structure in KwaZulu-Natal (Alcock & Hornby, 2004:8)

The relationships within the traditional governance structure are not strictly hierarchical. Each level of authority is accompanied by specific responsibilities over a geographically defined space. The iNkosi and the Traditional Administrative Council are the highest decision-making body with jurisdiction over the nation (isizwe) and the final arbiter on a wide range of issues. A tribal secretary, paid by the Government, assists the iNkosi and council. The nation comprises different izigodi (wards). The uNdunankulu assists the Inkosi and mediates in disputes between the izinNduna and the people in the wards. The iNduna administers land issues, assisted by a functionary (ipoyisa), as well as the igosa and iqhikiza, who regulate the behaviour of men and women, particularly at cultural ceremonies. The ipini regulates the behaviour of young men and women in a sub-ward. The ibandla is a meeting of men who come together to discuss an issue of common concern or to receive information from the iNkosi through the uNdunankulu or iNduna. The smallest spatial unit is the umuzi, a household or homestead. The umuzi holds citizenship, not an individual, and is represented by the head of household who attends meetings of the ibandla or igosa. The composition of the Traditional Administrative Council can vary per area, and generally include members of the royal family, respected men, chief iziNduna, and iziNduna. In some areas, municipal councilors (who are democratically elected) also serve as advisers to the iNkosi and the Traditional Administrative Council⁷. The uNdunankulu acts as a prosecutor unless the matter is referred to the Magistrate Court. The Magistrate Court can call on the uNdunankulu to give evidence. Urban migration by men and the impact of HIV and AIDS have resulted in an increase in female-headed and child-headed households. Alcock and Hornby (2004) cite examples from Msinga, where, contrary to custom, a widow was allowed to retain her family's homestead and land.

Okhombe has over four thousand inhabitants. People rely on income from grants, small business, farming for food and cash, livestock, craft, teaching, traditional healing, and income from relatives working elsewhere (Provincial Planning and Development Commission KwaZulu-

⁷ The Traditional Governance and Framework Act (2003) stipulates that Traditional Councils should consist of no more than 30 members, depending of the needs of the community concerned, that at least a third of its members must be women, and a further 40% be democratically elected members of the traditional community (Sithole & Mbele, 2008:20).

Natal, 2005:100). Households can be described as “multiple-site households” (Sithole & Mbele, 2008:15), with members located in Okhombe and in urban areas – mostly Johannesburg and Durban – “in search for socio-economic survival” (Sithole & Mbele, 2008:15). People, goods, and money are exchanged between the rural and urban sites. The extent to which people in Okhombe depend on crops and livestock for their daily living varies. For many households, however, the rural home is foremost a place of social safety to which members from the urban sites can retreat when faced with adversity (Sithole & Mbele, 2008; Provincial Planning and Development Commission KwaZulu-Natal, 2005).

Okhombe has dirt access roads, a primary and secondary school, a community hall, and a mobile clinic that services the area twice a month. There are no piped water services, nor household sanitation (Provincial Planning and Development Commission KwaZulu-Natal, 2005:94). Few households have electricity because the majority cannot afford the cost.

3.2 Community involvement in natural resources management

In 1992, staff from the Council for Scientific and Industrial Research (CSIR) set up an agro-forestry trial in Ngubhela, one of the six sub-wards of Okhombe. The aim of the trial was to promote re-vegetation of areas that were degraded. Community members were involved in designing and managing a plot of 100 square metres which was fenced off and re-vegetated with trees and grasses. A weather station, simple equipment, and v-notch weirs to measure water run-off in plots with and without vegetation, were installed. Community members were encouraged to see how resting improved vegetation of the area, and they requested a similar project for the whole of Okhombe.

A project proposal was developed in consultation with community members, and, with funding from the National Department of Agriculture’s Landcare Programme, the Okhombe Landcare project was launched in 1999. The project was coordinated by the then University of Natal’s

community outreach unit, the Farmer Support Group, of which I was the newly appointed director. Project activities were undertaken in partnership with staff of Range and Forage Resources (now the School of Biological and Conservation Sciences of the University of KwaZulu-Natal), the KwaZulu-Natal Department of Agriculture and Environmental Affairs (now the KwaZulu-Natal Department of Agriculture, Environmental Affairs, and Rural Development), the CSIR-Environmentek, Bergwatch - a local non-governmental organization, and the then KwaZulu-Natal Nature Conservation Services (now Ezemvelo KwaZulu-Natal Wildlife).

The Okhombe Landcare Project aimed to address the problem of land degradation, strengthen community structures, and promote job creation in natural resource management. A community action plan was developed through community workshops in each of the six subwards to promote sustainable farming, communal grazing management, and soil erosion control. Over a period of two years, four hundred community members were employed in work teams for several months at a time. Work teams were trained in relevant skills to erect fences to protect cropping fields from livestock, to plant indigenous trees and grasses, and to build simple erosion control structures. After their contract period ended these work teams trained new work teams.

Several local institutions were formed and trained to sustain community management of natural resources. These institutions included three Landcare facilitators tasked to enhance community capacity, the Okhombe Inthathakhusa Monitoring Group (OMG) committed to monitor the impact of soil erosion control measures, the Okhombe Landcare Trust aimed at raising funds and coordinating community conservation efforts, the Okhombe Livestock Committee dedicated to managing communal grazing, and the Okhombe Tourism Task Team aimed at promoting community-based tourism.

3.3 The participatory cattle grazing initiative⁸

One of the issues identified by community members, during the Okhombe Landcare Project, was related to cattle and grazing management. The grazing camps on the upper slopes and mountain plateau, which had been established in the 1950s as part of the South African Government's villagization programme, also known as the Betterment Scheme, were no longer functional. Most fences had been removed or destroyed or had collapsed. There was no communal control of grazing movement of cattle, and there were no regulations with regard to stocking densities. Due to lack of security and stock theft people kept most cattle near their homestead and moved them daily up and down the slopes, while crop damage by cattle had increased (Sonneveld, 2004). Some people said that cattle caused much damage to cropping fields in the valley, they caused soil erosion through trampling and moving up and down cattle paths particularly on the hill slopes and mountains, and it was felt that cattle put pressure on grazing lands on the lower hill slopes. People also experienced fodder shortages particularly in the winter season.

The Okhombe Livestock Committee was formed, drawing volunteers from all six sub-wards, including stock owners and people who did not own cattle to ensure that various interests and concerns were considered. Assisted by project staff from the Okhombe Landcare Project, the Okhombe Livestock Committee led community workshops to plan the improvement of livestock management and cattle grazing. In each sub-ward, crush pens were built for community members to treat their cattle against tick-borne diseases, and to prevent soil erosion caused by moving cattle from the sub-wards to the only dipping tank in the valley near the uKhombe river. A fence was erected throughout the Okhombe ward to separate the cropping fields from the rangelands. Community members considered this as one of the most successful parts of the intervention because the incidence of crop damage by cattle was reduced (Sisitka, 2004:3).

⁸ Adapted from: Salomon, 2006.

Three sub-wards, namely Sgodiphola, Oqolweni, and Enhlanokhombe, agreed to develop a communal grazing management plan. The other three sub-wards, Ngubhela, Mahlabathini, and Mpameni, decided not to participate because they had a boundary dispute and/or shared water points with neighbouring wards. In preparation for creating a grazing plan, a vegetation survey was conducted in the mountain rangelands of Enhlanokhombe and Oqolweni sub-wards to assess rangeland condition, basal cover, and grazing capacity (Tau, 2006). According to Tau (2006), the mountain rangelands in Okhombe, classified as Moist Highland Sourveld (i.e. Bioresource group 8), have a recommended carrying capacity of 2 hectares per Animal Unit (ha AU⁻¹), while the actual stocking density in 2001 was 0.5 ha AU⁻¹. These calculations were based on the range condition, rainfall, and a stocking density of 1 545 head of cattle grazing on 3 024 ha of rangelands. The range condition score, determined through the occurrence of decreaser and increaser species⁹, was low for all sites, ranging from 40.4% in the bottom lands to 47.0% in the uplands (Tau, 2006).

In 2004, the Okhombe Livestock Committee approved and launched the design of a rotational resting system (Figure 3). The grazing camps were intended to be rested annually in rotation: in year one, the first camp (priority camp) is grazed; the camp rated second in priority is held in reserve – to be used only when grass production in the priority camp is too low; while a third grazing camp is rested throughout the growing season. In the following year, the rested camp becomes the priority camp for grazing. First a spring burn is applied to remove the low quality material that has accumulated during the rest. Grazing is allowed as soon as the grassland has recovered from the burn. The camp that was grazed becomes the reserve camp, and the reserve camp becomes the rested camp. The cycle is repeated every year to ensure that the vegetation in the grazed camp is rested and can recover from grazing. This system is called

⁹ Decreaser species are species which decrease when the grassland is under- or over-utilized. Increaser species increase with under-utilization (Increaser I), over-utilization (Increaser II), and selective grazing (Increaser III) (Tainton, 1999). The veld condition score is calculated by multiplying the percentage of each species by its grazing value, totalling all the values for the site and expressing this total as a percentage of the benchmark value (Tau, 2006:91).

rotational resting, whereby one camp is rested for the entire growing season to provide a period of uninterrupted plant development.

To help implement the grazing system, six herders were appointed to maintain and protect the fences, control veld fires, and ensure compliance with the grazing rules. The herders were equipped with cell phones for emergencies while herding cattle in the mountains. It was agreed that the herders would be paid on a cost sharing basis from project funds and community contributions. All households were expected to contribute an amount of five rand per month (US\$ 0.60) to a herding fund, since everyone was said to benefit from cattle and their products. Over a period of three months, the project would reduce its financial contribution to zero, while the community would phase in their financial contribution to 100% for the herding fund.

However, problems occurred soon after the grazing system was launched, which raised questions about the viability of the plan. Several issues emerged. Firstly, many people with cattle and without cattle did not pay the agreed monthly contribution of five rand. The project did phase out its contribution, but the community never made the 100% contribution as agreed. People said that they did not have money because they were unemployed or because they felt that herding is a child or family task that is not paid for (Gengiah *et al.*, 2004). Within a few months after the grazing system started, only two out of six herders were active due to lack of funds.

Secondly, another problem was that community members had conflicting understandings about the purpose and functioning of the rotational resting system. A map drawn by community members showed three grazing camps (Figure 4) instead of the five proposed camps (Figure 3). Several people suggested that the fences were there to prevent stock theft. They referred to the herders as guards and emphasized the need for firearms to protect themselves against thieves (Gengiah *et al.*, 2004). Some said the police were accomplices to what they considered to be organized stock theft. There was also concern that the camps would make it easier for thieves to round up cattle, particularly since there were only one or

two herdsmen left. The Okhombe Livestock Committee expressed concern about people’s lack of understanding of the grazing system and requested that an outsider expert should explain the system to the wider community.

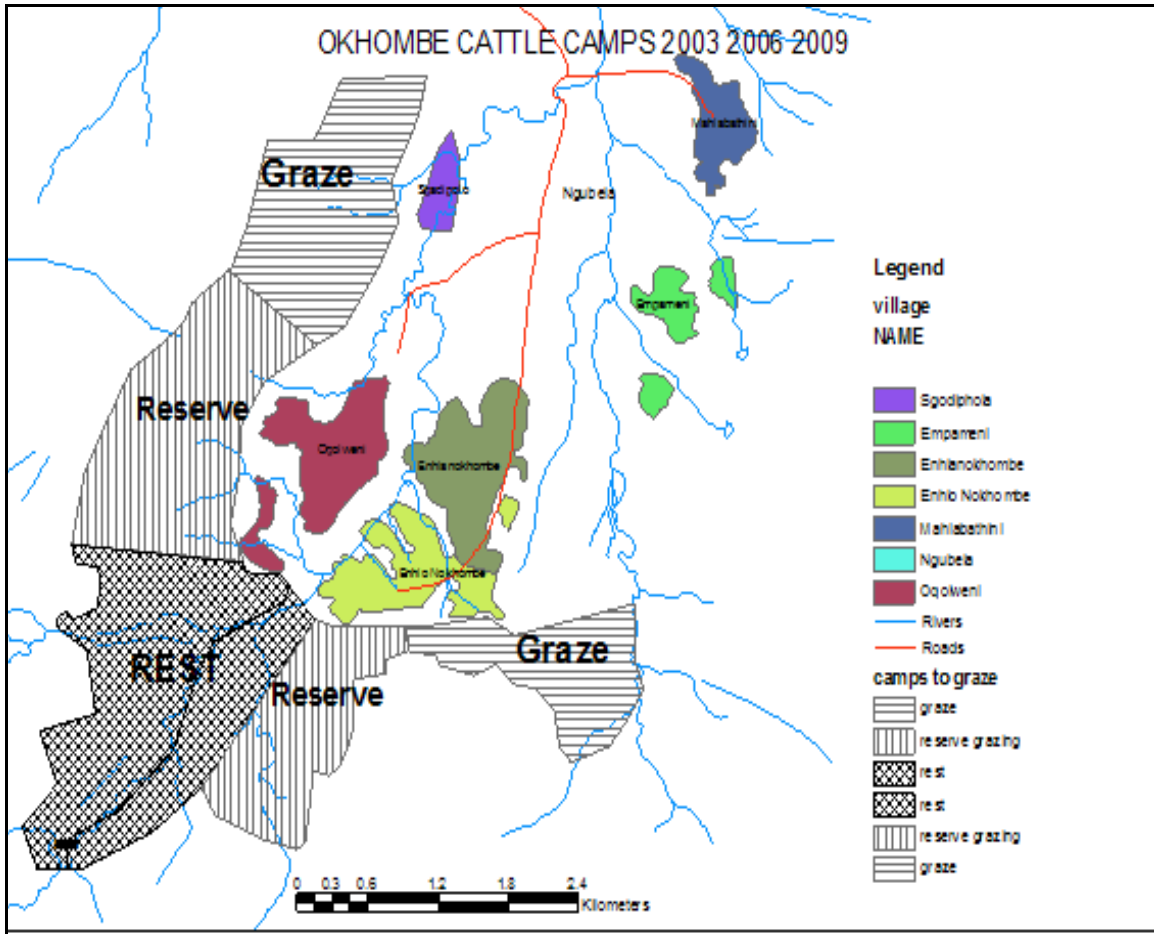


Figure 3 The rotational resting design for Okhombe (Tau, 2006)

The system comprises five camps to be used for grazing during the summer season when traditionally cattle stay in the mountains. The two camps on the left, labelled ‘Graze’ and ‘Reserve’ belong to the communal grazing system of Oqolweni sub-ward. The camp labelled ‘Rest’ is shared by Enhlanokhombe and Oqolweni sub-wards, while the camps labelled ‘Reserve’ and ‘Graze’ are part of the communal grazing system of the Enhlanokhombe sub-ward. All grazing camps are separated by fences of wooden poles and barbed wire (black lines around camps) which were provided by the Landcare Project and erected by community volunteers.

Thirdly, theft of fences was a constraint in implementing the rotational resting plan. Over one kilometre of fencing materials was reported missing from the fences erected to demarcate the five grazing camps. The *iNduna* called a meeting in each sub-ward to address the issue. The *iNkosi* of the *AmaZizi* Traditional Administrative Council to which Okhombe belongs, issued a warning that individuals responsible for theft of fences would be brought to justice, and the Landcare Project put all activities on grazing management on hold. As a result, some individuals contributed old fencing materials, while others collected money to purchase fencing to repair the fences.

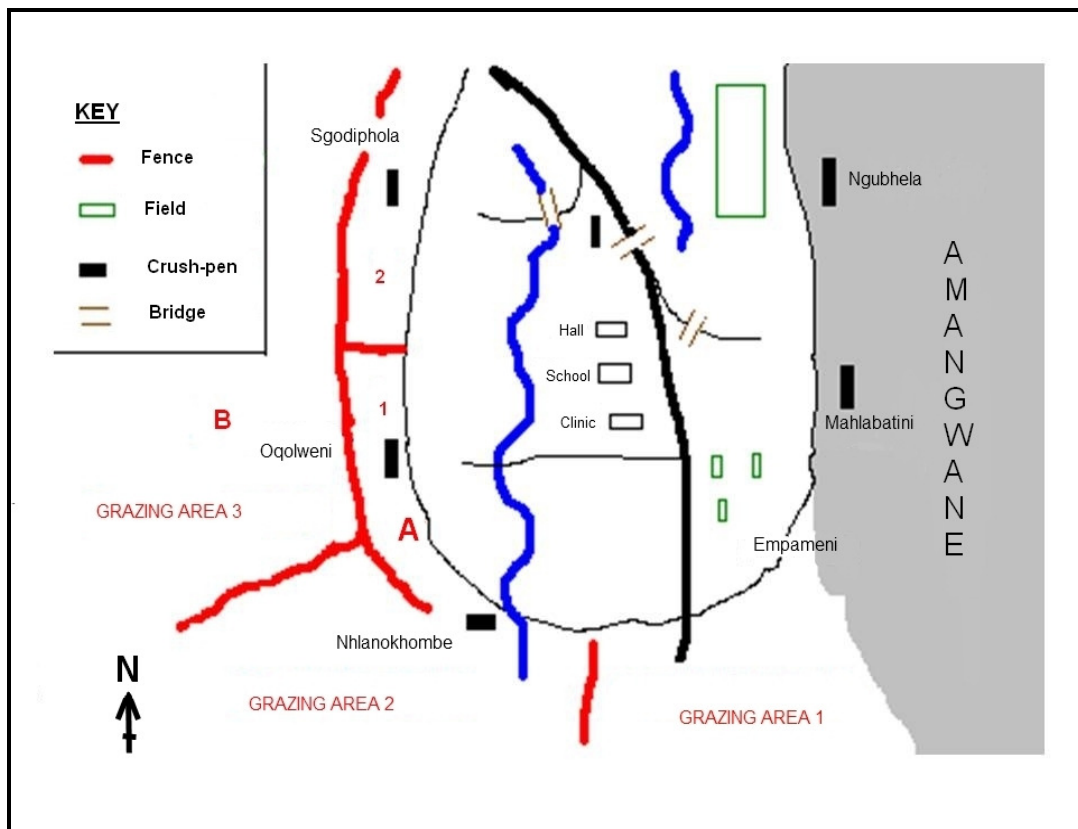


Figure 4 Grazing camps drawn by community members (Gengiah *et al.*, 2004)

The problems with the rotational resting system raised questions about community ownership and appropriateness of the plan. The Okhombe Livestock Committee was unable to resolve

internal differences and failed to bring leadership and vision to the implementation of the rotational resting system.

3.4 Questioning community participation

The Okhombe Livestock Committee's rotational resting system was identical to the grazing management plan implemented under the Betterment Scheme, which had collapsed. The Okhombe Landcare Project had budgeted an amount of R100 000 (US\$ 12 000) for fencing, which may have directed community members to a known strategy, rather than considering alternatives such as herding instead of fencing.

Although the stolen fences had been replaced, this may not have resolved the possible underlying conflict. Sithole (2003) states that non-compliance to rules for communal resources management can be a sign that the protection of the resource is contested. Fences are physical boundaries that help to monopolize the use of a particular resource and deny them to other uses. Breaking down a fence can thus be a sign of internal disagreement in a community. In the case of Okhombe, the fences could have blocked trade routes for cannabis which is grown illegally in parts of the uKhahlamba Drakensberg Mountains, and/or blocked escape routes used by stock theft syndicates (Altbeker, 2005).

The request of the Okhombe Livestock Committee for an outsider expert and confusion of some of its members about the principles of rotation raised questions about the effectiveness and quality of community participation in the design process. Of the 4 000 inhabitants in Okhombe, an average of 80 people (2%) had attended a series of community meetings held by the Okhombe Livestock Committee to present and discuss their plans to manage communal grazing (Salomon, 2006).

In her book on gender and participation, Cornwall (2003) notes that tapping into people's knowledge and experiences can result in context-specific development interventions. However, she warns that attendance by women and marginalized groups, for instance, does not automatically mean that they are given a platform to speak and exercise influence, and that allocating places in committees can still silence and even mask dissident voices. Thus, participatory practices can result in maintaining a status quo, rather than challenging the dynamics of power and exclusion (Cornwall, 2003).

3.5 Action-oriented research

After several years of working in community projects¹⁰, project staff recognized the need for in-depth research into the social dynamics underlying grazing management practices in Okhombe. Building on the ethos of participation that had characterized previous projects, it was felt that community members should be involved as research partners and that the research should produce practical knowledge and actions to improve people's lives.

The research focus was to investigate why the rotational resting system collapsed despite having been designed in a participatory manner. A historical perspective was deemed important to understand how the past had shaped current cattle keeping practices, how the social-ecological landscape had changed, and what the main drivers of change had been. Research questions were formulated accordingly.

¹⁰ Between 2004 and 2006 project work was expanded to two other wards in the amaZizi area and three wards in the amaNgwane (Mnweni) area with funding from the Maloti-Drakensberg Transfrontier Project.

Research questions:

What shifts have occurred in the social-ecological landscape in Okhombe since the 1800s? And what has been the contribution of practices of cattle grazing management to landscape changes?

Sub-questions:

1. How do people currently manage cattle, and what determines their management practices of cattle grazing?
2. How has the social-ecological landscape changed since the 1800s?
3. What have been the key drivers of change?
4. Is there a causal link between cattle grazing management practices and soil erosion?

Summary

In 1999, a participatory livestock initiative was launched in Okhombe, western KwaZulu-Natal, to improve management practices for cattle grazing. During a period of four years, a community livestock committee was formed and range condition assessments were undertaken to inform the design of a communal grazing system. In 2004, the Okhombe Livestock Committee led the implementation of the system based on rotational grazing camps and paid herders. This rotational resting system, however, did not take off as intended. The early collapse of the herding fund, the theft of fences, and non-compliance in using the grazing camps raised questions about community ownership and appropriateness of the system. The Okhombe Livestock Committee which represented different interests was unable to bring leadership and to resolve internal differences. Project staff expressed the need for research to investigate why cattle keepers in Okhombe rejected the rotational resting plan that had been developed in consultation with community members. In the following chapter, the research design is presented.

Chapter 4 Research design

Introduction

“We cannot solve our problems with the same thinking we used when we created them”.

Albert Einstein

In this chapter the research methodology is introduced as a rich and fluid process of inquiry, rather than a stepwise design. Using the principles of action research, an account is given of the research design, which aimed at engaging community members and students as equal partners in research. Specific issues are addressed about combining qualitative and quantitative research methods, trans-disciplinarity, validity of the research, and taking note of ethical concerns.

4.1 The action research process

Several terms are used to describe research in which the locus of control is shifted from researchers to research subjects (Herr & Anderson, 2005; Ladkin, 2004). Action research, participatory rural appraisal, appreciative inquiry, community-based research, and action science, to name but a few methodologies, are specifically aimed at producing practical knowledge and result in actions that bring an improvement to people’s everyday lives (Herr & Anderson, 2005). In the current work, the term ‘action research’ is used as it makes “*action* central to the research enterprise and sets up nicely a tension with traditional research, which tends to take a more distanced approach to research settings” (Herr & Anderson, 2005:3).

Ladkin (2004:537) distinguishes four features in action research: 1) The practice of collaboration; 2) Cycles of action and reflection; 3) Sensitivity to the emergent process; and 4)

Finding presentational form for action research inquiries. In the following section, these features are used to describe the action research process that was followed during this study.

4.1.1 The practice of collaboration

I am a female of Indonesian-Dutch origin with a Masters' Degree in Cultural Anthropology, who has lived in South Africa since 1995, and with a basic understanding of *isiZulu*. My engagement with people in Okhombe started in 1999 when I became Director of the Farmer Support Group and was overseeing the implementation of the Okhombe Landcare Project by project staff. From 2004 until 2006 I was also responsible for coordinating staff activity in the Amagugu Esizwe Maloti-Drakensberg Transfrontier Project, which involved Okhombe and five other wards of the amaZizi and amaNgwane Traditional Administrative Authorities. I resigned as Director by the end of 2006 to read for a PhD.

In 2007 I initiated the research following a short study on crop-livestock-soil interactions by a Masters student from Stockholm University, Trolle Carlsson. He presented his findings in two meetings attended by about twenty community members, in which participants expressed concern about communal grazing. I proposed research to investigate management of grazing in communal lands, because a communal grazing intervention had not yielded satisfactory results, and that such research would involve community members as co-researchers. Participants agreed to the proposal, and during two consecutive meetings they developed research questions and formulated criteria for community members who would be part of the research team:

“A person with an interest in livestock, who knows the mountains, is fit to go into the mountains, is open to other people's ideas, and/or able to write. There should be a gender balance, and include people who do not own livestock” (Grazing meeting, 10 April 2007).

Seven community members – two females and five males - were identified and nominated as co-researchers (Table 1). The co-researchers gave consent to undertake specific research activities on a voluntary basis (Annexure 2), which undertaking was first renewed for six months, and then twice for a year. All except two co-researchers had been involved in previous projects, four were still active in other projects, and one was the *iNduna* of Okhombe (village headman). In 2008, two co-researchers (a male and female) had withdrawn, and two new members (two males) had joined. Of the seven members, four were active throughout the research process, attending most monthly meetings and undertaking specific tasks. One member was particularly active in administering a cattle keepers’ survey and taking coordinates using a Global Positioning Systems device. Members of the co-research team are presented below (Table 1).

Table 1 Co-researchers

Name	Gender	Age	Background	Cattle	Period
Dlamini, Sipho	Male	1964	Member of the Okhombe Livestock Committee and was involved in the first year of the Okhombe Landcare Project.	Yes	Entire study
Dubazane, Sphiwe	Male	1947	Member of local Farmers Association, involved in Farmer Support Group projects.	Yes	Joined in 2008, up to 2010
Hlatshwayo, Zanele	Female	1985	Unemployed, matriculated from secondary school in the previous year. No prior project involvement.	Yes	2007
Khumalo, Themba	Male	1961	Member of various committees, previously involved in the Okhombe Landcare Project.	Yes	Joined in 2008, up to 2010
Maphalala, Bhekizizwe	Male	1964	Member of the Okhombe Monitoring Group, established under the Okhombe Landcare Project.	No	Entire study

Mvemve, Duduzile	Female	1968	Community facilitator for a farming project of the Farmer Support Group.	No	Entire study
Sithole, Maphakamiseni	Male	1964	Member of the Okhombe Livestock Committee, established under the Okhombe Landcare Project.	Yes	2007
Xaba, Mandla	Male	1947	<i>iNduna</i> of Okhombe and member of the Okhombe Livestock Committee.	Yes	Entire study
Zondo, Madada	Male	1948	Member of the Okhombe Livestock Committee.	Yes	Entire study

The term ‘co-researchers’ is used here to emphasize that local people and outside researchers “share their knowledge to create new understanding and work together to form action plans, with outsider facilitation” (Herr & Anderson, 2005:40). Co-learning, and in this study co-research, is one of five forms of participation and collaboration distinguished by Cornwall, quoted by Herr and Anderson (2005) (Table 2).

Table 2 Continuum of participation and collaboration (Herr & Anderson, 2005:40)

Co-option	Compliance	Consultation	Cooperation	Co-learning	Collective action
A person or group is invited as representative of a group or community in an outsider initiative	A person or group adheres to the requirements set by an outsider initiative	A person or group is asked for their views on a particular issue raised by an outsider initiative	A person or group participate in an outsider initiative	Insiders and outsiders learn from one another to generate new knowledge	Insiders and outsiders initiate and pursue a common goal

With input from my supervisor and co-supervisors, I conceptualized a research programme and developed a funding proposal for trans-disciplinary research involving myself as a PhD student

and two Masters' students, to be supervised by senior academics in their disciplines, and an advisory panel of experts from South Africa and The Netherlands. I started the research early 2007. In the second half of that year, I contracted a Masters student in Rural Resources Management, Johannes Mphumzeni Chonco, to undertake a survey of cattle keepers and to investigate management practices of cattle grazing (Chonco, 2009). I facilitated the design of a questionnaire which was administered by Mphumzeni and the co-researchers, and used the raw data of the survey, as well as the additional in-depth interviews held by Mphumzeni, for my analysis of practices of cattle keeping and cattle grazing in Enhlanokhombe. When research funding was granted in 2008 by the South African-Netherlands Programme on Alternatives Development (SANPAD), I recruited another Masters' student in Geography, Victor Bangamwabo, to analyse changes in the landscape using aerial photographs from Okhombe in the period from 1945 to 2004 (Bangamwabo, 2009). In 2009, Precious Sanelisiwe Duma, an Honours student in Rural Resources Management, was contracted as interpreter, and to analyse data from the cattle keeping survey in Oqolweni sub-ward administered by co-researcher Themba Khumalo, and Masters' student Mphumzeni Chonco (Duma, 2009).

In 2009 and 2010, I drew in Masters' students in Research Psychology to explore specific topics that had emerged during the research. As part of a module on Research Inquiry and Participation, they worked in small groups and undertook three days of field work to study:

- Co-researchers views on the action research process (Bundhoo *et al.*, 2009);
- How cattle connect people (Rambally *et al.*, 2009);
- People's criteria of wealth and the relation with cattle (Singh & Balkaran, 2010);
- Winter grazing, and management of cattle health and disease (Olivier *et al.*, 2010); and
- Strategy of the cattle patrol (*amavimbela*) to address stock theft (Chitindingu *et al.*, 2010).

Interpretation from Zulu to English and vice versa during meetings and interviews was provided by different people at different times. In the first half of 2007, Nhlanhla Miya, a community

member and former community facilitator for the Farmer Support Group, was paid to interpret during team meetings and community meetings. He was succeeded by Ncengimpilo Khanyile, a former project facilitator at the Farmer Support Group. Masters student, Johannes Mphumzeni Chonco, took over when he joined the team and he also translated written documents. An Honours student, Precious Sanelisiwe Duma, was contracted in 2009. Two co-researchers, Simphiwe Dubazane and Themba Khumalo, took over as voluntary interpreters in 2010.

The best interpretation was provided by Mphumzeni Chonco, a native *isiZulu* speaker who grew up in a rural area, and excellent command of English. He was also familiar with the subject matter of cattle keeping and rangeland management, and understood the scientific research process. Mphumzeni had the vocabulary in both languages to effectively interpret the technical and scientific aspects of the research. His style of interpreting was almost simultaneous interpretation that is, translating while the person spoke sentence-by-sentence. Having grown up in the city, Sanelisiwe Duma sometimes had difficulty to understand the particular 'rural' *isiZulu* spoken in Okhombe. She was less familiar with the topic, but had a good understanding of the process of research. Nhlanhla Miya, Ncengimpilo Khanyile, Simphiwe Dubazana, and Themba Khumalo were not as fluent in English, and lacked understanding and vocabulary for the scientific aspects of the research process in one or both languages. Nevertheless, the interpretation by the two co-researchers, Simphiwe Dubazana and Themba Khumalo, improved the communication between the co-researchers and me as it facilitated more direct contact and conversation with the group members. This experience made me realize that the presence of a formal interpreter had created distance between me and the co-researchers. So, although the interpretation by the co-researchers was sub-optimum in terms of accuracy, it greatly improved communication and rapport with the group.

The roles played by researcher 'outsiders' and stakeholder 'insiders' in action research vary (Table 3). Herr and Anderson (2005:32) emphasize that these positions are not necessarily static, but can shift during the research process and can vary for different aspects of the research.

Although the research was responding to an issue identified by community members, the process started as ‘outsider in collaboration with insiders’ because I had initiated the research as an outsider PhD student. The research moved towards ‘reciprocal collaboration’ when co-researchers were trained in research skills, such as participatory photography, oral history, and how to read maps. Co-researchers took photographs to tell their stories about what keeping cattle in Okhombe meant to them, they interviewed some elders in the community about the history of the area, and they presented their findings at a community report back meeting. The co-researchers and students designed and tested a questionnaire for cattle keepers. Of the 52 questionnaires administered in one sub-ward, the co-researchers administered 12 questionnaires.

In 2008 and 2009, the research process veered towards ‘outsiders in collaboration with insiders’ and at times ‘outsiders study insiders’. The Masters student, who investigated cattle keeping and grazing management practices, expressed the desire to retain control over data collection to ensure data quality and consistency. He administered 40 of the 52 questionnaires, and held 20 in-depth interviews in one sub-ward. He was occasionally accompanied by co-researchers. However, under pressure to complete his studies within a year, he often could not align his schedule with the availability of co-researchers. The Masters student who investigated landscape changes, required an expert computer-based methodology which demanded limited fieldwork on site. In 2010, the research process again shifted towards ‘reciprocal collaboration’ as co-researchers and I attended training in Participatory Video and produced a short DVD.

Table 3 Continuum of positionality in action research (Herr & Anderson, 2005:38)

1. Insider (researcher studies own self/practice)	2. Insider in collaboration with others	3. Insider(s) in collaboration with outsider(s)	4. Reciprocal collaboration (insider-outsider teams)	5. Outsider(s) in collaboration with insiders	6. Outsider(s) studies insider(s)
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Box 1 The Okhombe co-researchers: Reflections on participatory research

Co-researchers said that they are involved in the research because cattle are important to them and to the wider community. They are concerned about land degradation, and view as their key tasks:

- Informing community members about the problem of soil degradation and loss of trees, and mobilizing community members into action so that, as in the past, people, cattle and the land must co-exist in harmony;
- Fostering and sharing historical and current knowledge of the area as community legacy, and teaching the next generation; and
- Better inform community members about the research, so that they recognize the value of the work of the co-researchers (Bundhoo *et al.*, 2009).

4.1.2 Cycles of action and reflection

Throughout the research process, monthly meetings of students and co-researchers were held to plan field work, present and discuss results, and reflect on the research process (Annexure 1). Plans were adjusted where necessary.

Community report back meetings were held at least once a year to create a platform for the wider community to engage with the research and the findings that were emerging. In preparation for the meetings the research team reflected on the research, and consolidated their findings into visual presentations. The community report back meetings elicited keen interest in the research, and led to two community members joining as co-researchers (Table 1).

To draw attention to and debate the emerging research findings, the research team engaged with different internal and external stakeholders, using different means. The co-researchers reported on the research at relevant local forums such as the Okhahlamba Livestock

Association, and the Okhahlamba Farmers Forum, and also arranged a presentation by the research team to the *amaZizi* Traditional Administrative Council.

4.1.3 Action research as an emergent process

The concept of 'emergence' is central in action research, both regarding process and outcome (Ladkin, 2004). "Sometimes a pattern cannot emerge until necessary parts of the 'puzzle' are present. Cultivating a respect for not-knowing is essential for working with emergent processes" (Ladkin, 2004:543-545).

The survey and interviews generated a particular narrative about cattle keeping in Okhombe. With guidance and critical input from supervisors and collaborators, I was able to critically examine and debate with the co-researchers the discrepancy between the emerging narrative and part of the survey data. The debate with the co-researchers yielded new insight into specific aspects of cattle keeping.

Two co-researchers were enthusiastic about the rotational resting system, and they felt that the research team should persuade community members to follow the system. At team meetings it was emphasized, however, that the aim of the research was to understand why cattle keepers do what they do and to suspend judgment. This recurring issue offered an opportunity for the research team to reflect on their perceived aims of the research.

A policy workshop, involving researchers from different localities in South Africa and policy-makers, resulted in suggestions to reformulate parts of the Government's draft Rangeland Policy (Annexure 6; SANPAD project on Keeping cattle in a changing rural landscape, 2010; South Africa, 2007.).

4.1.4 Finding presentational form for action research inquiries.

Ladkin (2004) points out the challenge of presenting action research in an appropriate form that captures the 'messy' and on-going process, is understandable, and is of value to insiders and outsiders. In the current study a range of outputs were produced for different audiences:

- To inform community members of the research and preliminary findings, community report back meetings were held for which co-researchers prepared posters and verbal presentations.
- To contribute to the academic curriculum in extension and rural development, the students made presentations to undergraduate and post-graduate students at the University of KwaZulu-Natal.
- Annual reports were submitted to the agency that funded the research, the South African-Netherlands Programme on Alternatives in Development (SANPAD).
- To reach academics, extension staff, development workers, and policy-makers, a communal grazing seminar was held in 2008 to present and discuss preliminary findings from the research (Salomon, 2008).
- To encourage discussion among cattle keepers, extension staff, researchers, and policy makers, two co-researchers and I produced a 6-minute DVD, as part of training in Participatory Video.
- To influence policy and implementation at provincial level, presentations were made to extension staff and staff of Veterinary Services of the KwaZulu-Natal Department of Agriculture, Environmental Affairs, and Rural Development.
- To influence national policy a communal grazing and policy influence workshop was held in 2010 for researchers, policy-makers and implementers.
- To contribute to policy debate on land degradation in South Africa and southern Africa, I made presentations at national and Southern African workshops for the United Nations Convention to Combat Desertification.
- To engage in international debate with peers, I published an opinion article for

SciDevNet, an on-line science and development network, and delivered a keynote paper at the International Rangeland Congress in China in 2008.

- To fulfil academic requirements, the two Masters students produced theses, and the Honours students a research paper. The present thesis is a "tidied up" (Ladkin, 2004:545) academic account as a final fulfilment towards a Doctorate which seeks to capture the richness of the action research process and its outcomes.
- To reach a wider audience, a newspaper journalist wrote an article about the community initiative that was prompted by the research.

4.2 Working with multiple perspectives

Brannen (2004) quoting Hammersley (1996) describes how researchers employ, combine, and interpret qualitative and quantitative data for triangulation – exploring an issue from multiple perspectives (Pretty et al, 1995) -, facilitation, and/or complementarity.

In the present research, triangulation was built into the research design by using different quantitative and qualitative research methods (see below) and drawing from a wide range of sources of information. Preliminary findings were presented, analyzed, and discussed with different stakeholders. For this purpose, a team of co-researchers was formed, students from different disciplines were recruited, monthly team meetings and six-monthly community meetings were held, and seminars were organized with outsider stakeholders in academic research, and government policy and implementation.

In the following, an overview is presented of the research methods used during the research process:

- Co-researchers as researchers, as well as 'informants' to give access to the community, identify relevant people, and introduce to households.
- Individual interviews and group interviews to record the oral history of the area.

- A survey and interviews to document practices in keeping cattle keeping and cattle grazing management (Annexure 2 and 3). The survey was designed as a practical tool for extension staff, development practitioners, and researchers. Rather than relying on assumptions or preconceived ideas, a 'quick scan' survey with focused questions could assist field workers in generating basic data on cattle keeping and grazing management to inform future interventions.
- Monthly team meetings of students and co-researchers, and annual community meetings to present and discuss research findings
- A Global Positioning Systems device was used to locate all households with cattle, grazing areas and fences of grazing camps, and gullies, with co-researchers as guides
- Community-led transect walks to identify and map out the rangelands in the different sub-wards, to view the condition of the rangelands, and see mountain passes and boundaries with neighbouring communities.
- Time-series analysis of aerial photographs to analyze changes in the landscape. The methodology used is described by Victor Bangamwabo in his Masters' thesis, which formed part of this study (Bangamwabo, 2009).
- Participatory Photography (or PhotoVoice) was used to capture a broad range of aspects on cattle keeping in Okhombe. For this purpose, co-researchers received cameras and were asked to take photographs of keeping cattle in Okhombe. These photographs were presented and discussed at team meetings. Selections of photographs were used for posters on cattle keeping in Okhombe and the research process, and which were presented at community report back meetings.
- Participatory Video (Lunch & Lunch 2007) was used to allow cattle keepers to narrate their own story. For this purpose, two co-researchers and I attended a three day training session to learn how to use a video camera and develop a storyboard. We then filmed in

Okhombe for three days. We spent two days in training and edited the video footage into a short film.

4.3 Trans-disciplinarity

Trans-disciplinary research is a practice that a) focuses on complex issues in the real world, b) transcends and integrates disciplinary paradigms, c) engages academic and non academic stakeholders in participatory research, and d) “searches for a unity of knowledge beyond disciplines” (Cronin, 2008:11). Trans-disciplinarity thus operates at the interface of science and society, and is particularly relevant in dealing with “large-scale, long-term, and interlinked issues” (Apgar et al., 2009:4).

This research is based on the premise that the theory and practice of cattle keeping and rangeland management are dominated by disciplinary views. Each discipline generates partial answers to what is essentially a complex issue. Thus, the research design draws from different disciplines such as anthropology, geography, and environmental history to investigate cattle keeping and rangeland management as a multi-dimensional phenomenon. Particular research techniques were used at different stages of the research process, and to generate answers to specific questions (Table 5).

Table 4 Research questions and research techniques used

Sub-questions	Research techniques
1. How do people currently manage cattle, and what determines people’s management practices of cattle grazing?	Survey, in-depth interviews, group discussion, participatory photography, Global Positioning Systems, community-led transect walks, and participatory video

2. How has land cover changed in Okhombe between 1945 and 2004? Time-series analysis, and group discussion
 3. What have been the key drivers in changes in the social-ecological landscape since the 1800s? Secondary data analysis of history, time-series analysis data, and group discussion
 4. Is there a causal link between cattle grazing practices and soil erosion? Time-series analysis data, statistical data
-

4.4 Issues relating to validity

“Quality, goodness, validity, trustworthiness, credibility, and workability have all been suggested as terms to describe criteria for good action research. [...] Internal validity is generally defined as the trustworthiness of inferences drawn from data. External validity refers to how well these inferences generalize to a larger population or are transferable to other contexts” (Herr & Anderson, 2005:50).

In a participatory inquiry, process and outcomes are judged on trustworthiness (Pretty *et al.*, 1995). Validity and trustworthiness, however, are not sufficient in action research, because action-oriented outcomes are also strived for. Herr and Anderson (2005) propose five criteria of validity which are linked to the commonly agreed upon goals of action research (Table 4). In Chapter 8, a reflection is given on the research process using these criteria.

Table 5 Goals of Action Research and Validity Criteria (Herr & Anderson, 2005:55)

Goals of Action Research	Validity Criteria
(a) The achievement of action-oriented outcomes	Outcome validity
(b) A sound and appropriate research methodology	Process validity
(c) Results that are relevant to the local setting	Democratic validity

(d) The education of researcher and participants	Catalytic validity
(e) The generation of new knowledge	Dialogic and process validity

4.5 Research ethics

Herr and Anderson (2005) stress that research participants should be given the opportunity to choose, without coercive pressure, and be provided with enough information to decide whether or not to participate in the research.

A consent form was designed for co-researchers to participate in research (Annexure 4). Specific research activities were not stipulated in the consent form since the co-researchers and students would design, review, and adjust the research methodology during the course of the research. “This idea of ‘processual consent’ is [...] a supplement to traditional informed consent” (Herr & Anderson, 2005:120). Although the forms explicitly stated that co-researchers could withdraw at any time during the research, they were also given the opportunity to renew consent after six months in the first year and then annually in the following two consecutive years. Consent forms for interviewees were more detailed, because they were invited to participate in a specific research activity such as a questionnaire and/or interview (Annexure 5).

Herr and Anderson (2005) emphasize that consent should be based on the principles of reciprocity, respect, and “beneficence, which asks of the researchers to do no harm and to do good” (Herr & Anderson, 2005:124).

Summary

The research described in this thesis was designed and conducted as action research, involving university students working closely with community members as research partners. Co-researchers and other community members who participated in the research process gave

written or verbal consent. During the research process, the locus of control moved along a continuum from student outsiders doing research with co-researcher insiders, towards co-researcher insiders doing research with student outsiders, and back.

A range of research outputs were produced to inform community members, share research experiences with university students, meet academic requirements, influence policy makers, decision-makers, and development practitioners, and engage in debate with peers, both nationally and internationally.

Trans-disciplinarity and triangulation were integral parts of the research design. Quantitative and qualitative research methods were combined with narrative and spatial techniques. Regular feedback and discussion sessions were held to verify findings both within the research team and with community members, student supervisors, and other outsider stakeholders.

Chapter 5 What has shaped the landscape: a history of the uKhahlamba Drakensberg from 1818 to 2009

Introduction

“Landscapes are libraries whose information is ignored by most academics. Approaching the history and future of a place through its landscape provides unique perspectives and opportunities”

Kate B. Showers (2005:1)

In this chapter the history of the uKhahlamba Drakensberg Region over the past two-hundred years is explored. A spatial and temporal perspective is considered necessary to understand the current situation of Okhombe as being on a trajectory set out in the past, and which continues to influence cattle keepers’ practices, opportunities, and constraints.

A review of literature was undertaken on the history of South Africa in general, and of the uKhahlamba Drakensberg in particular. The limited historical sources on the uKhahlamba Drakensberg, and the particular angle from which they were written, posed a challenge in developing a comprehensive account of the region’s history.

From the review, four historical episodes emerged that marked the interactions between people and nature in the uKhahlamba Drakensberg since the early 1800s. Each episode consisted of events that have shaped the landscapes of the region and of Okhombe village. Events are arranged in four distinct areas of change that emerged from the historical analysis: social encounters, nature and conservation, economic expansion, and government legislation. Specific attention is paid to changes in land use in Okhombe using aerial photographs taken at intervals of several years in the period between 1945 and 2004.

Table 6 Episodes in the uKhahlamba Drakensberg

<i>Early history</i>	<i>Human footprint in the uKhahlamba Drakensberg</i>	<i>Social engineering</i>	<i>Rural-urban-rural migration</i>	<i>Greening the uKhahlamba Drakensberg</i>
	1820 1840 1860 1880 1900	1920 1940 1960	1980	2000

5.1 Early history

The uKhahlamba Drakensberg Mountains bear testimony to their first people, with a vast collection of rock art paintings - comprising 35% of all known rock art in South Africa (Van Dyk, 2004) – made by the San hunters and gatherers that lived there from more than 8 000 years ago (Amagugu Esizwe MDTP Project; 2007, Irwin *et al.*, 1980).

When exactly the first Nguni people arrived in the uKhahlamba Drakensberg is contested by historians, with dates varying between 1200 and 1700 AD (Pearse, 1982; Pfothenauer, 2007). Van Dyk (2004:13) suggests that the Nguni people came in three ‘waves’: in 300 CE, 1300 AD, and 1600 AD respectively.

“Just when the Amazizi settled in the foothills of the Drakensberg we are not quite sure. They were a tribe of the Embo Nguni group of Bantu, which arrived in southern Africa soon after 1200 A.D. [...]. Pushing up the river valleys which cut westwards into these mountain solitudes, they had come with their wives and their families, their herds and their cattle, and soon the broad valley of the Bushman’s, the heavily-forested Injasuti, the smiling valley of the Sterkspruit, the Mhlawazini and the Umlambonja, the Mnweni and the Singati, knew their bee-hive huts and the lowing of their cattle [...].The *Amazizi* were pastoralists and herdsmen: the Bushmen were hunters” (Pearse, 1982:12).

“The first tribe to arrive [...] was [the] Mazibuko tribe. The second tribe was Jwaha. The third tribe was Mbhele, who welcomed [the] *amaZizi* and Dlamini tribes. The *aMazizi*

and Dlamini tribes arrived at the same time, and they were from Mozambique and they went to [a] place called Matiwane next to Ladysmith. The Boers chased them, and they ran away to Estcourt, Colenso, Emmaus, Makhosaneni and finally came to National Park where they are right now”

(Interviewee, MM/ENH, Jul 2007).

Some of the San rock art paintings depict interactions with Nguni people and seem to suggest co-operative interaction between the two groups, at least prior to the 19th century. Oral history of the *amaZizi* and *amaNgwane* confirm that by then the San had increasingly withdrawn into the mountains (Pfothenauer, 2007; Irwin *et al.*, 1980).

5.2 Episode 1: Human footprint in the uKhahlamba Drakensberg, 1818-1910

In this period, the landscape was transformed drastically, and it shaped much of the current ecological landscape and relationships between the people.

5.2.1 Social encounters

The Drakensberg of the 19th century was marked by social encounters between the native San and the settled *amaZizi* people, on the one hand, and refugees, settler farmers, and entrepreneurs arriving in the region, on the other hand.

Between 1810 and 1824 several tribes travelled from Zululand, fleeing from one another – such as the *amaHlubi* and the *amaNgwane* – and from King Shaka and his emerging Zulu Kingdom, into the Drakensberg and well beyond into the Free State, Lesotho, and the Eastern Cape. Confronted by the *amaNgwane* led by *iNkosi* Matiwane, members of the *amaZizi* tribe also fled, with only part of the *amaZizi* tribe remaining near Mont-Aux-Sources (Pearse, 1982; Ellis, 1985; Irwin *et al.*, 1980).

Wright and Mazel (2008) question whether cannibalism was practised in the uKhahlamba Drakensberg by the 1820s as claimed by historians (Pearse, 1982; Pfothenauer, 2007). They suggest that "the so-called 'cannibals' [...] were groups of people who had lost their cattle and taken to banditry, and so lived outside the bounds of social norms. Few, if any of them, were actually eaters of people" (Wright & Mazel, 2008:79). Nevertheless, the Cannibal Caves at what is now Royal Natal National Park, supposedly the headquarters of *iNkosi* Sidinane of the *amaZizi* (Pearse, 1985:20-21), will undoubtedly form part of the 'Cannibal Route', envisaged by the uKhahlamba Local Municipality as a tourist attraction (South Africa, 2010:4).

An account of how the *amaZizi* and *amaNgwane* arrived at their current locations is published by Van Warmelo (1938) as being the outcome of a dispute resolved by the colonial Government.

"Now, Sidinane [*iNkosi* of the *amaZizi*], what do you say as to your territory ending at the Mwneni?" A surveyor was sent and he marked out the boundary at [O]Gade's, and they were told "Your country, Sidinane, ends at the Khombe. Your chief is Zikhali [of the *amaNgwane*], because he has beaten you". He said, "Yes, sir, thank you". But Zikhali demanded, "I want the [ama]Zizi to come nearer to us, for you also know that Sidinane is a thief, and will steal my cattle. He has upon occasion stolen them and gone with them into Basutoland". [...] So they were given (as subjects) to Zikhali's queen, okaSoncaka at the Phahlindlela royal kraal, and they became the people of Mnanja (eldest son of okaSoncaka). There they lived for a long time, for they had been made to settle near the Situlwana spruit. Then one day Sidinane complained, "I am aggrieved, my chief, because my desire for meat is killing me, as I am a man accustomed to hunting. So Zikhali then went and reported this to the authorities who replied, "Well, this is for you to decide, Zikhali". He answered, "My chiefs, I have no objection; for I can see that he is now accustomed to me", and so he permitted Sidinane to return to his old kraal-sites [just below Mont-Aux-Sources]. However Sidinane's son Mdingi remained at Emmaus, and also Mfacane Miya. And Zikhali gave Sidinane permission to go, and he moved, but

remained a subject to Zikhali after that nevertheless” (Van Warmelo, 1938: 168).

In 1824 a group of British hunter-traders from the Cape Colony had settled at Port Natal. They hunted elephants, hippopotamuses, and buffaloes for trade items. Hunter-traders’ use of firearms and recruitment of groups of black hunters rapidly decreased the game population (Ellis, 1985:72-74; 1.3).

"On 14 November 1837, the first creaking wagons of the Voortrekkers began their slow lumbering descent of the Drakensberg. After months of trekking across the arid plains of the Free State, they had crossed the Eland's River, and had come to a land 'rich in water and grass and very fruitful'" (Van Dyk, 2004:24).

A few thousand Dutch Afrikaner farmer pioneers – also called *Voortrekkers* (pioneers) or *Boers* (farmers) – arrived in Natal from the Cape Colony, across the natural pass near Oliviershoek Pass (Ellis, 1985:73; Terreblanche, 2002:208). Their leaders Piet Retief - who was killed by *iNkosi* Dingane of the Zulu tribe - and Gerrit Maritz, settled at Bushman’s River Valley, which grew from being a military post into the present town of Estcourt (Van Dyk, 2004).

5.2.2 Economic expansion

The Afrikaner pioneer farmers introduced a system of private tenure of land in a region where land was held communally. This system drastically changed people’s relationship with the environment, and shaped current land use patterns. The land was subdivided into private farms, allowing landowners to exploit the natural resources on their property as they wished. They used the technology at their disposal: guns to hunt, farming implements to work the land, cutting tools to log timber and dig stone, and wagons and sleds to transport goods. Although the farmers largely produced for subsistence, their technology and the use of local people as labourers intensified the exploitation of the environment (Ellis, 1985:73,74).

“The Boers altered the landform of Natal, by varying degrees, where they quarried stone, mined coal and built dams and irrigation ditches. They would have affected the composition of the grasslands through their grazing and burning practices. They destroyed indigenous vegetation for fuel and timber, particularly around towns” (Gautier, 1994:63).

When the British took control of Natal in 1842, the Afrikaner farmers left in large numbers. The arrival of some 5 000 immigrants from England and Scotland, and the return of 100 Afrikaner families settling to farm in Weenen and the Upper uThukela region a few years later, set in motion an intensive campaign of market-oriented farming and town formation (Ellis, 1985:75). The present town of Bergville was established in 1897 as a small outpost called Upper Tugela on the farm Klein Waterval and was renamed in 1903. Two years later, the village of Springfield was established around a small irrigation scheme, and was renamed Winterton in 1910 after Natal’s agricultural secretary HD Winter (Van Dyk, 2004; Bristow, 1988). In that year, road and rail reached the area, giving access to markets throughout the country (Gautier, 1994:81).

In the uKhahlamba Drakensberg, ‘Native locations’ (1.4) were established around 1850 as buffer between the white settlers and the cattle-raiding San people, who were increasingly persecuted (Bristow, 1988:64; Irwin *et al.*, 1980:43; Pearse, 1982:32). Initially called the Kahlamba Location (Brookes & Hurwitz, 1957:5), it was split into three areas (Figure 5). The Mabaso, Mhlungu, Dhlamini, and Mbo tribes were settled in the Giant’s Castle area, which covered 56 000 hectares, and was called Drakensberg Location 1. The *amaHlubi* under *iNkosi* Langalibalele (who had fled from Zulu king Mpande), and the *amaNgwe* under *iNkosi* Putini were settled in Drakensberg Location 2 in the Cathkin Peak area and that covered 40 000 hectares. The *amaNgwane* under *iNkosi* Zikhali - son of Matiwane - and the *amaZizi* resided in the Mont-Aux-Sources area, covering close to 240 000 hectares, and called the Upper Tugela Location (Pearse, 1982:32; Brookes & Hurwitz, 1957: 19). Those who remained outside the ‘reserves’ lived on state land, on farms owned by white people, and on missions, such as the

Emmaus Mission which was established in 1847 by C. Zunckel from the Berlin Missionary Society (Ellis, 1985:75,76; Van Dyk, 2004).

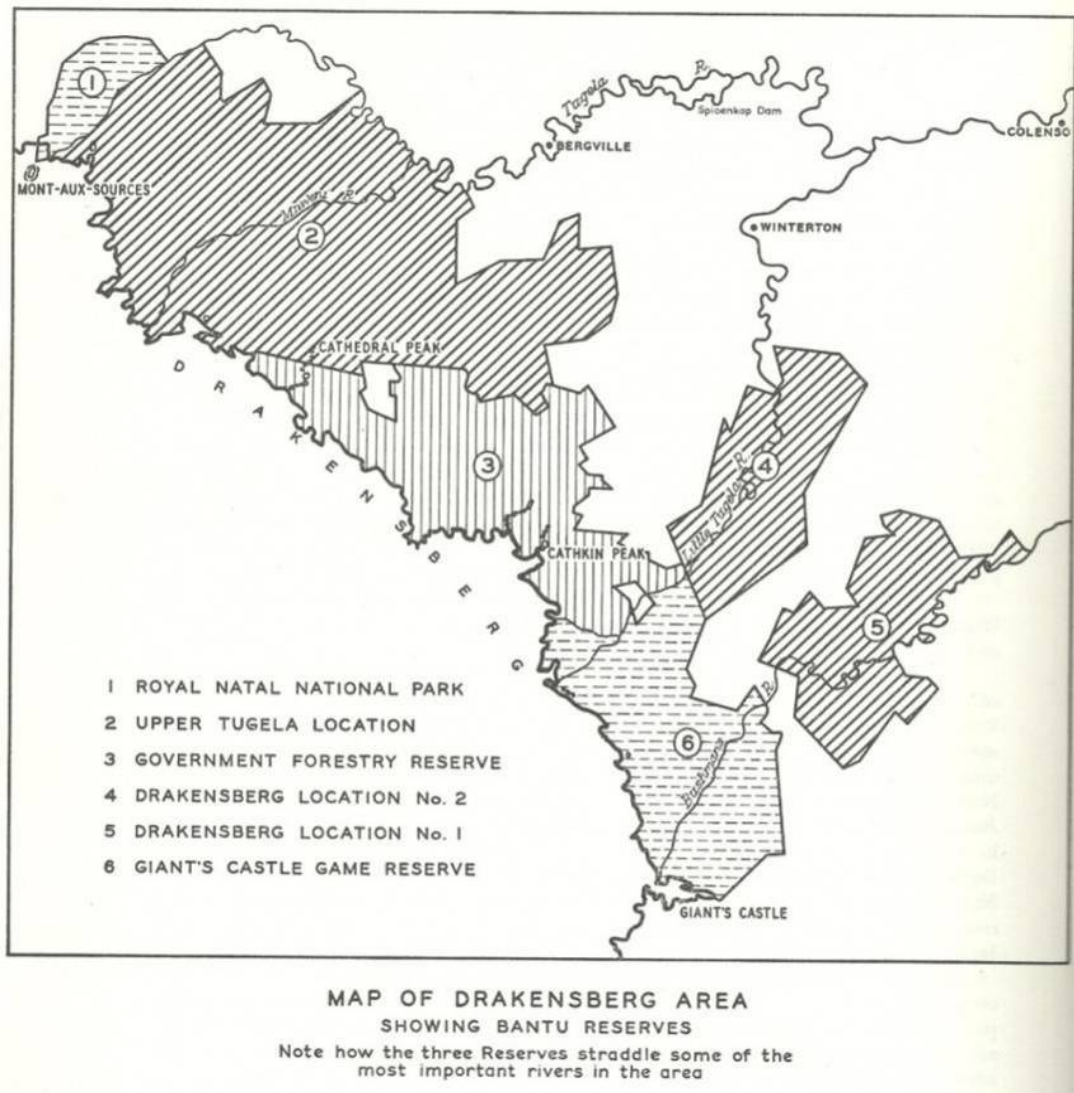


Figure 5 Native reserves in the uKhahlamba Drakensberg (Pearse, 1982:260)

“In each location a ‘model mechanical school’ was to be instituted, where the ‘useful’ arts should be taught and practically ‘illustrated’, and the superintendent was to give systematic agriculture instruction” (Brookes & Hurwitz, 1957:3). The imposition of “hut taxes, excise duties and other fees” imposed a need for cash, aimed at creating a labour reserve for the expanding

agricultural, industrial, and urban economy. Many Africans, nevertheless, avoided working as labourers, and they lived from farming the holdings of absentee landlords, crown lands, and mission stations.

These African peasants sold staples, such as maize and grain, to the Natal administration to meet the Colony's increasing food demands (Terreblanche, 2002:207-210; Van Onselen, 1996; Lambert, 2009:214). However, as the population and the need for food grew, African farmers struggled to expand and purchase new lands. White farmers started to use more of their farm land and thus reduced the portion available to their farm tenants. The State and absentee owners sold their lands to white owners, who either settled tenants on poor parts of the property or evicted them forcing them to move onto the crowded 'Native reserves'.

Between 1891 and 1909, land cultivated by white farmers increased from 85 000 acres to 541 000 acres (34 400 to 218 935 hectares) (Terreblanche, 2002:259), while the share of African homestead food production to Natal's maize crop had dropped from 80% to 38%. The decline in food production was the result of legal restrictions on the African population to own land, of overcrowding, of environmental degradation in the 'Native reserves', of drought accompanied by locust plagues attacking entire crop harvests, and of the *rinderpest* decimating cattle herds (Lambert, 2009: 214,215, Terreblanche, 2002:264).

In the uKhahlamba Drakensberg region, outbreaks were recorded of lung sickness in 1855, 1893 and 1898 and the *rinderpest* in 1897 (South Africa, 1910), which destroyed 85% of cattle owned by African people in Natal and Zululand (Lambert, 2009:216). Herd losses continued when East Coast Fever struck around 1904, and, although fewer losses occurred, the epidemic lasted longer than previous outbreaks of disease (Bundy, 1988:188). The effects were manifold. One of the effects was that many African families could no longer afford the traditional bridewealth offering of cattle (*ilobolo*), which resulted in a decline in marriages and an increase in childbirths out-of-wedlock (Irwin *et al.*, 1980; Pearse, 1982:216)

“By 1905 African-owned cattle [in Natal] numbered 279 997, far short of the 494 382 of 1896 [...]; population numbers had increased to 607 229 in 1904 compared to 455 983 in 1891” (Lambert, 2009:220).

The discovery of diamonds in Kimberley and Griqualand West, gold in Johannesburg, and coal in Natal from the 1850s onwards (Pearse, 1982:227; Bundy, 1988:184,185), had transformed the economic and political landscape of the region. Transport infrastructure was developed for the mines. Oliviershoek Pass, in the most northern part of uKhahlamba-Drakensberg, was built in 1871 to connect Durban with Kimberley and Johannesburg (Pearse, 1982: 227; Van Dyk, 2004). Economic investments, also of absentee landlords, shifted to these regions (Terreblanche, 2002:210). The increasingly dire circumstances in the ‘Native reserves’, as described earlier, pushed growing numbers of African peasant men into migrant labour in towns and on the mines to provide for their homesteads (Lambert, 2009:214-216). This period marked the start of an accelerated and institutionalized trend of rural to urban migration and diversification of livelihoods of rural people that were growing increasingly dependent on urban remittances.

In 1873, *iNkosi* Langalibalele of the *amaHlubi* tribe resisted the *amaZulu* and the British in Bushman’s River Pass, using the guns his tribesmen had earned while working in the Kimberley Diamond Mines (Pearse, 1982:252). This event ended Theophilus Shepstone’s 30 years as Secretary of Native Affairs. He had used the *amaKosi* to subject the African population in Natal (Pearse, 1982:252; Van Dyk, 2004:208; Bristow, 1988).

5.2.3 Nature and conservation

The impact of people on the environment had left its mark on wildlife in Natal. In 1844, the hippopotamus population was said to be one-tenth of what it was in 1839 (Ellis, 1985:72-74). By the late 1860s, migrations of springbok and other antelopes, described by travellers in 1847, had ceased (Pearse, 1982:173).

Explorers were attracted to the vast uKhahlamba Drakensberg mountain range. In 1863, two French Missionaries arrived by pony from the Maloti mountains at the Amphitheatre. They found the source of five rivers and named the place Mont-Aux-Sources. Here originate the eastern and western Khubedu rivers - which are tributaries of the Orange river; the Elands river - which flows into the Free State; the Bijanjul; and uThukela rivers (Bristow, 1988:71; Irwin *et al.*, 1980).

At the turn of the 19th century, concern grew to conserve the last remnants of game in the uKhahlamba Drakensberg (Bristow, 1988). The region consisted of 'Native reserves', farms which had been surveyed and bought, as well as unoccupied farms that belonged to the State (Van Dyk, 2004). Travel to Bergville was possibly only by a rough sledge-track. In 1906 a start was made to establish a nature reserve at Mont-Aux-Sources. Over a period of 15 years, the reserve grew into the Royal Natal National Park and Hotel (Pearse, 1982:97,98).

In 1908, the border between Natal and Basutoland was demarcated by a mounted police patrol that travelled a distance of 120kms along the escarpment from Giants Castle to Mont-aux-Sources (Bristow, 1988).

5.2.4 Government legislation

The exploitation of the environment prompted the Colonial Government in the 1850s to enact several pieces of legislation to preserve timber (Ellis, 1985:78; Pearse, 1982:216), eradicate burr weed (*Xanthium spinosum*) which affected the quality of export wool, and prevent burning of veld which was commonly done to improve pasture for cattle and to facilitate hunting (Ellis, 1985:78).

As mentioned earlier, during this period also saw the onset of "territorial segregation" (Terreblanche, 2002:208) and separate development began in the region. White settlers were

allocated large tracts of land for farming, while the local African population was increasingly confined in “Native Reserves” (Ellis, 1985:90-91).

“By 1870 some 5 million of the 6 million acres of land owned by whites were in the hands of absentee proprietors or rentiers, and occupied by African squatters. A sizeable portion of land – just less than 175 000 acres – was granted to various mission stations. More mission stations were active in Natal than in any other part of South Africa. By 1970, 3 million acres of Natal’s total area of 12 million acres remained unalienated crown land. More than 2 million acres were set aside as African reserves, called ‘locations’ by Theophilus Shepstone” (Terreblanche, 2002:208).

The Colonial Government passed several pieces of legislation to restrict and undermine the powers of traditional leaders. The 1878 and 1891 Natal Code of Native Law was aimed at regulating customary law, and placing Zulu Chiefs (*amaKosi*) under the control of Magistrates and the Supreme Court (Thabethe, 2000). The Marriage Law required formal registration with fees, imposed limits on the number of cattle payable as bride wealth, and banned forced marriages (Thabethe, 2000).

5.2.5 Summary

This first historical episode in the uKhahlamba Drakensberg, spanning the period from 1818 to 1910, was marked by social encounters between the native San and the settled *amaZizi* people with refugees, settler farmers, and entrepreneurs. Their actions and interactions transformed the landscape from vast tracts of largely uninhabited land with abundant wildlife into a patchy landscape of peasant farms and large-scale commercial farms, predominantly towns inhabited by white people and enclaves inhabited by black people, expanding transport infrastructure, and a rapidly disappearing wildlife.

5.3 Episode 2: Social engineering, 1910-1976

5.3.1 Social encounters

In 1956, a police patrol from Ladysmith surveyed the Mnweni Valley in search of *Cannabis* (dagga) plantations. Dagga raids were held regularly in the 'Native reserves' of the uKhahlamba Drakensberg where large fields were cultivated. Dagga fields found were destroyed, and anyone in possession of the traditional tobacco was arrested. "In one small area [the police had found] over 50 dagga fields, one of them nearly 2 ½ ha in extent" (Pearse, 1982:113). The *amaNgwane* responded to the destruction of the fields by killing almost the entire patrol of 19 policemen. Arrested were 23 men who were sentenced to death (Pearse, 1982). This event occurred after the National Party had come to power, and the creation of homelands was in full swing (2.4). To this day, *Cannabis* remains an illegal yet important cash crop in the region that remains hidden from official livelihood statistics.

5.3.2 Economic expansion

By 1921, African cattle owners in Zululand had re-established their herds, after the *rinderpest* and East Coast fever outbreaks had wiped out most of their cattle. Aided by state veterinary measures and effective herding practices, Zulu cattle keeping performed much better than crop farming which had become stifled by the lack of land available to African peasants. Over the years, homestead food production declined, making families increasingly dependent on income from migrant labour, and the breeding and selling of cattle for subsistence (Mackinnon, 2009:251-252). In 1921, the Department of Native Affairs introduced the Livestock Improvement Proclamation No. 31, aimed at "combating what they perceived to be 'deleterious methods' of cultivation and 'overgrazing' of Zulu 'scrub' animals". This betterment initiative to reduce herds and replace these with commercial breeds undermined not only "the base of Zulu survival" but also their cultural identity (Mackinnon, 2009:250). The significance of

cattle was regarded as being backward, and modernization thinking was promoted at the expense of customary practices and traditions.

When the National Party came to power in 1948, they developed the 'Native' policy into a fully-fledged racist system of separate development (apartheid) to secure a growing African labour force for capital accumulation by the white population, particularly Afrikaners and for ensuring that the Afrikaners could monopolize the best resources. In the 1950s an "exploitative African migrant system was engineered for the manufacturing sector". This was followed by 'territorial apartheid' or 'separate development' along racial lines in the 1960s. Control of the movement of black people between rural and urban areas, and between the Republic of South Africa and the 'independent homelands' in the 1970s further entrenched the widening urban-rural divide (Terreblanche, 2002:312-316).

5.3.3 Nature and conservation

In the early 1900s, conservationist efforts grew to preserve the remaining flora and fauna. Giants' Castle Game Reserve was established in 1910 in the central uKhahlamba Drakensberg (Bristow, 1988). By 1919, the Natal National Park stretched over 6 000 hectares having incorporated several farms, Crown land, and the Upper uThukela Trust land, and the park had gained royal status following a visit by the British Royal Family in 1916. The park reached its present size of 8 000 hectares by 1950 (Pearse, 1982: 98-100; Irwin *et al*, 1980:23; Van Dyk, 2004:213), and was frequented by mountaineers who explored the uKhahlamba Drakensberg and its many peaks, which were opened for recreation (Bristow, 1988).

The first reserves of natural indigenous forests and planted exotic forests were established from 1910 when a start was made with what was to become Monk's Cowl Forest Station. Cathkin Forest Reserve was proclaimed in 1922, stretching over 40 000 hectares from the Injasuthi to the Umlambonja Rivers. Cathedral Forest Station opened in 1934, covering 48 000

hectares (Pearse, 1982: 216-218). In 1970 forest reserves were declared State Wilderness Areas¹¹ intended “for the preservation of indigenous forests, plant communities or national scenery for scientific, aesthetic and recreational reasons” (Irwin *et al.*, 1980:13). Mountain areas were to be conserved through soil erosion prevention, invasive alien vegetation removal, fire hazard reduction, sustainable grazing management, afforestation, and promotion of tourism and recreational opportunity¹² (Irwin *et al.*, 1980).

As the human population in the uKhahlamba Drakensberg grew, the calamities of nature, however, had increasingly led to human fatalities. Pearse (1982:217) mentions people drowning due to flooding of the uThukela River in 1931. In 1970, Spioenkop Dam was built to dam the uThukela River, and alongside, a nature reserve with some wildlife was established (Van Dyk, 2004).

5.3.4 Government legislation

In 1913, the Native Land Act No. 27 was passed which prohibited Africans from land purchases, sharecropping, and squatter farming, and replaced rent tenancy on farms owned by white people with labour tenancy. The Act also made provision for the Chamber of Mines to recruit migrant labourers from the ‘Native reserves’. These labourers would be paid a low wage to supplement the subsistence needs of their families remaining in the ‘reserve’. This piece of legislation – which also affected vulnerable white farmers of smallholdings and tenants (*bywoners*) - destroyed an “important agricultural and entrepreneurial tradition and store of indigenous farming knowledge” (Terreblanche, 2002:260-264).

¹¹ Forest Act No.72 of 1968 as amended in 1971 (Irwin *et al.*, 1988).

¹² Mountain Catchment Areas Act No.63 (Irwin *et al.*, 1988).

“Sol Plaatje [founder of the South African Native National Congress, which became the African National Congress] wrote that the act made the South African black ‘not actually a slave, but a pariah in the land of his birth’ (Terreblanche, 2002:264).

The disenfranchisement of Africans, which had started in the 19th Century, was reinforced by legislation¹³ to control movement from rural to urban areas, prohibit land ownership in urban areas by Africans, expand the ‘Native reserves’, and curtail labour tenancy (South African History Online, undated; Terreblanche, 2002:278).

The rise of the Nationalist Party and the coming to power of a supremacist Government run by white people in 1948 launched an all-encompassing campaign of social engineering¹⁴ that would last several decades. Racial segregation and unequal development were enforced in favour of the white population, while black participation in the political and economic spheres was eliminated. The ‘Native reserves’ were grouped into ten territories each for a designated ‘African nation’. Citizens of these ‘self-governing homelands’ - administered by ‘Bantu authorities’ under control of white people – were no longer considered to be citizens of the Republic of South Africa and they needed special permits to enter the Republic. Africans - as well as coloured and Indian people – were subjected to acts of violence and injustice on a daily basis, such as forced relocations, restricted access to public spaces, inferior education, healthcare, and other government services, and curtailed economic opportunities (Thompson, 2001:182-198).

From 1921, successive governments had designed Betterment planning programmes for land rehabilitation and agricultural development in the ‘Native reserves’. In the 1950s, Betterment

¹³ Native Black Urban Areas Act No 21 (1923), Black Native Administration Act No. 38 (1927), Development Trust and Land Act No. 18 (1936), and Black Native Laws Amendment Act No. 18 (1937) (South African History Online, undated)

¹⁴ Group Areas Act and amendments (1950-1966), Bantu Authorities Act No 68 (1951), Black (Native) Laws Amendment Act No 54 (1952), Blacks Resettlement Act No 19 (1954), Representation between Republic of South Africa and Self-Governing Territories Act (Promotion of Bantu Self-Government Act) No 46 (1959), Bantu Homelands Citizenship Act No 26 (1970), Bantu Homelands Constitution Act No 21 (1971), Black Laws Amendment Act No 7 (1973) (South African History Online, undated)

explicitly aimed at keeping more black people in the 'homelands' and curbing urbanization. The Tomlinson Commission (South Africa, 1955) proposed a "fundamental restructuring" of the homelands, the development of industry locally, and the relocation of people to ensure that households would each have sufficient arable land and grazing commonage to make a living (De Wet, 1989: 327). The Betterment plan was partly implemented: due to the Government's refusal to allocate sufficient funds, and the political risk of moving large numbers of the population, the economic development goals had been abandoned (De Wet, 1989: 327-328).

"People moved to the new residential areas, being compensated for the move, and arable and grazing lands were fenced off. Arable land regarded as unsuitable (e.g. too eroded or too steeply sloping) by the planners was removed from cultivation, so that in a number of communities people found themselves with less arable land than before. In some cases, people lost their arable holdings altogether. In some areas, culling of stock took place, with the culled animals being auctioned where possible. Agricultural extension services were planned to be more effective and in some areas irrigation schemes and other projects were undertaken" (De Wet, 1989:327).

Okhombe village was also subjected to 'Betterment' (Von Maltitz & Evans, undated). The people who lived scattered around hill slopes and mountains were concentrated into six settlements, called sub-wards, in the lower valley areas adjacent to the uKhombe and uMgeni Rivers. These areas were designated as cropping fields, while the mountain slopes and plateau were allocated for grazing commonage, with fenced off grazing camps. Each sub-ward had its own grazing lands, and different types of cattle were allocated to different parts of the camps. The hill slopes close to the homesteads were intended for dairy cows, and cattle belonging to female-headed households. This would save women from taking long walks to retrieve their cattle. The hilltops were reserved for the main livestock herds (Sonneveld, 2004).

A comparison between digitized maps derived from aerial photos taken in 1945 and 1962 shows how 'Betterment planning' had changed land use in Okhombe (Figure 6). The map of

1945 shows homesteads scattered across the area and well into the mountains; cultivated lands are also spread out but with a concentration in the valley; while in the south, a fence line runs from east to west to prevent cattle from straying into the mountains. The 1962 map shows a concentration of two large and several smaller settlements in the valley. Table 6 shows a quantitative analysis of changes in land cover in hectares. Between 1945 and 1962, settlements expanded from just over 24 hectares to nearly 112 hectares (Table 7). Cultivated lands had become entirely concentrated in the valley, surrounded by the new settlements (Figure 6). However, total hectares of land under cultivation had declined from 616 hectares to 514 hectares, which is in line with De Wet's (1989) findings mentioned above. Soil erosion decreased, with a reduction of 24 hectares in bare soil surface.

In the 1970s, the Tugela-Vaal Water Scheme was initiated to transfer water from the uThukela River into the Vaal River to meet the increasing industrial demands and to generate electricity. Below the uKhahlamba Drakensberg escarpment a system of canals, pipelines, and dams - of which the largest is Woodstock dam – was built, which connected with the Vaal River via Sterkfontein Dam (Water Research Commission, 2005:15; Eskom generation, undated; Van Dyk, 2004.)

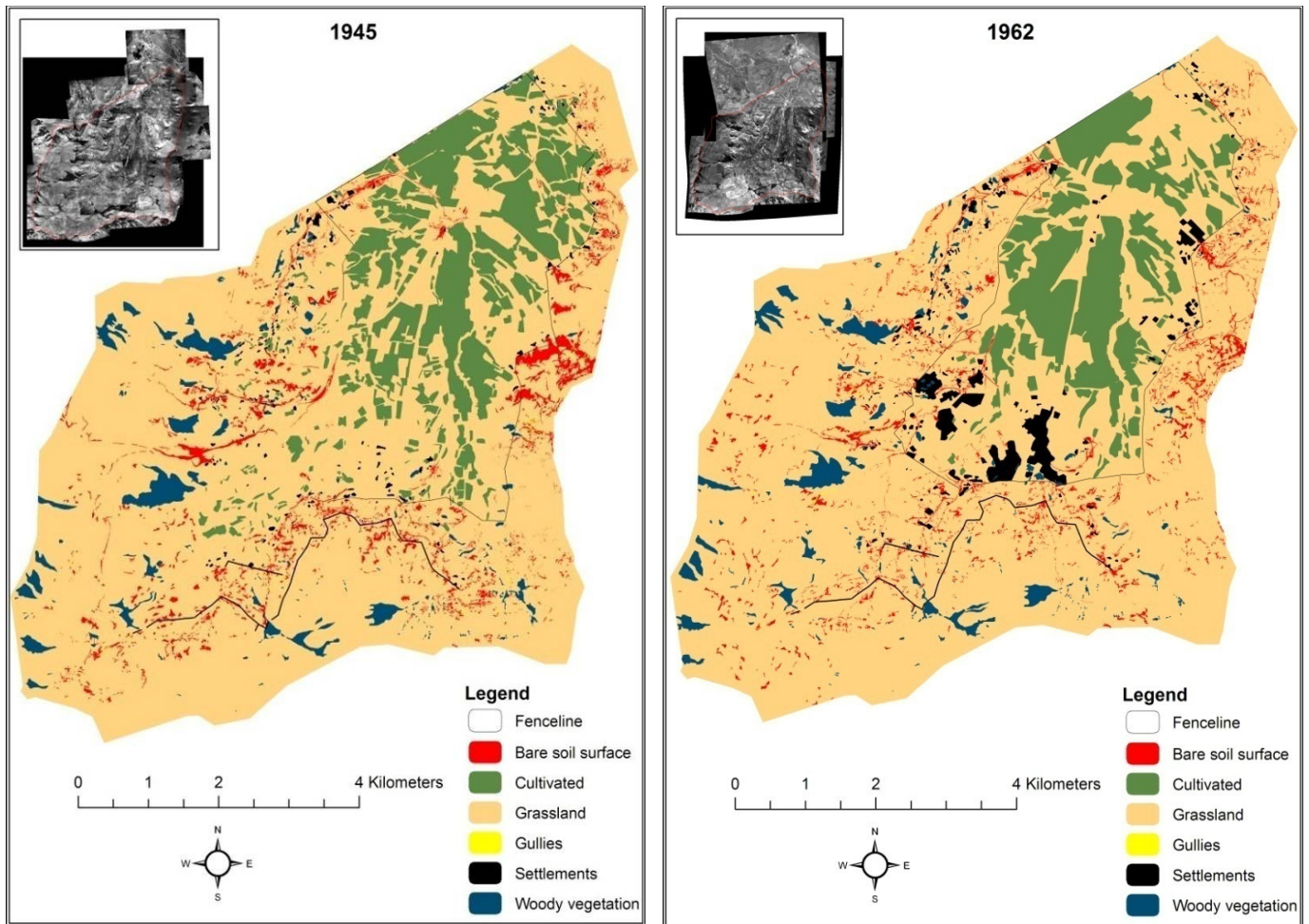


Figure 6 Changes in land cover in Okhombe in 1945 and 1962 (Bangamwabo, 2009:54)

Table 7 Land cover changes in hectares in Okhombe, 1945-2004 (Bangamwabo, 2009)

	1945	1962	1976	1992	2004
Bare soil surface	178.706	154.188	123.689	150.528	90.360
Gullies	2.942	3.048	1.475	4.761	6.075
Settlements	24.652	111.990	228.109	329.414	408.052
Cultivated areas	616.318	514.539	591.980	607.571	466.531
Grassland	3625.961	3682.212	3497.017	3318.516	3436.783
Woody vegetation	137.688	135.557	165.047	208.927	190.610

A comparison of the map of 1962 with a digitized map from aerial photographs taken in 1976 in Okhombe village (Figure 7) shows a doubling of settlements, expanding from close to 112 hectares to 229 hectares (Table 7).

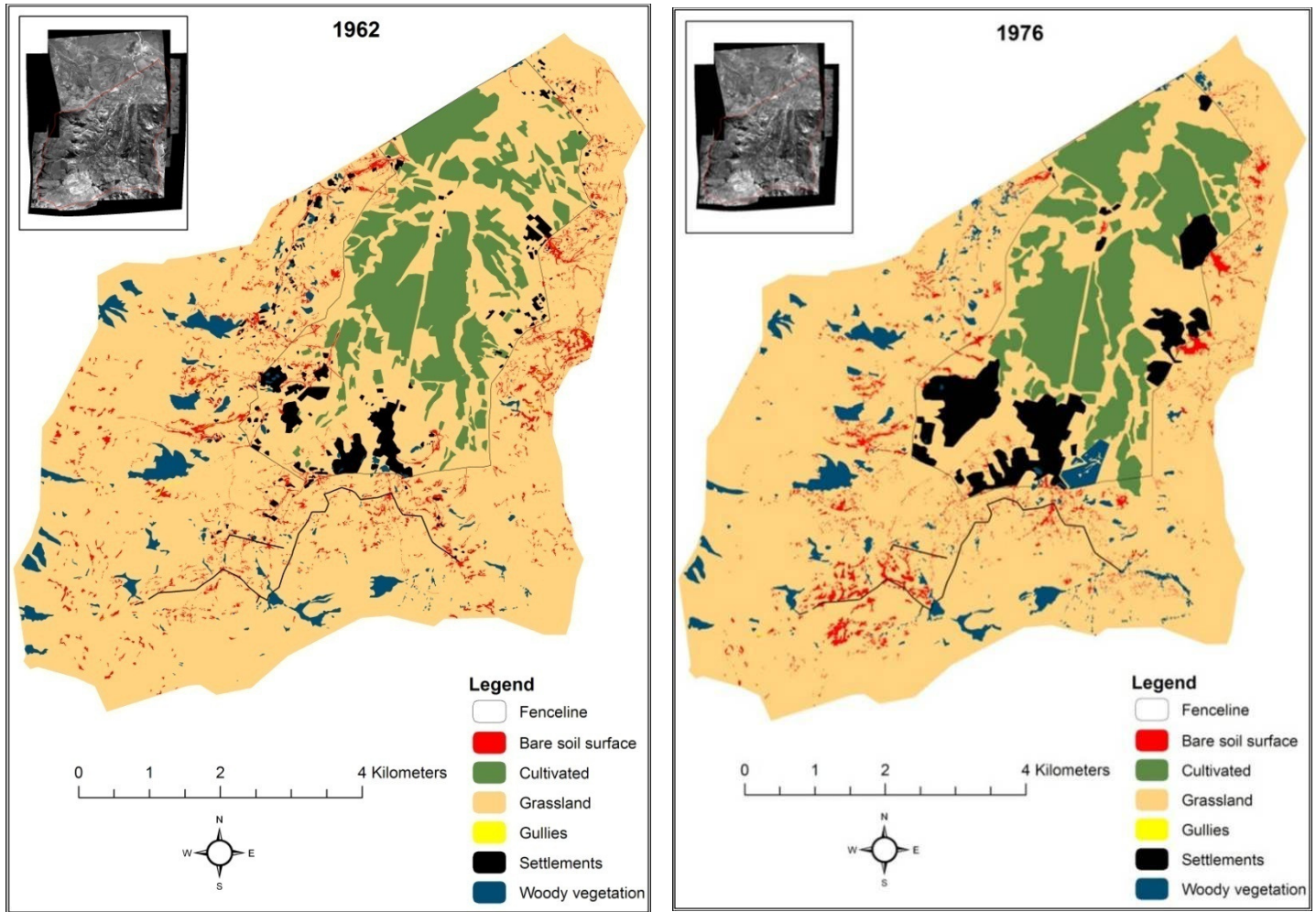


Figure 7 Changes in land cover in Okhombe in 1962 and 1976 (Bangamwabo, 2009:54)



Figure 8 North-west Kwazulu-Natal. Inset: South Africa and KwaZulu-Natal Province.

The map shows the proximity of Okhombe to the Woodstock and Sterkfontein dams which are part of the Tugela-Vaal Water Scheme.

5.3.5 Summary

The second episode in the uKhahlamba Drakensberg history, stretching from 1910 to 1976, was the landscape being turned into a patchwork of occupation by black and white people. Territorial segregation and accelerated economic development were accompanied by tracts of lands absorbed by nature reserves. Rigid lines were drawn across the already patchy landscape,

separating rural - and some urban – overcrowded African enclaves from booming towns. The relocation of African people intensified to make way for industrial development and infrastructural schemes. Flexible land management practices were replaced with rigid, single use land management resulting in environmental degradation and loss of traditional agro-ecological knowledge.

5.4 Episode 3: Rural-urban-rural migration, 1976-1990

“I was born in 1948 in Emmaus (*amaNgwane* area). In 1968, I worked on farms in Colenso and Mooi River. In 1969 and 1970 I worked at Power stations in Arnoud in Mpumalanga. I moved to Cape Town in 1971 where I worked at a shipping company. I returned to Emmaus in 1972 because my father had passed away. In 1973 I went back to Cape Town and worked in a furniture workshop. I returned to Emmaus in 1974 and lived from farming, and moved to Okhombe in 1977. I worked for a year at a fishing company in Namibia. I returned to Okhombe in 1979 where I have stayed since. I make a living from farming, woodwork, and cattle”.

(Interviewee, 54/MZA, Nov 2010)

5.4.1 Social encounters

In the 1970s, the apartheid Government increasingly resorted to overt violence and repression to suppress domestic resistance by a growing anti-apartheid movement. The Soweto uprising of 1976, when police forces shot at thousands of marching children, triggered nationwide protests (Terreblanche, 2002:352).

The Government's attempt to control strikes by regulating trade unions backfired, because unions became a strong political force for workers, and also ignited disturbances in rural areas (Thompson, 2001: 217-223).

5.4.2 Economic expansion

Between 1974 and 1994, South Africa experienced a downward economic spiral. The apartheid strategy of cheap African labour for industry had reached its limits. Unemployment among Africans soared due to changes in production, a shift towards the services sector requiring specialized education, and population growth. Economic sanctions and restrictions on international trade that were imposed by foreign countries in response to the apartheid Government's violence against protesters further exacerbated the struggling economy (Terreblanche, 2002:374,378; Thompson, 2001:224,233).

5.4.3 Nature and conservation

In 1976, the Drakensberg Policy Statement was issued to protect the water-producing capacity and natural resources of the uKhahlamba Drakensberg mountains. The policy was welcomed by environmentalists who sought to halt the development of holiday resorts in the Cathkin area (White, 1994:61-66; Irwin *et al.*, 1980:13) and whose concern was heightened by the opening of the first part of the National Hiking Way in the uKhahlamba Drakensberg in 1979 (Irwin *et al.*, 1980).

In Okhombe, a comparison of the 1976 map with a digitized map from aerial photographs taken in 1990 (Figure 9) showed that settlements increased from 228 hectares to 329 hectares (Table 7). The declining trend in bare soil surface changed between 1976 and 1990, when bare soil surface increased by 27 hectares and the land surface with gullies tripled. Rainfall data obtained for the period 1945 to 2004 (Figure 11) show a decrease in rainfall in the early 1980s which

coincided with the increase in soil patches noted.

5.4.4 Government legislation

In 1977, KwaZulu was declared a 'self-governing territory' rather than an independent homeland (Thompson, 2001:186) and comprised areas which were spread across the present KwaZulu-Natal Province. The uKhahlamba Drakensberg region, however, remained part of Natal and the Republic of South Africa. Tighter controls had been put in place to restrict movement of people between rural and urban areas, towns and townships, and South Africa and the 'homelands' (Terreblanche, 2002:312-316). The economic recession resulted in many Africans becoming unemployed. Some moved back to their rural homesteads, while others were sent to a 'homeland' in which they had never lived before.

Settlements in Okhombe village grew between 1976 and 1992, and a new settlement, Sgodiphola sub-ward, was established (Figure 9), adding another 100 hectares to the 228 hectares in settlements (Table 7). The Sgodiphola sub-ward was built to accommodate the growing population and the Okhombe families returning from elsewhere.

5.4.5 Summary

The third episode in the history of the uKhahlamba Drakensberg between 1976 and 1992 signaled the beginning of the end of apartheid as domestic resistance and foreign protests grew stronger. This period saw the rural-to-urban trend reversed to migration from urban to rural areas by large groups of unemployed Africans retrenched as a result of the economic recession.

5.5 Episode 4: Greening the uKhahlamba Drakensberg, 1990-2009

5.5.1 Social encounters

By the late 1990s, the uKhahlamba Drakensberg region was described as being “among the most poverty-stricken, degraded and underdeveloped areas in KwaZulu-Natal Province, and [which] formed a stark contrast with the comparatively well-managed protected areas” (Sandwith, 1997:124-125). Okhombe village, comprising around 4 000 inhabitants, is under the jurisdiction of the *amaZizi* Traditional Administrative Council and the Okhahlamba Local Municipality. By 2010 the municipality comprised over 152 000 inhabitants of African, Indian, white, and coloured origin, and the municipality forms part of the uThukela District Municipality (South Africa, 2010: 11-16).

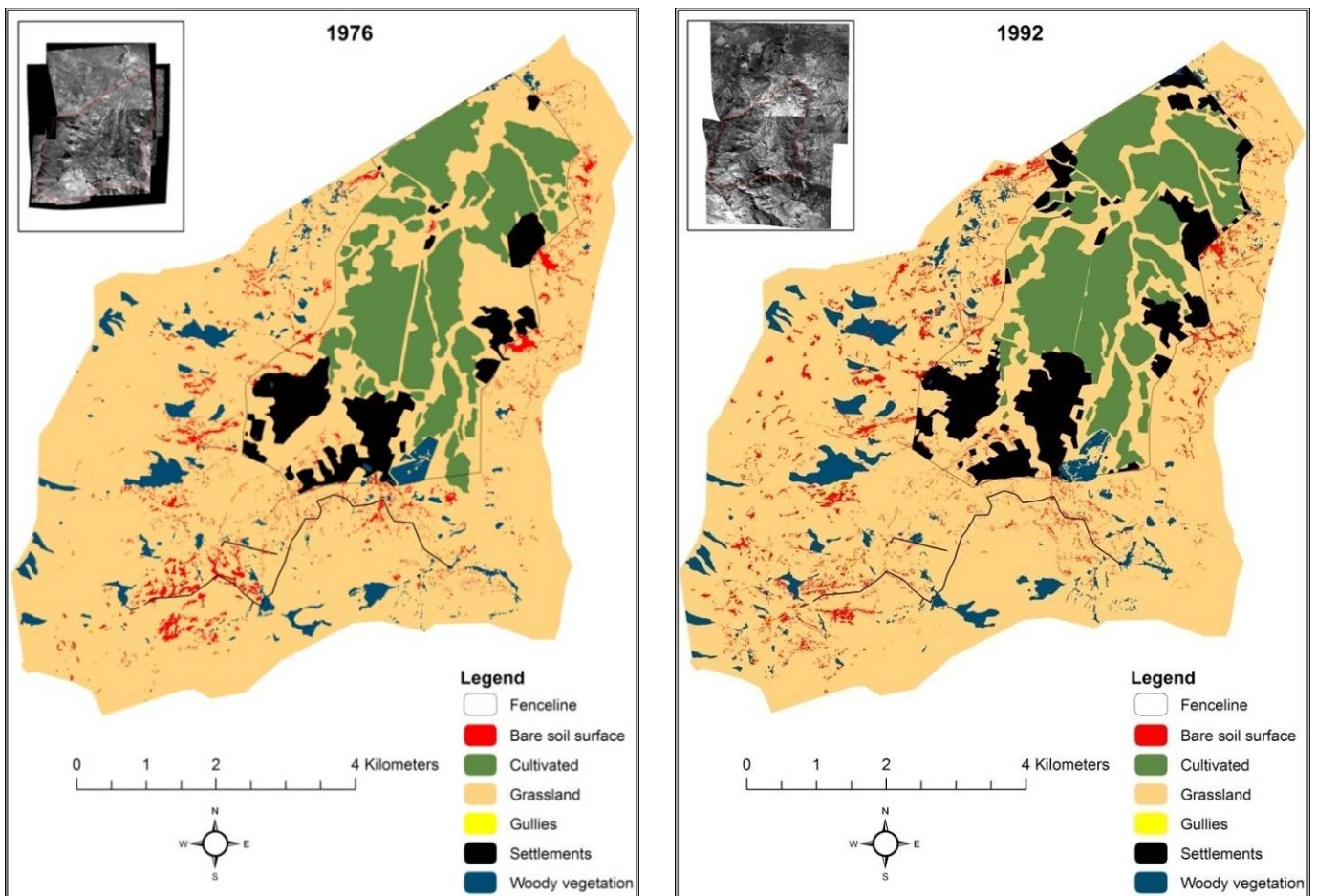


Figure 9 Changes in land cover in Okhombe in 1976 and 1992 (Bangamwabo, 2009:53)

5.5.2 Economic expansion

The uThukela District Municipality is predominantly rural and it experiences high levels of poverty, an unemployment rate of over 49%, a low revenue base, with a third of the population earning between 6 000 and 18 000 Rand or US\$ 750 to 2 250 per annum, limited access to services, poor infrastructure, and low investment.

5.5.3 Nature and conservation

The *amaZizi* and neighbouring *amaNgwane* tribal areas are wedged in between Royal Natal National Park and Cathedral Peak which form part of the uKhahlamba Drakensberg Park World Heritage Site. From the mid-1990s, projects such as Working for Water, Landcare, and the Maloti-Drakensberg Transfrontier Project were launched in Okhombe and neighbouring areas to address environmental problems and to enhance community management of natural resources. These initiatives were part of a drive “to green the Busingatha-Mnweni gap” (Amagugu Esizwe MDTP, 2007:8) in order to retain the uKhahlamba Drakensberg Park’s World Heritage Status (Amagugu Esizwe MDTP, 2007:8-10).

In 2004, the uKhahlamba Drakensberg Region was identified as a pilot area for a Payment for Ecosystem Services approach of compensating communities for managing the natural resources in a sustainable manner (Diederichs & Mander, 2004). The rationale for developing a strategy of incentives for land users in the region was: 1) to alleviate poverty of communities; 2) to retain the mountains as a World Heritage Site of international biodiversity, cultural, and geological significance; 3) to maintain the region’s watershed functions, supplying 25% of South Africa’s water; and 4) to promote the region as a key tourist destination (Diederichs & Mander, 2004:4).

In Okhombe, a comparison of the 1992 map with a digitized map from aerial photographs taken in 2004 (Figure 10), showed that settlements increased from 329 hectares to 408 hectares

(Table 7). The 2004 map showed a 30% decrease of land under cultivation from 607 hectares to 466 hectares. The map also showed fence lines demarcating a rotational grazing scheme which was developed under the Landcare Project. Between 1992 and 2004, bare soil surface decreased from 150 hectares to 90 hectares. Gullies increased from over 4 hectares to 6 hectares. Following a drought in the early 1990s, rainfall reached a peak by 1995, and dropped again by 2000 (Figure 11).

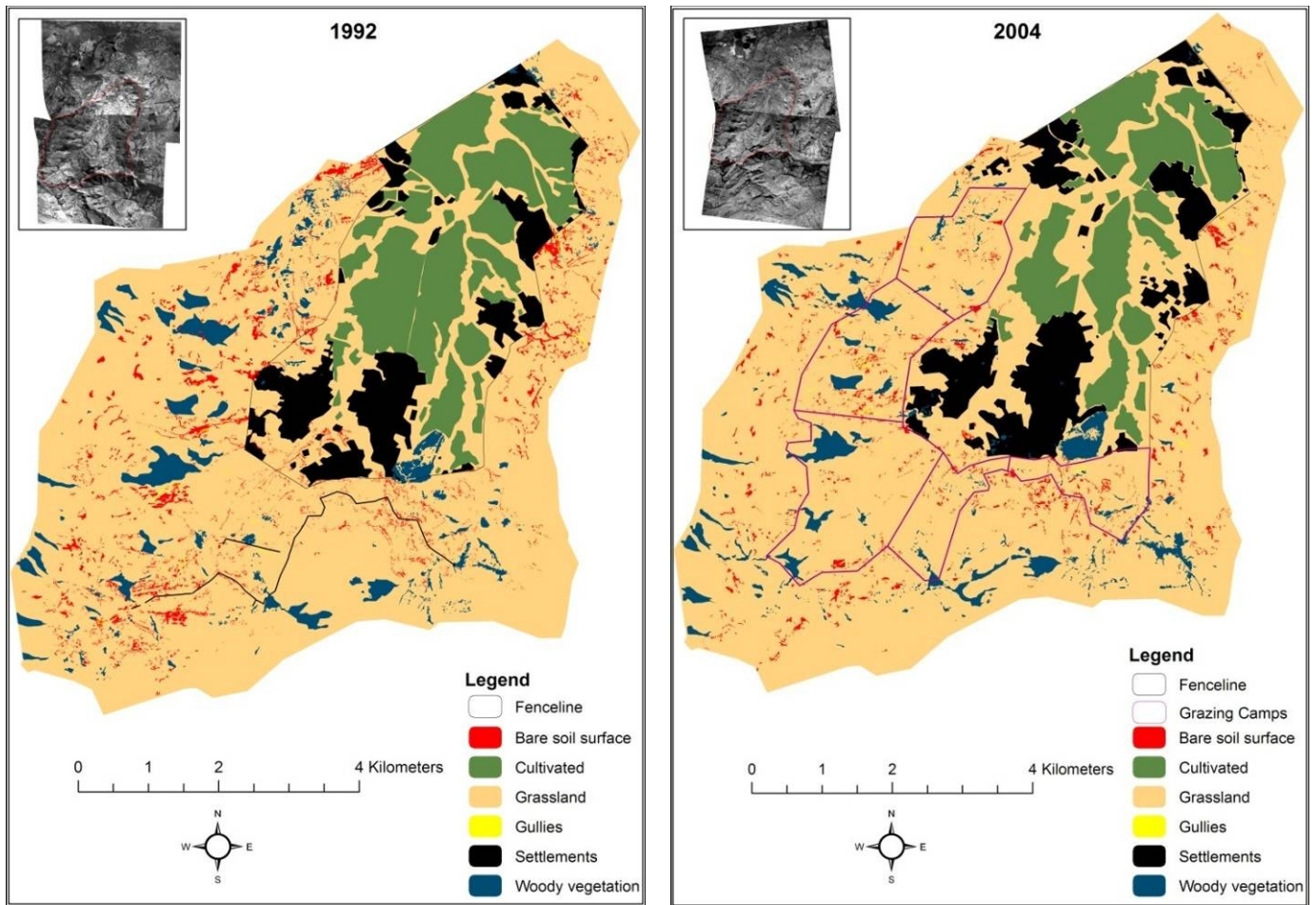


Figure 10 Changes in land cover in Okhombe in 1992 and 2004 (Bangamwabo, 2009:53)

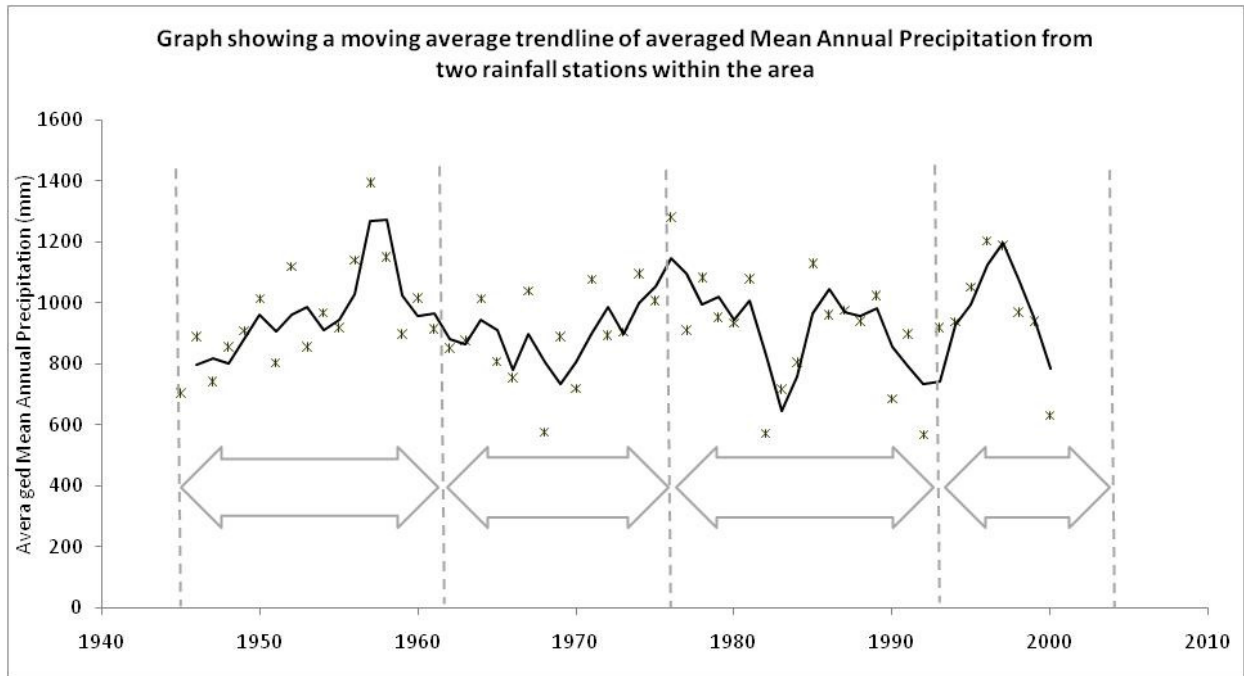


Figure 11 Mean annual precipitation¹⁵ (compiled by Victor Bangamwabo)

5.5.4 Government legislation

The new Democratic Government constitutionally secured environmental rights and the right of all citizens to participate in decision-making.

5.5.5 Summary

The fourth episode in the history of the uKhahlamba Drakensberg was marked by concerted efforts by government departments and development organizations to engage people in Okhombe and neighbouring communities to manage their environment in a sustainable manner.

¹⁵ The rainfall data come from two meteorological stations, namely Clifford Chambers, approximately 4 km north east of Okhombe, and Olivia, 2 km west of Okhombe (Dolleris, 2004:74).

The present landscapes of Okhombe and the wider uKhahlamba Drakensberg region were not shaped by a single factor. Rather, a range of social, economic, ecological, and political processes and interactions transformed the uKhahlamba Drakensberg region from a wilderness landscape into a patchwork comprising thriving towns and industry, expanding transport networks, and overcrowded African enclaves.

The modernization model of development, which gained international prominence in the 1960s, was implemented in South Africa as part of a nationwide campaign of territorial segregation and accelerated industrial and infrastructural development. The Okhombe ward was one of the rural areas that were subjected to a Betterment scheme. This Government intervention transformed flexible land use practices - aimed at managing patchy resources - into a landscape carved up into zones for single land use, with cattle grazing being designated to the mountain slopes. Nevertheless, soil erosion remained more or less constant in the period between 1945 and 2004. An increase in bare soil in the period between 1976 and 1992 coincided with a period of drought.

In less than two centuries, African peasants who grew crops and tended to their cattle - and who in 1891 provided 80% of Natal's maize crop - had been put out of business. The process of systematic and legislated disenfranchisement, which had started already during colonial times, had forced African peasant men into migrant labour for the mining and manufacturing industry, and had made rural households dependent on urban remittances.

Chapter 6 Cattle and the commons of Enhlanokhombe sub-ward

Introduction

In Chapter 2, it was argued that studies on traditional rangeland management practices have disproved dominant beliefs that good governance of the commons requires privatization and centralized regulation (Hardin 1968, 1998) and that rotational grazing would be superior to continuous grazing (Briske *et al.*, 2008). It was also argued that there is a need for analyses of social and political relations (Peters, 2002) to understand the 'wicked' (Mwangi, 2008:962) processes of negotiation and contestation between resource users (Sithole, 2003; Peters, 2002) and the legal pluralism in which governance of natural resources are often situated (Alinon, 2004).

Against the backdrop of the issues and debates highlighted in Chapter 2, in this chapter the question is explored of why a rotational resting system in Okhombe collapsed within six months of its launch in 2004, despite having been designed in a participatory manner. Findings are presented of a study of how cattle keepers in Enhlanokhombe sub-ward use the rangeland commons, and what determines these practices. Current grazing practices are compared with the design of the rotational resting system. The question of whether or not institutional arrangements exist in Enhlanokhombe to manage natural resources is explored, and it is questioned, in particular, whether:

- there are traditional rules that govern the rangeland commons;
- legal pluralism is affecting natural resource governance; and
- processes of negotiation and contestation take place to gain access to and control over natural resources.

6.1 Keeping livestock in Okhombe

6.1.1 The cattle connection

“I keep cattle because in Zulu culture cattle are known as the bank. Cattle help me to plough my land. Some of my cattle are good for selling, while others are good for slaughtering. My herd has grown to 25 cattle from the few cattle I bought from people here, and others which I received as bride wealth (*ilobolo*) for my daughter. These days people just buy cattle for rituals and to pay *ilobolo*. People who don't have cattle can use someone else's oxen to plough their land. This is a very old custom. People don't pay but exchange labour by helping others to plough their fields. If you don't have cattle, life is not good because cattle are a person's bank, though it may not be a problem for those who work in the city and put their money in the bank”.

2/KDB, Sep 2009, Okhombe

In Okhombe, cattle fulfil multiple functions and are of cultural and spiritual significance (Salomon, 2006). People use and appreciate a range of products and services that cattle offer, such as milk, meat, manure, leather hides, traditional attire, drums, shields, mats, ropes, whips, fuel, and draught power. Cattle and goats are used to communicate with the ancestors, in training of traditional healers, and in rites of passage, such as girls' coming-of-age ceremonies, child birth, and funerals. Cattle are also important to strengthen or mend social ties, such as bride wealth (*ilobolo*) or pregnancy out-of-wedlock (Salomon, 2006).

Photographs of cattle keeping in Okhombe taken by the co-researchers showed a range of issues, such as breeds of cattle found in the area, who look after cattle, the condition of different parts of the rangelands, different uses of cattle, equipment used to work with cattle where cattle and other stock are kept at the homestead. An example of a series of photographs is shown in Plate 3.

Box 2 The role of cattle in Okhombe

Zulu culture is called a cattle-centred culture. Cattle play a vital role in the day-to-day lives of many Zulu people and are more than just an economic asset. But how specifically do cattle facilitate interactions, foster relationships, and enhance social cohesion in a community?

Three broad categories can be distinguished:

1. Social movement of cattle, involving trading and *lobola* (bride wealth)

Trading inside the community requires tact, skill and social sensitivity. Cattle can be traded for cattle, for money, or for other livestock. Trading at outside markets gives more money.

Lobola is widely practiced but people view it differently. Cattle owners choose their best cattle to show their pride and love for their son and new daughter-in-law (*makoti*), and replace the empty space left by her with something precious, loved and valued.

Others say that the naughtiest and most troublesome cattle are used for *lobola*, and that money can be used instead of cattle.

2. **Practical uses of cattle** include ploughing, transportation, fertilizer/manure, breeding, food (milk and meat), and banking. Households without cattle can borrow or rent cattle, use its products and services, and gain special skills, such as ploughing and milking.

3. Cultural and spiritual uses

Cultural adornments: These include shields, wrist bands, clothing, protection, and a link to the ancestors (*amadlozi*).

Rituals: Rituals such as weddings and funerals demand certain types of cattle, special skills (e.g. slaughter, digging) and community cooperation.

Spiritual: Each household has a sacred family cow, which is a medium to communicate and appease the ancestors.

A person with cattle has status and respect. At the same time, cattle are viewed as a communal resource. It is a communal responsibility to care for and protect cattle, ensure sufficient grazing and prevent stock theft. Loss of cattle means loss of trust, and loss of social cohesion (Rambally *et al.*, 2009).

Cattle keeping in Okhombe by co-researcher Zanele Hlatshwayo



"Cattle are grazing in the mountains Wadoyi".



"Brahman and Drakensberg cattle look similar to Zulu cattle".



"Bles and isomi cattle".



"Cattle are eating maize in the field".



"Cattle come back from the field. They eat ground yellow maize. The herder is Mr Xaba's son who looks after the cattle".



"Who looks after cattle? The herder in the picture".



"This grass is good, you can feed cattle in that grass".



"This grass is not good, cattle cannot graze here. There is no grass around the homestead compared to other areas".

Plate 3 Photo series on cattle keeping in Okhombe by co-researcher Zanele Hlatshwayo

6.1.2 Keeping livestock in Enhlanokhombe

A survey was made of all households with cattle in Enhlanokhombe sub-ward to document people's practices in keeping cattle. Of the 148 households in Enhlanokhombe, 55 households kept cattle and other grazing stock, and were interviewed. Of these interviewees 39 were male, 14 were female, and 2 were interviewed as a couple.

A total of 456 head of cattle, 182 goats, and 23 sheep were recorded in the period between October 2007 and October 2008. Of the 55 stock keeping households, 27 kept cattle and goats, 21 cattle only, 6 cattle, goats, and sheep, and 1 household kept cattle and sheep (Figure 12).

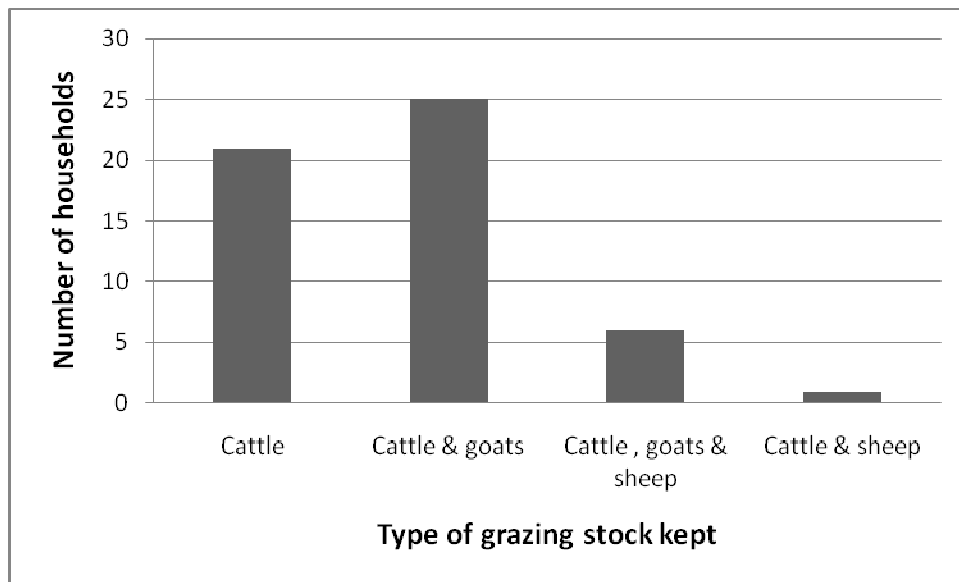


Figure 12 Type of grazing stock kept in Enhlanokhombe

Co-researchers said they had expected there to be a higher number of cattle. A comparison of figures from 2001 (Table 8) showed a decline of 147 (or 24%) from the 603 head of cattle recorded in Enhlanokhombe. These figures had been provided by the Okhombe Livestock Committee, who recorded a total of 1545 head of cattle for the whole of Okhombe. In 1989 and 1996, cattle numbers, taken from the dip tank register, stood at respectively 2897 and 2477 head of cattle (Dolleris, 2002:86; Rural Development Services, 1989:42). Assuming that the number of cattle in Enhlanokhombe was a constant 39% of the total cattle herd in Okhombe, a

steady decline in number of cattle would have occurred from 1989 onwards (Table 9). This trend coincided with an increasing dependence on income from urban areas, and a decreasing reliance on livestock and agriculture (Box 3).

Table 8 Cattle herds in Okhombe in 2001 (Tau, 2006:62)

Sub-ward	Head of cattle	Percentage
Enhlanokhombe	603	39%
Mahlabathini	168	11%
Mpameni	126	8%
Ngubhela	108	7%
Oqolweni	390	25%
Sgodiphola	150	10%
	1545	100%

Table 9 Change of cattle herds in Okhombe and Enhlanokhombe from 1989 to 2008

Cattle herd	1989	1996	2001	2008
Okhombe ward	2897	2477	1545	1140
% Decrease		13%	38%	16%
Enhlanokhombe sub-ward	1130	966	603	456
% Decrease		15%	18%	18%
	Source	Dip tank register	Dip tank register	Livestock Committee
				Survey

The most common herd size in Enhlanokhombe sub-ward was 4 head of cattle (Figure 13). The largest herd was 46 head of cattle. The herd size for 1 household was unknown. According to the co-researchers and other community members, in the past, fewer households kept cattle

Box 3 Sources of income in Enhlanokhombe

Two Masters' students in Psychology undertook field work to identify the economic stratification of Enhlanokhombe sub-ward (Singh & Balkaran, 2010). For this purpose, they asked a group of twelve female and three male villagers to sort cards with the names of all households in the sub-ward according to wealth. The group distinguished nine categories and described for each its distinct characteristics. Household names were then checked against the list of cattle keepers to see if cattle were a distinguishing feature of wealth. The findings show that the wealthier households are more likely to have cattle. However, poor people can have cattle also.

Wealth categories (ranked from very well off to poorest)	Households (=N)	Households with cattle (=N)
1. Living well	6	4
2. Money from outside Okhombe	21	14
3. Farming	7	3
4. Pension and income from children	3	1
5. Pension only	38	9
6. Child grant and piece jobs	12	0
7. Piece jobs only	1	0
8. Poor (unknown how they survive)	6	2
9. Orphans	2	0
Total	96	33

but they had larger herds. Absorption in the monetary economy enabled more people to purchase cattle, as was the case in Lesotho for example (Turner, 2003).

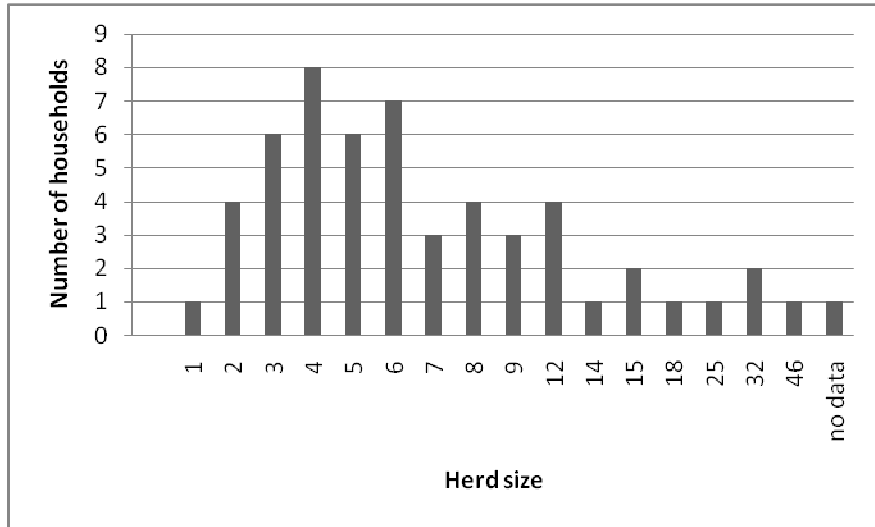


Figure 13 Range of herd size for households with cattle

Data on herd composition were available for 45 of the 55 cattle keeping households (Figure 14). Of these 45 households, who owned a total of 302 head of cattle, cows formed 45% (135) of the total cattle herd, oxen 29% (87), calves 19% (24), and bulls 8% (56). Ten cattle keeping households, owning 100 head of cattle, did not stipulate how their cattle herd was composed.

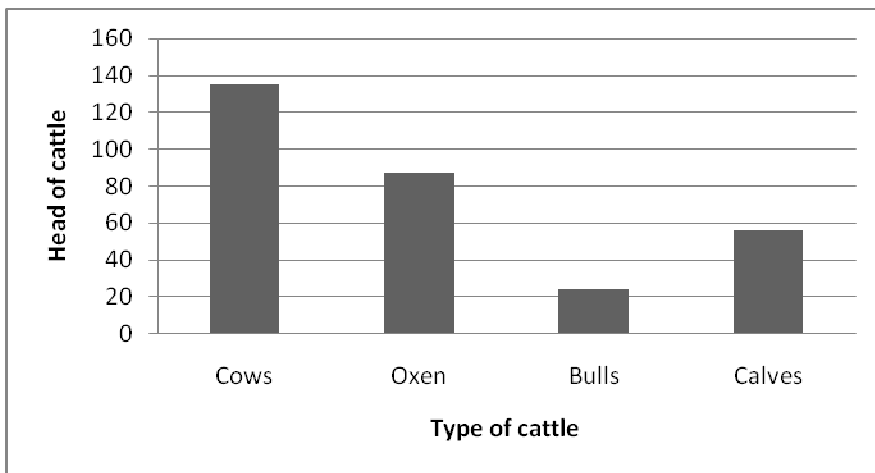


Figure 14 Composition of cattle herds in Enhlanokhombe

6.2 Grazing the commons of Enhlanokhombe

6.2.1 People's practices of keeping cattle and management of cattle grazing

For the vast majority of cattle keepers (42 out of 55), attending to their cattle was a family affair (Figure 15). The head of household, his or her children, and/or other relatives look after the family herd. Twelve households had a paid herder and one cattle keeper kept his two head of cattle near his homestead. Traditionally, livestock graze in the mountain rangelands in the summer period between October and May. After the crops are harvested, cattle are moved down to the valley to graze the maize residues in the cropping fields during the winter period between June and September.

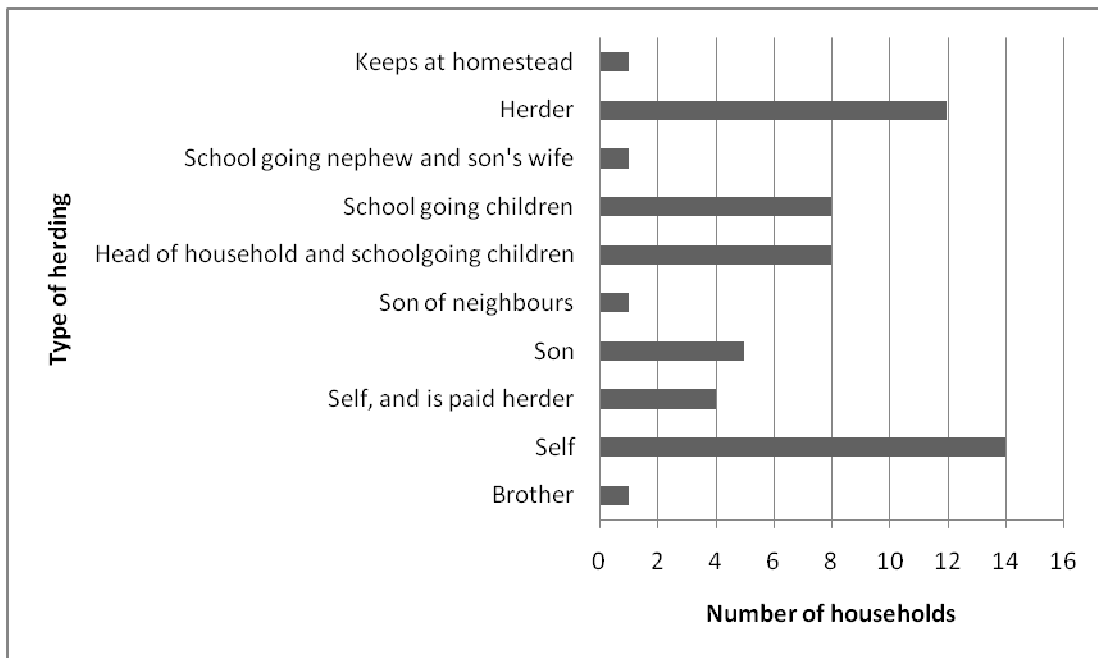


Figure 15 Type of herding per household

Cattle keepers were asked how they decide where to take their cattle for mountain grazing during the summer season (Table 10). Proximity to the homestead and, related to this, safety

from stock theft was mentioned most often. For two cattle keepers it was family tradition. Only one cattle keeper mentioned grazing quantity as a criterion for grazing location.

Table 10 Criteria cattle keepers use to decide where to take their cattle for grazing

Criteria mentioned	Cattle keepers (N= 55)
Proximity to homestead	12
Prevention of stock theft	5
Family tradition	2
Available grass and water	1

Three distinct areas were identified where cattle keepers take their herds for mountain grazing during the summer season (Table 11). Just over half of all stock keepers, namely 35 of 55, take their herds to Skidi mountain. Fifteen cattle keepers go to Maqoqo mountain. Two stock keepers take their herds to Mdlankomo mountain in the Oqolweni rangelands.

Table 11 Grazing stock per grazing location in Ehlanokhombe

Grazing location	Households	Cattle	Goats	Sheep
Maqoqo	15	167	55	8
Skidi	34	253	115	11
Mlankomo	2	14	3	
Homestead	1	2	1	
No data	3	20	8	4
	55	456	182	23

By combining information from the survey with spatial data (collected with a Global Positioning Systems device), some insights were gained which otherwise may have been overlooked:

- The map shows the distribution of households with cattle across the sub-ward. A slight concentration of cattle keepers is observed in the north-western part of the village towards the uKhombe River and the main road to Oqolweni sub-ward.
- Not all cattle keeping households consider the proximity of grazing location to homestead as a criterion, as several households take their cattle to a grazing area further away.
- Almost twice as many head of cattle graze at the Skidi grazing location as at the Maqoqa one.

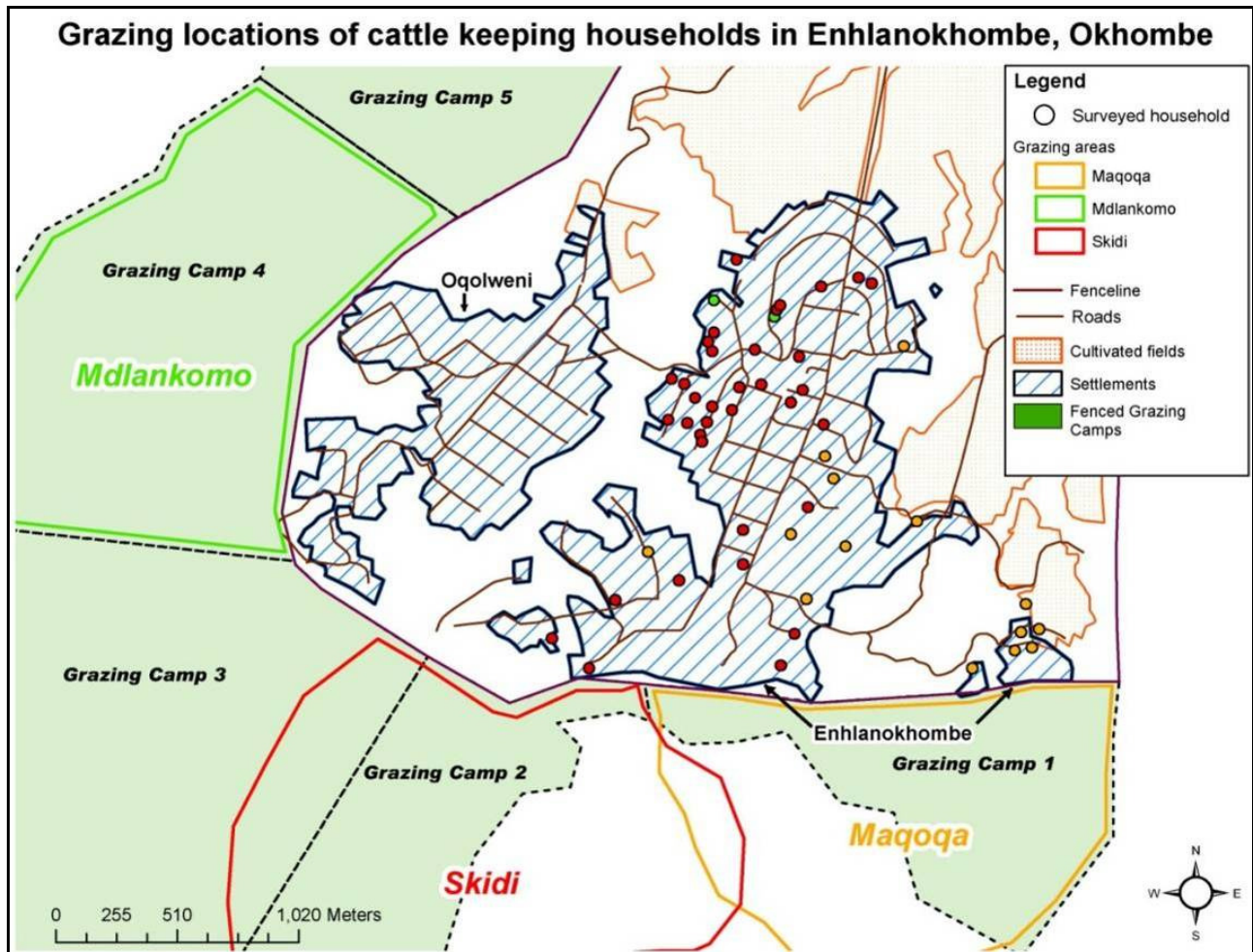


Figure 16 Grazing locations of cattle keeping households in Enhlanokhombe

The figure shows the locations of each cattle keeping household (indicated by coloured dots) and the locations they use for mountain grazing (demarcated by yellow, red, and green lines). The colour of each dot (household) corresponds with the colour of the grazing location to which the household takes their cattle.

Many cattle keepers who use the Skidi grazing area do not take their herd high up onto the mountain. Instead, they drive their cattle on the lower hill slopes and leave them there because they want to see the cattle from their homestead. Stock theft is mentioned most as the reason for keeping the cattle near. Others say that they don't have the time or labour to stay with their cattle, and that they cannot afford to pay a herder. Traditionally, young boys would herd the family cattle. Since the introduction of compulsory schooling, however, herding labour had become a serious constraint (Chonco, 2009). Urban migration and an increasing reliance on remittances and grants may have further reduced dependence on and investment in livestock and agriculture.

Stock keepers were asked what problems they experience in keeping cattle. Stock theft was mentioned by 47 of the 55 cattle keepers as the pressing problem (Table 12). Twenty eight stock keepers also said they experience problems with cattle diseases. This was contested by five others who stated that cattle diseases do not pose a problem, of which one remarked that animal diseases can be treated.

Table 12 Problems that cattle keepers experience

Problems mentioned	Cattle keepers (N = 55)
Stock theft	47
Death from disease	28
Veld fires	11
Cattle get thin in winter due to grass shortage	8
Animal diseases are not such a problem	5

Cattle eat plastics	5
Cattle fall into dongas	2
Herders are drunkards	1

A stock theft narrative seems to emerge from the research findings. To verify the incidence of stock theft, figures from the survey for stock losses were analysed. Cattle keepers were asked to indicate how their herds had changed in the previous five years. Nineteen of 55 cattle keepers did not answer this question for the year 2007 (Figure 17). This number increased to 36 for 2006 (Figure 18). No responses were recorded for the previous three years. Between 2006 and 2007, a total of 17 households reported cattle deaths as cause for changes in herd size compared to 14 households reporting stock theft as cause for cattle losses¹⁶. When counting number of cattle lost, however, between 2006 and 2007, a total of 42 head of cattle was reported lost due to stock theft, compared to 37 head of cattle lost through cattle death (Figure 19). The results showed that, although both stock theft and cattle disease leading to death appear to be pressing problems, cattle keepers perceive stock theft to be more of a threat. Co-researchers explained this discrepancy:

“If your cattle die, you can still eat them. But if cattle are stolen they are lost”

(Okhombe team meeting, 8 April 2008).

“When a cow dies you can see that it is dead. But when a cow is stolen, you don’t see it, and you will always look for it. Even after 20 years, even though you know that a cow cannot live that long, when you see a cow that looks like yours you think that that is the one that was stolen”.

(Okhombe team meeting, 16 November 2010)

¹⁶ It must be kept in mind that the figures are incomplete with low rates of recall.

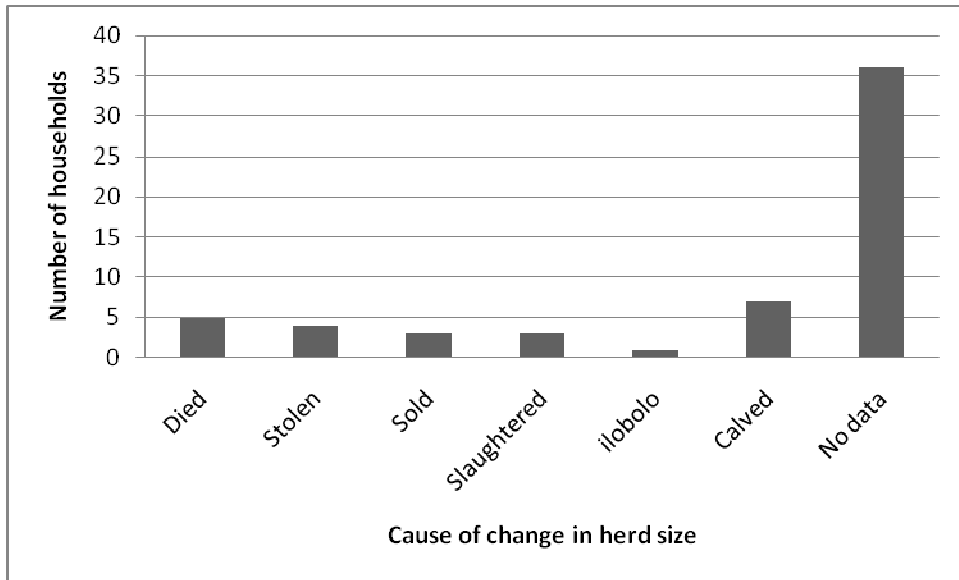


Figure 17 Cause of herd size changes in 2007 in Enhlanokhombe

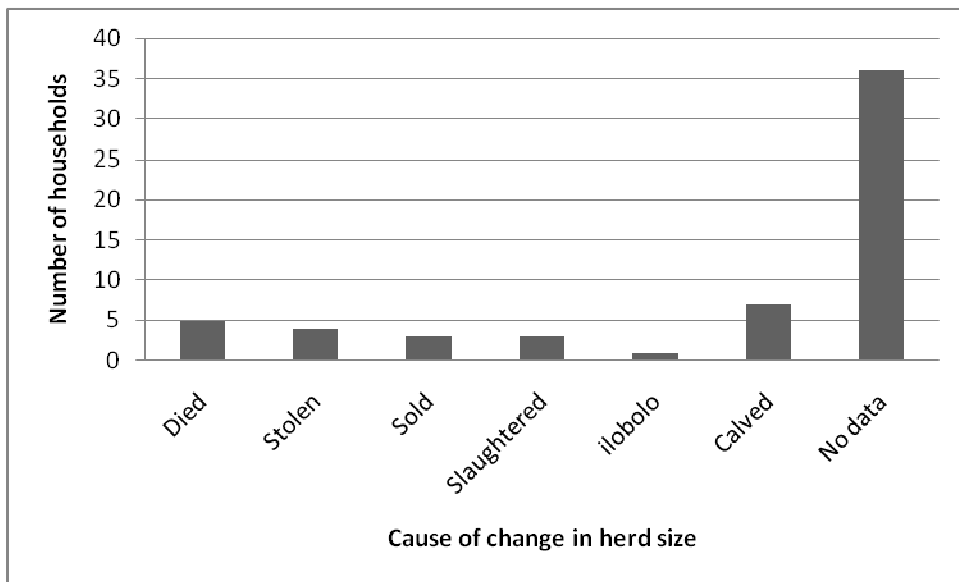


Figure 18 Cause of herd size changes in 2006 in Enhlanokhombe

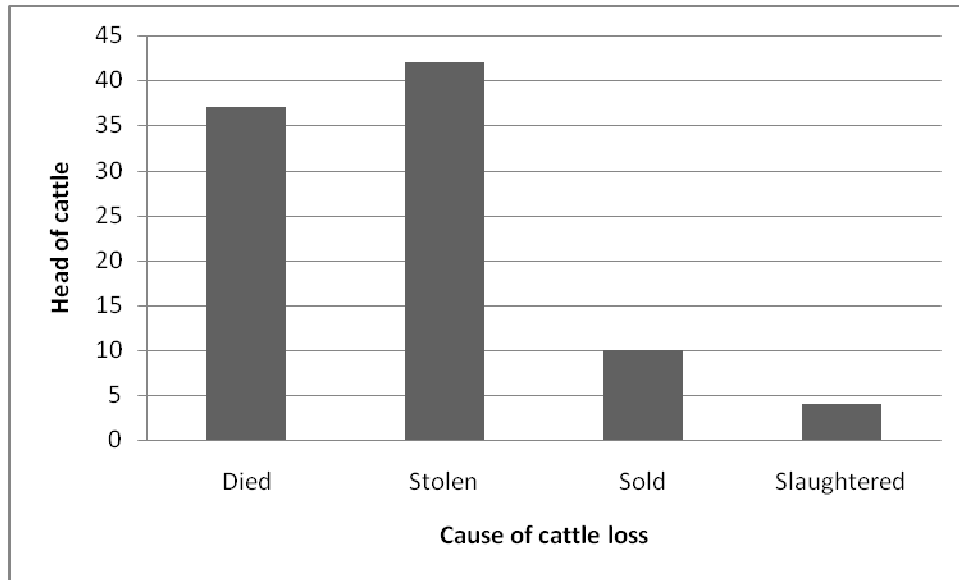


Figure 19 Cattle losses and causes in 2006 and 2007 in Enhlanokhombe

A short study on winter grazing of cattle by a group of Masters students in Research Psychology triggered a new narrative among co-researchers and other community members, who expressed a pressing need for assistance and knowledge on how to diagnose and treat cattle diseases (Olivier *et al.*, 2010).

6.2.2 Appropriateness of the rotational resting system

Nineteen of the 55 cattle keepers made mention of the rotational resting system established under the Landcare project. Nine cattle keepers had positive views of what they called “the herding programme” (*umdibi*), while 9 cattle keepers said they did not like the herding programme, and 1 had left the programme (Table 13).

Five of nine proponents of the herding programme emphasize the prevention of stock theft as the main reason for the programme’s existence. Five opponents of the programme said that cattle became thin in the programme because of poor grazing and/or restricted movement. Two opponents said that herders were rumoured to be thieves, while another said the herders

went out drinking instead of staying with the herd. One cattle keeper said he did not like to pay for the herding. The significance of rotational resting to improve quality of the rangelands was not mentioned as a consideration.

Table 13 Cattle keepers and the herding programme

In herding programme	House-holds (N=55)	Aver Herd size	Total herd	Grazing location				Type of herding		
				Skidi	Maqoqo	Mdlan-komo	Fam	Paid herder	Is paid herder	Home-stead
Yes	7	10.6	95	6	1			4	3	
No, positive	2	2	2	1	1		1			
No, negative	9	5.8	58	1	7	2	6	2		1
Left	1	8	5		1		1			
No data	36	8.1	293					2	1	

One characteristic that distinguishes proponents from opponents is their herding strategy, with proponents using paid herders and opponents relying more on family members for herding. Even more striking is the difference in average herd size, with proponents showing an average herd size of 10.6, compared to an average of 5.8 head of cattle for opponents. The map of cattle keeping households (Figure 13) further showed that cattle keepers with negative views of the herding programme live near one another and are furthest away from the grazing area where the cattle were kept.

Figure 16 shows how the grazing locations that cattle keepers currently use overlap with the rotational resting design (Figure 3). The Maqoqo grazing location is camp 1 in the original rotational resting design. The Skidi grazing location includes camp 2 and part of camp 3 which is shared with the Oqolweni sub-ward. The Mdlankomo grazing location is camp 4 of Oqolweni's grazing system. All four camps are now used for grazing, and not one of the camps is rested as

is required in the rotational resting design.

The only part of the rotational resting design that is currently in use is the kraal in Maqoqo which was built during the Landcare Project. Community members voluntarily erected a fence around this kraal using local materials, and which looks distinctly different from the boundary and camp fences. The kraal is used by an *umdibi*, a group of herders who herd their cattle together and keep their herds in the kraal overnight and under their watch. The herding group consists of 3 paid herders, 2 of which are co-researchers. The group herds the cattle of at least 5 households, including their own, totaling 89 head of cattle. Every summer afternoon, when cattle are grazing in the mountains, they go up to Maqoqo mountain to count the cattle. They spend the night with the herds in the mountain kraal, count the cattle again in the morning, and then return to the village.

The research findings suggest that cattle keepers' fear of stock theft is a key driver of management of grazing in Enhlanokhombe sub-ward. It explains why stock keepers do not want to follow the rotational resting system: the system has divided the mountains into three grazing camps. Cattle can graze in only one or two of these camps in one year. This means that in every year, one segment of the cattle keepers who don't have paid herders will not be able to watch their cattle from the homestead as they prefer, because the herds would need to graze in a camp further away. However, another underlying reason may be the fact that, to the majority of households, herding is a family affair for which they do not want to or cannot afford to pay.

6.3 Institutional arrangements to manage natural resources

In this section the "wicked nature" (Mwangi, 2008:962) of resource governance in Okhombe is explored. Particular attention is paid to local rules to manage the commons, processes of negotiation and contestation between resource users, and the impact of legal pluralism on governance of natural resources.

6.3.1 Traditional rules and legal pluralism in managing the commons of Enhlanokombe

“The Government wants councilors to be in charge of villages, but people under *Inkosi* don’t want it”.

(Minutes of focus group discussion, 14 April 2011)

It is custom in Okhombe that the *iNduna* announces when the cattle should go to the mountain rangelands for summer grazing and when the cattle can come down from the mountain rangelands to the valley for winter grazing. However, not everyone follows the *iNduna*’s instruction. According to the *iNduna* some even say “I don’t take orders from traditional leaders”. People don’t get penalties for disobedience, and, when asked why, the *iNduna* replied “What can I do?”

People in Enhlanokhombe disagree on whether cattle should be herded or not. Most cattle keepers drive their herds onto the hill slopes and leave them there to graze. This practice was debated at length at a community report back meeting.

“When people leave their cattle unattended and these are stolen, they should be put in jail themselves, because they are advertising to the thieves to come and steal cattle”.

(Minutes of third community report back meeting, 3 November 2009)

Two co-researchers, who are members of the Okhombe Livestock Committee and are part of the Maqoqa herding group, are of the opinion that a good herding practice involves moving around with one’s cattle and staying with them overnight. At a monthly team meeting where findings from the survey were discussed, they strongly objected to the term ‘herding’ (*ukwelusa*) being used to describe grazing practices in Okhombe. “The word herding is wrong because most cattle keepers do not stay with their cattle but leave them unattended” (Minutes

of Okhombe team meeting, 8 April 2008).

The successful intervention by the then *iNduna* and *iNkosi* to resolve the issue of theft of fencing during the Landcare project showed that people in Okhombe recognized the authority of traditional leaders. However, the traditional leaders were not able to exercise this authority in regulating the grazing commons.

The Okhombe Livestock Committee was established in 2000 to formally manage the rangeland commons. The members signed an agreement with the Okhombe Landcare Project Partners to manage the herders and the herding fund, monitor the fences, and facilitate the implementation of the rotational resting system. In Enhlanokhombe, many cattle keepers did not participate in the new communal grazing system or they abandoned it because they said they were unhappy about the herders and the way they herded their cattle. The Okhombe Livestock Committee lacked the authority to enforce the new rotational resting system. Yet, the fenced off camps are maintained because cattle keepers use these to safeguard their herds.

6.3.2 Contestation over the management of cattle and the rangelands

Cattle keepers hold implicit norms and values about how cattle should be looked after. The herding fund collapsed because people considered herding to be a family task that should not be paid for and because they lacked the money. One of the co-researchers voiced his opinion, more than once, that people should take good care of their cattle. One day while the research team was walking in the fields, he pointed to a herd of skinny cows and said angrily “Can you say that those are your cattle? No! Cattle are like children. They must be looked after well”.

Besides the debate about the feasibility of the rotational resting system and whether cattle should be herded or not, cattle keepers also disagree about the practice of a herding group (*umdibi*) keeping their cattle on a specific part of the mountain range. This became apparent at

one of the community report back meetings where much time was spent debating the issue. One cattle keeper said that he had withdrawn his herd from the Maqoqo herding group because he felt they did not get sufficient feed from grazing, and he was now taking his cattle to Skidi. Members of the herding group defended their practice saying that a large part of the rangeland is a hotspot for stock theft.

People also have opposing views about the condition of the rangelands, with some saying that there is insufficient good quality grass due to overgrazing and burning. Others say that the rangelands are in good condition with more than enough grass to feed all cattle. At a community meeting where people were asked whether they considered it a problem that two-thirds of the cattle in Enhlanokhombe are grazing at Skidi and one-third at Maqoqo, no one expressed concern about the condition of the rangeland (Minutes of third community report back meeting, 2009).

6.3.3 The potential for collective action in Enhlanokhombe sub-ward

Although cattle keepers in Enhlanokhombe hold different and sometime opposing views on the state of the rangelands and how these should be managed, there is potential for joint action. Some co-researchers feel that the rotational resting system should be reinstated. However, the findings of the study show that the system does not work for the majority of cattle keepers.

Some people, the *uNdunankulu* being a vocal proponent, want to erect fences to close the mountain passes between Okhombe and the neighbouring *amaNgwane* areas and Lesotho to stop stock theft. Fences in the mountains are, however, prone to theft and vandalism as was evidenced during the Landcare project. During a walk to the boundary pass between Okhombe and Mabhuleseni Ward, the research team noticed that higher up the mountain part of the fence between Enhlanokhombe and Oqolweni had been pulled down. Cattle do not go that far

up the mountain, and most co-researchers had either never been there or only many years ago. Fences privilege grazing the mountain areas over for instance harvesting of medicinal plants or cultivation and trade of *Cannabis*, and may only be effective against stock theft if they are patrolled regularly.

The community-built kraal in Maqoqo fulfills a need and is the only part of the rotational resting system design that is used. The fences erected during the Landcare project to separate the rangelands from the cropping fields were also never stolen as they met a clear need to protect people's fields from cattle damage.

During the training in Participatory Video for livestock keepers, the two attending co-researchers suggested to make a film on stock theft in Okhombe. The research team filmed on location in Okhombe, and edited the footage into a 6 minute film. In the film the suggestion is made to form a cattle patrol (*ibhuto*) such as used in Lesotho where a group of community members search for missing cattle. The film was showed at a meeting of the Vukani *amaZizi* Livestock Association, who were interested in forming cattle patrols in each of the Wards in the *amaZizi* Tribal Area. The film was also shown to Grade 11 learners from Maqoqa High School in Okhombe, who agreed to share the issues and ideas raised with their parents/caregivers.

Early 2010, the *iNduna* and other members of the Okhombe Livestock Committee started with establishing a cattle patrol, initially called *ibhuto* (regiment or age-grade), and then changed the name to *amavimbela* (the 'blockers' or protection squad). Five community members volunteered to join, and the *iNduna* expected that more recruits would follow. In the same period, a new two-year project was launched by the African Conservation Trust, a local NGO, to establish a community wilderness area and which involved the appointment of paid mountain rangers to monitor rock art caves, the wilderness area, and rangelands. At a community meeting the *iNduna* called for volunteers for the cattle patrol, but he didn't mention the new project. Asked why, he said "After two years the money will run out and people will stop working. So we will first form an *ibhuto* [now called *amavimbela*], and then we will see how we

will link with the project". This statement shows determination of some people in Okhombe to engage with development projects on their own terms.

Summary

Challenges in communal rangeland management are multi-faceted. In the Enhlanokhombe subward, the key drivers of cattle grazing management are stock theft, the lack of authority of traditional leaders, and the dominant norm that herding is a family task. The introduction of compulsory schooling for boys who were traditionally tasked with herding and the reliance of households on remittances and social grants, have contributed to the common practice of 'hands-free' cattle keeping and grazing management, instead of the traditional herding.

Cattle keepers perceived stock theft as the most important threat. Yet, figures of stock losses showed that cattle disease resulting in death is an equally pressing problem. A short study on cattle grazing in winter triggered a new narrative among cattle keepers expressing a need for knowledge to diagnose and treat animal diseases.

Rangeland management in Enhlanokhombe can be characterized as being a continuous grazing regime. Rotational resting may suit some of the cattle keepers who continue the tradition of herding by moving with the herd to locate better pastures up the mountain and by resting the degraded areas. However, such generalized grazing regime does not meet the needs of the majority of cattle keepers who want to keep a close watch on their herds as they graze on the lower hill slopes.

The condition of the range and what comprises appropriate grazing management remain issues for debate. The majority of cattle keepers in Enhlanokhombe kept their cattle closer to home to avoid stock theft and did not express concern about possible degradation of the mountain rangelands. Declining cattle numbers, such as recorded since 1989, may have counterbalanced potential grazing pressure of continuous grazing.

Although there is contestation among cattle keepers in Enhlanokhombe over how cattle grazing should be managed, collective action is possible as demonstrated in the formation of a community cattle patrol (*amavimbela*) to address stock theft.

Chapter 7 Discussion

Introduction

In this chapter the research findings are situated within the science and development debates on pastoralism, rangeland management, and land degradation. Particular attention is paid to the premise underpinning government policy in South Africa that overstocking and overgrazing by livestock is the main cause of land degradation in rural areas (South Africa, 2007).

Systems diagrams are constructed of the interaction of variables and drivers that influence cattle keeping and rangeland management in Okhombe, and which illustrate the complex and dynamic context in which rural people operate.

7.1 People, cattle and the commons

Livestock keepers in Enhlanokhombe valued the multi-functionality of cattle. Cattle connect people with one another through social exchanges such as *ilobolo*. Cattle – and goats – also connect people with their ancestors and cultural heritage. And, last but not least, cattle and other livestock provide people with a livelihood.

According to community members fewer households kept larger herds in the past. During colonial and apartheid times, the number of households with cattle increased as a result of people entering into the cash economy and the attraction of investing in cattle as an asset when land for cropping had become scarce in the 'Native reserves'. From 1989 a steady decline in cattle numbers was observed in Okhombe. Although people in Enhlanokhombe assigned the decline to stock theft, it also coincided with a change in rural livelihoods relying less on agriculture and more on off-farm, urban income.

Traditional pastoralists have developed sophisticated mechanisms to survive in complex, diverse, and risk-prone dryland environments. Customary rules and sanctions regulate and facilitate negotiations between users about access to and control of the commons. Like most countries on the continent, the government of South Africa is trying to navigate a way through constitutional law, customary law, and private property. Under the new democratic government, traditional leaders are challenged to rebuild their credibility and authority, which had been damaged under colonial and apartheid rule. However, the powers of the hereditary traditional leaders remain restricted under the new dispensation, being bound to the Constitution and having been assigned an advisory role in matters of national concern. The effects of the limited powers of traditional leaders are felt most in rural communities such as Okhombe.

The uncomfortable co-existence of traditional leaders in Okhombe, who fall under the jurisdiction of amaZizi Traditional Administrative Authorities, and democratically elected leaders, who are accountable to the larger Okhahlamba Local Municipality, is in fact a clash between a norm-based system of governance (Fernandez-Gimenez et.al, 2008) and a rules-based system (Ostrom, 1990). The rotational resting system, designed under the Okhombe Landcare Project, was a set of rules introduced in a norm-based practice of communal rangeland management. In this light, the request from the Okhombe Livestock Committee for an outside expert to explain the new rotational resting system to community members was a call to correct cattle keeper's behavior through education.

7.2 Landscapes of the mind

The debate on the impact of livestock on the land shows two contrasting images of the landscape. The first image is of people and nature in harmony, rooted in indigenous wisdom and ecological integrity: the "Garden of Eden" (McCann, 1999: 4; Draper & Wels, 2002:7). The second image is of people at war with nature, and landscapes devastated by human hands, an

“Armageddon” (Draper & Wels, 2002: 7). Each picture suggests a distinct set of measures (to conserve and protect, versus to attack and rebuild) with very different outcomes.

The digitized maps of aerial photographs of Okhombe, which were taken in the years 1945, 1962, 1976, 1992 and 2004 (Figure 20) did not show a rapid increase in soil erosion as is commonly assumed by among rangeland scientists and extension staff who work in rural areas where cattle keeping are dominant (SANPAD project on Keeping cattle in a changing rural landscape, 2010). In the period from 1945 to 2004 bare soil remained relatively constant. An increase in bare soil patches was observed between 1976 and 1992. This increase coincided with a period of drought in the early 1980s.

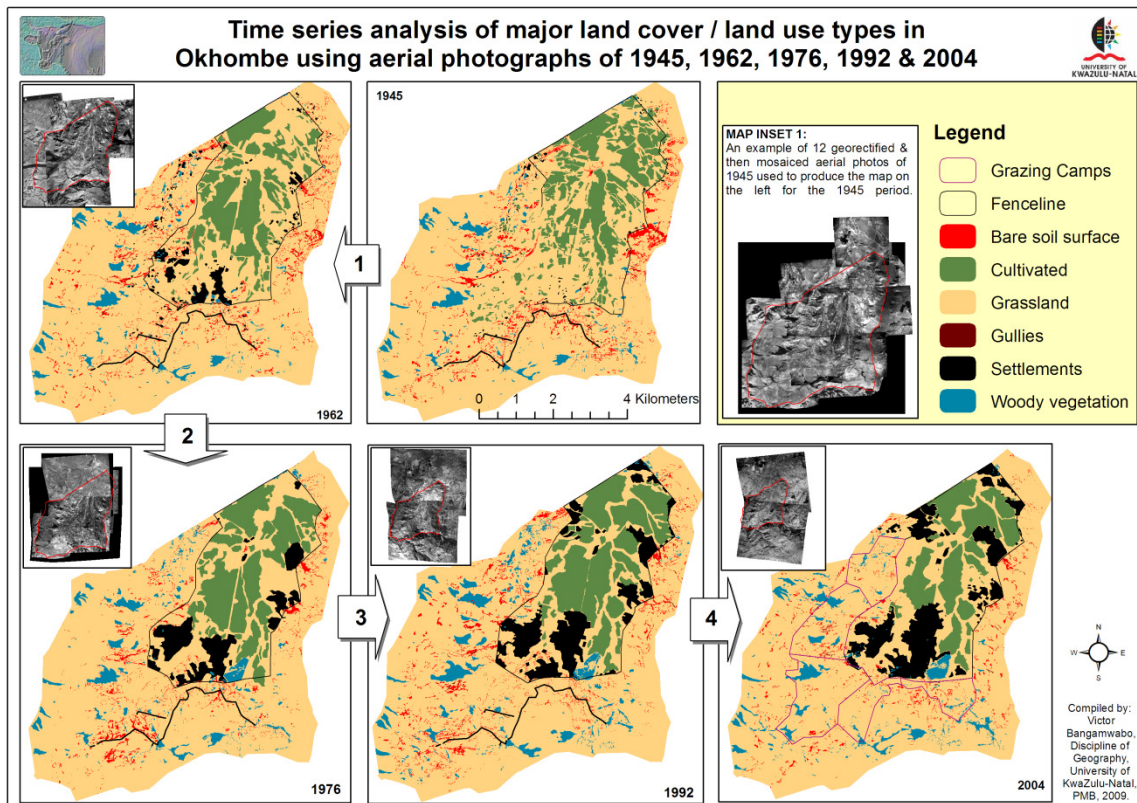


Figure 20 Changes in land cover in Okhombe from 1945 to 2004 (Bangamwabo, 2009:53)

The history of the uKhahlamba Drakensberg illustrates that a landscape is more than merely a set of geographical features of an area. It is the outcome of socio-political historical processes and interactions between people imprinted onto the natural environment (Sithole, 2003). People give meaning to the landscape. They interpret – or ‘read’ – the landscape in a particular way depending on their world view, they tell stories or rekindle memories. People draw conclusions and may act on these, which, in turn, changes that same landscape. Thus, landscapes are not static and never constant. They are “tensioned, always in movement, always in the making” (Bender & Winer, 2001:3).

7.3 Cattle keeping and rangeland management as a social-ecological system

“Rangelands are [...] characterised by linkages and feedbacks between ecological and social processes across a range of temporal and spatial scales. The effects of droughts in rangelands are an outcome of the interplay between climatic events, plant-herbivore interactions and human management decisions [...] determined by the opportunities and constraints presented by various ecological, economic and political drivers” (Vetter, 2009:31).

People’s practices of cattle keeping and management of cattle grazing in Okhombe can be understood as a social-ecological system. In the Enhlanokhombe sub-ward, two cattle keeping practices are distinguished, and both apply continuous grazing. Stock theft, cattle disease, loss of authority of traditional leaders, and erratic rainfall and drought, drive cattle keeping from within. Urban migration, villagization, and colonial and apartheid rule are the external drivers of the system. The historical processes, that operate at different scales and that placed the cattle keeping system on its current trajectory, are shown in Figure 21.

Historical episodes	<i>Human footprint in the uKhahlamba Drakensberg</i>	<i>Social engineering</i>	<i>Rural-urban-rural migration</i>	<i>Greening the uKhahlamba</i>
Scale/Period	1820 1840 1860 1880 1900	1920 1940 1960	1980	2000 2009
South Africa	Unequal land allocation along racial lines	Territorial segregation Control of movement of black people Widening of urban-rural divide	Reversed migration from urban to rural areas	Incentives for land rehabilitation
uKhahlamba Drakensberg	Private land tenure by white people Native reserves Decrease in farming by black people	Traditional leaders under colonial/apartheid rule Large infrastructural schemes Modernization of Native reserves Nature reserves		World Heritage Site
Okhombe	Decrease in wildlife Increase in human activity	Betterment Loss of traditional authority Increasing cattle herds Rural-urban household livelihoods More people on less land	Urban workers return Herd boys to school Declining cattle herds Erratic rainfall and drought Stock theft	Environmental projects Continuous grazing

Figure 21 System scales and drivers of change in the uKhahlamba Drakensberg and Okhombe

The impact of stock theft and the opportunity that the community cattle patrol offers to shift the system is illustrated in Figure 22.

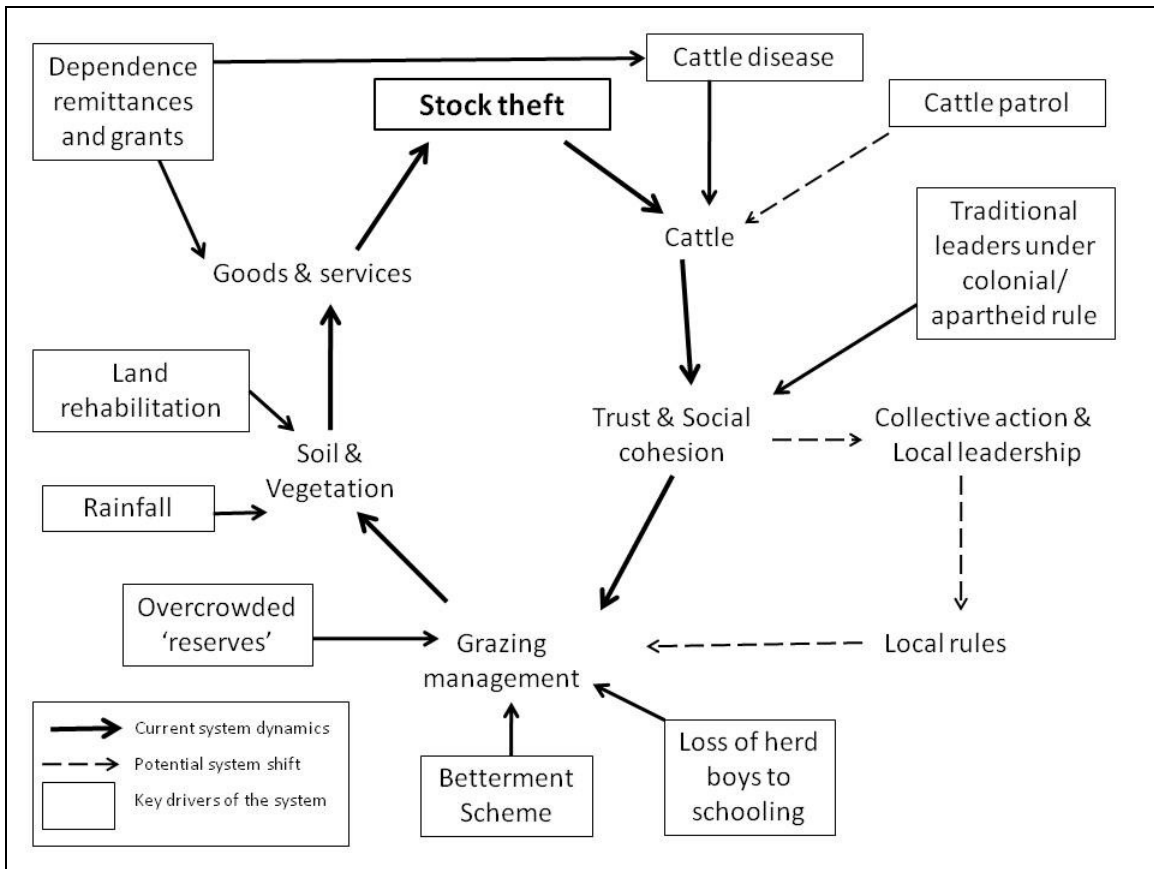


Figure 22 Stock theft in the Enhlanokhombe sub-ward

Stock theft is one of the key drivers of cattle grazing management in Enhlanokhombe. Stock theft results in loss of cattle and exacerbates the lack of trust and social cohesion that had deteriorated under colonial and apartheid rule. Grazing pressure from cattle on the lower hill slopes leads to a decline in vegetation condition. If fewer people keep fewer cattle, the remaining cattle keepers are more at risk to fall victim to stock theft. There is potential to shift current system dynamics by the community initiative to form a cattle patrol. If the cattle patrol is successful in addressing stock theft, this will reverse the decline in cattle, and restore trust and social cohesion. Collective action and local leadership can emerge, and local rules can be agreed upon to improve the management of natural resources. If there is adequate rainfall, this will improve vegetation condition. Goods and services from cattle will increase, and people's

livelihoods will improve, which is a disincentive, for local people particularly, to be involved in stock theft.

In South Africa, degradation and overpopulation narratives are often expressed in projects in community-based natural resources management. The focus on cattle grazing in the Okhombe Landcare project aimed to reverse land degradation and assumed overgrazing. This focus was driven by a conviction to restore the uKhahlamba Drakensberg as a near-pristine, wilderness landscape. Such conviction was expressed as early as the late 1800s. The late 1990s, when the Landcare project was initiated, saw the launch of an incentives approach of compensating land users to 'green' the uKhahlamba Drakensberg. Diederichs and Mander (2004) identified scenic beauty, soil retention, water regulation, and carbon sequestration as sellable ecosystem services, which seem of benefit for the more affluent segments of society (Figure 23).

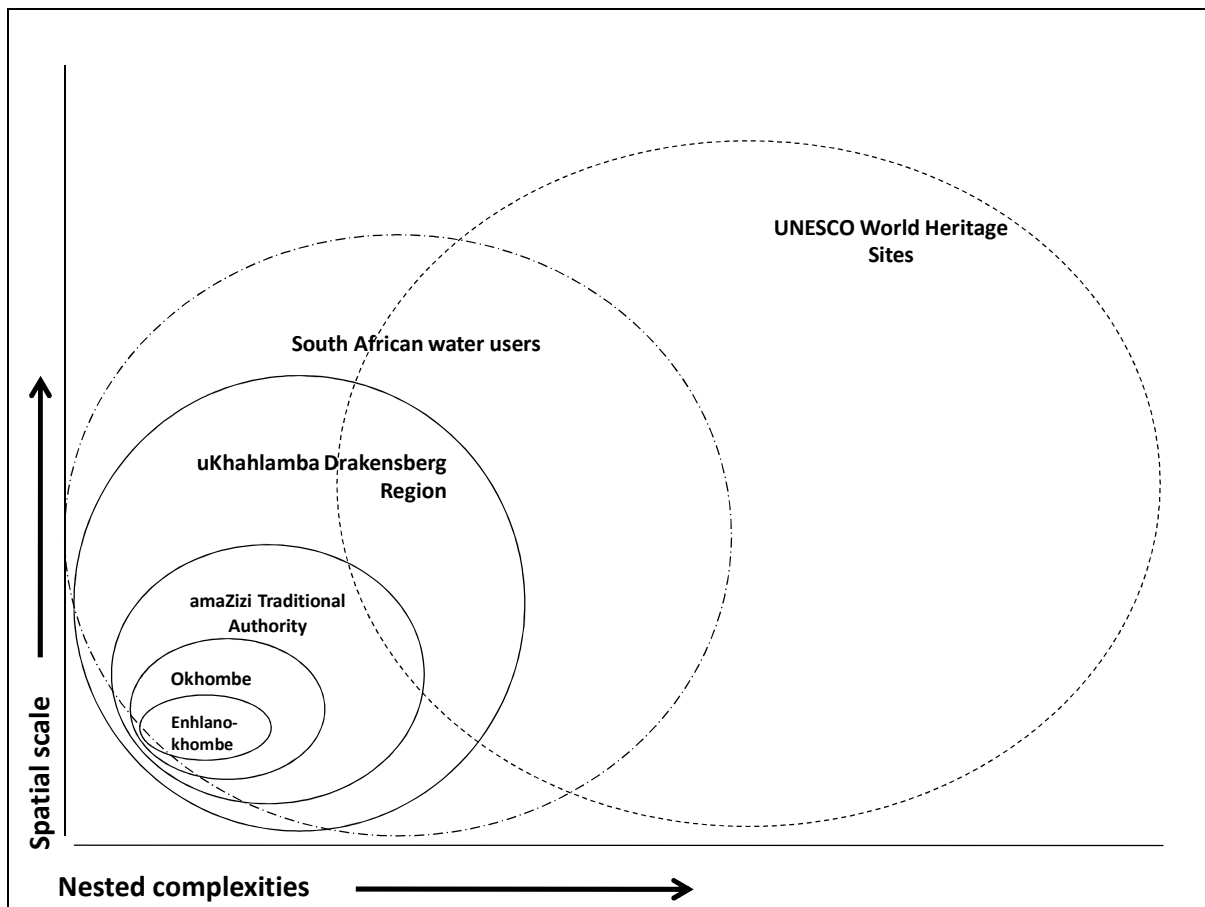


Figure 23 The rangelands of Enhlanokhombe as a nested system

Proponents of payment for ecosystems programmes argue that if the people in the Enhlanokhombe sub-ward, the Okhombe ward, and the amaZizi area manage the natural resources sustainably, the uKhahlamba Drakensberg can retain its World Heritage Site Status and water users in KwaZulu-Natal and Gauteng will benefit from improved quality and quantity of water.

The systems diagrams show that current cattle keeping practices are influenced by a range of social, economic, political, and ecological factors that exert pressure from within as well as from the outside. Factors can be active at one level with cascading effects to the lower levels, and they can operate at different levels. Different factors occur simultaneously, impacting on one another. Rather than a single driver, multiple drivers are at work, and which influence waxes and wanes over time. Changes in one driver can trigger a response that can potentially cause a shift in the system.

Thus, cattle keepers, other rangelands users, and outside stakeholders such as extension workers and policy-makers, are challenged to respond effectively in a context dictated by interacting biophysical, socio-political, and economic variables. The present research highlights the importance of putting livestock keepers first: to understand their practices and motivation, and to engage with them in finding solutions to felt problems. However, interventions in complex systems such as communal rangelands are always partial and fluid. The Okhombe Landcare Project showed that a participatory initiative can produce an outcome for which there is little community support. In this research, the issue of stock theft prompted collective action, although cattle disease was also a major cause of herd losses. A short study on cattle diseases generated a new narrative among cattle keepers on the need for knowledge to diagnose and treat cattle. Interventions, thus, are always partial and fluid because they are the outcome of negotiations between insider and outsider stakeholders who adopt a particular action at a specific moment in time.

Summary

Pastoralism is more than an economic investment. Livestock and cattle particularly, shape social relations, mutual trust, and maintain continuity between the past, present, and future of a pastoralist society.

In Okhombe, the 'battle over cattle' is a battle over how cattle should be managed and who is in charge of the commons. Cattle keeping in Okhombe can be described as being embedded in a social-ecological system comprising a series of nested, self-organizing sub-systems which are interconnected. Sub-systems include the cattle production system, cattle grazing management practices, the wider ecosystem, and government policies and regulations.

A spatial-temporal and systemic approach in research on rangeland management can facilitate meaningful, policy-related decisions and actions. Such an approach would enable cattle keepers, other rangeland users, and outside stakeholders, to respond effectively to changes in the social-ecological landscape. The present research highlights the need to engage with livestock keepers as key role players in designing and negotiating interventions and policies that affect them.

Chapter 8 Conclusion, recommendations, and reflection

Introduction

This chapter brings the thesis to conclusion with a summary of research findings, recommendations for policy makers and implementers, and a reflection on the action research process.

8.1 Conclusion

This study was initiated by a team of scientists and community members to investigate why cattle keepers in Okhombe, western KwaZulu-Natal, South Africa, did not adopt a rotational resting system that had been designed in a participatory manner over a period of five years to improve the management of communal cattle grazing.

The overall aim of the study was to deepen understanding of the dynamic interrelations between practices of communal cattle keeping, and the social-ecological landscape in Okhombe, which can inform policy and practice in management of communal rangelands. The specific objectives of the research were to:

- Investigate practices of cattle keeping and cattle grazing management;
- Investigate how the social-ecological landscape has changed since the 1800s;
- Identify key drivers of landscape changes; and
- Examine whether there is a causal link between management of cattle grazing and soil erosion.

The research was designed and conducted as action research. University students worked closely with community members as research partners. During the research process the locus of control moved along a continuum from outsiders doing research with insiders and insiders

doing research with outsiders. Triangulation was an integral part of the research design. Quantitative and qualitative research methods were combined with narrative and spatial techniques. A range of research outputs were produced to inform, discuss, and validate findings with different audiences. The research findings prompted collective action in Okhombe: co-researchers and community members launched a community cattle patrol to address stock theft.

The study found that livestock keeping in general, and in Okhombe, cattle in particular, fulfil essential social, cultural, economic, and spiritual functions. Over a period of two hundred years socio-political, economic, and ecological trends at local, regional, and global levels have transformed traditional pastoralist practice. In the Enhlanokhombe sub-ward, traditional herding of livestock to good grazing areas is no longer practised by the majority of cattle owners. Instead, continuous grazing by free roaming cattle has become the norm. Internal key drivers of current practices in the management of cattle grazing are stock theft, the lack of authority of traditional leaders, and the dominant norm that herding is a family task. Urban migration, villagization, and colonial and apartheid rule are external key drivers that have placed the system on its current trajectory.

The rotational resting system, designed under the Okhombe Landcare Project, is unsuited to the majority of cattle keepers who no longer continue the tradition of herding and moving with the herd to better pastures on the mountain. In the Enhlanokhombe sub-ward, this grazing regime does not meet the needs of the majority of cattle keepers who want to keep a close watch on their herds as they graze on the lower hill slopes. Nevertheless, if successful, a community cattle patrol (*amavimbela*) may serve the greater good in Okhombe, because those people that do not keep cattle also benefit from retaining and increasing cattle herds, and may facilitate further community action and enhance resource governance.

The study highlighted that the current landscapes of Okhombe and the wider uKhahlamba Drakensberg Region are very different from what they were in the 1800s. Social encounters,

economic expansion, nature conservation, and government legislation have transformed these landscapes from vast tracts of largely uninhabited land with abundant wildlife into structured landscapes of overcrowded African enclaves, thriving large commercial farms, booming towns, and infrastructural development to service the burgeoning industry.

The research findings challenge the dominant view of many government staff and scientists that overstocking and overgrazing result in soil erosion in areas under communal land tenure. Rather than the assumed rapid increase, levels of erosion in the Enhlanokhombe sub-ward show small fluctuations over the past 65 years. Furthermore, stock numbers have declined by 24% since 2001, and may have counterbalanced the effects of the continuous grazing regime prevalent in the area. These findings may explain the debate among people in Okhombe about the condition of the rangelands, and what comprises appropriate grazing management.

As part of its action-orientation, the study included a stakeholder policy workshop for researchers, government extension staff policy-makers, and development workers. Pertinent issues emerging from research on communal rangelands in Okhombe and other localities in South Africa were consolidated and were proposed for incorporation into the South African Draft Range and Forage Policy. The research provides valuable lessons on why one should build needs-based policies from the bottom up, to ensure that national (and global) priorities and policies are aligned with the concerns and priorities of cattle keepers.

8.2 Reflection on the action research process

The research described in this thesis was designed and conducted as action research involving university students working closely with community members as research partners. In the following, Herr and Anderson's (2005) criteria of validity, presented in Chapter 4, are used to reflect on the action research process.

8.2.1 Validity of the action research process

(a) The achievement of action-oriented outcomes

“One test of the validity of action research is the extent to which actions occur, which leads to a resolution of the problem that led to the study” (Herr & Anderson, 2005:55).

The research generated insight into the reasons why the rotational resting system in Okhombe had failed. Stock theft was identified as key driver for cattle keeping practices. The co-researchers and other community members felt that stock theft was a pressing problem that needed to be addressed. The issue was discussed at length at meetings in Okhombe, in the amaZizi area, and in Bergville. The research team also produced a short film on the topic which was shown at relevant fora. Although the team cannot claim to have prompted the community initiative to form a cattle patrol in Okhombe and neighbouring areas, the research findings, discussions, and short film undoubtedly catalyzed the decision of community members to take action.

Co-researchers and other community members were in disagreement whether current practices of cattle keeping and management of cattle grazing found in the Enhlanokhombe sub-ward needed to be changed. Instead, collective action was prompted to address stock theft.

The stakeholder policy workshop, mentioned earlier, facilitated discussion and sharing of ideas between researchers, government extension staff, policy-makers, and development workers. Concrete issues emerging from research in different localities in South Africa, including Okhombe, were consolidated and proposed for incorporation in the South African Draft Range and Forage Policy. The policy should distinguish between commercial livestock farming and management of communal rangelands, and make provision for each. It was also suggested that the National Department of Agriculture would facilitate ongoing discussion platforms and consultation with land users, in order to align policy with the realities on the ground.

(b) A sound and appropriate research methodology

“Process validity asks to what extent problems are framed and solved in a manner that permits ongoing learning of the individual or the system [...]. Process validity must also deal with the much-debated problem of what counts as evidence to sustain assertions, as well as the quality of the relationships that are developed with participants” (Herr & Anderson, 2005:55).

The research was initiated in response to concerns about communal grazing expressed by community members, and because a communal grazing intervention had not yielded satisfactory results. In two consecutive meetings, a group of twenty community members developed research questions and formulated criteria for community researchers. Two female and five male community members were nominated and recruited. These co-researchers gave consent to participate in the research on a voluntary basis.

Participatory photography was used to explore the different dimension of cattle keeping in Okhombe. For this purpose, co-researchers were given simple cameras with film and were asked to take photographs that showed the different aspects of cattle keeping. Film spools were collected and taken to Pietermaritzburg for developing and printing. Each co-researcher received their set of photographs and was tasked to select a limited number of photographs that told their story on keeping cattle and other livestock. The co-researchers presented their compilation to the research team. They were then tasked to make a story as a team using a selection of photos taken from the different photo stories. The co-researchers then made a poster from this selection which was presented at community report back meeting. This exercise was repeated for another community report back meeting. At both community meetings, participants commented that the presentations were very informative and that they had gained much knowledge on keeping cattle, managing cattle health, and rangeland condition. Some co-researchers continued taking photographs throughout the research process. This technique was very accessible, easy to use, and engaging for the co-researchers.

Co-researchers formulated questions for a questionnaire among all cattle keeping households. A final selection of 14 questions was agreed upon. They formed small groups and tested the questionnaire. From the feedback, guidelines for probing were added for different questions. Co-researchers administered 12 of the 52 questionnaires of the survey undertaken in the Enhlanokhombe sub-ward. Themba Khumalo continued with the survey in the Oqolweni sub-ward, and worked with Simphiwe Dubazane and Duduzile Mvemve to undertake the survey in the Mahlabathini and Mpameni sub-wards. Mphumzeni Chonco and I analyzed the survey data from Enhlanokhombe. The findings were discussed with the co-researchers, who verified results and helped clarify issues where necessary. They explained, for example, why most cattle keepers mentioned stock theft as most important problem, while the survey data showed that cattle disease was as an equally significant cause of cattle losses.

Mphumzeni Chonco used a Global Positioning Systems device to locate all households with cattle. Themba Khumalo used the device to locate gullies in the mountain rangelands in Enhlanokhombe. The maps of the time-series analysis, produced by Victor Bangamwabo, elicited much discussion during community report back meetings. A female participant asked whether the rangelands were in better condition in the past compared to the present or not. I asked her to have a look at the maps of 1945 and 2004, and try to draw the conclusion herself. She concluded that in 1945 there were fewer patches of bare soil but they were quite large, while in 2004 there were more patches of bare soil but they were much smaller. This example showed that spatial data can generate information which is accessible to people who have had limited education or are illiterate.

Co-researchers were asked to prepare questions for a group interview of older men on the history of Okhombe. Mandla Xaba and Themba Khumalo led the interview which was recorded on video tape.

Community-led transect walks to identify and map out the rangelands in the different sub-wards were helpful particularly for the students who experienced the distances involved in herding cattle. The walks allowed for informal conversations that were informative, and helped

to get to know the different parts of the rangelands and mountains, and community boundaries.

The training in Participatory Video enabled the co-researchers to articulate what they felt was the main concern that had emerged from the research, and to tell this story in their own words. Filming was a step up from taking photographs which the co-researchers engaged with very enthusiastically. The two co-researcher trainees taught the other members how to handle the video camera, replacing a tape, recording, replaying, zooming, and interviewing. In the field, each co-researcher took a turn to film, while the others held the tripod, microphone, or umbrella to shield against the sunlight. The end result was a genuine co-production of the research team of which they were very proud.

Written summaries of the history of Okhombe and the uKhahlamba Drakensberg were produced and discussed with the co-researchers at two occasions. Copies were made of chapters from two books describing the amaZizi history (one in Zulu and English, and another in English only). The co-researchers listened with great interest, particularly because little oral history seemed to have survived Okhombe other than the family trees, documented by Zanele Hlatshwayo, Duduzile Mvemve and Siphon Dlamini, of two families that had a long history in Okhombe.

(c) Results that are relevant to the local setting

“Democratic validity refers to the extent to which research is done in collaboration with all parties who have a stake in the problem under investigation. If not done collaboratively, how are multiple perspectives and material interests taken into account in the study” (Herr & Anderson, 2005:56). This is considered an ethical and social justice issue.

Triangulation was built into the research design through the formation of a team of co-

researchers, the recruitment of students from different disciplines, monthly team meetings, six-monthly community meetings to present, analyse, and evaluate findings, and discussions with outsider stakeholders in academic research and government policy and implementation.

A three hour-long lesson was presented to Grade 11 learners of Maqoqa Secondary School as part of the subject Geography. The lesson focused on geographical information systems, which is a matric subject, using maps produced during the research. Learners were also taught how to use a global positioning systems device.

(d) Research that is relevant to researchers and participants

“Catalytic validity is the degree to which the research process reorients, focuses, and energizes participants toward knowing reality in order to transform it” (Herr & Anderson, 2005:56 quoting Lather).

During the research, tension was experienced between some co-researchers motivated to persuade community members to use the rotational resting system, on the one hand, and others motivated to explore reasons why people did not want to follow the system, on the other hand. Co-researchers and I had to let go of expectations that an alternative grazing management system was needed, when the research showed that current practices of grazing management were a symptom of an entirely different problem.

While some co-researchers and other community members explored avenues to address stock theft, which they considered to be the key issue, I stepped back and observed the emergence of community action to form a cattle patrol.

A short study on winter grazing of cattle by a group of Masters students in Research Psychology triggered a new narrative among co-researchers and other community members, who expressed a pressing need for assistance and knowledge on how to diagnose and treat cattle diseases (Olivier *et al.*, 2010).

(e) The generation of new knowledge

The research findings showed the quantitative and qualitative aspects of keeping cattle in a rural village, and the insight that rotational resting was unsuitable because stock theft was a key driver in the management of cattle. The short film enhanced awareness and mobilized people in Okhombe and the wider amaZizi area to address the problem of stock theft.

Students and co-researchers learnt by doing how to undertake participatory action research. The co-researchers in particular learnt how to design and administer a questionnaire and hold interviews, how to read topographical maps and aerial photographs, and how to use a photo camera, video camera, and GPS device.

“A similar form of peer review [to academic peer reviews] is beginning to develop within and among action research communities [...] through action research groups and publishing venues for action research” (Herr & Anderson, 2005:57).

The policy workshop, titled *Mainstreaming new paradigms in communal rangelands: How can we influence policy in South Africa?*, was attended by researchers from local and international Universities and research institutes involved in research on communal grazing in different parts of South Africa and staff from the National Department of Agriculture. Participants presented and discussed findings from research in different localities in South Africa, and made recommendations for policy and interventions in rangeland management.

I published a solicited opinion article in an on-line scientific development forum which elicited positive responses from peers in South Africa and abroad.

8.2.2 Limitations of the action research process

Throughout the research, the process moved along a continuum between ‘outsider in

collaboration with insiders' and 'reciprocal collaboration'. However, PhD research involves intense periods of literature study, data analyses, and academic writing. These tasks are juxtaposed with the imperative in action research to work in collaboration and generate new knowledge together with stakeholders. Although insights presented in Chapters 5, 6 and 7 were discussed with the co-researchers and other community members, they are in fact of my making.

Action research rejects the idea of the researcher as an objective outsider (Charles & Ward, 2007). "Subjectivity is replaced with explicit commitment [...] to the perspective and interests of the group the researcher chooses to identify and work with" (Charles & Ward, 2007:13). The composition of the co-research team was biased towards people who are active in projects, and the participation of the *iNduna*, a person with formal power. After the co-researchers had tested the cattle keeping survey, *the iNduna* requested to be excused from administering the questionnaires because he wanted to prevent a situation in which an interviewee would not feel free to speak openly in his presence.

Claims of reciprocal collaboration (Table 4) must be approached with great caution. The position of the outsider in the social hierarchy (including race, social class, gender, and sexual orientation) has a bearing on the relationship and interaction with the insider researcher (Herr & Anderson, 2005). Prior to the study, I had entered the research site in a position of power, as director of the Farmer Support Group, a development organization that coordinated the well-funded Okhombe Landcare Project. Although my study began without funding, and the co-researchers had agreed to work as volunteers, they may held hopes for undertaking future funded projects.

8.3 Recommendations

Policies and interventions to improve livestock keeping and rangeland management in areas under communal land tenure need to recognize that:

- Pastoralism is a multi-dimensional phenomenon in which access to and benefits from livestock products are largely regulated through social and cultural norms;
- Pastoralist practices can ably manage the fluctuating climatic, agro-ecological, economic, and political conditions;
- Generic grazing schemes do not work because cattle keepers have different objectives that inform their practices to manage their livestock;
- Land degradation is the historical outcome of interactions between ecological, socio-political, and economic processes and interactions at different scales, and not singularly caused by incorrect grazing management practices; and that
- Tension and conflict between local government and national government, and between traditional leaders and civic leaders constrain collective action and effective management of the rangeland commons.

Against the backdrop of the above key issues the following recommendations are put forward.

Single discipline approaches have failed to generate appropriate solutions that effectively engage with the complexities of livestock keeping and rangeland management in areas under communal land tenure. A systemic approach with high spatial-temporal specificity in research and development is needed that enables livestock keepers, other rangelands users, and outside stakeholders such as extension workers and policy-makers, to intervene in a dynamic context dictated by interacting biophysical, socio-political, and economic variables. Such approach can facilitate the development of broader scenarios that balance sustainable management of national resources with enhancing people's livelihoods based on livestock.

The shift in emphasis in the draft Range and Forage Policy for South Africa, from monitoring and control of rangelands to promoting a culture of sustainable management, is applauded. However, the voices of livestock keepers need to be incorporated in policies relevant to

rangeland management¹⁷ to ensure that national priorities are aligned with the realities of livestock keepers and particularly of those in areas under communal land tenure. Through action research livestock keepers can 1) become partners in research that generates knowledge and baseline data of local practices of livestock keeping and rangeland management, 2) design interventions that are appropriate to the local context and addresses their objectives and constraints, and 3) participate in stakeholder platforms that monitor policy and implementation of rangeland management projects and programmes at local, regional, and national levels.

¹⁷ Forest and Veld Conservation Act (Act 13 of 1941), Soil Conservation Act (Act 45 of 1946), Conservation of Natural Resources Act (Act 43 of 1983), and the draft Policy for the sustainable management of Veld (range) and Forage Resources in South Africa.

REFERENCES

Bibliography

ALCOCK, R. & HORNBY, D. 2004. Traditional land matters: a look into land administration in tribal areas in KwaZulu-Natal. Pietermaritzburg: Legal Entity Assessment Project.

ALINON, K., 2004. Land tenure and legal pluralism: the West African Situation. (In Saruchera M (eds) *Securing land and resource rights in Africa: Pan-African perspectives*. Cape Town: PLAAS. p. 41-47).

ALLSOPP, N., LAURENT, C., DEBEAUDOIN, L. & SAMUELS, I. 2007. Environmental perceptions and practices of livestock keepers on the Namaqualand Commons challenge conventional rangeland management. *Journal of Arid Environments*, 70: 740-754. www.elsevier.com.

ALTBEKER, A. 2005. An outpost of progress: Night patrols in the Drakensberg. In: *The dirty work of democracy. A year on the streets with the SAPS*. Jonathan Ball Publishers, Capetown. Pp.26-41.

AMAGUGU ESIZWE MDTP PROJECT. 2007a. *Final project report: September 2004-December 2006*. Howick: Maloti-Drakensberg Transfrontier Project.

AMAGUGU ESIZWE MDTP PROJECT. 2007b. *Integrated natural and cultural heritage management plan for the mountain areas of the Mnweni Triangle, Busingatha, Obonjaneni and Okhombe (Northern KZN Drakensberg)*. Howick: Maloti-Drakensberg Transfrontier Project.

ANDERIES, J. M., JANSSEN, M. A. & OSTRUM, E. 2004. A framework to analyze the robustness of social-ecological systems from an institutional perspective. *Ecology and Society* 9(1): 18. [online] URL: <http://www.ecologyandsociety.org/vol9/iss1/art18> [17 September 2010].

APGAR, J.M., ARGUMEDO, A. & ALLEN, W. (2009) Building Transdisciplinarity for Managing Complexity: Lessons from Indigenous Practice. *International Journal of Interdisciplinary Social Sciences*, 4 (5):255-270.

BANGAMWABO, V. 2009. *Spatial and temporal extent of land degradation in a communal landscape of KwaZulu-Natal, South Africa*. Pietermaritzburg, South Africa. University of KwaZulu-Natal. (MSc-thesis)

BEINART, W. 1996. Soil erosion, animals & pasture over the longer term. In: *The lie of the land: challenging received wisdom on the African environment*. LEACH, M. & MEARNNS, R. London: The International African Institute.

BENDER, B. & WINER, M. (eds). 2001. Introduction. *Contested landscapes. Movement, exile and place*. Oxford/New York: Berg. 1-20.

BENJAMINSEN, T.A., ROHDE, R., SJAASTAD, E., WISBORG, P. & LEBERT, T., 2005. The politics of land and livestock. In: *Global knowledge. International cooperation in research and higher education*. The Environment.

BENNETT, J., AINSLIE, A. & DAVIS, J. 2009. Fenced in: Common property struggles in the management of communal rangelands in central Eastern Cape Province, South Africa. *Land Use Policy*, 27:340-350.

BLAIKIE, P. 1985. *The political ecology of soil erosion in developing countries*. New York: Longman.

BLAIKIE, N. 2007. *Approaches to social enquiry*. Cambridge: Polity Press.

BORGERHOFF MULDER, M., FAZZIO, I., IRONS, W., MCELREATH, R., BOWLES, S., BELL, A., HERTZ, T. & HAZZAH, L. 2010. Pastoralism and Wealth Inequality. Revisiting an Old Question. *Current Anthropology*, 51(1):35-47.

BRANNEN, J. 2004. Working qualitatively and quantitatively (*In Seal, C., Gobo, G., Gubrium, J.F. & SILVERMAN, D. (eds.) Qualitative research practice*. London: Sage Publications. p.312-326).

BRISKE, D., DERNER, J., BROWN, R., FUHLENDORF, S., TEAGUE, W., HAVSTAD, K., GILLEN, R., ASH, A. & WILLM, D. 2008. Rotational Grazing on Rangelands: Reconciliation of Perception and Experimental Evidence. *Rangeland Ecology & Management*, 61(1):3-17.

BRISTOW, D. 1988. *The mountains of Southern Africa*. Cape Town: C Struik Publishers.

BROOKES, E.H. & HURWITZ, N. 1957. *The native reserves of Natal*. Natal Regional Survey Volume 7. London: Oxford University Press.

BUNDHOO, N., DHLAMINI, L., MURRAY, A.J. & SEUNANDEN, T. 2009. Report on research with the Okhombe co-researchers. Reflections on participatory research. Psyc825 Specialisation module: research inquiry and participation. University of KwaZulu-Natal. (Research report)

BUNDY, C. 1988. *The rise and fall of the South African peasantry*. Claremont: David Philip.

CAMAROFF, J. & CAMAROFF, J. 1991. "How beasts lost their legs": cattle in Tswana economy and society. (*In Galaty, J. & Bonte, P. (eds), Herders, warriors and traders. Pastoralism in Africa*. Boulder: Westview Press. p.33-61).

CAMPBELL, B., GORDON, I., LUCKERT, M., PETHERAM, L. & VETTER, S. 2006. In search of optimal stocking regimes in semi-arid grazing lands: One size does not fit all. *Ecological Economics*

60:75-85.

CHAMBERS, R. 1993. *Challenging the professions: Frontiers for rural development*. London: Intermediate Technology Publications.

CHARLES, L. & WARD, N. 2007. Generating change through research: action research and its implications. Centre for Rural Economy Discussion Paper Series No. 10. January. Newcastle-upon-Thyne: United Kingdom.

CHITINDINGU, E., JACOBS, N., JONES, K. & KERR, P. 2010. Critical report on the Okhombe research process. Psyc825 Specialisation module: research inquiry and participation. University of KwaZulu-Natal. (Research report)

CHONCO, J. 2009. *Factors influencing choices of grazing lands made by livestock keepers in Enhlanokhombe in uKhahlamba (Drakensberg), KwaZulu-Natal*. Pietermaritzburg, South Africa. University of KwaZulu-Natal. (MSc-thesis.)

CORNWALL, A., 2003. Whose voices? Whose choices? Reflections on gender and participatory development. In: *World Development*, 31(8):1325-1342, Elsevier Ltd. UK.

CRONIN, K. 2008. Transdisciplinary research and sustainability. [Online] Available: http://learningforsustainability.net/pubs/Transdisciplinary_Research_and_Sustainability.pdf. [17November 2010]

DE BRUIJN, M. 1997. The hearthhold in pastoral Fulbe society, central Mali: Social relations, milk and drought. *Journal of the International African Institute*, 67(4). Edinburgh: Edinburgh University Press. p. 625-651.

DERRY, J.F. & BOONE, R.B. 2010. Grazing systems are a result of equilibrium and non-equilibrium dynamics. *Journal of Arid Environments*, 74:307-309.

DE WET, C. 1989. Betterment planning in a rural village in Keiskammahoek, Ciskei. *Journal of African Studies*, 15 (2):326-345.

DIEDERICHS, N. & MANDER, M. 2004. *Payment for environmental services: baseline study. Final Report. December 2004*. Howick: Maloti-Drakensberg Transfrontier Project.

DIETZ, T., OSTROM, E., & STERN, P. 2003. The struggle to govern the commons. *Science* 302:1907-1912.

DOLLERIS, Cathrine. 2002. *Community-based soil conservation and sustainable land management in rural South Africa. A historical perspective*. Copenhagen, Denmark. University of Copenhagen. (MSc-thesis.)

DRAPER, M. & WELS, H. 2002. Super African dreams: the mythology of community development in transfrontier conservation areas in Southern Africa. *Proceedings of the Seminar on ecotourism and nature parks in East and Southern Africa*. 12 November. Leiden: African Studies Centre.

DUMA, S. 2009. Cattle keeping practices in rural Okhombe (Drakensberg). University of KwaZulu-Natal. (Research paper)

DUTILLY-DIANE, C., MCCARTHY, N., TURKELBOOM, F., BRUGGEMAN, A., TIEDEMANN, J., STREET, K. & SERRA, G. 2007. Could Payments for Environmental Services Improve Rangeland Management in Central Asia, West Asia and North Africa? *CAPRI Working Paper 62*, January. Washington: CGIAR.

ELLIS, B. 1985. The impact of White settlers on the natural environment of Natal, 1845-1870. (In Guest, B. & Sellers, J.M. (eds.), *Enterprise and exploitation in a Victorian colony: aspects of the economic and social history of colonial Natal*. Pietermaritzburg: University of Natal. p.71-97)

ENFORS, E. 2009. *Traps and transformations: exploring the potential of water system innovations in dryland sub-Saharan Africa*. Stockholm. Sweden, Stockholm University. (PhD-thesis)

ESKOM GENERATION. Undated. Drakensberg pumped water storage. [Online] Available: <http://www.eskom.co.za/content/Drakensburg%20FA%20Pg%2001-06.pdf?q=pumped> [18 July 2010]

EVERSON, T. & HATCH, G. 1999. Managing veld (Rangeland) in the communal areas of Southern Africa. (In Tainton N (eds), *Veld management in South Africa*. Scottsville: University of Natal Press. p. 381-388).

FERGUSON, J. 1994. The bovine mystique: a study of power, property and livestock in rural Lesotho. (In: Ferguson J., *The anti-politics machine*. Minneapolis: University of Minnesota Press. p.135-166).

FERNANDEZ-GIMENEZ, M., HAYS, J. HUNTINGTON, H., ANDREW, R. & GOODWIN, W. 2008. Ambivalence towards formalizing customary resource management norms among Alaska native beluga whale hunters and Tohona O'odham livestock owners. *Human Organization* 67, 2:137-150.

FLOOD, R.L. 2001. The relationship of 'systems thinking' to action research. (In REASON, Peter & BRADBURY, Hilary eds. *Handbook of action research*. London: SAGE Publications. p. 133-144.)

FRATKIN, E. 1997. Pastoralism: governance and development issues. *Annual Review Anthropology* 26:235-261.

GALATY, J. & BONTE, P. (eds). 1991. *Herders, warriors and traders. Pastoralism in Africa*. Boulder: Westview Press.

GAUTIER, D. 1994. Prudence and profligacy: the dialectic of ecology and humanity in the Underberg District in historical context. University of Natal (BA Hons thesis).

GENGIAH, S., VON MALTZAHN, R. & MARX, J. 2004. The Okhombe project. Report for the module Research inquiry and participation. University of KwaZulu-Natal. (Research report)

GILSON, L. & HOFFMAN, M. 2007. Rangeland ecology in a changing world. *Science*, 315:53-54.

GLADWELL, M. 2000. *The Tipping Point: How Little Things Can Make a Big Difference*. London: Abacus books.

GROSS, J., MCALLISTER, R., ABEL, N., STAFFORD SMITH, D. & MARU, Y. 2005. Australian rangelands as complex adaptive systems: A conceptual model and preliminary results. *Environmental Modelling & Software*, 21:1264-1272

HARDIN, G. 1968. The tragedy of the commons. The population problem has no technical solution; it requires a fundamental extension in morality. *Science New Series*, 162 (3859):1243-1248.

HARDIN, G. 1998. Extensions of the "Tragedy of the Commons". American Association for the Advancement of Science 150 years 1848-1998. *Science*, 280:682-683.

HATFIELD, R. & DAVIES, J. 2006. *Global Review of the Economics of Pastoralism*. Nairobi: World Initiative for Sustainable Pastoralism, IUCN.

HERR, K. & ANDERSON, G.L. 2005. *The action research dissertation*. Thousand Oaks: Sage

Publications.

HESSE, C. & MACGREGOR, J. 2006. Pastoralism: Drylands invisible asset? Developing a framework for assessing the value of pastoralism in East Africa. *IIED Issue paper 142*. IIED, Edinburgh.

HOCKING, D. & MATTICK, A. 1993. *Dynamic carrying capacity analysis as tool for conceptualising and planning range management Improvements, with a case study from India*. Network Paper 34c. London: ODI. [Online] Available: <http://www.odi.org.uk/pdn/papers/34c.pdf> [25 October 2010].

HODGSON, D. (eds). 2000. *Rethinking pastoralism in Africa*. Oxford: James Currey.

HOLLING, C.S. 2008. Understanding the Complexity of Economic, Ecological, and Social Systems. *Ecosystems*,4:390-405.

HOMEWOOD, K. 2008. *Ecology of African pastoralist societies*. Oxford: James Currey and Ohio University Press.

HUYSENTRUYT, M., BARRETT, C. & MCPEAK, J. 2002. Social identity and manipulative interhousehold transfers among East African pastoralists. *Working Paper 2002-38*. Department of Applied Economics and Management. Ithaca, Cornell University.

IRWIN, P., AKHURST, J. & IRWIN, D. 1980. *A field guide to the Natal Drakensberg*. Durban: Natal Branch of the Wildlife Society of Southern Africa.

JONES, H. 2009. Policy-making as discourse: a review of recent knowledge-to-policy literature. A *joint IKM Emergent-ODI working paper no.5*. [Online] Available: www.ikmemergent.net.

KEELEY, J. & SCOONES, I. 2000. Global science, global policy: Local to global policy processes for soils management in Africa. *IDS Working Paper 115*. Sussex: Institute of Development Studies, 2000.

LADKIN, D. 2004. Action research. (In Seal, C., Gobo, G., Gubrium, J.F. & Silverman D. (eds.) *Qualitative research practice*. London: Sage Publications. p. 536-548).

LAMBERT, J. 2009. 'Happy are those who are dead': Crises in African life in late-nineteenth-century and early-twentieth-century colonial Natal. (In Carlton, B., Laband, J. & Sithole, J. (eds.), *Zulu identities: being Zulu, past and present*, p.214-221). Scottsville: University of KwaZulu-Natal Press.

LANE, C. & SCOONES, I. 1993. (In MD Young & OT Solbrig (eds), The world's savannahs. *Man and the Biosphere Series, 12*. Paris: UNESCO. P. 93-120.

LEBERT, T. & ROHDE, R. 2007. Land reform and the new elite: Exclusion of the poor from communal land in Namaqualand, South Africa. *Journal of Arid Environments, 70*:818-833.

LUNCH, N. & LUNCH, C. 2006. Insights into participatory video: a handbook for the field. London: Insightshare.

MACKINNON, A. S. 2009. Chiefs, cattle and 'Betterment': Contesting Zuluness and segregation in the Reserves. (In B. Carlton, J. Laband, & J. Sithole (eds.), *Zulu identities: being Zulu, past and present*, p.250-255). Scottsville: University of KwaZulu-Natal Press.

MCCANN, J. 1999. *An environmental history of Africa 1800-1990*. Portsmouth: Heinemann.

MWANGI, E. 2008. Taming a 'wicked' policy problem: A policy overview of property rights and governance of Africa's rangelands. (In Organizing Committee of the XXI International Grassland Congress/VIII International Rangeland Congress (eds), *Multifunctional grasslands in a changing world*. Vol 2. Guangzhou: Guangdong People's Publishing House. p.962-968.

NDAGALA, D. 1992. Territory, pastoralists, and livestock. Resource control among the Kisongo Maasai. *Uppsala Studies in Cultural Anthropology*, 18. Stockholm: Gotab.

NORBERG, J. & CUMMING, G. S. (eds). 2008. Complexity theory for a sustainable future. New York: Columbia University Press.

OLIVIER, S., MNTAMBO, N., MOTUBA, T. & DUMISA, N. 2010. Okhombe Project. Psyc825 Specialisation module: Research inquiry and participation. University of KwaZulu-Natal. (Research report)

O'REAGAN, P. & TURNER, J. 1992. An evaluation of the empirical basis for grazing management recommendations for rangeland in South Africa. *Journal of the Grassland Society of South Africa*, 9:38-49.

OSTROM, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

PEARSE, R.O. 1982. *Barrier of spears: drama of the Drakensberg*. Cape Town: Howard Timmins.

PETERS, P., 2002. Grounding governance: power and meaning in natural resource management. In: *Contested resources: challenges to the governance of natural resources in Southern Africa*. BENJAMIN, T., COUSINS, B. & THOMPSON, L., editors. PLAAS, School of Government, University of the Western Cape.

PFOTENHAUER, M. 2007. Chapter 11 Rock Art Management. (*In Amagugu Esizwe MDTP Project. Integrated natural and cultural heritage management plan for the mountain areas of the Mnweni Triangle, Busingatha, Obonjaneni and Okhombe (Northern KZN Drakensberg)* p.133-236). Howick: Maloti-Drakensberg Transfrontier Project.

POLAND, M., HAMMOND-TOOKE, D. & VOIGT, L., 2003. *The abundant herds. A celebration of the Nguni cattle of the Zulu people.*

PRETTY, J. N., GUIJT, I., THOMPSON, J., and SCOONES, I.. 1995. *Participatory Learning & Action. A trainer's guide.* London: IIED.

PROVINCIAL PLANNING AND DEVELOPMENT COMMISSION KWAZULU-NATAL. 2005. *Women in Development: Urban-Rural Linkages.* Durban: South Africa.

RAMBALLY, L., GREENER, R., THERON, G. & TUTSHANA, B. 2009. *The Cattle Connection: A Critical Reflection of Participatory Research in a rural setting.* Psyc825 Specialisation module: Research inquiry and participation. University of KwaZulu-Natal. (Research report)

RASS, N. *Policies and strategies to address the vulnerability of pastoralists in Sub-Saharan Africa.* A living from livestock. Pro-poor livestock initiative. [Online] Available: http://www.fao.org/ag/againfo/programmes/en/ppipi/docarc/execsumm_wp37.pdf [17 September 2010]

RESILIENCE ALLIANCE. 2007. *Assessing and managing resilience social-ecological systems: a practitioners' workbook.* [Online]. Available: www.resalliance.org. [15 September 2010].

RODRIGUEZ, L. 2008. *A global perspective on the total economic value of pastoralism: Global synthesis report based on six country valuations.* Nairobi: World Initiative for Sustainable Pastoralism/IUCN.

ROHDE, R.F., & HOFFMAN, M.T. 2008. One hundred years of separation: The historical ecology of a South African 'coloured reserve'. *Africa*, 78(2):189-222.

RURAL DEVELOPMENT SERVICES. 1989. An agricultural development strategy for the Upper Tugela location.

SALOMON, M. 2006. The people and their cattle. Communal grazing in the Northern Drakensberg. *Proceedings of the 40th Annual Conference of the South African Society for Agricultural Extension*. Berg en Dal. 9-11 May 2006.

SALOMON, M. 2008. Challenges and contestations in communal grazing. *Grassroots News*. Aug 2008.

SALOMON, M., FINCHAM, R., EVERSON T. & ALLSOPP, N. 2008. The battle over cattle: Livestock management in a changing rural landscape. *Proceedings of the XXI International Grassland Congress/VIII International Rangeland Congress. Multifunctional grasslands in a changing world. Vol 2*. Organizing Committee of the XXI International Grassland Congress/VIII International Rangeland Congress eds. Guangzhou: Guangdong People's Publishing House. 1082-1086.

SAMUELS, M., ALLSOPP, N & KNIGHT, R. 2007. Patterns of resource use by livestock during and after drought on the commons of Namaqualand, South Africa. *Journal of Arid Environments*, Vol. 70:728-739. www.elsevier.com.

SANDWITH, T.S. 1998. The Drakensberg-Maloti Transfrontier Conservation Area: Experience and lessons learned. *Proceedings of Parks for Peace. International Conference on Transboundary Protected Areas as a vehicle for international cooperation. 16-18 September 1997. Somerset West*.

SANPAD PROJECT ON KEEPING CATTLE IN A CHANGING RURAL LANDSCAPE. 2010. Minutes of the expert workshop on mainstreaming new paradigms in communal rangelands: How can we influence policy in South Africa? Pietermaritzburg: South Africa. 29-30 March.

SAVORY, A. & BUTTERFIELD, J. 1999. *Holistic Management: A New Framework for Decision Making*. Washington: Island Press.

SCOONES, I. 1996. Range management science & policy. Politics, polemics, & pasture in Southern Africa. In: *The lie of the land: challenging received wisdom on the African environment*. LEACH, M. & MEARNNS, R. London: The International African Institute.

SHOWERS, K.B. & MALAHLELA, G.M. 1992. Historical environmental impact assessment: a tool for analysis of past interventions in landscapes. The Project on African Agriculture. Working Paper 8. New York: Social Science Research Council.

SHOWERS, K.B. 2005. Imperial gullies. Soil erosion and conservation in Lesotho. Ohio: Ohio University Press.

SINGH, N. & BALKARAN, A. 2010. Economic assessment of households in the Enhlanokhombe sub-ward. Psyc825 Specialisation module: Research inquiry and participation. University of KwaZulu-Natal. (Research report)

SISITKA, L. 2004. Okhombe Landcare Programme. Technical evaluation report.

SITHOLE, B. 2003. Whose cows are eating here today? *Proceedings of the VIIIth International Rangeland Congress*, Durban, South Africa, 26 Jul-1 Aug 2003.

SITHOLE, P. & MBELE, T. 2008. Fifteen Year Review on Traditional Leadership: A Research Paper. Durban: Human Sciences Research Council.

SONNEVELD, M., 2004. *Dynamics of land degradation in a communal grazing area in KwaZulu-Natal, South Africa*. Wageningen, The Netherlands. Wageningen University and Research. (PhD-thesis).

SOUTH AFRICA. Commission for the Socio-economic development of the Bantu areas within the Union of South Africa 1955. *Summary of the report of the Commission for the Socio-economic development of the Bantu areas within the Union of South Africa*. Pretoria: The Government Printer.

SOUTH AFRICA. Department of Agriculture 2007. *Draft Policy for the sustainable management of veld (range) and forage resources in South Africa*. Pretoria: Department of Agriculture

SOUTH AFRICA. Department Strategic Planning and Economic Development. 2010. *Draft IDP Review 2009/2010*. Ladysmith: Uthukela District Municipality.

SOUTH AFRICA. National Archives and Records Services. Pietermaritzburg Repository. 1910. [Online] Available: <http://www.national.archsrch.gov.za/sm300cv/smws/sm300ds?2010071823133925CF8405http://www.national.archsrch.gov.za/sm300cv/smws/sm300ds?2010071823053925CF8405&PN=00000001> [18 July 2010]

SOUTH AFRICAN HISTORY ONLINE. Undated. *Apartheid Legislation Timeline* [Online] Available: <http://www.sahistory.org.za/pages/chronology/special-chrono/governance/apartheid-legislation.html> [18 July 2010].

TAU, M. 2006. *Grazing management in the communal rangelands of the Upper Thukela, KwaZulu-Natal*. Pietermaritzburg, University of KwaZulu-Natal. (MSc-thesis)

TERREBLANCHE, S. 2002. *A history of inequality in South Africa 1652-2002*. Pietermaritzburg: University of Natal Press.

THABETHE, S.D. 2000. Laws and regulations affecting the powers of Chiefs in the Natal and Zululand Regions, 1875-1910. A historical examination. Pietermaritzburg, South Africa. University of Natal (MA-thesis.)

THOMPSON, L. 2001. *A history of South Africa*. Jeppestown: Jonathan Publishers.

TURNER, S. 2003. Rangelands in Lesotho: Can common property resources succeed in the 21st century? (*In* Allsopp N, Palmer A, Milton S, Kirkman K, Kerley G, Hurt C, and Brown C (eds), *Rangelands in the New Millenium. VIIth International Rangelands Congress*. 26 July-1 August. Durban, South Africa.)

TURTON, A.R. 1999. *Water and social stability: the Southern African dilemma*. 49th Pugwash Conference. Confronting the challenges of the 21st Century. Working Group No. 5 The Environment. Rustenburg, 7-13 September 1999. [Online] Available: <http://www.awiru.co.za/pdf/trutonanthony9.pdf> [18 July 2010].

VAN DER LEEUW, S. & ASCHAN-LEYGONIE, C. 2000. A long-term perspective on resilience on socio-natural systems. *Proceedings of the Workshop on System shocks-System resilience*. Abisko, Sweden, 22-26 May.

VAN DYK, P. 2004. *Explore KwaZulu-Natal*. Pretoria: Izimpilo C&S Publishers.

VAN ONSELEN, C. 1996. *The seed is mine: the life of Kas Maine, a South African sharecropper 1894-1985*. Johannesburg/Cape Town: Jonathan Ball Publishers.

VAN WARMELO, N.J. (ed), 1938. History of Matiwane and the Amangwane tribe as told by Msebenzi to his kinsman Albert Hlongwane. *Ethnological Publications Vol. VII. Department of Native Affairs*. Pretoria: Government Printer.

VETTER, S. (ed) 2004. *Rangelands at equilibrium and non-equilibrium: Recent developments in the debate around rangeland ecology and management*. Cape Town: Programme for Land and Agrarian Studies, University of the Western Cape.

VETTER, S. 2005. Livestock development in communal rangelands: what can be done to improve the success of interventions? *Proceedings of the 40th GSSA Congress*. Grassland Society of South Africa. Port Shepstone, South Africa, July.

VETTER, S. 2005. Rangelands at equilibrium and non-equilibrium: recent developments in the debate. *Journal of Arid Environments*, 62(2):321-341.

VETTER, S. 2009. Drought, change and resilience in South Africa's arid and semi-arid rangelands. *South African Journal of Science* 105, January/February 2009:29-33.

VON MALTITZ, Graham & EVANS, Jeremy. Is Tenure the Root Cause and consequently the Solution to Resource Degradation in the Communal Areas of Rural South Africa? *Guiding Principles: Land Tenure in Development Cooperation*. [Online]. Available: <http://www.mekonginfo.org/mrc/html/capetown/cape59.htm> [11 November 2010].

WATER RESEARCH COMMISSION. 2005. Projects restoring land and water. *Water Wheel Magazine*, 4(2):12-15.

WOODBURN, J. 1982. Egalitarian societies. *Man. New Series*, 17(3):431-451.

WRIGHT, J. & MAZEL, A. 2008. *Tracks in a mountain range. Exploring the history of the uKhahlamba-Drakensberg*. Johannesburg: Wits University Press.

WUNDER, S. 2005. Payments for environmental services: Some nuts and bolts. *CIFOR Occasional paper No. 42*. Jakarta: Center for International Forestry Research.

Field Data

Interviewee, 2/KDB. 2009. Interviewed by R. Greener, L. Rambally, G. Therone, & O. Tutshana on 27 or 28 September 2009. Okhombe. Translated by O. Tutshana. [Tape recording and transcript in possession of author]

Interviewee, MM/ENH. 2007. Interviewed by Z. Hlatshwayo and D. Mvemve in May 2007. Okhombe. Translated by Mphumzeni Chonco in July 2007. [Transcript in possession of author]

Interviewee, 54/MZA. 2010. Interviewed by M. Salomon on 16 November 2010. Okhombe. Translated by Simphiwe Dubazana. [Transcript in possession of author]

Minutes of focus group discussion, 14 April 2011. Facilitated by M Salomon. Translated by Simphiwe Dubazana. [Video in possession of author]

Minutes of Okhombe team meeting, 8 April 2008. Okhombe.

Minutes of Okhombe team meeting, 16 November 2008. Okhombe.

Minutes of third community report back meeting, 3 November 2009. Okhombe.

Annexure 1 Time line of research process

2007	
March	Masters research on crop-livestock-soil erosion raised concern about communal cattle grazing (Trolle Carlsson)
April	Permission sought for research on communal cattle grazing
May	Nominations for and formation of 7 member co-research team Training in research skills (oral history, PhotoVoice, aerial photos, topographical maps)
June	Co-researchers take photos on cattle keeping and document oral history Community report back meeting: co-researchers present results Themba Khumalo joins the co-research team.
Aug-Nov	Cattle keepers survey in Enhlanokhombe sub-ward
Dec	Reflection by co-researchers and plans for 2008
2008	
Feb	Masters students Mphumzeni Chonco and Victor Bangamwabo present their research plans Co-researchers renew voluntary consent Group interview of elder men on the history of cattle grazing in Okhombe
Mar	Victor and Mphumzeni present field work plans
Apr	Student field work: Victor taking biomass samples, Mphumzeni interviews cattle keepers in Enhlanokhombe), and Monique interviews with extension staff and ex-commercial cattle farmer. Monique presents and discusses analysis of survey data on cattle keeping in Enhlanokhombe
May	iNduna reports that the Okhahlamba Livestock Association wants the policy to pursue stock theft harder Co-researchers reflect on their role as researchers
Jun-Jul	Monique presents paper on Okhombe at International Rangeland Congress in China Victor and Mphumzeni present poster on Okhombe at the Annual Congress of the Southern African Grassland Society

Aug	iNduna reports that the iNkosi wants herding programmes in all areas of the amaZizi Students report on research progress
Sep	2 nd Community report back meeting: Students present results from the cattle survey in Enhlanokhombe, maps of changes in land use in Okhombe, and debate behind the research on cattle and soil erosion. Community members discuss research findings in small groups. Mr Sphiwe Dubazana joins the co-research team.
Oct	Co-researchers are asked to take photos of cattle keeping winter, and discuss that the practice of <i>ilobolo</i> has not changed significantly
Nov	Stock theft is identified as key concern in Okhombe Co-researcher Themba Kumalo initiates cattle keeping survey in Oqolweni sub-ward
2009	
Jan-Mar	Oqolweni survey
Apr	Sanelisiwe Duma, Honours students in Rural Resources Management, joins as an intern. Masters students in Research Psych undertake 3 days of field work on How cattle connect people, and Co-researchers' experiences.
May	The research team gives a presentation to amaZizi Traditional Administrative Council
Jun	Summary of findings from Research Psychology students is presented; Themba, Dubazane, and Dudu start survey in Mahlabathini.
Jul	The team has a joint meeting with the Okhombe Monitoring Group, Terry Everson, and the CSIR. They debate the extent of land degradation and the impact of cattle grazing in Okhombe. Monique gives a presentation to a combined meeting of State Veterinarians and Control Animal Health technicians in KwaZulu-Natal
Sep	Monique meets with research collaborators Prof Akke van der Zijpp and Dr Claudius van de Vijver in The Netherlands. Monique attends the SANPAD Advanced Research Capacity Initiative course. PhD student Khalid Manssour starts research to identify vegetation species as indicator for land degradation using remote sensing
Oct	Co-researchers each compile a photo album telling their personal story on the research as historical record and to share with others. The team presents their research at the Okhahlamba Intersectoral Meeting held in Okhombe

Nov	3 rd Community report back meeting: Co-researchers present research, people involved, and research techniques used. Victor presents maps of land use changes, and Monique survey results.
2010	
Jan	Themba and Mr Dubazana start cattle keeping survey in Mahlabathini and Mpameni sub-wards
Mar	Co-researchers and Monique attend meetings of African Conservation Trust on new Mountain Rehabilitation and Recording Project in the amaZizi and amaNgwane
Apr	
May	A form is designed to register all cattle in Okhombe
Jun	Mr Sishi talks about the newly established cattle patrol (<i>amavimbela</i>)
Jul	Develop cell phone based stock register with assistance from Alastair van Heerden of the Human Sciences Research Council
Aug	Prepare Masters students in Research Psychology for 3 day fieldwork in Okhombe
Sep	Meeting with co-researchers: Update on cell phone stock register; Psychology students ask permission for their fieldwork; Mr Stephen Coan, journalist from the Witness paper, interviews co-researchers and <i>amavimbela</i> about stock theft in Okhombe
	Field work by psychology students on winter grazing, the <i>amavimbela</i> , and the relation between cattle and wealth, respectively
Oct	Report back by Psychology students to Victor, Monique, and Dr Terry Everson.

4. Why do you keep cattle?

5. What do you like about cattle keeping?

6. Who looks after your cattle? Why? (Herding programme; Paid herder; Self; Family member; Neighbour; None/ Keep at homestead; other....)

7. Where do they graze, in which time of the year and why?

Winter:

Summer:

Other:

8. What do you do when cattle is sick?

9. What do you do to keep your cattle healthy?

10. What problems do you experience in keeping cattle?

11. Who helps you when you have a problem? Who do you go to for advice?

12. Why do you think some cattle you see here in Okhombe are fat and healthy, and others are thin and sick?

13. How would you feel if you didn't have any cattle? Why?

14. Do you have any questions for us?

Thank you for your cooperation.

Annexure 3 In-depth interview outline

Surname:

Gender:

First name:

Location:

1. What type of livestock do you own in this household, how many each?

Type of livestock	Number
Cattle	
Goats	
Sheep	
Horses	
Donkeys	

2. What is the role livestock in this household?
3. Who looks after your livestock? Why?
4. How does s/he look after your livestock?
5. How was s/he chosen?
6. How are your livestock looked after in summer?
 - Where do your livestock eat in summer?
 - How does he get there?
 - Does the areas where your livestock has a name? If yes, what is its name?
 - Why do your livestock eat there in summer?
 - What do they eat?

- Please describe the day about feeding livestock in summer.

7. How are livestock looked after in winter?

- Where do your livestock eat there in winter?
- How does he get
- What is the name of the areas where your livestock eat in winter?
- Why do your livestock eat there in winter?
- What do they eat
- Please take through your daily process of feeding your cattle in winter.
- How does looking after livestock in winter differ from summer?

8. Do you buy any livestock feed? If yes, why and if no, why not?

- What feed supplements do you buy?
- Why do you buy that feed supplement?
- Where do you buy it?
- When do buy it
- When do you use it?
- How do you pay?

9. In which season of the year are your livestock well fed? Why?

10. when was the worst winter

- What did you do?

11. when was the worst drought

- What did you do?

12. Do you sell your livestock?

- when do you sell
- where do you sell
- how do you market you livestock

13. What do you do to prepare for the uncertain situations like droughts, fire, etc.?

Annexure 4 Consent form for co-researchers



CONSENT DOCUMENT CO-RESEARCH TEAM MEMBERS

FOR A PHD RESEARCH PROJECT ON CHANGES IN CATTLE KEEPING IN OKHOMBE SINCE THE 1900S

I hereby seek your voluntary participation in a two year research project in Okhombe as part of my Doctorate in Philosophy of Science (PhD) titled "Keeping cattle in a changing rural landscape". The research aims to build on the work of the Farmer Support Group and Grassland Science with the Okhombe Livestock Committee and other community members in addressing the challenges faced in cattle grazing management. I would like to investigate how grazing management practices in Okhombe have changed since the early 1900s. Special attention will be paid to the following aspects:

- How individuals and groups negotiate and decide how natural resources can be used
- Whether there is evidence for a causal link between cattle grazing and land degradation, and
- How interventions in grazing management can be designed in communal areas such as Okhombe.

This study will be designed as action-oriented research that will result not only in more knowledge, but also a (modest) improvement of the situation. For this purpose, I would like to form a team of not more than six experienced and committed community members, who will work with me as co-researchers. They will undertake specific research activities and ensure that the research will yield some tangible results.

I believe that you can make a meaningful contribution to this research. I would like you to consider joining the research team. This will entail a commitment of approximately half a day per week, over a period of at least six months. You will not be paid for your time. However, it is envisioned that you will gain some skills that may be of personal benefit and/or be advantageous when applying for paid employment in future. As co-researcher you will be expected to interview people, help facilitate group discussions and/or meetings, and/or

undertake physically demanding walks to follow cattle and/or assess the condition of fields and rangelands. You will be bound to confidentiality, as you may handle sensitive information, particularly from individual interviews. Some costs for fieldwork may be covered from a very limited budget and with prior approval only.

Participation is voluntary. You have the right to turn down my request. If you do so, you will not be disadvantaged in any way. If you do agree to participate, you are free to withdraw from the research at any stage, and for any reason.

I look forward to your positive consideration to participate in this proposed research.

Ms Monique Salomon, PhD Research fellow

My contact details

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**To verify this information, please contact my
supervisor:**

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DECLARATION OF CONSENT ¹⁸

I.....(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

¹⁸ NOTE: Research participants should be given time to read, understand and question the information given before giving consent. This should include time out of the presence of the investigator and time to consult friends and/or family.

Annexure 5 Consent form for interviewees



UNIVERSITY OF
KWAZULU-NATAL

CONSENT DOCUMENT INTERVIEWEES

FOR A PHD RESEARCH PROJECT ON CHANGES IN CATTLE KEEPING IN OKHOMBE SINCE THE 1900S

I hereby seek your voluntary participation in a two year research project in Okhombe as part of my Doctorate in Philosophy of Science (PhD) titled "Keeping cattle in a changing rural landscape". The research aims to build on the work of the Farmer Support Group and Grassland Science with the Okhombe Livestock Committee and other community members in addressing the challenges faced in cattle grazing management. I would like to investigate how grazing management practices in Okhombe have changed since the early 1900s. Special attention will be paid to the following aspects:

- How individuals and groups negotiate and decide how natural resources can be used
- Whether there is evidence for a causal link between cattle grazing and land degradation, and
- How interventions in grazing management can be designed in communal areas such as Okhombe.

This study will be designed as action-oriented research that will result not only in more knowledge, but also a (modest) improvement of the situation. I believe that you can make a meaningful contribution to this research. For this purpose I would like to ask you to participate in an interview. The interview will take not longer than 2 hours.

Participation is voluntary. You have the right to turn down my request. If you do so, you will not be disadvantaged in any way. If you do agree to participate, you are free to withdraw at any stage, and for any reason.

I look forward to your positive consideration to participate in this proposed research.

Ms Monique Salomon, PhD Research fellow

My contact details

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**To verify this information, please contact my
supervisor:**

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CEAD, University of KwaZulu-Natal
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E-mail Fincham@ukzn.ac.za

DECLARATION OF CONSENT ¹⁹

I.....(full names of participant) hereby
confirm that I understand the contents of this document and the nature of the research project,
and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

¹⁹ NOTE: Research participants should be given time to read, understand and question the information given before giving consent. This should include time out of the presence of the investigator and time to consult friends and/or family.

Annexure 6 Summary of policy workshop

Summary report of the Expert workshop on Mainstreaming new paradigms in communal rangelands: How can we influence policy in South Africa? 29-30 March 2010, Pietermaritzburg

Introduction

A two day expert workshop - titled *Mainstreaming new paradigms in communal rangelands: How can we influence policy in South Africa?* - was held on 29 and 30 March 2010 at the University of KwaZulu-Natal. The event was hosted by a team of researchers from South Africa and The Netherlands²⁰ who are studying communal grazing in Okhombe in KwaZulu-Natal, with funding by SANPAD.

The research in Okhombe focused on how cattle keeping practices have changed since the 1800s, and what shifts have occurred in the social-ecological landscape. Preliminary research results showed that rural people keep much less cattle than expected, that cattle are not the primary cause for soil erosion, and a single communal rotational grazing management system is not appropriate considering the diverse cattle keeping practices found.

The research findings are in line with research undertaken in the Eastern Cape and Northern Cape, and they challenge dominant views of Government policy makers, scientists and technicians, on communal grazing and land degradation as reflected in policy and practice. Although experts have made submissions to amend the National Department of Agriculture's draft Policy for the sustainable management of range and forage resources in South Africa, this process seems to have stalled.

Expected outcomes

- Deeper understanding of the realities of communal rangeland management in different localities in South Africa - *Presentations and panel discussions*

²⁰ Students: Monique Salomon (PhD), Victor Bangamwabo (MSc), and Mphumzeni Chonco (MSc). Supervisors: Prof Robert Fincham, Dr Terry Everson, Prof Onesimo Mutanga (UKZN), and Dr Nicky Allsopp (SAEON). Advisors: Prof Akke van der Zijpp, Dr Claudius van de Vijver (WUR), Prof Michael McCall (ITC), and Dr Andrew Ainslie (now in UK)

- A focused strategy to influence policy relevant to livestock management in areas under communal land tenure - *Work sessions*

Workshop process

Nineteen participants from Universities in South Africa and the United Kingdom, research institutes, civil society organizations, National Department of Agriculture, Forestry, and Fisheries, and a company attended the workshop²¹.

The workshop consisted of two thematic sessions: 1) The realities of communal rangeland management; and 2) From knowledge to policy (Annexure 1). Plenary presentations were alternated with discussion in plenary and in small groups. In the small group discussion in thematic session 1, participants were asked to identify key issues for policy emerging from the presentations. In thematic session 2, participants were asked to formulate in small groups practical recommendations for the Range and Forage Policy. Follow up actions were agreed upon in a plenary session.

Results

Thematic session 1: Key issues for policy

The range of presentations on research undertaken in different localities helped to draw a rich picture of communal rangeland management in South Africa.

Research in the Northern Cape

- *Understanding commonage policy: A challenge for pastoralists in the semi-arid regions of South Africa* - Igshaan Samuels, Livestock Business Division, Agricultural Research Council
- *What scientific knowledge informs rangeland policy? Why some disciplinary assumptions do not work in Namaqualand* - Dr Nicky Allsopp, Fynbos Node, South African Environmental Observation Network

Research in the Eastern Cape

²¹ Universities of KwaZulu-Natal, Rhodes, and Cape Town in South Africa; Oxford and Coventry Universities in the United Kingdom; Agricultural Research Council; Council for Scientific and Industrial Research; South African Environmental Observation Network; Church Agricultural Project; Eastern Cape Department of Agriculture; National Department of Agriculture, Forestry, and Fisheries; and Mondi.

- *Communal livestock farming in the Eastern Cape: Synthesis of key research findings and their policy implications* - Dr Susan Vetter, Botany Department, Rhodes University
- *The perceptions of communal livestock keepers on veld condition, veld degradation and options for improving livestock production: A synthesis of studies from Sterkspruit in the Eastern Cape* - Dr Wiseman Goqwana, Eastern Cape Department of Agriculture, Dohne Agricultural Development Institute
- *Management of Communal Rangelands: The dialogue between Science and Indigenous Knowledge. The case of the Eastern Cape* – Dr Bethwell Moyo, University of Fort Hare
- *Managing rangelands in communal areas of Eastern Cape: Commons constraints* - Dr James Bennett, Department of Geography, Environment and Disaster Management, Coventry University UK

Research in KwaZulu-Natal

- *Communal grazing strategies to inform policy* - Dr Terry Everson, School of Biological and Conservation Sciences, University of KwaZulu-Natal
- *Spatial and temporal extent of land degradation in a communal landscape of KwaZulu-Natal* - Victor Bangamwabo, Department of Geography, University of KwaZulu-Natal
- *Facilitating bottom up policy development in communal rangelands in the uKhahlamba-Drakensberg* - Monique Salomon, Centre for Environment, Agriculture and Development, University of KwaZulu-Natal

In small groups participants identified and discussed the following issues:

a) Policy development

- Land users should be part of defining the research and policy agenda.
- No single theory or core hypothesis encompasses complexity of natural and social systems
- Dialogue that encompasses the plurality of scientific approaches will overcome some aspects of contradictory hypotheses and allow for broader scenario development
- Legislative inconsistencies in acts related to communal rangelands should be ironed out (e.g. to prevent conflicts between traditional leaders and councillors)

b) Development interventions

- Interventions need to be informed by people's objectives and practices and should seek to overcome their constraints.
- Balance sustainable management of natural resources with enhancing people's livelihoods based on livestock
- Develop and enhance local, civic structures with a NRM focus, and nest these within higher tiers of governance.
- Adequate local support from government
- Incentives for sustainable communal rangeland management

c) Enabling/Limiting context

- Access to and control of communal rangelands
- National policy versus local government implementation
- The need to co-manage range resources across 'village' boundaries (without fences).

Thematic session 2: From knowledge to policy

The session was opened with a key note paper by Prof William Beinart. The paper was followed by short presentations.

- *Transhumance and ticks in Mpondoland: a crisis in livestock management on the "Wild Coast"* - - Prof William Beinart, University of Oxford
- *Policy making as discourse: relevant issues for discussion* – Monique Salomon
- *Current state of the Range and Forage Policy* – Victor Musetha, Directorate Animal and Aquaculture Production, Department of Agriculture, Forestry and Fisheries
- *Assessment of Grazing Potential and Rangeland Status in South Africa* - Dirk Pretorius, Directorate Land Use and Soil Management, Department of Agriculture, Forestry and Fisheries

Government initiatives relevant to communal rangeland management

Draft Policy for the sustainable management of Veld (Range) and Forage Resources in South Africa

Status

- Further consultation to shape and align policy with relevant initiatives (*i.e* SUPAR Bill)
- Critical need to translate Research into Policy that will influence Practical Decisions on the ground

Objectives

- To provide a framework and guidelines that promote and facilitate the sustainable use of South Africa's veld and forage resources for animal production
- To provide a framework and guidelines for effective veld monitoring, and veld and forage improvement initiatives with the capacity to support compliance to the relevant legislation/regulations regarding the sustainable use of these resources
- To provide guidance and motivation for the amendment of legislation on the sustainable management of veld and forage resources, as well as more effective and consistent regulation thereof
- To support and facilitate the revival of existing biome-linked research and technology development structures across provincial boundaries

Land Degradation Assessment in Drylands (LADA) Programme

- Developing new national grazing capacity norms for rangeland policy
- Challenge to implement in communal areas
- National Land Degradation information to inform programmes like LandCare, Letsima NRM, and soil protection

In small groups participants discussed and formulated practical recommendations for the Range and Forage Policy based on the issues that had emerged from the previous session.

a) Co-producing knowledge on different management options, and their opportunities and constraints

- Co-production of knowledge by the farmers, local leaders and development workers, and researchers. Learning together and raising awareness of problems and possibilities.
- Researchers should not just gather knowledge but be involved in training.
- Focus on problem solving, starting with tractable problems (e.g. winter grazing, animal health) that could yield tangible results.
- Generate more base-line data, and data required for policy and development
- Draw on experiences elsewhere (country, continent and developing world).
- Research to link to the national rangeland monitoring programme and ensure socio-ecological knowledge feeds into the programme.
- Management options with “requisite simplicity” and appropriate, aligned with people’s objectives, and addresses constraints, promote entrepreneurship, and build on emerging initiatives.

b) Local institutions and traditional leadership, and Enforcement of rules and regulations at local level (including fencing versus flexible boundaries)

The Eastern Cape was used as example (former Ciskei no strong traditional leadership, in contrast to former Transkei)

- Existing conflict between traditional leadership and democratic civic leadership.
- Varied approaches required throughout the country.
- Recognise informal regulations in the community.
- Work with motivated farmers
- Engage local organizations and external agencies already working in the community (e.g. dipping committees, CBOs, NGOs, private companies, animal health technicians)

c) How to connect expertise, competencies and resources between national-provincial-local level for knowledge generation and policy implementation

- Policy must provide for local ongoing discussion platforms, including consultation with land users at grass-roots level.
- GSSA can be the platform for discussion.

d) What are the problems that the policy should address and what solution strategies? (Livestock's contribution to livelihoods and sustainable rangeland management; land reform to expand grazing lands)

- Different livestock keeping practices needed to be spelt out clearly to ensure how grazing lands led to livelihoods.
- Policy can enable or constrain different rangeland management practices: commercial rangelands and communal rangelands.
- Communal rangelands should be clearly defined.

Way forward

The following actions were agreed upon:

- Write a concept note and develop a position paper on the new paradigms in communal rangeland management
- Raise funds for a joint research programme
- Form a Research-into-Policy Platform at the Annual Congress of the Grassland Society of Southern Africa (GSSA).