

Wild resources and cultural practices in rural and urban households in South Africa



Implications for bio-cultural
diversity conservation

Michelle Cocks

WILD PLANT RESOURCES AND CULTURAL
PRACTICES IN RURAL
AND URBAN HOUSEHOLDS
IN SOUTH AFRICA

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Dedicated to my beloved soul mate and husband, Tony Dold.

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PROLOGUE

While I sit here reflecting over the past four years I wonder if I would have had the courage to begin this journey had I known where it would take me? It has been a journey filled with such extremes as I have learnt both about the wonders of humanity as well as its cruelty.

The journey of my discovery of the value of plants to people began in ‘true anthropology’ style. As I was driving with my field assistant, Nomtunzi Sizani, through one of the many rural villages in which I have worked in the Eastern Cape, I casually asked her about the huge woodpiles I saw outside people’s homesteads and at the time her response was simply that they were called *amagoqo* and in my cultural naivety I merely assumed they represented piles of fuel wood. To cut a long story short and after much stumbling around I discovered that these huge piles of wood had very little to do with the household’s need for fuel but fulfilled an important cultural role within women’s lives. This made me question how many other times we had misunderstood the use of plant material in people’s lives. Once I began asking the right questions a whole new world opened up to me as I began to get a feel for the importance that plants have for the *amaXhosa* people. I have many fond memories of the people I have met and worked with along the way who have been so warm and hospitable to me. They also never grew impatient of all my endless questions, as new experiences sparked my curiosity. I also have so many heart-warming and amusing stories to tell of my interactions with people who have shared with me what plants have meant to them.

Sadly, however, during fieldwork in 2002, a colleague and I were hijacked and brutally assaulted by a gang of criminals, who left us for dead in the bush. At the time I was four months pregnant and the attack resulted in me losing our first son. As a victim of a brutal act of violence there are no words to describe the effect that such an act has on one’s life. My physical damage healed fairly quickly but the psychological effects took a lot longer as my faith in humanity was completely destroyed, as I felt so angry and betrayed. It literally took months of daily mental battles to claim my life back. Without the loving support of my husband, Tony Dold, and family to conquer many of my psychological demons, I know I would not have been able to complete this work. This has shown me the true value of family for which I will be eternally grateful. I also thank the public of South Africa, for their support after the attack and subsequent court case. The Peddie Women’s Group deserve special mention for their public support through demonstrations during the protracted court cases.

Tony’s theoretical contributions, botanical expertise and his shared love for people and plants has made this journey a wonderful experience to share. His ability to capture the significance that people attach to plants through his photographs has provided me with much inspiration to conserve our cultural and biological diversity in South Africa. I also need to make special mention to Mandy Cocks for assisting me in the mindless task of data capture which was no mean feat. I will also always be grateful to Nomtunzi Sizani,

my friend, translator, and mentor to *amaXhosa* culture, without whom much of the material gathered would have been meaningless.

I also wish to extend my deepest gratitude to Dr Freerk Wiersum who, despite my ordeal in 2002, never lost faith in me to regain my passion for people and plants. Neither did he ever question my ability to complete this doctorate. His guidance and insight has both expanded my scientific inquiry and improved the quality of this work considerably. His attention to detail and devoted availability over the past four years has been very much appreciated. I also thank Professor Charlie Shackleton, who has been very supportive and encouraging and has always been willing to listen to my concerns and fears.

This study was carried out with the scientific and logistic support of the Forest and Nature Conservation Policy Group (FNP), Wageningen University. I also wish to thank former Chair group Professor, Professor Heiner Schanz. To all my colleagues of the FNP group who always made me feel immediately welcome, thank you for making my visits to Wageningen so memorable. I only hope one day to return this hospitality. This study would not have been completed without the financial support from the South African Netherlands Programme for Alternatives in Development (SANPAD) and the Carolina MacGillavry programme of the International Foundation of Science (IFS) and the Royal Academy of Sciences (KNAW) from the Netherlands, the MacGillavry. Professor Valerie Møller, HOD of the Institute of Social and Economic Research (ISER), generously allowed me the freedom to explore my passion for research into *Imithi yesiXhosa* (Xhosa plants). I also wish to thank members of the Institute and associated colleagues at Rhodes University for their support down the many paths I've had to travel over the past four years.

I hope that this work provides some insight into the value and importance that people attach to plants and contributes in some way to the understanding of the culture, customs, and way of life of the people of the Eastern Cape. Only through a mutual understanding and respect of the many cultures of this rainbow nation can we travel together into the future of a united South Africa.

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CHAPTER 1

GENERAL INTRODUCTION



Figure 1: Typical peri-urban landscape in the study site (Photo A. Dold)



Figure 2: Typical urban settlement in the study site (Photo A. Dold)

1. INTRODUCTION

In the late 19th century the first initiatives to establish nature reserves and national parks in the United States was heavily influenced by historical and socio-economic factors in Europe. This included the development of an Anglo-American appreciation for nature aesthetics which was promoted by the need to create landscapes of consumption for leisure and for the emerging bourgeoisie class developing under the capitalism as noted by Neumann (1998). For example, within Western Europe during the 19th century a spatial separation of nature developed whereby cultivated land, resource and labour were perceived as representing unnatural areas whereas nature only existed where human society had not intervened. This resulted in nature being perceived as only existing in pristine landscapes in the countryside. An appreciation of such areas became increasingly associated with the emergence of the petite bourgeoisie who as part of their leisure time sought to escape the burdens of urban living by escaping to picturesque landscapes. A cultured appreciation of nature by the late 19th century had become an index of education and good breeding. The cultural value associated with nature appreciation and its importance for class identity remained echoed in the discourse of nature preservation both in North America and later in Africa (Neumann 1998).

It was against this background that Yellowstone Park the first national park to be proclaimed in the USA was established. In line with the need to preserve the picturesque landscape Yellowstone National Park prohibited human settlements and activities. Yellowstone National Park became a model for all the world's national parks. In South Africa the Kruger National Park (KNP) was established in 1898, the second oldest national park in the world (<http://sunsite.wits.ac.za/env/soc.htm>). Conservation ideologies in southern Africa were also heavily influenced by political and economic events in other countries (Fabricius and Koch 2004). For example, impressionists' paintings of Edenic landscapes, devoid of labour and portraying peace and tranquillity reflect a popular consciousness that underlay the British colonial drive for 'wild' protected areas, without people, where animals could be observed in 'pristine environments' (Neuman 1998; Fabricius and Koch 2004). The implementation of purity conceptions of the wilderness resulted in the depopulation of national parks (Beinart 2000).

In the more recent years the objectives for national parks and reserves have been formulated on more ecological terms, i.e. that reserves should serve as conservation areas for endangered animals and to maintain the integrity of ecological systems. These views were largely fuelled by Hardin's 'Tragedy of the commons' essay (Hardin 1968) and the belief in Malthusian economics, which postulated that resources eventually have to run out if human populations keep growing. This further stimulated the move towards conserving landscapes which were devoid of people and returning distributed landscapes to their 'original undistributed form' (Fabricius and Koch 2004). Consequently, in much of the 20th century all answers to conservation were perceived as only lying within the domain of the biological sciences as biology provided the analytical tools to identify rare and threatened species and ecosystems as well as the means to estimate the limits of human

use to sustain these systems (Mascia *et al.* 2003). In the latter part of the 20th century the common policy measure adopted, was to establish protected areas in places of prime importance to biodiversity or where high profile animals or habitats were threatened. Thus biodiversity conservation became strongly associated with the establishment of protected areas and this generally resulted in the separation of habitats and people. This preservationist approach only allowed for the so-called non-consumptive uses of national parks and strict nature reserves. Unfortunately such practices often brought about untold hardship to the local communities living adjacent to these areas as they were increasingly excluded from the use of the biodiversity on which they had previously depended (Grimble and Laidlaw 2002; Singh and Houtum 2002; Colchester 2003).

This preservationist approach based on State controls did not however provide the expected results. Gradually it became clear that many of the presumably 'pristine' wilderness lands had in fact been influenced by local people, and that the presumed dichotomy between wilderness areas and local village lands is a false one. This has been coupled with increased amounts of biodiversity being found outside of reserves (Shackleton 2000) as a result of reserves often being situated in marginal lands in southern Africa. It also gradually became clear that the spatial requirements of large game species such as elephants often exceeded the size of even the largest reserves (Neumann 1998). In order to allow for corridors between reserves it would be necessary also to consider conservation measures outside the reserves. Moreover, in several cases the State control over the reserves proved to be less effective than originally assumed. These insights, coupled with the worldwide political and economic changes of the 1980s and the growing concern with global environmental issues brought the question of how to make conservation more effective for development. This generated immense interest and discussion over the issue of the environments future sustainability (Twyman 1998). In response to the poor conservation outcomes that followed decades of governments' ineffectiveness in managing biodiversity, scholars and policy makers have been forced to reconsider the role of the community in resource use and conservation (Western and Wright 1994). As a result social scientists began having an impact on the biodiversity management debate and have catalysed a more people-centred approach. Their key contribution was to alert ecologists to the various types of indigenous knowledge and practices in respect to controlled use and conservation of natural resources as well as the nature of common property management systems and its value in community-based natural resource management (CBNRM) (Fabricius 2004). These insights coincided well with policy calls for State decentralization and increased participation of local communities in natural resource management. One of the key outcomes of these developments is that CBNRM is now considered by many to be a promising approach to environmental and biodiversity conservation as well as towards effective decentralisation and devolvement of power and control over resources (Twyman 1998; Singh and Houtum 2002).

Since the last decade, many governments, particularly in developing countries, have formulated policies aimed at promoting participatory rural development and the empowerment of local populations in the management of natural resources (Twyman 1998). However, the actual results with community-based conservation have not only led

to enchantment, but also to dis-enchantment (Agrawal and Gibson 1999). There are several reasons for the still less than anticipated results of community-based conservation efforts; many of those are of organizational nature. But more fundamentally, it has gradually appeared that there often exists a difference in values between local people and professional conservationists concerning the role and significance of natural resources. For example, outside professionals often do not understand the belief systems of rural people and erroneously assume that profits alone will lead to development and resource conservations (Fabricius 2004).

A deeper respect for indigenous knowledge and their beliefs has however recently arisen from a worldwide surge of interest in the way indigenous people interact with their environment and the value of their knowledge systems (Berkes 1993; Laird 1999). In response indigenous knowledge systems are increasingly been recognized as contributing to the conservation of biodiversity, rare species, protected areas, ecological processes and to sustainable use in general (Berkes *et al.* 2000). This interest has arisen out of the realisation that many regions inhabited by indigenous people contain impressive biodiversity, suggesting anthropogenic origins of these biodiversity hotspots (Posey 1999). Consequently, scientists and practitioners are increasingly questioning whether social and cultural factors are not the primary determinants of success or failure of conservation practices. Social processes are therefore increasingly perceived as playing a role in biodiversity conservation (Mascia *et al.* 2003). Before appropriate policy can be formulated to protect and manage a particular ecological system, an understanding of its cultural context is considered to be crucial:

Humanity's relation to the natural environment has so far been seen predominantly in biophysical terms; but there is now a growing recognition that societies themselves have created elaborate procedures to protect and manage their resources. These procedures are rooted in cultural values that have to be taken into account if sustainable and equitable human development is to become a reality (Bridgewater 2002).

Within the political arena mechanisms were established to deal with questions of self-representation and sovereignty for indigenous populations. Internationally, co-ordinating bodies have been established such as the U.N. Working Group on Indigenous Populations and its Permanent Forum on Indigenous Issues to deal with the interest of indigenous peoples (MacDonald 2003). These trends have resulted in a shift from a top down to a more community-based approach which aims to work closely with local people, draw on their knowledge, and contribute to their livelihoods (Grimble and Laidlaw 2002). The need for strategies to protect and preserve indigenous peoples' knowledge is now being called for (Slikkerveer 1999). Since then, there has been an escalation in the number of institutions that adopt approaches that "link humanity with its ancient origins" (Bruntland 1987). The Convention on Biological Diversity (CBD) from 1992 calls on parties to:

respect, preserve, and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for

the conservation and sustainable use of biological diversity, and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices, and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices (McNeely 2000).

Thus, in the CBD the international community has not only formulated its commitment to increase efforts at biodiversity conservation, but also identified the need to recognize the value of biodiversity for indigenous people and local communities and to use such values in developing locally context specific conservation programmes (Laird 1999). This is a stark contrast to the paradigms which were supported in the 20th century, which portrayed local people as a threat to biodiversity conservation. National and international conservation organisations have responded to these changes in the political landscape. It even has been stated that new conservation initiatives that ignore indigenous or local interest do so at their peril (MacDonald 2003).

These international commitments have led to increased attention towards the relationship between biodiversity and human diversity. It is recognised by several authors that many of the areas of highest biological diversity are inhabited by indigenous and traditional people (Posey 1999; Maffi 2001), providing what the Declaration of Belem (1988) calls an 'inextricable link' between biological and cultural diversity. The term bio-cultural diversity was introduced (Posey 1999) to describe the concept denoting this link. This concept relates specifically to indigenous people, who as part of their traditional lifestyles often conserve forests and biodiversity. The recognition of the close links between the lifestyles of 'indigenous' and 'local' people and biodiversity is seen as crucial not only for the survival of biological diversity but sometimes also for the protection of cultural diversity. Most of the discussions on the intricate relationship between the conservation of biodiversity and cultural diversity centre on the argument that cultural diversity can sustain a wide variety of use practices and conservation of biodiversity (Dasmann 1991; Posey 1999; McNeely 2000). These very same processes are being noted for their potential to act as a tool and a model for biodiversity conservation (Laird 1999; McNeely 2000).

2. SCIENTIFIC PROBLEM STATEMENT

Although recently increased attention has been given to the interaction between culture and biological diversity, there still has been given little systematic analysis to the question of what type of linkages exist and what type of people need to be considered in the elaboration of the concept of bio-cultural diversity. As illustrated above, the terms 'indigenous', 'traditional' and 'local' people have become embedded in the discourse of bio-cultural diversity. Nonetheless, the precise interpretations of the terms 'indigenous', 'traditional' and 'local' are problematic in many parts of the world. Within the Convention on Biological Diversity the general consensus is that the term 'indigenous' applies to people

who have historical continuity with pre-invasion and pre-colonial societies that have developed on their own territories, and who consider themselves distinct from other sectors of society now prevailing in those territories, or part of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems (Posey 1999).

The modes and relations of indigenous production systems are typically subsistence and kin based and involve extraction of wild products from the natural environment. They usually demonstrate restraint in resource exploitation and show a respect for nature that is characteristically reinforced by an animistic worldview that regards the spirit world as infusing all of nature. These people have been described as ‘ecosystem’ people (Dasmann 1991) with a non-invasive traditional lifestyle (Posey 1999) favouring biodiversity conservation.

The terms ‘indigenous’ and ‘traditional’ are often used as synonyms. Although Fisher (1989) argues they should not be. The term ‘indigenous’ refers to values that were generated by internal initiatives within a local (tribal) community on the basis of the prevailing norms. The term ‘traditional’ relates to norms and values dating from the past. These values are not necessarily related to past norms, but may have arisen as adaptive responses to changing ecological and social conditions.

Not only ‘ecosystem’ people with traditional tribal lifestyles may value biodiversity, but also other rural people. Within the Convention on Biological Diversity the term ‘local communities’ is recognised, and such communities are

commonly referred to as representing a socially and geographically defined group of people, not necessarily homogeneous, living close to biodiversity and protected areas. These people may have customary rights of use, distinctive knowledge and skills and direct dependency on biodiversity as individuals or groups of individuals. They are also described as having a close and unique relationship to their natural resources as a community (www.iucn.org/themes/ceesp).

Similar to the term ‘indigenous’, it is important to recognize that the term ‘local communities’ should not be interpreted as referring only to traditional communities with static lifestyles, and to acknowledge that these communities may be dynamic in response to changing rural conditions, and hence may change their cultural practices and their perspectives on the importance of natural resources and biodiversity (Wiersum and Shackleton 2005).

Willet (in Posey 1999) stresses the need to avoid becoming side-tracked by who qualifies as ‘indigenous’ or ‘local’ as the task at hand is rather to enhance the spiritual and cultural values as a basis to conserve biodiversity (Posey 1999). Despite these calls for not limiting

the ideas incorporated in the term bio-cultural diversity to only indigenous people, relatively little consideration has yet been given to the cultural values of forests and resources for communities that cannot be considered as ‘indigenous’ or ‘traditional’ according to the above criteria, and whose lifestyles have been affected and transformed by modernization. As the classification currently stands it fails to incorporate large sectors of the global population and neglects the fact that community-based conservation is not only being stimulated in the (former) homelands of indigenous tribes, but also in modernized regions (Wiersum *et al.* 2004). Investigations into bio-cultural diversity should therefore not be solely orientated at communities of ‘indigenous’ and ‘local’ people as classified by the CBD.

At present rural conditions are changing rapidly in many tropical countries, and the livelihood strategies of local communities are diversifying (Ellis 1998) and are becoming more integrated into a cash based economy. As a result of these changes, the worldviews, cultural values and knowledge of large sectors of the population in Africa can no longer be classified as ‘traditional’ nor as representative of western culture. Despite these changes, many of these communities are still reliant on wild resources both for utilitarian and cultural needs (Wiersum *et al.* 2004). Unfortunately, as it stands, the theory on bio-cultural diversity only pays homage to one end of the continuum — that is the more ‘exotic’ and under political represented sectors of the population. Focusing only on such examples can potentially lead to the failure to comprehend the resilience, or rather the persistence, of culture and how increasingly commercial networks are used to maintain aspects of cultural practices linked to the use of biodiversity. This thesis will explore the position of communities other than ‘indigenous’ or ‘local’ and will seek to reveal how the concept of bio-cultural diversity is relevant and applicable to broader communities.

3. THE ROLE AND MANAGEMENT OF BIODIVERSITY IN SOUTH AFRICA

One of the countries where it is clearly demonstrated that the use and value of biodiversity is not limited to only ‘traditional’ and/or ‘indigenous’ communities (as defined within the CBD) is South Africa. In this country researchers, policy analysts and development agencies are increasingly recognizing the important role that wild resources play in the lives of the marginalised rural poor (Campbell 1996; Shackleton *et al.* 2000; Campbell and Luckert 2001; Willis 2004). The following are invariably cited as needs, which are being met through direct access to biodiversity:

- Healthcare via indigenous medicinal plant use;
- Energy provision from fuel wood;
- Housing development based on wood and thatch resources;
- Other goods and services (draught – based on livestock production supported on grasslands);
- Household nutrition supplementation from edible plants, fruits, mushrooms, insects and honey; and

- Income generation from the use of harvested wood and fibres from craftwork and the trade in products for all the above uses (Willis 2004).

Access to these resources has however been marked by a highly politicized historical past (see Fabricius 2004; Willis 2004; Von Maltitz and Shackleton 2004).

Since the 1980s and within the South African context, people-centred conservation has been widely accepted. The strong protectionist policy of biodiversity management that emerged during the colonial and apartheid period generated a range of social conflicts that endangered the future of biodiversity. This awareness, together with the democratisation of South Africa in 1994 which brought about the country's return to the global arena after decades of isolation, resulted in the updating of most legislation which articulated the need for the participation of local people in the management of biodiversity both within communal areas and on state owned land (Campbell and Shackleton 2001; Kepe 1999).

Unfortunately the changes since 1994 have not all been positive for biodiversity management (Von Maltitz and Shackleton 2004) as researchers and project managers are uncovering flaws. This is resulting in project implementors questioning the basic design and assumptions of CBNRM initiatives. In response suggestions have been made to modify aspects of CBNRM methodologies, as our understanding of the relationship between people and biodiversity and the factors that shape the outcome of this relationship are still weak. In response a call has been made to explore other development pathways or conservation strategies (Fabricius 2004).

In South Africa culture has been identified as being intricately bound up with the use and management of biodiversity, conservation and consumptive use (Fabricius 2004; Bernard 2003). This has led to the development of a new order, which sees people and biodiversity as part of the same system, and links culture to nature (Fabricius 2004). Despite this recognition, the use of culture as a tool in conservation strategies has not been explored within the South African context as yet. Therefore South Africa offers an excellent opportunity to study whether and to what extent the effects of cultural values on biodiversity is preserved under non-traditional conditions.

Currently within South Africa, the predominate focus within the literature is on the utilitarian functions of biodiversity (Shackleton and Shackleton 2000; Dovie *et al.* 2002; Shackleton *et al.* 2000; Shackleton *et al.* 2002) and very little attention has been given to the cultural values of biodiversity and their relevance in respect to biodiversity conservation. A study on bio-cultural diversity in South Africa can therefore not only contribute towards a better scientific understanding of the dynamic dimensions of this concept, but may also offer new ideas on how to further stimulate community-based conservation in South Africa.

4. RESEARCH OBJECTIVE, LOCATION AND APPROACH

4.1 RESEARCH OBJECTIVE

The overall aim of this study is to assess the importance of biodiversity with respect to cultural and utilitarian value amongst different categories of non-traditional communities in South Africa and to evaluate factors, which contribute to the persistent use of biodiversity for cultural practices.

This aim has been further elaborated in the following specific research objectives:

- To assess how the concept of culture can be brought into analyses of the complete role of biodiversity and to develop an appropriate theoretical framework to explain the relationship between nature and culture.
- To determine the relative magnitude of the utilitarian and cultural value of biodiversity to both urban and rural populations
- To assess how different socio-economic factors such as gender, age, wealth and level of education impact on local use of biodiversity resources for cultural practices.
- To reflect how the cultural values of biodiversity contribute towards biodiversity conservation.

4.2 RESEARCH LOCATION

The study was carried in the Eastern Cape province of South Africa and concentrated on the Nqusha and Amathole region (Figure 3). Mainly the *amaXhosa* and *amaMfengu* ethnic groups inhabit this area.

Historically the *amaXhosa* and *amaMfengu* groups descend from negroid people who migrated down south some two thousand years ago from Central and West Africa. The Nguni arrived on the southeast Africa coast and today they largely inhabit the territory from the Fish River to Kosi Bay, including Swaaziland, with branches extending as far as Zimbabwe and Malawi (Broster 1981). The Nguni group speaks dialects of the same language. The Umzimkulu River divides the Zulu-speaking Nguni of the north from the Xhosa-speaking Nguni of the south; the later are referred to as *amaXhosa* people. Only later did the *amaMfengu* people join the *amaXhosa* as result of fleeing the turmoil and marauding wars of the Zulu people under rule of Shaka and imfecane (Broster 1981). In the late 1700s the Dutch-speaking pastoralist enter this area with disastrous results for the *amaXhosa* and *amaMfengu* people as they were banished from their land, economically and politically subjugated and brought under the heel of the colonial state (Ainslie 2002). For over a century the consolidation of racially based subjugation entailed what may be regarded as an unbridled assault on Xhosa identity and culture (Beinart 1980) consequently demonstrating that they cannot be considered as representing traditional indigenous people. Rather, their lives have been greatly affected by the political history of the region as it formed part of the one of the former homelands, the Ciskei. Homelands were established under the former apartheid vision which saw South Africa's population as being divided into a number of ethnic groups, each with its own territory and inherent potential, that would be developed into separate sovereign nations (Sharp 1988). More

than 3.5 million people were shifted to mostly unfertile lands in the Ciskei. The effects of relocation were compounded by the effects of the continued policy of ‘betterment’, which necessitated the relocation of scattered rural African homesteads to villages. This resulted in millions of families being forcibly moved (Beinart 1994) and as a result these areas became severely overpopulated. The people in these ‘homelands’ mostly worked as labourers in the ‘white’ industries and urban areas. As a result today many rural people are urban people too as rural households continue to draw heavily on livelihoods generated from urban areas and/or State benefits such as pensions, rather than revenue flows from farming practices or biodiversity use (Turner 2004) although land-based livelihoods strategies do still remain important (Shackleton *et al.* 2001). A more comprehensive description of the Homelands is provided in Chapter 3.

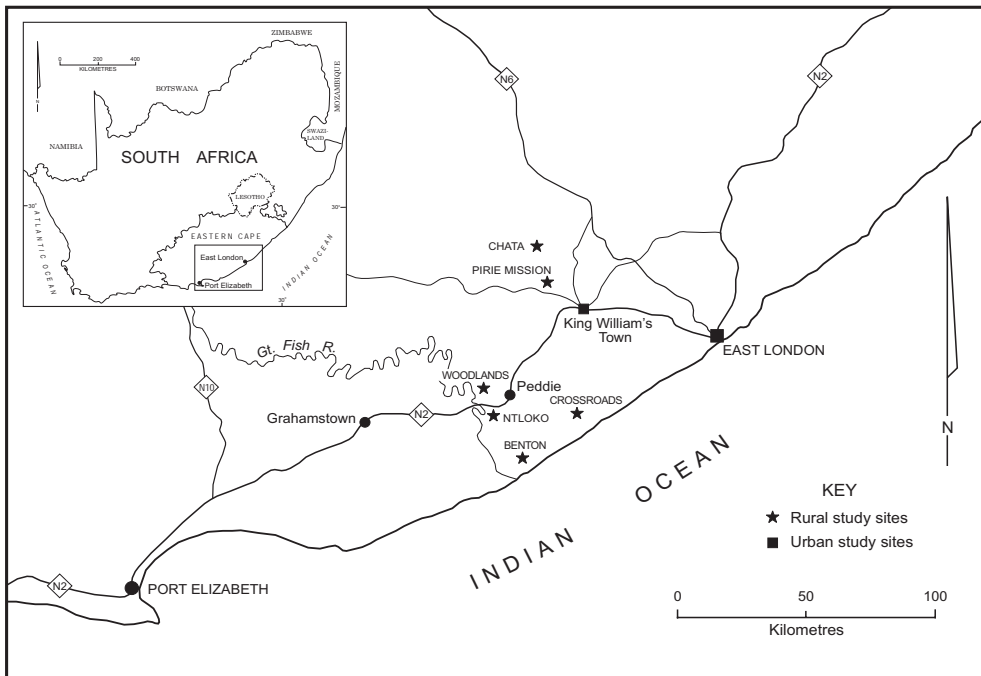


Figure 3: Study site localities

4.3 RESEARCH APPROACH

To fulfil the research objectives both sociological and anthropological research methods were used. The study is based on an accumulative approach in which literature study and different types of field study proceed in a cyclical manner.

To identify the various scientific approaches towards the concept of biodiversity the main literature regarding the cultural dimensions of biodiversity was reviewed. During the study the initial focus on assessing values of biodiversity gradually evolved into a more specific focus on cultural values and their dynamics. The growing realization of the

dynamic nature of cultural values resulted in the extension of the originally planned series of rural surveys to include urban areas as well. In the field studies both sociological and anthropological research methods were used to obtain both qualitative and quantitative data. To assess the importance of biodiversity for use as cultural artefacts two systematic surveys on the use and values of wild plant material were made. These surveys were carried out in rural and urban areas respectively (Figures 1 and 2). This stratification was applied to assess whether the cultural use of wild plant material is limited to the rural areas or retains importance and value in urban areas. This was considered necessary as a detailed literature search indicated that many of the cultural uses of biodiversity still remains poorly recorded. In an iterative process, also several case studies on specific cultural artefacts were made. These detailed ethnographic studies did not only serve to document previously poorly documented practices, but also served to demonstrate the real-life importance of cultural artefacts and the various practices related to their use. These studies were carried out through in-depth interviews with key informants in the study area.

The rural survey was conducted in 2001-2002. A 100% sample of households was carried out in six randomly selected villages located in three different vegetation zones; in total 1,011 households were interviewed. In 2003 a stratified urban survey was carried out amongst poor, middle-class and wealthy African households within the two towns of King William's Town and East London. In total 302 households were interviewed. The case studies focused on the cultural significance and use characteristics of grass brooms and medicinal plants. Data were collected by open interviews with key informants both in the rural and urban areas. Further details on the research techniques are given in later chapters, which report on the various studies.

5. STRUCTURE OF THESIS

This thesis is structured in four parts (Figure 4). In part one Chapter 2 the conceptual framework is presented which serves as the theoretical orientation of the overall study. Chapter 3 provides a case study of the comparative values of biodiversity for utilitarian and cultural resources in one of the studied villages; this chapter sets the tone for the subsequent chapters.

Part two consist of Chapters 4 and 5 that provide data on the use of biodiversity in rural areas. Chapter 4 provides a detailed assessment of the cultural significance of a specific type of cultural artefacts, i.e. rural kraals (*ubublanti*) and woodpiles (*amagogo*). After these detailed descriptions Chapter 5 provides a more general overview. It describes the results of a household survey on the use of wild plant products in six villages. This data also allowed for the interpretation of the results of the case studies in a wider context as well as how inter-household and community factors influence the use of plant resources.

Part three consists of three chapters describing the urban use of biodiversity. Chapter 6 provides an account of the cultural significance of traditional grass brooms and Chapter 7 of medicinal plants (*amayeza*). Chapter 8 describes the results of the household survey in two urban centres.

Part four consists of the conclusive Chapter 9 in which the results of the various chapters are integrated and reflected upon. In this chapter, the results of the rural and urban surveys are first compared. This is followed by a reflection on the theoretical implications of the research findings in relation to the concept of bio-cultural diversity. Finally, the repercussions of the research findings are reflected upon in respect to finding new conservation strategies within the new order of community-based conservation in South Africa. Part four consists of the conclusive Chapter 9 in which the results of the various chapters are integrated and reflected upon. In this chapter, the results of the rural and urban surveys are first compared. This is followed by a reflection on the theoretical implications of the research findings in relation to the concept of bio-cultural diversity. Finally, the repercussions of the research findings are reflected upon in respect to finding new conservation strategies within the new order of community-based conservation in South Africa.

It should be noted that in the various chapters the terms rural, urban and peri-urban areas are used and sometimes the term peri-urban is used interchangeably with the term rural areas. The term peri-urban areas is used to indicate that the studied rural areas cannot be considered as 'rural' in the traditional sense, as these areas have been impacted not only by the policies implemented under apartheid but also by the processes of urbanization and industrialization. In some instances the use of these terms is used to contrasting rural areas from urban cities.

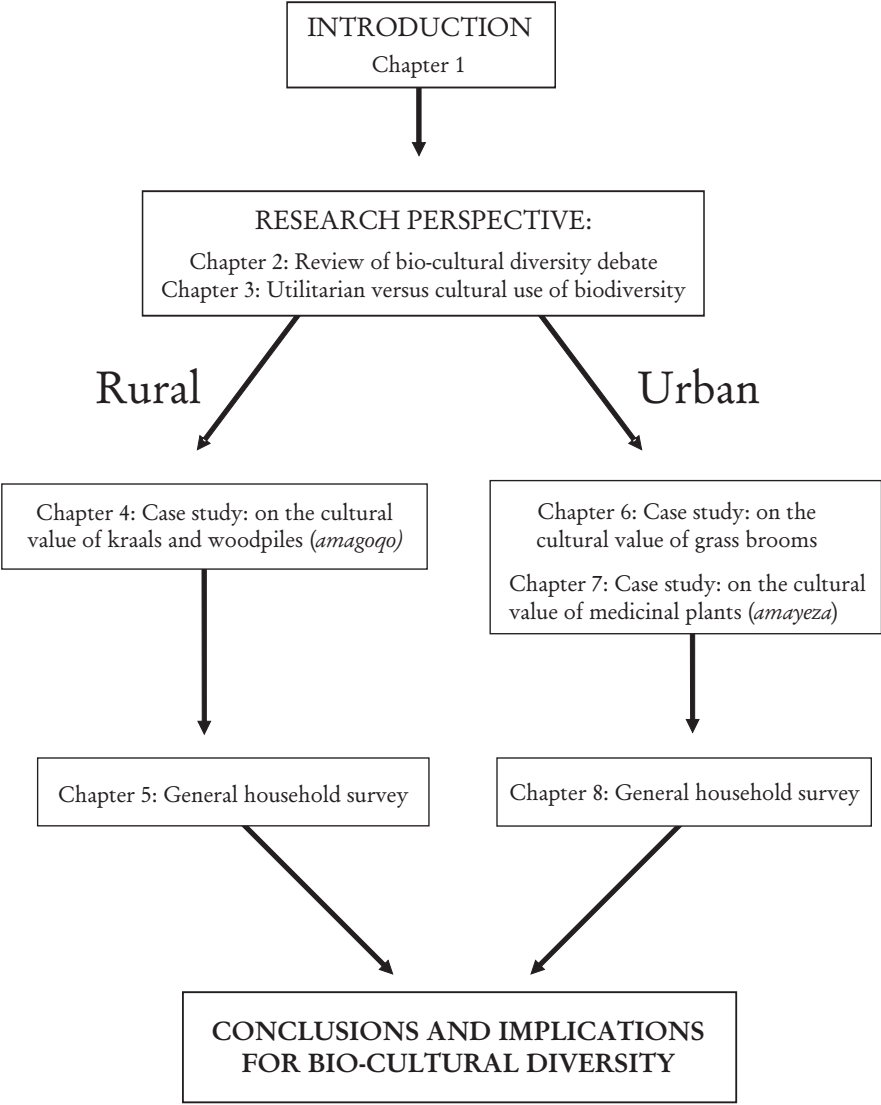


Figure 4: Structure of thesis

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CHAPTER 2

BIO-CULTURAL DIVERSITY: MOVING BEYOND THE REALM OF 'INDIGENOUS' AND 'LOCAL' PEOPLE

Cocks, M.L. 2006. Bio-cultural diversity: Moving beyond the realm of 'indigenous' and 'local' people. *Human Ecology* 34(2): 185-200.



Figure 1: Ritual burning of incense purchased from an informal herbal trader (Photo A. Dold)

1. ABSTRACT

During the past decade the relationship between biodiversity and human diversity has received increased attention. This has resulted in the identification of what the Declaration of Belem calls an 'inextricable link' between biological and cultural diversity. The term bio-cultural diversity has been introduced as a concept denoting this link. Although the term is being used increasingly, there has been little critical reflection on what the term precisely refers to. It is argued that the concept is particularly used with reference to 'indigenous traditional' people, but that there is scope for extending the concept within the bio-cultural discourse. In order to demonstrate how the concept could be used beyond the realm of 'indigenous traditional' people, the concept of culture is reviewed. This is followed by a discussion of what constitutes cultural values of the natural environment. It is concluded that the concept of culture must be understood as involving a dynamic process of trans-cultural exchange and constant re-articulations of tradition resulting in the persistence of certain cultural practices. This re-conceptualization ultimately reveals that the cultural value of wild resources is also applicable to non-indigenous traditional communities.

Key Words: natural environment, bio-cultural diversity, indigenous, culture, cultural values

2. INTRODUCTION

Over the past decade, scholars from various fields have increasingly emphasized the detrimental effects of global socio-economic processes on biodiversity (Wood *et al.* 2000). Machlis (1992) identifies the industrial revolution, the demographic explosion of *Homo sapiens* and the rise of the global exchange economy as the major factors that influence human land use patterns and, ultimately, both the loss of biological species diversity and the erosion of world's ecosystems. From the late 1980s onwards biosystematics and conservation biology have successfully brought this concern to the attention of the public and as a result they are discussed almost daily in the media (Cunningham 2001; Maffi 2001). Biodiversity is increasingly recognized as an essential resource on which families, communities, nations and future generations depend. Biologists, ecologists and conservationists have further recognized that solutions to biological problems lie in the mechanisms of social, cultural, and economic systems, which has led to attempts to place a monetary value on species and ecosystems in order to calculate the cost of using and conserving biodiversity. These approaches, however, failed to take into account the various ways in which different groups of people make use of biodiversity (Posey 1999). Consequently, greater attention is now being paid towards the relationship between biodiversity and human diversity because many of the planet's areas of highest biological diversity are inhabited by indigenous and traditional peoples, providing what the Declaration of Belem (1999) calls an 'inextricable link' between biological and cultural diversity (Posey 1999). Although the term bio-cultural diversity, introduced (Posey 1999)

to denote this link, is used increasingly, there has been little critical reflection on what precisely it refers to. There also appear to be several misconceptions and inaccuracies concerning its meaning as reflected in the biases of the case studies selected to illustrate bio-cultural diversity, where the majority represent more 'exotic' type communities which, by their nature, are remote and isolated communities (Posey 1999).

This review therefore aims to contribute towards a better understanding of what constitutes bio-cultural diversity. It is structured in three parts: Firstly, a review of the manner in which the theory has been applied to date. It will be argued that key concepts, particularly the use of 'indigenous' and 'local' people, need extending. Currently the theory relies on the definition of these terms given by the Special Rapporteur of the UN Economic and Social Council Sub-Commission on the Prevention of Discrimination and Protection of Minorities, a complementary contribution to the global biodiversity assessment (Posey 1999, p. 3). Secondly to demonstrate how the concept could be used beyond the realm of 'indigenous' and 'local' people, the concept of culture is reviewed. This is followed by a discussion of what constitutes cultural values of the natural environment. Finally, the implications of these extensions and evaluations on what constitutes a cultural value of the environment will be discussed in terms of management strategies, which can be used to promote the conservation of bio-cultural diversity in developing countries. The arguments presented are based on an extensive literature review and are supported by examples of primary research conducted by the author.

3. INTERPRETATIONS OF BIO-CULTURAL DIVERSITY

3.1 THE ROLE OF 'INDIGENOUS' AND 'LOCAL' PEOPLE

Bio-cultural diversity denotes the link between biodiversity and human diversity. It is important to explicitly recognize the role played by human diversity in biodiversity conservation because biodiversity represents a source of raw material on which the processes of evolution depends. The less diversity there is, the greater the chance that life itself could be destroyed through lack of resilience to environmental change. Biodiversity needs to be maintained because it provides humans with different ways of understanding and interacting with the world and ultimately offers different possibilities for human futures (Milton 1996).

Different cultures and peoples perceive and appreciate biodiversity in different ways because of their distinct heritage and experience (Töpfer 1999). Most discussions on the intricate relationship between the conservation of biodiversity and cultural diversity center around the argument that cultural diversity can sustain a wide variety of use practices and conservation of natural resources (Posey 1999; McNeely 2000). Examples of how 'indigenous' and 'local' people around the world have protected both individual trees and entire habitats have led to the interest in linking biodiversity to human diversity. In many parts of the world natural features and habitats, often protected by religious taboos and considered sacred by community members, have survived due to strong cultural forces and today act as reservoirs of local biodiversity (Laird 1999). For example, the

American Indian Menominee tribes have successfully held onto 100,000 ha of their native territory, almost all of which is still forested and contains the only significant concentration of old-growth tree stands in the now mostly deforested region of the upper mid-Western states (Groenfeldt 2003). These areas generally form part of the surrounding communities' ancestral domains and contribute towards their cultural identity (Laird 1999). From a more general perspective, they contribute to a people's sense of place (Kusel 2001; Wiersum *et al.* 2004). For instance, the Menominee tribes have a spiritual relationship with their forest representing a twinned identity for both the tribe and the forest (Groenfeldt 2003). Thus, 'indigenous' and 'local' are understood to ascribe symbolic significance to their surrounding landscapes and consequently perceive and value nature differently than ecologically trained conservationists and biologists (Posey 1999; Infield 2001).

The importance of recognizing the traditional values of 'indigenous' and 'local' communities in forest and biodiversity conservation has been officially recognized by the Convention on Biological Diversity. Following this a UNESCO report which states that "Sacred groves have served as important reservoirs of biodiversity, preserving unique species of trees, forest groves, mountains, rivers, caves, and temple sites and should continue to play an important role in the protection of particular ecosystems by local people" (Laird 1999, p. 352). The literature cites an increasing number of examples of how non-industrial people live in harmony with their natural environment, such as rural communities in Hawaii (McGregor 1999), the Kayapo Indians of Middle Xingu Valley in Brazil (Posey 1999) and the Dai, an indigenous ethnic group in south-west China (Shengji 1999). In contrast, industrial societies draw on a wide range of ecosystems, and if supplies from the one source are exhausted or destroyed, they turn to another, and consequently are less likely to feel the need to protect any one resource or ecosystem (Milton 1996).

Although the notion of an 'ecologically noble savage' has been challenged as overly romantic (Ellen 1986; Redford 1990; Milton 1999; Posey 1999; Berkes 2001; Cunningham 2001), many researchers and conservationists argue that numerous studies have proven how traditional ecological knowledge and practices have effectively served to protect and maintain natural environments (Posey 1999; Wiersum 2000; Berkes 2001; Cunningham 2001). However, the claims that indigenous and local people are by nature conservationists can be easily undermined by counter-examples—species extinction due to human hunting in the prehistoric past, indigenous people who grant large timber cutting or mining concessions on their lands, etc. Moreover, indigenous and local people themselves have a variety of reactions to these claims (Cunningham 2001, p. 6). More recent writings adopt a more pragmatic stance that stresses the practicality and urgency of coordinating local communities and conservationists (Orlove and Brush 1996, p. 329). For example, Infield argues (2001, p. 801) that "promoting conservation in the context of local culture would endow protected areas with significance that an emphasis on biological diversity, landscape, or economies does not".

The recognition of the close links between lifestyles of indigenous and local people and biodiversity is seen as crucial not only for the survival of biological diversity but sometimes also for the protection of cultural diversity by those who argue that the very

same processes of global socio-economic development that destroy biodiversity also cause local cultures to be swallowed up in the expansion of the global economy. For example, Dasmann (1991) describes 'indigenous' people all over the world as being eliminated or having their cultures shattered by invaders of their territories. Motte-Florac and Ramos-Elorduy (2002, p. 210) go as far as describing indigenous peoples and their knowledge as being on the verge of "imminent destruction". In light of these sentiments, it has been estimated that on average one ethnic group, in the Amazonian region, has disappeared for each year of the twentieth century (Motte-Florac and Ramos-Elorduy 2002, p. 210).

3.2 MOVING BEYOND THE REALM OF 'INDIGENOUS' AND 'LOCAL' PEOPLE

Within the Convention on Biological Diversity the general consensus is that the term indigenous has been used to apply to people

who have historical continuity with pre-invasion and pre-colonial societies that have developed on their own territories, and who consider themselves distinct from other sectors of society now prevailing in those territories, or part of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems (Posey 1999, p. 3).

Their modes of production and relations are typically subsistence and kin based, respectively. As a result they demonstrate restraint in resource exploitation and show a respect for nature that is characteristically reinforced by an animistic worldview that regards the spirit world as infusing all of nature. Similarly, according to the International Union for the Conservation of Nature (www.iucn.org/themes/ceesp), local communities are

commonly referred to as representing a socially and geographically defined group of people, not necessarily homogeneous, living close to natural resources and protected areas. These people may have customary rights of use, distinctive knowledge and skills and direct dependency on natural resources as individuals or groups of individuals. They are also described as having a close and unique relationship to their natural resources as a community.

Willett in Posey (1999) stresses the need to avoid becoming side-tracked by who qualifies as 'indigenous' or 'local' as the task at hand is rather to rekindle and enhance the spiritual and cultural values that cultures have effectively used to conserve biodiversity. Despite these calls for caution, less consideration has been given to the cultural values of forests and resources for communities that cannot be considered as indigenous or local according to the above criteria, and whose lifestyles have been affected and transformed by modernization (Cocks and Wiersum 2003). As the classification currently stands it fails to incorporate large sectors of the global population.

At present rural conditions are changing rapidly in many tropical countries, and the livelihood strategies of local communities are diversifying (Ellis 1998; Wiersum and Shackleton 2005) and becoming more and more integrated into a cash based economy. However, despite the effects of rapid urbanization, increased westernization and access to conventional western medicinal health care facilities, in southern Africa the use of traditional medicine remains high amongst urban black populations (Mander 1998). The trade in traditional medicines has been described as greater now than at any time in the past (Cunningham 1991; Mander 1998; Dold and Cocks 2002), estimated to be worth approximately \$44.4 (US) million per annum, and as meeting the demands of approximately 27 million indigenous medicine consumers in South Africa (Mander 1998). Nevertheless, the worldviews, cultural values and knowledge of large sectors of the population in Africa can no longer be classified as 'traditional' nor as representative of western culture. Despite these changes, many of these communities are still reliant on wild resources both for utilitarian (Shackleton *et al.* 2001; Campbell and Luckert 2002; Shackleton and Shackleton 2004) and cultural needs (Goebel *et al.* 2000; Cocks and Wiersum 2003; Cocks *et al.* in press). Unfortunately, the focus of bio-cultural diversity theory on the more 'exotic' sectors of the population potentially can lead to the failure to comprehend the resilience, or rather the persistence, of culture and how the networks of globalization are often used to maintain aspects of cultural practices linked to the use of natural resources.

3.3 EXTENDING THE SIGNIFICANCE OF THE CONCEPT OF BIO-CULTURAL DIVERSITY

For the bio-cultural diversity concept to have relevance and applicability to communities other than indigenous or local it is necessary to reconceptualize two of its key components. The first is the meaning of the word culture. Present thinking within the theory of bio-cultural diversity fails to take into account the multiple dimensions of culture, for example, how aspects of culture can be modified, adapted and maintained, despite the changes a community might experience in its social and material context and its removal from precolonial residence areas. This is the result of a failure to acknowledge the resilience or persistence of certain dimensions of culture in the face of change, and the implications this might have for bio-cultural diversity.

Secondly, bio-cultural theory makes repeated reference to the cultural functions and values of natural areas because the studies using the theory focus predominantly on areas such as sacred forests, rainmaking sites, landmarks, etc. (Posey 1999; Goebel *et al.* 2000). Cultural values are seldom extended to the resources harvested from natural areas and how these resources fulfill an important cultural value within the communities that utilize them. This is surprising in view of the fact that during the last decade there has been a greater focus on the role of forests and non-timber forest products (NTFPs) in fulfilling livelihood needs (Ruiz-Perez and Arnold 1996; Wollenberg and Ingles 1998) and affective needs such as a sense of belonging and identity (Douglas and Isherwood 1997). Recent studies have even demonstrated that urban-based community forestry arrangements in Europe provide a sense of place and belonging (Kusel 2001; Wiersum *et al.* 2004) thus illustrating that a nature-related sense of cultural identity remains applicable to

modernized communities. A review of the concept of culture and cultural value will show how this is possible.

4. CULTURE

The concept of culture is multidimensional. As discussed above, it can be related to specific lifestyles and dominant modes of interaction with the natural environment, and to specific aspects of behavior such as veneration of sacred forests. Traditionally the study of cultures was considered to be the specific domain of anthropology. But with the advent of interest in the cultural dimension of natural resource use, today the concept of culture forms the foundation of scientific disciplines such as ecological anthropology and scientific concepts such as bio-cultural diversity. In both cases a basic premise is that the relationship between humans and their environments is mediated by culture (Laird 1999; Posey 1999; Berkes *et al.* 2000).

Despite growing interest in the cultural dimensions of natural resource use there is still no clear common agreement on what the concept of culture encompasses. While it is not the purpose of this review to explore all the theoretical debates on the construction or deconstruction of the term culture, an attempt will be made to highlight how the concept, when used in the discourse of bio-cultural diversity, has been too narrowly perceived. Culture is commonly referred to as a system of values, beliefs, and ideas that social groups make use of in experiencing the world in mutually meaningful ways (Kuper 1999; Berkes *et al.* 2000). As a primary starting point, this approach fails to stress that these systems are creations of the researcher and not of the people described (Rapport and Overing 2000). Furthermore, as Ingold so explains, what researchers do not find are neatly bound and mutually exclusive bodies of thought and custom, perfectly shared by all who subscribe to them, and in which their lives and works are fully encapsulated (Ingold 2002). Thus, the definition of culture as an integrated system of values and beliefs fails to reflect culture as it is experienced. Groenfeldt provides an excellent example of such: "A Cherokee Indian medicine woman who lives in a solidly middle-class suburban community in Washington, D.C. has worked off and on in administrative jobs within the US Air Force, and has a growing clientele of mostly White Anglo patients with various physical and mental ailments. She heals by invoking spirit forces from the Cherokee pantheon and serving as a medium for their healing powers, as her grandmother taught her" (2003, p. 921).

This example, shows that the Cherokee Indian medicine woman's religious worldview is highly traditional, while her social and material cultural context is basically that of a mainstream American. Therefore, there is a deliberately choosing from the cultural assemblage at her disposal (Groenfeldt 2003). This approach to the concept of culture as a selective force has particular merit when trying to explain the phenomena that occur within societies where lifestyles have been affected and transformed by global processes and where livelihood strategies of communities that have become diversified. As Groenfeldt (2003) observes, peoples' worldviews are maintained to a large extent but their day-to-day lives are radically transformed.

The argument for considering culture as a selective force rather than as an integrated system is supported by Canclini (1995), who argues that the dominant substitution-retention models of cultural change associated with modernization and dependency theory have tended to direct attention away from the critical and complex processes of 'intercultural hybridization'. He argues, for example, that people in Latin America cannot "enter or leave modernity" as these "countries now are the product of the sedimentation, juxtaposition and inter-crossing of Indian traditions, of colonial Catholic Hispanism and of modern political, educational and communicative practices." This does not occur as simple cultural syncretism but rather as dynamic processes of trans-cultural exchange, where the 'modern' fails to 'substitute' the 'traditional,' resulting in constant rearticulations of tradition (Canclini 1995).

This view is also illustrated in case studies from South Africa that describe 'traditional' cultural practices and activities which are still being performed in communities that have experienced social, economic and political upheaval as a result of the resettlement policy implemented by the former apartheid government (Bank 2002; Cocks and Wiersum 2003). This has resulted in a large proportion of the rural communities becoming reliant on cash income from adjacent urban areas and state welfare payments rather than on subsistence economies. Apartheid also resulted in a breakdown of traditional rural structures, particularly those responsible for management of natural resources (Fabricius *et al.* 2004). However, despite the onslaught of the apartheid regime and the ongoing impact of global economic, cultural practices and activities have been recorded as taking on a new form, with women taking charge of certain aspects of ritual and custom that were largely men's responsibility in the past (Bank 2002), although what is of more interest to this article is the resurgence of the importance of these practices within their respective communities.

The general consensus is "that something has (or appears to have) survived, persisted or continued and one cannot assume that incorporation into an industrial environment results in the complete overturning and replacement of what existed before" (Spiegel 1997, p. 10). Canclini identifies this process as 'truncated innovation' as it is not a retreat into cultural essentialism but rather one that involves the creation of subtle crisscrossing links between different cultural orientations and experiences that have been mediated by the rearticulation of tradition (Canclini 2002, p. 649). People adopt different cultural perspectives under the all-embracing umbrella of culture and that culture formation is always a relational process, which is shaped both from outside and from within (Bhabha 1996). These arguments demonstrate that within the discourse of bio-cultural diversity culture needs to be recognized as dynamic and having the ability to adapt and adopt under change. However, it is necessary first to discuss what constitutes a cultural value of the natural environment as it is believed to be too narrowly perceived and portrayed within the current discourse of bio-cultural diversity.

5. CULTURAL VALUES OF THE NATURAL ENVIRONMENT

If it is accepted that different and dynamic cultural perspectives are possible under the all-embracing umbrella of culture, the question then becomes: how can cultural values in respect to the natural environment best be conceptualized? Thus far the cultural values of natural resources are often only related to components of the vegetation or fauna, e.g., forests as dwelling places for spirits, burial places for ancestors, sites for ritual ceremonies and sacred natural features such as springs and caves (Laird 1999; Posey 1999; Seeland 1997). The cultural values of wild resources harvested by communities are far less acknowledged (Ingles 1997). Case studies from South Africa, however, reveal that a cultural value does relate also to harvested wild resources. For example, Cocks *et al.* (in press) describe the significant role that wild resources play in the construction and maintenance of cultural artifacts within peri-urban households. Vast quantities of woody material are collected annually by male members of the households for the maintenance of a kraal. This is often assumed to be a cattle enclosure, but the structure is foremost maintained as a scared place for the male lineage of the homestead to communicate with their ancestral spirits and receive their blessings and protection. The maintenance of a kraal is also a visual display of the households' ethnic affiliation and the significance the occupants attach to their ancestral belief. Similarly female household members of *amaXhosa* communities maintain an *igogo*, often considered a stockpile of fuel wood located within the homestead yard. It is, however, seldom used for fuel wood purposes but represents a woman's domain, as it is where her ancestral spirits reside.

In another study in South Africa it was observed that urban residents still prefer using traditional grass brooms over industrially manufactured brooms because of the cultural significance they attached to the use of these brooms, e.g., as wedding presents, and for their ability to offer households' protection from lightening attributed to sorcery (Cocks and Dold 2004). The same applies to the continued use of traditional medicines. In a study amongst the *amaXhosa* people it was found that approximately half of the medicinal plants purchased by urban black consumers were used to enhance a sense of spiritual well-being (Figure 1) rather than to treat a physical ailment or complainant (Cocks and Møller 2002; Cocks and Dold 2006). Interestingly, in a survey amongst school children it was observed that they believed that such cultural uses of wild plant resources would continue in the future, while more utilitarian uses such as fuel wood would be replaced by commercial goods (Cocks and Wiersum 2003).

These examples clearly indicate that cultural values of the natural environment may take on several manifestations which relate not only to the religious roles of forests but also to wild resources which are harvested from natural areas and traded with consumers living in peri-urban and urban communities. The fact that these practices are maintained in urban and resettlement areas demonstrates that cultural values concerning the use of wild plant resources are not restricted to traditional communities. Moreover, one does not have to live geographically close to the natural environment for it to hold spiritual, social and cultural values for its users. Wiersum and Shackleton (2005) describe how migrated families in southern Africa return to their ancestral lands to partake in cultural festivities and ceremonies featuring wild plants.

The major driving forces behind the continued use of wild plant resources as cultural artifacts by non-traditional people are the diversification in rural livelihoods and increased mobility, as well as the incorporation of rural areas into commercial trade networks (Wiersum and Shackleton 2005). Several recent studies in southern Africa reveal that, at present, in rural areas households are engaged in both on-farm and off-farm activities. Such multi-enterprise practices are often essential to the livelihood strategies of rural households as they help to reduce vulnerability and risk (Shackleton *et al.* 2001). As a result, rural African communities are becoming increasingly incorporated in commercial networks (Ellis 1998). Moreover, the increase in commercialization has resulted in an increase in sales not only of agricultural produce but also wild resources and products (Campbell *et al.* 2001, Sunderland and Ndoye 2004; Wiersum and Shackleton 2005). This includes selling both within the villages (Cocks and Wiersum 2003), between villages, to urban centers (Dold and Cocks 2002; Cocks and Dold 2004) and even across international borders as seen in the international trade in wildlife and marine products (Kalland 1999), often to fulfill cultural needs amongst immigrant communities living in developed countries.

6. IMPLICATIONS FOR BIO-CULTURAL DIVERSITY CONSERVATION IN DEVELOPING COUNTRIES

I have argued in this paper that the concept of culture must be understood as a dynamic process of transcultural exchange with constant rearticulations of tradition resulting in the persistence of certain cultural practices amongst any group of people. In developing countries traditional indigenous communities are changing (often rapidly) due to the impact of socio-economic processes such as the increase in diversification of rural livelihoods and of rural and urban linkages. Notwithstanding, as the examples above have shown, even people who have migrated to urban or peri-urban areas and have become involved in modern economic sectors still to varying degrees maintain certain cultural practices, including the use of wild resources for maintaining a sense of well-being and identity. Thus, the theory of bio-cultural diversity should extend the term 'indigenous' and 'local' people to include more varied social groups.

Several authors such as McNeely (2000), Cunningham (2001), Infield (2001) and Berkes (2001) have noted that approaches to conserving biodiversity that are based on cultural and religious values are often more sustainable than those based only on legislation or regulation. The recognition of the role of value systems has greatly contributed towards the development of community-based natural resource management schemes (Fabricius *et al.* 2004). However as noted by Redford (1990) and Ellen (1986), we need to be particularly careful of the uncritical belief in the inherent superiority of indigenous resource use systems as being ideal for sustainable use and preservation of plant and animal diversity. As noted by Redford (1990), amongst the Amazonian Indians there is no cultural barrier to the adoption of techniques to 'improve' their lifestyles even if the long-term sustainability of the resource base is threatened. Such improvement strategies might include the sale of timber and mining rights to indigenous lands, commercial exploitation

of flora and fauna, and invitations to tourists to observe 'traditional lifestyles', etc. This note of caution is of particular relevance to communities in developing countries which have undergone rapid social, economic and political changes. However, despite these changes, communities and groups of individuals in South Africa continue to attach a strong cultural value to wild resources, although it should not be assumed that these communities or groups of individuals make sustainable use of natural resources. For instance, the continued use of wild medicinal plants has resulted in overexploitation in several cases (Cunningham 1991; Mander 1998; Williams *et al.* 2000; Dold and Cocks 2002).

Interpretations of these observations are often taken as an indication that continued use of natural resources based on traditional cultural values cannot be maintained if traditional livelihood strategies are threatened due to socio-economic dynamics and increased rates of commercialization. Well-known examples of this opinion are the call for a halt on international trade of ivory and rhino horn, or the abolishment of bush meat consumption in Central Africa. This indicates a somewhat ambiguous opinion concerning the importance of bio-cultural values. On the one hand, the use of indigenous values and practices of traditional communities is often heralded as a means of biodiversity conservation. But on the other hand, the continued use of such values and practices under more modern conditions is often considered to be detrimental to biodiversity conservation. It might be more useful to consider an alternative view taking the dynamics in bio-cultural values as a starting point for additional approaches towards community-based conservation. Such approaches should not only focus on preserving wilderness areas, but also on conserving locally-valued biodiversity in agricultural landscapes. In this way, bio-cultural values could contribute towards the creation of diversified landscapes which transcend the accepted dichotomy between wilderness areas and cultured fields. Within such local landscapes, local people may purposefully conserve the biodiversity which they value. An example, of such an approach is the recent efforts to stimulate domestication of medicinal plants. Recent experiences in South Africa illustrate that such conservation efforts should be fully cognizant of the cultural values of medicinal plant use. Authors such as Prins (1996) have claimed that the procedure surrounding the collection of medicinal plants from the wild is an important dimension in the cultural use of such plants. Observations of farmers experimenting with the growing medicinal plants indicate, however, that the cultural beliefs regarding the need to collect medicinal plants in the wild are probably less resilient than the belief in their impact on personal well-being (Wiersum *et al.* 2006).

In developing countries, including South Africa, it is of paramount importance that biodiversity conservation programs develop awareness campaigns which illustrate the link between cultural and biodiversity conservation as well as the diversity and dynamics of cultural values regarding biodiversity. Biodiversity conservation programs should include a careful adaptation of the multitude of cultural values regarding biodiversity to newly emerging socio-economic conditions. Local communities and individuals as well as conservationists need to be made aware not only of the link between the loss of the natural habitat and their cultural practices, but also of the options for incorporating cultural values held by non-traditional communities into novel approaches for

biodiversity conservation. It is believed that the implementation of such educational campaigns would have far greater success than species-focused conservation approaches, which are perceived only to be of benefit to the elite.

I therefore conclude that culturally-conscious programs for conservation of biodiversity should pay attention to the links between the values of biodiversity and the cultural values within both indigenous communities and non-indigenous communities. My identification of a variety of cultural practices in the use of wild plant resources by people living under non-traditional conditions underlines the more theoretical argument that the bio-cultural discourse must extend its present focus of 'indigenous' people. This is necessary to ensure an increased understanding of the role of wild resources in the lives of its users, as well as to identify new approaches to link the continuation of multi-faceted cultural practices relating to the use of wild resources with biodiversity conservation.

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CHAPTER 3

THE SIGNIFICANCE OF BIODIVERSITY TO RURAL HOUSEHOLDS IN EASTERN CAPE PROVINCE OF SOUTH AFRICA

Cocks, M.L. and Wiersum, K.F. 2003. The significance of biodiversity to rural households in Eastern Cape Province of South Africa.
Forest, Trees and Livelihoods 13: 39-58.



Figure 2: Plant material harvested on commission for the maintenance of a kraal
(Photo A. Dold)

1. ABSTRACT

Increased attention has been given recently to the role of NTFPs in maintaining rural livelihoods and to the spiritual roles of forests and trees for local communities. Few studies have investigated the utilitarian and cultural roles of forests and trees in an integrated manner. Most studies have focused on indigenous communities with little attention being given to the role of biodiversity in local communities living under non-traditional conditions. Furthermore most research has focussed on the extraction of resources in tropical rain forests and only recently have attempts been made to determine the contribution of temperate-zone vegetation types. The aim of this paper was to highlight the significance of plant diversity in the livelihoods of rural communities within the Valley Bushveld in South Africa. It documents the various uses of NTFPs, the species used, the amounts harvested and their value. In total 103 plant species were used. The mean gross direct use value for the utilisation of wild plant resources amounts to \$159 per annum per household. The use of NTFPs is not purely utilitarian as approximately one-third of the species and just less than half of the total use value were for cultural purposes. This illustrates that plant diversity is important in serving the cultural needs of non-traditional local communities. Programmes for biodiversity conservation should heed of its role in traditional cultures.

Key Words: cultural diversity, plant diversity, Valley Bushveld, Eastern Cape, South Africa.

2. INTRODUCTION

The roles of trees and non-timber forest products (NTFP) were rarely acknowledged as contributing to rural livelihoods until towards the end of the 20th century. For instance, in 1987 Chambers and Leach (1987) noted a lack of recognition within the scientific literature of trees acting as 'buffers against contingencies', and this article was one of the first to recognise the importance of trees and forest products in rural livelihoods. This concerned not just the provision of subsistence needs, but also as a source of income and types of savings and assets. Since then the contribution of forest products to rural communities has been more clearly recognised and defined. Much attention is now given to the role of NTFPs in maintaining rural livelihoods through household consumption and sale (e.g. Hladik *et al.* 1993; Ruiz-Perez and Arnold 1996; Wollenberg and Ingles 1998). Increased attention is also being given to the cultural and spiritual roles of forests and trees for rural communities (Posey 1999a). Trees and NTFPs are not only a natural asset that either can be used in subsistence or transferred into the economy through sale, but are also a cultural asset.

Two aspects have received attention from Oldfield and Alcorn 1991, Posey 1999b and Laird 2001:

- i.e. the role of forests in the world's views of local communities, and

- the manner in which local communities have shaped and maintained a diversity of forested landscapes.

Indigenous forest dwelling tribes may view themselves as guardians and stewards of their environment and live in harmony with nature. Although this notion of an 'ecologically noble savage' has been challenged as overly romantic (Redford and Stearman 1993; Posey 1999b), many researchers and conservationists defend the conservation mentalities of indigenous and traditional peoples on the ground that many studies have been proven how traditional ecological knowledge and practices have effectively served to protect and maintain natural or semi-natural environments (Clay 1991; Posey 1999a; Wiersum 2000; Cunningham 2001). Moreover, on the basis of their basic cultural perspective indigenous peoples give symbolic significance to their surrounding landscapes; consequently, they perceive nature through different values than ecologically trained conservationists (Posey 1999a; Infield 2001).

Much attention has been focused on the sacred and religious roles of forests as dwelling places for spirits, burial places for ancestors, sites for ritual ceremonies such as initiation rites, or protection of sacred natural features such as springs and caves. These protected forests often play an important role in the conservation of native vegetation (Laird 1999). Moreover, the consumption of specific forest products may hold spiritual significance (Ingles 1997) through their use in religious rituals, in ceremonies to attain social or religious merit (Ingles 1997), or in traditional health and cleansing systems (Bodeker 1999).

The importance of recognizing the traditional values of indigenous and local communities in forest and biodiversity conservation is now officially recognised, e.g. in the Convention on Biological Diversity. It has been argued that 'promoting conservation in the context of local culture would endow protected areas with significance that emphasis on biological diversity, landscape, or economies does not' (Infield 2001). This is especially relevant in a continent such as Africa, where people can ill-afford the luxury of a species-focussed conservation ethic.

Most statements regarding the cultural significance of forest resources focus on traditional indigenous communities that have a historical continuity with pre-colonial societies. Such historical continuity is characterized by the occupation of ancestral lands, a common ancestry with the original occupants of those lands and a culture that is a manifestation of specific ethnic customs or traditions (Posey 1999a). Much less attention has been given to the cultural values of forests for local communities that cannot be considered as indigenous according to such criteria, and whose lifestyles have been affected by modernization. Nonetheless, at present in many tropical countries, notably Africa, rural conditions are changing quickly and the livelihood strategies of local communities are diversifying (Ellis 1998). Little attention has been given to the roles of forests and trees in such non-traditional environments to ascertain whether in such cases forests still are of cultural significance. Such is the aim of this paper. A non-traditional community from South Africa was studied to find out:

- Which plant species are gathered from the natural vegetation and how much is collected?
- For what utilitarian or cultural purposes are they used?
- What are their comparative values?

3. LAND-USE CONDITIONS IN THE RESEARCH AREA

The study was carried out in the former homeland of Ciskei in the Eastern Cape province of South Africa. During the past century, the prevailing land-use policies have resulted in major discontinuities in land-ownership and access to forest resources of the Bantu population who are now living in this area. Since the early 1900s the Government has limited the black population's access to natural resources. The Land Act of 1913 resulted in enormous pressure on the land reserved for the black people and rapid environmental deterioration. By the late 1930's concern about the deteriorating condition in the areas where black people were allowed to own lands was rising. The Betterment Proclamation of 1939 aimed to improve the situation by resettling scattered African homesteads in concentrated villages. After 1948, the 'apartheid' policy resulted in the creation of the so-called 'homelands' for the African population. These homelands were established because the apartheid vision saw South African's population being divided into a number of ethnic groups, each with its own territory and inherent potential, that would be developed into separate sovereign nations (Boonzaire and Sharp 1988). More than 3.5 million people were shifted to mostly unproductive lands. The people in these 'homelands' mostly worked as labourers in the 'white' industries and urban areas. Since the end of the 'apartheid' era, the homelands officially have been abolished and merged into the South African provinces. Nonetheless, these areas still display many of the unfavourable conditions created during earlier regimes.

As part of the 'apartheid' vision, the Ciskei Proclamation 187 of 1972 declared the Ciskei as a 'homeland' that should be developed into a self-governing ethnic enclave (Ainslie *et al.* 1994). A large numbers of Africans were relocated into this area. The effects of relocation were compounded by the effects of the continued policy of 'betterment', which necessitated the relocation of scattered rural African homesteads to villages. This resulted in millions of families being forcibly moved (Beinart 1994). The Ciskei is severely overpopulated as a result. Moreover, the Eastern Cape Province is characterised by a weak economy due to a lack of any significant industrial sector. Consequently the official level of unemployment in the province is as high as 45.5% (Ainslie *et al.* 1997). This is reflected in the prevalence of extreme poverty in the Ciskei.

The poorest families in the Ciskei have to rely heavily on the natural environment for a number of resources such as fuel wood, construction poles, thatching, food supplements and medicines. These resources are either collected for individual household use or for supplying the ever-growing commercial market (Cocks and Dold 2000). Due to the increasing population pressure and poor management, large areas of the local vegetation are currently under threat. However in areas where the vegetation is still in a relatively

good condition, its rich biodiversity provides important livelihood products to the rural communities.

In large parts of Ciskei the local vegetation consisted of the so-called Valley Bushveld. This vegetation type covered 228,767 km² of which approximately half has been altered and only two percent is conserved (Low and Rebelo 1996). The distribution of Valley Bushveld is limited, being found mainly in the Eastern Cape but also extending northwards into KwaZulu-Natal. In its natural state, Valley Bushveld consists of extremely dense, semi-succulent thorny scrub forest interspersed with grassland in raised areas (Palmer 1988). The closed canopy is up to 6 m in height and woody evergreen species are dominant, rather than succulent trees or shrubs. There is a great diversity of species in this ticket type, but characteristic species are Kooboo-berry (*Cassine aethiopica*), Thornfern (*Asparagus species*), *Plumbago auriculata*, *Dorvialis rotundifolia*, *Diospyros dichrophylla*, *Euphorbia triangularis* and *Euphorbia tetragona* (Low and Rebelo 1996). Valley Bushveld is one of South Africa's richest but most poorly conserved ecological resources in which the high species diversity is recognised internationally as being of global significance.

4. CASE-STUDY AREA

A detailed case study in one village, Woodlands, was carried out to assess the role of the Bushveld vegetation for the black population living in the former Ciskei homeland. The village was selected, as it is located in an area where the Valley Bushland prevails along the national road from Cape Town to Durban; it is situated approximately 10 km from the town of Peddie (Figure 1). The village is characteristic of a rural settlement in which a large proportion of the community is reliant on cash income from adjacent urban areas rather than on subsistence based economy. However, due to its location along a national road, the community is somewhat better off than neighbouring villages. The community within the study site is made up of *amaXhosa* and *Mfengu* ethnic groups.

Woodlands village comprises 146 households including 745 people. Fifty seven percent of households are male headed and 42% are female headed. 53 percent of the population are adults of whom:-

- 22% are pensioners;
- 16% are employed in occasional employment;
- 19% in fixed employment and
- 43% are not formally employed.

Children make up 47% of the population, 73% of the children have received at least elementary schooling.

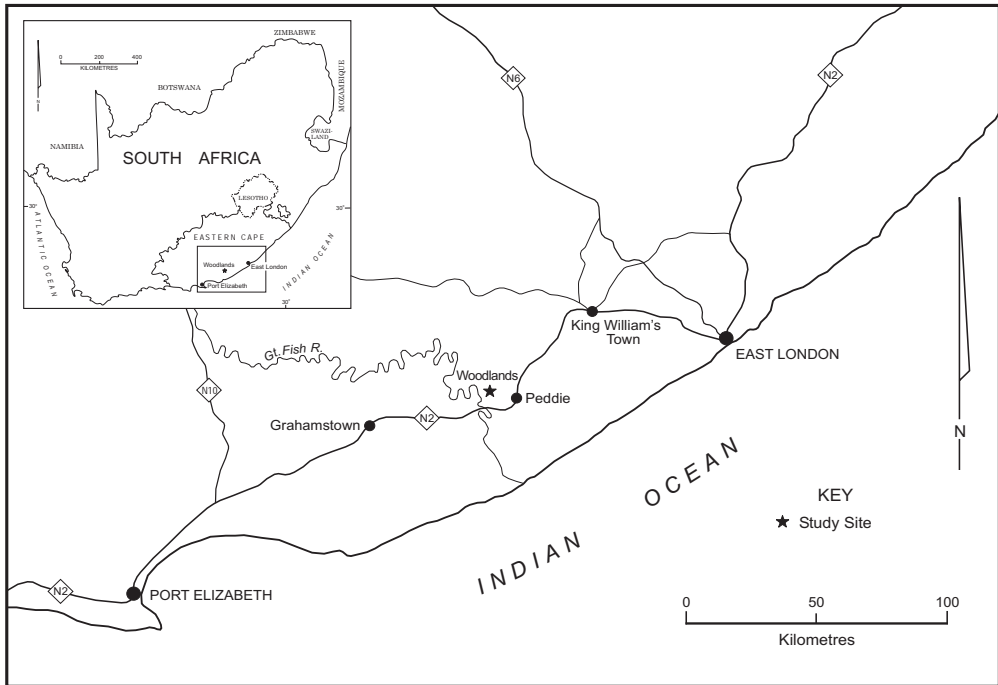


Figure 1: Study site locality - Woodlands

The economic situation in the community is characterised by high unemployment and heavy dependence on urban earnings and welfare payments. Only 43% of households are engaged in subsistence agriculture in the form of vegetables cultivation in their home gardens. No households are engaged in commercial agriculture activities; 18% of the households obtain products from their livestock. Public services are poorly developed. Access to running water and electricity were installed in 2000. The community has access to a poorly serviced school and a clinic.

Household assets varied significantly. Whilst the majority owned a paraffin stove, (88%) and a wireless (78%), just over half of the households owned a gas stove (52%), a television set (50%), or a fridge (35%). Significantly less owned a radio/tape (34%) and only 8% owned a car.

5. RESEARCH METHODOLOGY

Within Woodlands a 100% household census was done to document the level of natural resource use within the community. The 100% census was chosen in preference to a random sample survey. This approach was adopted to ensure that accurate data was collected from each household.

During the household interviews information was collected on the plant species harvested from the natural vegetation and their use. Also the quantities collected and retail prices were recorded. Household informants were asked to indicate the amount of each resource they harvested/utilized. The quantities were often given in terms of the container used or transport method used, for example, a plastic bag, cart load or head load. When applicable the dimensions of timber were also recorded, for example, the length and diameter of poles. Information pertaining to the lifespan of the resource was also gathered. For resources such as fuel wood, participants were asked how often they collected the quantity specified and to indicate seasonal differences. Plant material for each product group was then weighed and, where applicable, the average weight for each container type used was recorded to determine the approximate quantity used annually by each household. Care was taken on the side of conservatism in assessing annual consumption; consequently the final values should be viewed as under- rather than over-estimates.

The retail prices of the various resources were recorded from individuals and cross checked at a range of the markets that exist in the area. These markets range in levels of sophistication. For example, the medicinal plant market is the most developed; it caters for the urban demand and operates at a national level in most towns and cities across the country. Such markets do not operate within the rural villages where medicinal plants are collected individually or obtained from a local traditional healer. The value of the medicinal products were taken from the nearest urban market reported by Cocks and Dold (2000). These prices were reduced by 100% to offset the transport and mark-up costs not incurred by the gatherers of the material.

Within the village and the surrounding area a well-developed informal market exists for the sale of selected wild fruits - *Opuntia ficus-indica*. The fruits are collected and sold along the national roads in various container of different sizes. The weights and prices of the various containers were weighed to determine an average price per kilogram. For the other resources, no formal markets exist in the village, but some individuals collected the products on request from household members who can afford to purchase them. These include kraal material (livestock enclosure), fuel wood, ritual material, *igogo* (fuel wood stockpile) material and timber. Set prices - e.g. per head load or cart load - exist for these. For the indigenous fruit and wild vegetables (*imifino*) for which there is no local price, nor were replacement prices available from commercial outlets in the nearest towns, since these species are not domesticated and were not on offer in conventional commercial outlets. Consequently a similar price ratio was used by that of Shackleton *et al.* (2001).

The vernacular names of plants were recorded and six fieldtrips with household members were undertaken to gather both specimens and household knowledge over as diverse a range of species and community members as possible. The fieldtrips were undertaken over a five-day period with three males and three females informants of varying ages groups. The informants represented the following age groups: between the ages of 20 to 30, 40 to 50 and over 60 years of age. The specimens have been identified and housed in the Selmar Schonland Herbarium (GRA) in Grahamstown. Appendix 1 provides this information; plant species names follow Arnold and De Wet (1993).

6. USE OF WILD PLANT SPECIES

Within Woodlands all households uses wild plant species for their domestic needs. The resource products are obtained by collection or purchase. Only nine percent of the households are engaged in the sale of collected wild plant products. They sell these products through informal networks or at market or roadside stalls.

103 plant species were identified as being used by non-specialist households on a regular basis, but only 25 of these were cited by more than 10 households. The mean number of species used per households was 7, the minimum number of species cited was two and the maximum was 21.

These species were used for a wide variety of purposes that have been collected into 13 use categories:

- kraal building (carried out by 84% of all households, quoting 19 species);
- fuelwood (80% of households, quoting 26 species);
- rituals (73% of households quoting, 16 species);
- fencing (51% of households quoting, 11 species);
- wild fruit (37% of households, quoting 18 fruit species);
- *igoqo*¹ (36% of households quoting, 15 species);
- traditional medicines (33% of households quoting, 56 species);
- timber (26% of households quoting 16 species);
- wild vegetables (24% of households, quoting 12 species);
- sticks (19% of households quoting 2 species);
- tools (5% of households quoting 8 species) and
- fodder (2% of households quoting 3 species).
- Other – includes mats, shade and building of initiation huts (3% of the households quoting 6 species).

The majority of the 103 wild plant species that were collected had multiple uses, some with as many as nine different uses. For the 103 species over 207 different uses were recorded (see Appendix 1). The mean amount of green biomass utilized per user households amounted to 5,360 kg per annum (Table 1). The amount collected between the households varied significantly with some households utilizing as little as 240 kg while others utilized as much as 22,000 kg per annum. The reason for this discrepancy is because the amounts used by households are influenced by the wealth and the social status of each household. This is reflected by the high standard deviations in the descriptions for each resource use category provided here.

¹ An *igoqo* refers to the wood stockpile collected by women. These woodpiles are not kept solely for fuel purposes but have high cultural value, particularly for the women of the household. The species used for maintaining an *igoqo* differs to those collected solely for fuel purposes.

The eight important utilisation categories, main species used and the quantities used are specified below. The uses for sticks, tools, thatching and fodder were minor and will not be considered further.

6.1 KRAAL MATERIAL

The most common use of wild plant resources in Woodlands was for the construction of a kraal. A kraal is normally considered as an enclosure for livestock, but in Woodlands this is not necessarily the case as demonstrated by the fact that 84% (n=123) of all households own a kraal — though only 19% own livestock. The kraal is foremost an important venue to host traditional rituals and is where family members can communicate directly with the ancestors. Rituals are performed frequently at the homestead where the kraal is centrally situated. Kraals that also function as livestock enclosures are used daily as livestock are brought in at night.

The mean amount of kraal poles collected per user household amounted to 52 ± 42 (median 40; range 8 - 231) kg per annum. Between the upright poles thorny branches are packed tightly. The mean amount of branches collected per user household amounted to $913 \pm 1,092$ (median 496; range 24 - 5,952) kg per annum. Male members of the household are responsible for the collection of kraal material. Some families collect the kraal material themselves, but others purchase the material from informal sellers (Figure 2). In terms of the mean gross net annual value the use of poles amounted to $\$2.2 \pm 2.0$ (median 1.8; range 0.2 - 9.8) per user household and of the branches to $\$48 \pm 58$ (median 27; range 1.3 - 331) per user household.

Of the 19 species selected, the dominant three species are for poles are *Ptaeroxylon obliquum*, *Olea europea* subsp. *africana* and *Pappea capensis* and for branches, *Pappea capensis*, *Coddia rudis* and *Ehretia rigida*. Only three households cited using exotic species, the remainder used indigenous species.

6.2 FUEL WOOD

Seventy-six percent (n=118) of all households in Woodlands make use of indigenous material for fuel wood. Poorer households gather their own fuel wood on a weekly basis. Women and teenagers collect it from the communal forested areas. The young children of the household are generally responsible for the collection of kindling, which is gathered close to the village. The mean amount collected totalled $2,121 \pm 1,877$ (median 1,580; range 80 - 9,360) kg per annum per user household. This amount is lower than the mean amount, 4,000 kg per annum, calculated by Shackleton *et al.* (2001) in the Kat River area. This may be as a result of the relatively high number of households in Woodlands owning a gas stove (52%) and a paraffin stove (88%). It is however important to bear in mind that despite the ownership of these appliances household members clearly expressed a preference for the use of fuel wood because of the taste it adds to food and for the cooking of traditional dishes such as beans and maize meal (Van Lieshout 2002). The gross net annual value amounted to $\$66 \pm 62$ (median 43; range 2 - 285) per user household.

The number of species selected for fuel wood purposes featured as the second highest after medicinal plants. Of the 26 species selected, the dominant species were *Ptaeroxylon obliquum*, *Acacia karoo* and *Olea europea* subsp. *africana*. No households made use of exotic species.

6.3 MATERIAL FOR RITUALS

Seventy-four percent (n=109) of the Woodlands households utilised material for rituals. Rituals are performed only on specific occasions during the year, predominantly in December and June/July. Rituals invariably involve the slaughtering of an animal, either an ox or a goat, for the ancestors. The host family invites extended members of the family, neighbours and friends to attend and large quantities of food and traditional beer are prepared. Preparations for the ritual can take up to four or five days. In order to prepare the food and beer large quantities of fuel wood are required. The mean amount of material utilised amounted to 890 ± 931 (median 744; range 2 - 6,400) kg per annum per user household. The gross net annual value amounted to $\$41 \pm 355$ (median 280; range 1 - 2,720) per user household. If the family has access to a kraal the animal is slaughtered inside the kraal. The first serving of the slaughtered animal is eaten by the male lineage inside the kraal.

Only 16 species were selected for ritual purposes. Notably *Olea europea* subsp. *africana* and *Ptaeroxylon obliquum* are culturally significant because these two species are used as plate or platter on which the sacrificed animal carcass is placed in traditional ceremonies. Leafy branches are collected and arranged on the ground as a plate (Dold and Cocks 1999a). Despite the same three species being dominant for both fuel wood and ritual purposes, a total of only 16 species was quoted for rituals, compared to 26 for fuel wood.

6.4 FENCING MATERIAL

Fifty-two percent (n=77) of the Woodlands households made use of timber for fencing. Fencing poles of indigenous species are placed around the individual homesteads and home gardens, with barbed wire being strung between the poles to keep livestock from wandering in. The mean amount of indigenous species utilized amounted to 168 ± 164 (median 125; range 6 - 7,000) kg per annum per user household. The gross net value of fencing material amounted to $\$7.7 \pm 8.4$ (median 5.4; range 0.2 - 50) per user homestead.

Of the 11 species selected, the dominant three are: *Ptaeroxylon obliquum*, *Olea europea* subsp. *africana* and *Schotia afra*, these species are selected because of their durability and straightness.

6.5 WILD FRUITS

Thirty-seven percent (n=53) of the households harvest wild fruits annually. The most common species of the 18 collected was the prickly pear - *Opuntia ficus-indica*, followed by *Harpephyllum caffrum*, *Dorvalis lucida* and *Scutia myrtina*. The prickly pear is an invasive alien cactus that occurs widely across the Eastern Cape. In many areas within the Eastern Cape people have been collecting and consuming the fruit from the wild for

decades. Children more commonly collect indigenous fruits, in these instances only small quantities such as handful or small container fills are collected. The mean amount collected was 53 ± 86 (median 13; range 0.5 - 480) kg per annum within Woodlands with a gross annual value of $\$13.3 \pm 21.6$ (median 1.1; range 0.01 - 116) per user household. Of the 18 species, one — *Convolvulus sagittatus* - is a tuber, eaten raw but called a fruit by the people of Woodlands.

6.6 IGOQO

Thirty-six percent (n=54) of the Woodlands households utilized wild plant material for maintaining an *igoqo*. An *igoqo* consists of a wood stock kept outside a homestead. The ethnic group of the family largely determines the shape of the *igoqo*. For example, the *Mfengu* women construct their *igoqo* by stacking the logs vertically, whereas those of *amaXhosa* women are stacked horizontally. Only specific species and sized stems are collected. These woodpiles are not stacked for fuel purposes but have a high cultural value, particularly for the women of the household as it considered to be where female ancestors reside. In the past when home births were frequent stillborn babies would be buried under the *igoqo*. The *igoqo* is also an important venue for women who congregate around it and talk about household matters. The *igoqo* is also considered the place where women urinate after dark in the same way that the kraal is the venue for men. A middle-aged woman described her *igoqo* as providing her with dignity because it signified her status within her community.

Poorer households collect the material required for the *igoqo* on a regular basis. The *igoqo* logs are often collected at the same time as wood is collected for fuel wood purposes. For example, one woman described how when she collects her head load of fuel wood she includes a single log of the appropriate species for her *igoqo*. Those households that can afford to hire a donkey cart to transport the wood will do so. The mean amount collected amounted to $1,399 \pm 1,287$ (median 1,000; range 101 - 6,000) kg per annum. This is significantly less than the mean amount utilized for fuel wood (2,121 kg per annum) because the material is not replaced as regularly as fuel wood. The gross net annual value amounted to $\$49 \pm 51$ (median 28; range 3 - 263) per user household.

Only 15 species are selected for maintaining an *igoqo* compared to 26 species for fuel wood, again highlighting species-specific selection for cultural requirements. The four dominant species collected were: *Acacia karoo*, *Ptaeroxylon obliquum* and *Olea europea* subsp. *africana*, revealing a large overlap between the species selected for ritual purposes and those used in an *igoqo*. Only one species differed between the two-resource categories — *Pteronia incana*, which was selected for ritual purposes only.

6.7 TRADITIONAL MEDICINES

Thirty-three percent (n=49) of the Woodlands households collected and used wild plants as traditional medicines. This category refers to medicines collected by household members for self-medication purposes or for the treatment of livestock. It does not include medicines purchased or obtained from a traditional healer. The mean amount collected amounted to 12 ± 28 (median 2; range 0.4 - 148) kg per annum with a gross

annual value of \$27 \pm 28 (median 2; range 0.4 - 148) per user household. This value is considerably higher than the values for other resources. These plants are also sought by the medicinal plant market that is currently a multi million Rand trade within the country (Cocks and Dold 2000; Mander 1998). Within Woodlands no household members are involved in the medicinal plant trade because the village is situated approximately 90 kms away from the nearest medicinal plant market. Consequently only a small amount of material was harvested per annum per user household.

In total 55 species were selected for medicinal purposes; this is the highest number in any resource use category. These traditional medicines are not only involved in the prevention and cure of health problems, but also in the purging and cleansing of the body. Purgatives are administered routinely as a preventive health measure, as it is believed that 'contamination' enters from both the physical and the spiritual plane. It is believed that relief is only to be found through purging and cleansing the body (Cocks and Møller 2002). The importance of such culturally oriented medicinal uses is demonstrated by the fact that of the three dominant medicinal species (i.e. *Bulbine latifolia*, *Dioscorea sylvatica* and *Ballota africana*) two are used for such purposes. *Bulbine latifolia* is used as purgative to cleanse the blood. *Dioscorea sylvatica* is used as a body wash to ward off evil. *Ballota africana* is used to treat coughs and fevers.

6.8 TIMBER

Only 27% (n=40) of all households made use of indigenous timber species—mainly for constructing poultry and small stock enclosures. This low figure reinforces the suggestion that the community is financial better off than its neighbours in which as many as 75% of houses are built from indigenous timber (Cocks and Dold 2002). The mean amount harvested consequently was low, 45 \pm 43 (median 19; range 3 - 286) kg per annum with a gross annual value of \$2 \pm 2 (median 1.2; range 0.1 - 12) per user household.

A total of 16 species were selected for timber purposes. The three commonest species are: *Ptaeroxylon obliquum*, *Acalypha glabrata* and *Ehretia rigida*.

6.9 WILD VEGETABLES

Only 24% (n=36) of all Woodlands households harvested wild vegetables. The mean amount harvested was 32 \pm 18 (median 26; range 5 - 108) kg per annum, per user household, and the gross use value for households amounted to \$2 \pm 1.8 (median 2.4; range 0.4 - 10) per annum. Of the 12 species selected, the dominant three are *Solanum retroflexum*, *Sonchus oleraceus* and *Amaranthus hybridus*, all exotics.

Women and young children are responsible for the collection of wild vegetables—commonly found around the homestead, in fallow fields and in disturbed areas. They are either boiled in water and served as a vegetable, or mixed and cooked with other foods such as maize. All wild vegetable species are annual weeds and are, therefore, not available throughout the year.

7. RELATIVE IMPORTANCE OF UTILITARIAN AND CULTURAL USES

It is clear that wild plant resources play an important role in Woodlands. Generally speaking, the wild plant resources have either an utilitarian or a cultural role. In many cases the distinction is self-evident. The use of wild plants for fuel wood, fencing, timber and as fruits or vegetables is clearly utilitarian, while the uses of wild plants for ritual purposes and for the construction of the *igoqo* clearly involves their cultural roles. However, this distinction is not always self-evident. For instance, it could be considered that the construction of a kraal is an utilitarian activity. However, it appeared that the ownership of a kraal holds a strong cultural value and is not simply a means of enclosing livestock; the construction of a kraal can foremost be considered as an activity demonstrating one's cultural identity. Traditional medicinal products are not only used for prevention or cure of health problems, but also for the culturally oriented actions of purging and cleansing of the body of evil spirits. A third of medicines are used for such culturally related needs. This estimate is supported by data from a study conducted by one of the authors in a neighbouring area, where approximately 30% of the medicines purchased from herbal markets and *muthi* stores were for culturally related needs (Cocks and Møller 2002). To summarise, almost half of all wild plant resources used in Woodlands and one third of the species recorded were for cultural related purposes (Table 1 and Appendix 1). This demonstrates the very significant role that wild plants play in ensuring the cultural traditions of the people within the study area.

Table 1: Total amount and value of wild plants used in Woodlands village

Category use	No. of h/holds using the item	Mean amount per user h/hold (kgs)	Total (in 1,000 kg) utilised in the village (n=146)	Average kgs utilised per h/hold (n=146)	Average value (USA \$) utilised (n=146)
Utilitarian		2,426	256.3	1,754	66.7
Fuel wood	N=112	2,121	237.5	1,627	50.8
Fencing	N=77	168	12.9	88	4.0
Wild fruits	N=53	52	2.7	18	4.8
Medicines	N=49	8	0.3	2	6.0
Timber	N=40	45	1.8	12	0.5
Wild vegetables	N=36	32	1.1	7	0.6
Cultural		3,258	290.8	2,016	92.8
Kraal poles	N=111	52	5.7	39	1.7
Kraal branch	N=123	913	112.2	796	40.6
Rituals	N=109	890	97.0	663	31.0
<i>Igoqo</i>	N=54	1,399	75.5	517	18.2
Medicines	N=49	4	0.1	1	1.3
Total		5,684	547.1	3,770	159.5

Table 1 also shows the estimated mean value of the different types of wild plant products. The monetary value attributed fuel wood is the highest, followed by the kraals, rituals and

wild fruits. The monetary value of products used for fencing, timber and as vegetables is only small. The mean gross direct use value for the wild plant resources amounts to \$159 per annum per household. This figure is relatively high considering that over 80% of families have an annual household income of less than \$1,461 (Statistics South Africa 1996). Wild plant resources are crucial in meeting the people of Woodlands' basic needs and contributing to their livelihood security.

8. DISCUSSION AND CONCLUSION

This study demonstrates that we have yet to understand fully the complete role and values associated with the diversity of natural vegetation in a given locality and its importance in the cultural fabric of local communities. In the past, most studies on the role of wild plant products focused predominantly on understanding their importance for meeting basic household needs and obtaining additional income. This study reveals that the use of wild plant products is not restricted to such utilitarian use only, but that they also provide an important means for indigenous people to perform and conserve their cultural practices and traditions.

The study also reveals that the distinction between utilitarian and cultural uses of wild plant species is not absolute, but relative. In several cases the utilitarian uses of plant resources are tied up with strong cultural values. For example, the collection of fuel wood by young married women was portrayed by the middle and older generation of the community as symbolising a good and hardworking wife, and as good training for young women for their future role as housewives. Such cultural roles are not restricted to indigenous people living on ancestral lands and following traditions, but may also prevail in non-traditional areas such as Woodlands, which have been affected by major demographic, political and economic changes.

The conclusions from the data on the important role of plant diversity for people in Woodlands are in general agreement with those from Mpumalanga province (Shackleton *et al.* 1999) and the Kat River area of the Eastern Cape (Shackleton *et al.* 2001). In a study in a neighbouring community of Woodlands representatives of different social groups were asked to identify key plant species that they perceived as most important in their lives. Two species, *Olea europea* subsp. *africana* and *Ptaeroxylon obliquum*, were selected unequivocally across age, gender and educational levels. The reason given was that these species are the only appropriate ones on which to serve sacrificial meat when rituals are hosted (Dold and Cocks 2000). In another study in the former Ciskei homeland it was found that children indicated that they expected to continue using forests in the future for collection of material for cultural practices, but that utilitarian uses of wild resources would be replaced by commercial goods (Van Lieshout 2002).

The important cultural value attributed to many plant species does not mean that their use is sustainable. Members of the Woodlands community indicated that at least 30 different plant species were becoming increasingly difficult to find. Of these, the five

species most frequently mentioned were all of cultural importance — *Olea europae* subsp. *africana* (28²), *Ptaeroxylon obliquum* (27), *Pappea capensis* (21), *Cassine aethiopica* (17) and *Schotia afra* (6). This indicates on the one hand that cultural practices in the research area are threatened by the loss of biodiversity and, conversely, the cultural value attributed to many plant species could be used as an argument to support the conservation of biodiversity.

Over the past twenty years several authors have pointed at the strong link between biological and cultural diversity. Most discussions on the intricate relations between the conservation of biodiversity and cultural diversity are centred around the argument that cultural diversity supports the sustenance of a wide variety of conservation and use practices for natural resources (Oldfield and Alcorn 1991; Clay 1991; Posey 1999a). This has led to the development of the bio-cultural model of conservation (Zent and Zent 2002). Such models have largely been applied within tribal communities living in remote areas of the globe, but are seldom extended to include non-traditional communities. Our findings reveal that also non-traditional societies not only use wild plant resources for purely utilitarian purposes, but rely on them in the performance of their cultural practices. It is therefore recommended that programmes for conservation of biodiversity should give more attention to the links between the loss of biodiversity and the loss of cultural values within both traditional and non-traditional societies; these two aspects should be addressed simultaneously.

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² Frequency refers to the number of times cited by individual households.

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Appendix 1: List of plant species used and number of times cited for each resource category by household members.

No.	Species selected	K ³	FW ⁴	R ⁵	F ⁶	I ⁷	WF ⁸	WV ⁹	M ¹⁰	T ¹¹	O ¹²	Total
1.	<i>Ptaeroxylon obliquum</i>	96	67	52	68	22	4	0	1	32	2	344
2.	<i>Olea europaea</i> subsp. <i>africana</i>	50	41	46	15	20	0	0	3	2	0	177
3.	<i>Acacia karoo</i>	4	59	65	0	25	1	0	0	1	0	155
4.	<i>Pappea capensis</i>	97	26	10	2	7	7	0	0	4	1	154
5.	<i>Cassine aethiopica</i>	0	38	21	0	13	2	0	1	0	3	78
6.	<i>Ehretia rigida</i>	34	5	17	0	3	2	0	0	8	1	70
7.	<i>Maytenus heterophylla</i>	21	32	5	1	0	0	0	1	0	0	60
8.	<i>Rhus dentata</i>	27	6	0	2	3	1	0	0	0	0	39
9.	<i>Coddia rudis</i>	31	2	0	0	0	0	0	0	1	0	33
10.	<i>Schotia afra</i>	9	5	1	11	2	0	0	0	1	2	31
11.	<i>Solanum retroflexum</i>	0	0	0	0	0	0	31	0	0	0	31
12.	<i>Sonchus oleraceus</i>	0	0	0	0	0	0	28	0	0	0	28
13.	<i>Amaranthus hybridus</i>	0	0	0	0	0	0	26	0	0	0	26
14.	<i>Opuntia focus-indica</i>	0	0	0	0	0	23	0	0	0	0	23
15.	<i>Harpephyllum caffrum</i>	0	0	0	0	0	21	0	1	0	0	22
16.	<i>Brachylaena ilicifolia</i>	6	3	2	0	2	3	0	1	0	1	18

³ Kraal material⁴ Fuelwood material⁵ Ritual material⁶ Fencing material⁷ Igogo material⁸ Wild fruit⁹ Wild vegetable¹⁰ Medicinal¹¹ Timber¹² Other

17.	<i>Bulbine latifolia</i>	0	0	0	0	0	0	0	15	0	0	15
18.	<i>Combretum caffrum</i>	0	2	1	1	1	0	0	5	1	2	13
19.	<i>Grewia occidentalis</i>	7	1	2	0	1	1	0	0	0	0	12
20.	<i>Scutia myrtina</i>	0	1	0	0	0	11	0	0	0	0	12
21.	<i>Dioscorea sylvatica</i>	0	0	0	0	0	0	0	12	0	0	12
22.	<i>Acalypha glabrata</i>	2	0	0	1	0	0	0	0	9	0	12
23.	<i>Sisymbrium thellungii</i>	0	0	0	0	0	0	12	0	0	0	12
24.	<i>Chenopodium album</i>	0	0	0	0	0	0	11	0	0	0	11
25.	<i>Schotia latifolia</i>	0	3	0	0	0	2	0	4	0	2	11
26.	<i>Ballota africana</i>	0	0	0	0	0	0	0	10	0	0	10
27.	<i>Brachylaena elliptica</i>	3	1	0	0	0	0	0	0	3	1	8
28.	<i>Pharnaceum dichotomum</i>	0	0	0	0	0	0	0	8	0	0	8
29.	<i>Rhus refracta</i>	1	2	0	1	1	2	0	0	0	0	7
30.	<i>Sideroxylon inerme</i>	4	2	0	0	1	0	0	0	0	0	7
31.	<i>Gasteria excelsa</i>	0	0	0	0	0	0	0	0	7	0	7
32.	<i>Talinum caffrum</i> ^{*13}	0	0	0	0	0	0	0	7	0	0	7
33.	<i>Bulbine asphodeloides</i>	0	0	0	0	0	0	0	7	0	0	7
34.	<i>Dorvalis lucida</i>	1	1	0	1	0	3	0	0	0	0	6
35.	<i>Ledebouria sp.</i>	0	0	0	0	0	0	0	6	0	0	6
36.	<i>Euclea undulata</i>	0	4	1	0	1	0	0	0	0	0	6
37.	<i>Acacia mearnsii</i> *	1	0	0	0	0	0	0	0	4	0	5
38.	<i>Convolvulus sagittatus</i>	0	0	0	0	0	4	0	0	1	0	5

¹³ The * symbol has been used to indicate botanical names sources from Dold and Cocks (1999b) rather than a voucher specimen collected from the study site area.

39.	<i>Cissampelos capensis</i>	0	0	0	0	0	0	0	5	0	0	5
40.	<i>Pteronia incana</i>	0	0	1	0	0	0	0	2	0	2	5
41.	<i>Acacia caffra</i>	0	1	0	0	0	0	0	0	0	4	5
42.	<i>Arctotis arctotoides</i>	0	0	0	0	0	0	0	4	0	0	4
43.	<i>Calpurnia aurea</i>	0	1	0	0	0	0	0	3	0	0	4
44.	<i>Fockea edulis</i>	0	0	0	0	0	0	0	4	0	0	4
45.	<i>Zanthoxylum capense</i>	0	0	0	0	0	0	0	2	0	2	4
46.	<i>Clematis brachiata</i>	0	0	0	0	0	0	0	4	0	0	4
47.	<i>Aizoon glinoides</i>	0	0	0	0	0	0	3	0	0	1	4
48.	<i>Ficus burtt-davyi</i>	0	0	0	0	0	0	0	0	0	4	4
49.	<i>Haemanthus albiflos*</i>	0	0	0	0	0	0	0	4	0	0	4
50.	<i>Cucurbita pepo*</i>	0	0	0	0	0	0	3	0	0	0	3
51.	<i>Asparagus</i> sp.	0	0	0	0	0	0	0	3	0	0	3
52.	<i>Sida</i> sp.	0	0	0	0	0	0	1	1	0	1	3
53.	<i>Cadaba aphylla</i>	0	0	0	0	0	0	0	3	0	0	3
54.	<i>Ornithogalum longibracteatum</i>	0	0	0	0	0	0	0	3	0	0	3
55.	<i>Teucrium trifidum</i>	0	0	0	0	0	0	0	3	0	0	3
56.	<i>Tulbaghia violacea</i>	0	0	0	0	0	0	0	3	0	0	3
57.	<i>Capparis fascicularis</i>	0	0	0	0	0	0	0	2	0	0	2
58.	<i>Apodytes dimidata</i>	0	0	0	0	0	0	0	0	2	0	2
59.	<i>Carissa bispinosa</i>	0	0	0	0	0	2	0	0	0	0	2
60.	<i>Phyllanthus verrucosus</i>	0	0	0	0	0	0	0	0	2	0	2
61.	<i>Azima tetracantha</i>	0	1	0	0	0	0	0	1	0	0	2

62.	<i>Portulacaria afra</i>	0	0	0	0	0	0	0	0	0	2	2
63.	<i>Helichrysum gymnocomum</i> *	0	0	0	0	0	0	0	2	0	0	2
64.	<i>Nuxia congesta</i>	0	1	0	0	1	0	0	0	0	0	2
65.	<i>Rhus incisa</i> *	0	0	0	0	0	1	0	1	0	0	2
66.	<i>Rhus laevigata</i> *	2	0	0	0	0	0	0	0	0	0	2
67.	<i>Agave americana</i>	0	0	0	0	0	0	0	0	1	1	2
68.	<i>Boscia oleoides</i>	0	0	0	0	0	0	0	0	0	2	2
69.	<i>Gerbera piloselloides</i>	0	0	1	0	0	0	0	0	0	0	1
70.	<i>Vernonia mespilifolia</i> *	0	0	0	0	0	0	0	1	0	0	1
71.	<i>Acokanthera oblongifolia</i> *	0	0	0	0	0	0	0	1	0	0	1
72.	<i>Alepiea amatymbica</i>	0	0	0	0	0	0	0	1	0	0	1
73.	<i>Aloe ferox</i>	0	0	0	0	0	0	0	1	0	0	1
74.	<i>Bulbine alooides</i>	0	0	0	0	0	0	0	1	0	0	1
75.	<i>Cotyledon</i> sp.*	0	0	1	0	0	0	0	0	0	0	1
76.	<i>Dianthus thunbergii</i> *	0	0	0	0	0	0	0	1	0	0	1
77.	<i>Eulophia streptopetala</i> *	0	0	0	0	0	0	0	1	0	0	1
78.	<i>Euphorbia</i> sp.*	0	0	0	0	0	0	0	1	0	0	1
79.	<i>Hippobromus pauciflorus</i> *	0	0	0	0	0	0	0	1	0	0	1
80.	<i>Ilex mitis</i> *	0	0	0	0	0	0	0	1	0	0	1
81.	<i>Isinyinyi</i> # ¹⁴	0	0	0	0	0	1	0	0	0	0	1
82.	<i>Iyeza lenkomo</i> #	0	0	0	0	0	0	0	1	0	0	1
83.	<i>Mahambeziphin da</i> #	0	0	0	0	0	0	0	1	0	0	1
84.	<i>Manyiki</i> #	0	0	0	0	0	0	0	1	0	0	1
85.	<i>Mayime</i> #	0	0	0	0	0	0	0	1	0	0	1
86.	<i>Mesembryanthemum aitonis</i> *	0	0	0	0	0	0	1	0	0	0	1

¹⁴ The # symbol has been used to indicate that the vernacular name has been used.

87.	<i>Olea capensis</i>	0	1	0	0	0	0	0	0	0	0	1
88.	<i>Pentanisia prunelloides*</i>	0	0	0	0	0	0	0	1	0	0	1
89.	<i>Phantsikomga#</i>	0	0	0	0	0	0	0	1	0	0	1
90.	<i>Pittosporum viridiflorum*</i>	0	0	0	0	0	0	0	1	0	0	1
91.	<i>Ranunculus multifidus*</i>	0	0	0	0	0	0	0	1	0	0	1
92.	<i>Rhawu#</i>	0	0	0	0	0	0	1	0	0	0	1
93.	<i>Rhiphu#</i>	0	0	0	0	0	0	1	0	0	0	1
94.	<i>Rhoicissus digitata</i>	0	0	0	0	0	0	0	1	0	0	1
95.	<i>Uchathakazi#</i>	0	0	0	0	0	0	1	0	0	0	1
96.	<i>Umvumbuka#</i>	0	0	0	0	0	0	0	1	0	0	1
97.	<i>Umngcunube#</i>	0	0	1	0	0	0	0	0	0	0	1
98.	<i>Umolubi#</i>	0	1	0	0	0	0	0	0	0	0	1
99.	<i>Umzanyathang a#¹⁵</i>	1	0	0	0	0	0	0	0	0	0	1
100.	<i>Unonkciyo#</i>	0	0	0	0	0	0	0	1	0	0	1
101.	<i>Uqhagula#</i>	0	0	0	0	0	0	0	1	0	0	1
102.	<i>Uqhangula#</i>	0	0	0	1	0	0	0	0	0	0	1
103.	<i>Zanthoxylum capense</i>	0	0	0	0	0	0	0	1	0	0	1

¹⁵ A # has been used to indicate those species for which no voucher specimen has yet been collected.

CHAPTER 4

SEEING THE WOOD FOR THE TREES: THE ROLE OF WOODY RESOURCES FOR THE CONSTRUCTION OF GENDER SPECIFIC HOUSEHOLD CULTURAL ARTEFACTS IN NON-TRADITIONAL COMMUNITIES IN THE EASTERN CAPE, SOUTH AFRICA

Cocks, M.L., Bangay, L., Wiersum, K.F. and Dold, A.P. In press. Seeing the wood for the trees: The role of woody resources for the construction of gender specific household cultural artefacts in the non-traditional communities in the Eastern Cape, South Africa. *Environment, Development and Sustainability*.



Figure 1: Square kraal of *Mfengu* homestead (Photo A. Dold)



Figure 2: Vertically stacked *igoqo* of *Mfengu* housewife (Photo A. Dold)

1. ABSTRACT

There is a growing wealth of data capturing the direct-use values of the environment and recognition of forests and wild resources as representing “the poor man’s overcoat”. This focus has however resulted in an emphasis on the utilitarian values of wild resources for rural livelihoods and has for the most part overlooked their cultural values. In tangent to these developments within the field of anthropology there has been increased attention being directed towards the relationship between biodiversity and human diversity over the past decade. This has resulted in the recognition of what the Declaration of Belem calls an ‘inextricable link’ between biological and cultural diversity. The term bio-cultural diversity has been introduced as a concept denoting this link. Consequently there is a need for more elaborate assessments of the various ways in which different groups of people find value in biodiversity. The aim of this paper is to demonstrate the cultural significance of wild harvested plant resources for the maintenance of two gender specific cultural artefacts for *AmaXhosa* people in South Africa, to assess the persistence of these practices in rapidly modernizing communities. We demonstrate the endurance of these ancient cultural artefacts in present-day peri-urban communities and suggest that they point to the need for improved understanding of the significance of bio-cultural diversity. The findings of the study should not be interpreted as illustrating stagnation in the traditional past, but rather as pointing at the need for improved understanding of the significance of bio-cultural diversity in a dynamic sense.

Key Words: *AmaXhosa*, bio-cultural diversity, cultural values, non-traditional communities, South Africa, woodland and forest resources.

2. INTRODUCTION

Several attempts within the field of environmental science has been to determine the Total Economic Value of the environment (Pearce and Moran 1995) so as to provide the means to integrate the cost of using and conserving biodiversity into the current global economic system (Dovie and Witkowski 2000). The focus of many of these valuation studies has been predominantly on the subsistence and ‘safety-net’ functions of wild resources for rural livelihoods; this has resulted in the recognition of forests as representing “the poor man’s overcoat” (Wunder 2001).

These approaches have however failed to fully account for the various ways in which different groups of people make use of, and find value in forest environments and biodiversity. In a recent review it was stated “The importance of forests as places of worship, burial sites and historic interest is recognised, and reflected in the attitudes of rural communities to the conservation of these sites; more research is required to capture these cultural, religious and social aspects in economic terms” (Lawes *et al.* 2004). This statement reflects the growing recognition that conservation efforts should not only focus on biological diversity itself, but also on the relationship between biodiversity and cultural diversity (Posey 1999). The concept of biodiversity conservation needs to be broadened to

include conservation of bio-cultural diversity. Initially, the concept of bio-cultural diversity was related specifically to indigenous people, who as part of their traditional lifestyles are often conserving forests and biodiversity. Recently it has been argued that the prevailing interpretation of the concept of bio-cultural diversity needs reconsideration (M. Cocks personal communication) as it is often incorrectly assumed that increased impacts of urban lifestyle would entail a loss of traditional cultural values and hence bio-cultural diversity, but this is not necessarily the case as demonstrated by studies conducted by Cocks and Wiersum (2003), Cocks and Møller (2002) and Cocks and Dold (2004) in South Africa.

The aim of this paper is to illustrate the enduring significance of wild plants for cultural purposes, and to demonstrate that the direct-use values of wild plants do not only relate to utilitarian uses for physical needs, but also to cultural uses which helps to provide a sense of belonging and identity amongst community members (Wiersum *et al.* 2004). The paper describes the importance of two cultural artefacts constructed out of wild plants, i.e. *ubuhlanti* and *igoqo*, for the *amaXhosa* and *Mfengu* people in the former homeland of Ciskei in South Africa. First, the cultural significance of these gendered cultural artefacts as reported in the literature is described. Next the results of a study to ascertain the present status of *ubuhlanti* and *igoqo* are presented. This study focused on the following questions:

- What is the present socio-cultural status of *ubuhlanti* and *igoqo*? For what cultural purposes are they used? How many households still maintain these cultural artefacts and what is the socio-economic profile of these households?
- What are the economic values of the *ubuhlanti* and *igoqo*? How much woody biomass is used in maintaining these artefacts and what are the economic costs of this material?

3. *UBUHLANTI* AND *IGOQO* AS CULTURAL ARTEFACTS

3.1 *UBUHLANTI*

The livestock enclosure (*isiXhosa* – *ubuhlanti*; South African English - kraal) features prominently in Xhosa and Zulu folklore (Broster and Bourn 1981), idioms, and expressions (Mahlasela 1982) and even appears in San rock art (Lee and Woodhouse 1970). *Iinthlanti* (plural) are most commonly represented in environmental literature in the Eastern Cape as an enclosure for livestock. In several studies their economic value has been estimated by measuring the amount of wood used in their construction and calculating the value of this material by shadow-pricing it on the basis of prevailing market prices (Palmer *et al.* 2000; Shackleton and Shackleton 2004). Various anthropologists have documented that these cattle enclosures are important cultural as well as practical artefacts (Cook 1931; Berglund 1975; Poland *et al.* 2003). Berglund (1975) describes the enclosure as a temple where the ancestral shades (ancestral spirits) reside and ‘brood’ over their descendents with ‘a benevolent eye’. Within these ‘temples’ ritual sacrifices are performed, which form the most important and effective form of communion with the ancestral spirits. These rituals are performed to elicit ancestral

blessings and protection from malevolent forces such as sorcery. Rituals invariably involve the slaughter of a domestic animal, usually an ox or a goat (Wilson *et al.* 1952; Poland *et al.* 2003). Typically a single erect wooden pole (*ixhanthi*), usually from the umnquma tree (*Olea europaea* subsp. *africana*), is a permanent fixture in the centre of the enclosure to serve as an anchor for the sacrificial animal. This pole is also a symbolic point of contact with the ancestral spirits (Cook 1931; Poland *et al.* 2003).

The *ubuhlanti* is also a venue for purging (*ukugaba*). The ritual expulsion of bodily fluid by means of an emetic is common practice amongst the *amaXhosa* to purify the body. This practice is often the first recourse to treatment of an illness of any sort; it is also performed repeatedly if sorcery is suspected (Cocks and Møller 2002). Male members of the household engage in their purging activities against the inner far wall of the *ubuhlanti* under the guardianship of the ancestral spirits.

3.2 IGOQO

A nondescript household woodpile in the homestead is most commonly represented in literature documenting use of forest products as a fuel wood stockpile. In a similar way as for *ubuhlanti*, its value is assumed as being utilitarian and is represented by assigning a shadow price to the woody material stocked in it (Palmer *et al.* 2000; Shackleton and Shackleton 2004). In the anthropological literature no mention of its cultural significance was found. The most comprehensive account of Xhosa material culture to date (Shaw and van Warmelo 1972) makes no mention of *igoqo* although it incidentally illustrates an example in a photograph of a cooking hearth taken in 1948. Kropf (1915) describes *igoqo* in his Xhosa language dictionary as “a heap of fire wood outside the hut” and Cook (1931) repeats this explanation verbatim. However it was recently reported that married women attach great cultural value to their *amagoqo* (plural) as it is considered to be where the female ancestors reside. Furthermore an *igoqo* is also an important social venue for women and provides the women of the household with dignity because it signifies their status within the community (Cocks and Wiersum 2003). The lack of attention to the cultural role of *igoqo* in contrast to the *ubuhlanti* may reflect a gender bias in the former anthropological studies (Howard 2001).

4. RESEARCH LOCATION AND METHODOLOGY

Information on the presence and economic value of *ubuhlanti* and *igoqo* was collected within the framework of the study on the use of wild plants in the Eastern Cape Province of South Africa. This study was carried out in six villages in the Peddie and King Williamstown Districts (Pirie Mission, Chata, Woodlands, Ntloko, Benton and Crossroads) in the former Ciskei homeland (Figure 3). The homelands are the result of resettlement policy implemented by the former apartheid government. They are characterised by poor infrastructure, high population densities, and high poverty levels (De Wet and Whisson 1997; Palmer 1997) and a heavy dependence on urban earnings and Government welfare payments. The people living in the study sites are predominantly from the *amaXhosa* and *amaMfengu* ethnic subgroups within the Nguni group.

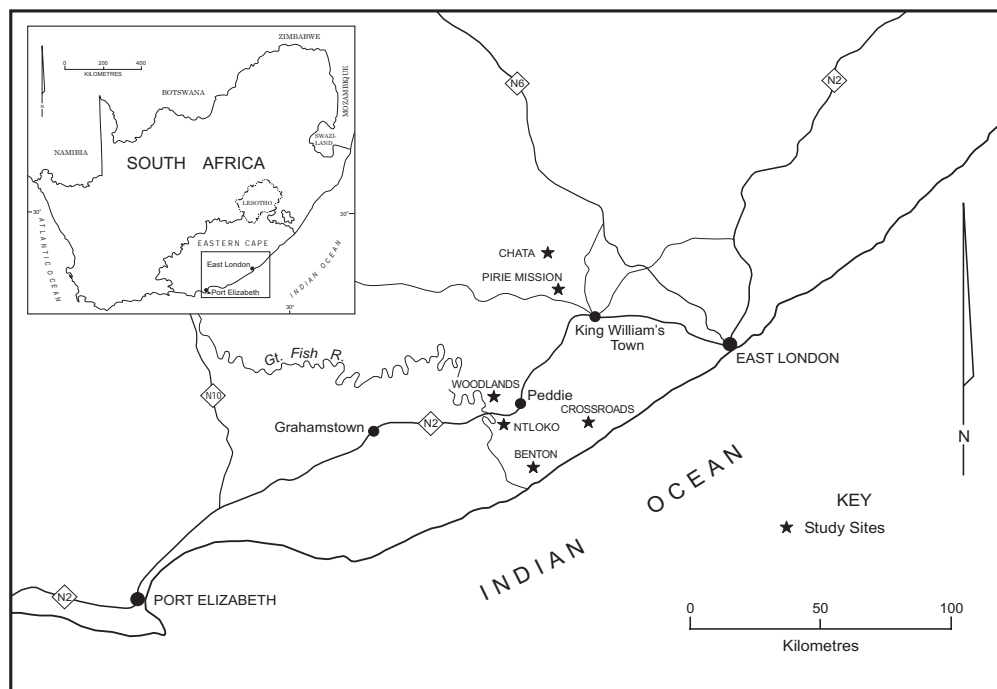


Figure 3: Map showing locality of study sites

A 100% questionnaire survey of households ($n=1,011$) in all six villages documented household demography, household wealth and the amounts of wild plant material collected for utilitarian use and maintenance of cultural artefacts. Criteria used for ascertaining the economic wealth conditions were: number of formal jobs in the household, number of pensions/grants in each household, types of household assets and appliances owned (fridges, stoves, cars etc.), and whether or not the household owned livestock. The analysis of these indicators indicated a high diversity in households' conditions. Many households with no formal income indicated to have lots of household assets, and many households with access to formal income indicated to have very little or no household assets. Statistical techniques, such as principal components, for grouping the households proved fruitless in light of this diversity. Ultimately cluster analysis techniques were used to identify wealthy and poor households. The households were found to cluster into four groups ranging from poorest to richest. However, the middle two groups proved not to be significantly distinct enough in terms of their wealth. Consequently only the two extreme clusters representing the 'richest' and 'poorest' were selected for use in further statistical testing. The cluster of 'poorest' households included 215 households and the cluster of 'richest' households 180. Thus, due to the large variety of access to livelihood resources, only one-third of all 1,011 households in the survey have been used for statistical comparison.

Information regarding the amounts of woody plant use was collected by recording the quantity and frequency of collection and use for different types of resources for each household. The local measurement units for collection were transferred to weight units on the basis of the average weight and dimensions of each unit as determined in the field. Information regarding the life span of the resource was gathered to enable a replacement estimate to be calculated. Set retail prices exist for standard amounts of specific resources, such as per head load or per donkey cart load and these were recorded to determine their direct-use value. These were ascertained from household members who could afford to purchase these resources rather than collect them.

For the analysis of the amounts of wood used for maintenance of the *ubublanti* and *igogo*, only households who collected this material themselves were used. Most households collected resources for their individual use, but some collected for resale to others. In this last case, it proved difficult to partition the collected amounts into units used for individual consumption and units for sale. Many households did not provide details on the replacement time of the resources collected but rather mentioned when the artefact was constructed. The data from these households were not included in the analysis regarding the maintenance of the artefacts.

Where the data are very right-skewed, which occurs frequently in the dataset, robust estimators of the centre and spread are used in numerical summaries and the Kruskal-Wallis test used in inference. The median is used as a more robust estimator of the centre of the distribution, and the MAD (Median Absolute Deviation) is used instead of the usual standard deviation where the data are very right skewed (Venables and Ripley, 1999 p. 128).

In addition to the household surveys, in-depth interviews were held with key informants to determine which rituals still hold significance and are still being performed by local community members.

5. RESULTS

5.1 SOCIO-ECONOMIC CONDITIONS IN SIX EASTERN CAPE VILLAGES

A summary of the household demographic profiles is provided in Table 1. Summaries of the socio-economic conditions of the two clusters are shown in Table 2. Key distinct variables distinguishing the 'rich' and 'poor' households are access to either gas or electricity and ownership of livestock. Also the 'richer' household heads tend to have higher levels of education ($\chi^2 = 6.3718$, $df = 1$, $p = 0.01159$) as well as more access to formal jobs ($t = -5.0674$, $df = 310.146$, $p < 0.000001$); most were male headed ($\chi^2 = 2.4$, $df = 1$, $p < 0.001$).

5.2 CULTURAL STATUS OF *UBUHLANTI* AND *IGOQO* IN SIX EASTERN CAPE VILLAGES

5.2.1 *Ubughlanti*

In the six villages 79% of the households own and maintain an *ubuhlanti*. Of these households, only 47% (n=375) own livestock, demonstrating that *ubuhlanti* are not just a livestock enclosure. There are two main types of *ubuhlanti* that are different in shape. The shape is determined by the ethnic identity of the family. *Mfengu's* *ubuhlanti* are square in shaped (Figure 1), whereas those of the *amaXhosa* are round in shape.

The important cultural significance of the *ubuhlanti* is demonstrated by the performance of several rituals in these enclosures. The most important are:

- *Ukubuyisa* and *ukukhapha*, requiring the sacrifice of an ox to appease the paternal ancestral spirits (*izinyanya*) soon after the death of the family patriarch, repeated on the first anniversary of his death;
- *Imbeleko*, requiring the sacrifice of a goat (male or female) to introduce a newborn member of the clan to the ancestral spirits;
- *Intambo*, the solicitation of the ancestral spirits at the time of serious illness of a family member.

The customary initiation of Xhosa teenagers into manhood by means of ritual circumcision (*umkwetha*) is also conducted in the *ubuhlanti* and is followed by the ritual sacrifice of a goat (*ukungcamisa*). Occasionally also other ritual sacrifices of animals are made in the *ubuhlanti*; these are either undertaken by traditional healers on behalf of the family for specific reasons or by family and clan heads for purposes such as the initiation of traditional healers. Rituals were performed by 72% of the households (n=690) with each household having a ceremony approximately every 2.3 years (+/- 2.0). The greatest restriction on performing a ritual is money for the purchase of the sacrificial animal and provisions for the hosting of the ritual.

Between households owning and not owning *ubuhlanti*, several statistical differences in household conditions were found (Table 3). Households owning an *ubuhlanti* were predominately male headed (58%, n=461), pensioners (48%, n=385) and had a primary level of education (38%, n=311). In contrast, amongst the households without an *ubuhlanti*, a greater proportion are female headed (66%). There is also a significant relation ($\chi^2 = 44.8$, df = 1, p-value < 0.00001) between *ubuhlanti* ownership and wealth status: amongst the 'poorest' households 60% own an *ubuhlanti*, and amongst the 'richest' 90%. There is no statistical relation between education level and *ubuhlanti* ownership.

Table 1: Demographic profile of the household surveyed

1. Household Head (n = 1,011)					
	Male	Female			
Gender	554 (55%)	457 (45%)			
Occupation	Pensioner	Professional	Not formally employed	Low/Med Skilled	Other
	473 (47%)	17 (2%)			
Education Level	None	Primary	Secondary	Further	
	278 (28%)	384 (38%)	327 (32%)	21 (2%)	

2. Household Members (n = 1 006 households)						
	Frequency		Percentage of the Household			
	Mean	Median	Range	Mean	Median	Range
Adults Females:	2.3	2	0 – 11	39.5	37.5	0 – 100
Adult Males:	1.1	1	0 – 7	30.5	28.6	0 – 100
Children (<18 years):	2	2	0 – 11	30	33.3	0 – 83.3
Pensioners/Grants:	0.7	1	0 – 4	14.1	10	0 – 100
Formally Employed:	0.5	0	0 – 5	8.3	0	0 – 100
Informally Employed:	0.6	0	0 – 6	9.5	0	0 – 100

3. Agriculture Products and Livestock (n = 1,011 households)			
	Yes		Commercial
		No	
Agriculture	638 (63%)	373 (37%)	26 (4%)
Livestock	414 (41%)	597 (59%)	8 (2%)

Table 2: Demographic profile of the households representing the ‘poorest’ and ‘richest’ households

Household Wealth Cluster				
		Poorest Cluster	Richest Cluster	
1. Household Head (n = 395)				
Gender	Male	Frequency (% of Column)		Test Statistic
	Female	89 (41%)	122 (68%)	
Education Level		126 (59%)	58 (32%)	$\chi^2 = 26.3$, df = 1, p < 0.0001
	None	82 (38%)	46 (26%)	$\chi^2 = 6.371$, df = 1, p = 0.0116
	Primary	77 (36%)	62 (34%)	
	Secondary	42 (20%)	50 (28%)	
	Further Secondary	11 (5%)	21 (12%)	
	Higher	3 (1%)	1 (<1%)	
2. Household Income				
Number of:		n	Mean \pm Sd	Test Statistic
	Formal Jobs	215	0.2 \pm 0.6	t = -5.0, df = 310.1, p < 0.0001
	Pensions/Grants	215	0.7 \pm 0.6	t = -0.15, df = 348.2, p = 0.1000
			0.8 \pm 0.8	
3. Agriculture and Livestock (n = 395)				
Agriculture	Yes	Frequency (% of Column)		Test Statistic
	No	111 (52%)	140 (78%)	
Livestock	Yes	104 (48%)	75 (22%)	$\chi^2 = 27.8$, df = 1, p < 0.0001
	No	0 (0%)	180 (100%)	
		215 (100%)	0 (0%)	

Table 3: A comparison of households owning and not owning an *ubublanti*

		Ubublanti		Test Statistic and p-value
		No (n=211)	Yes (n=800)	
1. Household Head: (n = 1,011)				
Gender		Frequency (% of column)		$\chi^2 = 2.4$, df = 1, p < 0.001
	Male	93 (44%)	461 (58%)	
	Female	118 (56%)	339 (42%)	
Occupation:	Pensioner	88 (41%)	385 (48%)	$\chi^2 = 3.8$, df = 4, p = 0.4
	Professional	4 (1.9%)	10 (1%)	
	Not formally employed	77 (36%)	251 (31%)	
	Low/Med Skill	40 (19%)	142 (17%)	
	Other	2 (0.9%)	12 (1%)	
Education level:	None	54 (25%)	224 (28%)	$\chi^2 = 5.4$, df = 3, p = 0.2
	Primary	73 (34%)	311 (38%)	
	Secondary	78 (37%)	249 (31%)	
	Further	6 (2%)	15 (1%)	
2. Household Members: (n = 1,006)				
		Mean \pm Sd	Mean \pm Sd	
Adult Females		1.9 \pm 1.2	2.3 \pm 1.4	$t = -3.9$, df = 377.4, p = 0.0001
Adult Males		1.3 \pm 1.2	1.8 \pm 1.3	$t = -5.1$, df = 361.7, p < 0.0001
Children (< 18 years)		1.7 \pm 1.9	2.1 \pm 2.2	$t = -2.0$, df = 369.6, p = 0.046
Pensioners/Grants		0.5 \pm 0.6	0.7 \pm 0.7	$t = -3.6$, df = 370.8, p = 0.0004
Formally Employed		0.4 \pm 0.7	0.5 \pm 0.9	$t = -2.2$, df = 382.6, p = 0.0261
Informally Employed		0.4 \pm 0.8	0.5 \pm 0.95	$t = -1.3$, df = 355.0, p = 0.1972
3. Agriculture Products and Livestock (n = 1,011)				
Agriculture products		Frequency (% of column)		$\chi^2 = 13.7$, df = 1, p = 0.0002
	Yes	110 (52%)	528 (66%)	
	No	101 (48%)	272 (34%)	
Livestock	Yes	39 (19%)	375 (47%)	$\chi^2 = 55.7$
	No	172 (81%)	425 (53%)	df = 1, p < 0.0001

5.2.2 *Igoqo*

Forty percent (n=402) of the households owned an *igoqo*. There are two main types of *igoqo*, which are different in shape. The shape is determined by the ethnic identity of the family. *Mfengu* women construct *amagoqo* vertically (Figure 2), whereas those of *amaXhosa* women are stacked horizontally. Occasionally a homestead will feature both types of *amagoqo* to show that the family is part *Mfengu* and part *Xhosa*.

The *igoqo* is a sanctuary for married women. The dimension and neatness of the *igoqo* is an important social status symbol signifying a housewife's status within her community as a hard working housewife and her commitment to her family and ancestral veneration. It is the place to announce the gender of a newborn child as '*ngumntu wasegoqweni*' (child of the *igoqo*, meaning a girl), or '*ngumntu wasebublanti*' (child of the livestock enclosure, meaning a boy). Also some rituals are held at the *igoqo*. These include the female equivalent of the *Ukubuyisa* ritual called *Inkobe* that requires the sacrifice of a goat to appease the maternal ancestral spirits (*izinyanya*) after the death of the family matriarch. Another ritual called *ukutyiswa amasi* concerns the welcoming of a new bride to her husband's home and clan. A goat is sacrificed to introduce the new family member to the ancestral spirits. These rituals take place in the presence of women only.

The *igoqo* is also an important informal social gathering place for female visitors and a formal venue where women from foreign clans will congregate when a ritual sacrifice is performed in the livestock enclosure. Women also undertake purging activities at the *igoqo*. In the past when home births were frequent the placenta and stillborn infants would be buried under the *igoqo*.

The cultural significance of the *igoqo* is also demonstrated by the fact that the wood of the *igoqo* is normally not used for other purposes. Only occasionally it is used during times of emergency, such as during prolonged rain when it has not been possible to collect fuel wood. However, under no circumstances will all of the wood be used and the used portion will be replaced as soon as possible.

The characteristics of the owners and non-owners of *igoqo* are given in Table 4. Households who owned and maintained an *igoqo* were predominantly male headed households (56%), pensioners (46%) and had primary level of education (38%). There is no statistically significant relationship between the gender of the household head and presence/absence of an *igoqo*, ($\chi^2 = 0.23$, df = 1, $p = 0.6314$), however households with an *igoqo* have significantly more adult females ($t = -3.08$, df = 858.4, $p = 0.0022$) than those without an *igoqo*. There was a statistical significant difference ($\chi^2 = 8.4$, df = 1, $p = 0.00381$) in wealth status between *igoqo* owners and non-owners. Of the poorest households 33% owned an *igoqo*, and of the 'richest' households 48% own an *igoqo*. Although the head of *igoqo* owning households tended to have primary level of education (38%), in cases where they had secondary or higher education, the household was less likely to have an *igoqo*. A similar relationship was not found in the case of ownership of an *ubublanti*.

Table 4: A comparison of households owning and not owning an *igoqo*

		<i>Igoqo</i>		Test Statistic and p-value
		No (n=609)	Yes (n=402)	
1. Household Head: (n = 1,011)				
		Frequency (% of column)		
Gender	Male	330 (54%)	46%	$\chi^2 = 0.2$, df = 1, p = 0.6314
	Female	279 (46%)	178 (44%)	
Occupation:	Pensioner	289 (47%)	184 (45%)	$\chi^2 = 4.3$, df = 4, p = 0.3605
	Professional	11 (1%)	3 (0.7%)	
	Not formally employed	186 (30%)	142 (35%)	
	Low/Med Skill	114 (18%)	68 (16%)	
	Other	9 (1%)	5 (1%)	
Education Level	None	143 (23%)	136 (33%)	$\chi^2 = 17.8$, df = 3, p = 0.0005
	Primary	232 (38%)	152 (37%)	
	Secondary	217 (35%)	110 (27%)	
	Further	17 (2%)	4 (1%)	
2. Household Members: (n = 1,010)				
		Mean \pm Sd	Mean \pm Sd	
Adult Females		2.1 \pm 1.4	2.4 \pm 1.4	$t = -3.0$, df = 858.4, p = 0.0022
Adult Males		1.7 \pm 1.3	1.8 \pm 1.3	$t = -0.9$, df = 829.7, p = 0.3671
Children (< 18 years)		1.9 \pm 2.2	2.1 \pm 2.2	$t = -1.3$, df = 843.9, p = 0.1699
Pensioners/Grants		0.6 \pm 0.7	0.7 \pm 0.7	$t = -0.8$, df = 834.4, p = 0.3967
Formally Employed		0.5 \pm 0.8	0.5 \pm 0.9	$t = 0.08$, df = 835.3, p = 0.9334
Informally Employed		0.6 \pm 0.9	0.5 \pm 0.9	$t = 1.39$, df = 840.7, p = 0.1658
3. Agricultural Products and Livestock (n = 1,011)				
Agriculture Products	Yes	363 (59%)	275 (68%)	$\chi^2 = 8.0$, df = 1, p = 0.0045
	No	246 (41%)	127 (32%)	
Livestock	Yes	214 (35%)	200 (49%)	$\chi^2 = 21.3$, df = 1, p < 0.0001
	No	395 (65%)	202 (51%)	

5.3 AMOUNT AND ECONOMIC VALUE OF WOODY MATERIAL USED

5.3.1 *Ubublanti*

For the construction of *ubublanti* two types of plant material are needed, i.e., poles forming the upright frame and branches for packing between the poles. For poles 49 species were used, preferred species included: *Ptaeroxylon obliquum* (288)¹⁶, *Acacia mearnsii* (181) and *Olea europaea* L. subsp. *africana* (159). The median number of poles used to construct an *ubublanti* is 32; these poles are replaced approximately between 6 – 8 years (Table 5). For each household owning an *ubublanti* this represents a median woody biomass use of 39 kg per annum. Branches are tightly packed between the poles to form the walls of the *ubublanti*; these walls are on average replaced every three years. Forty-eight species were used as wall material; the preferred species are *Coddia rudis* (337), *Acacia mearnsii* (181) and *Pappea capensis* (80). The median amount of branches used per user household is 1,344 kg per annum. In economic terms, the median gross annual value per user household is \$5.30¹⁷ for poles and \$24 for branches. Thus, the average annual amount of wood biomass used for maintaining an *ubublanti* is 521 kg per household; this use can be valued at \$29 per user household (Table 5). The ‘richest’ households tended to use more poles and branches in the maintenance of their *ubublanti* than the ‘poorest’ households (Table 6). The weights per annum were significantly higher for both poles and branches to construct the *ubublanti*, which ultimately resulted in the richer households having better constructed *ubublanti*. Consequently the wealthier households replace their material more regularly.

Table 5: Woody biomass needed per user household for maintenance of *ubublanti*

	Mean \pm Sd	Median \pm MAD	Range
No. of Poles	37.4 \pm 22.7	32 \pm 19.3	1 – 160
Replacement Time (in years)	7.7 \pm 4.2	5.6 \pm 0.9	1 – 30
Weight (kg) per annum	55.1 \pm 53.6	39.5 \pm 30.1	1.1 – 595.7
Economic Value per annum (\$)	7.7 \pm 7.2	5.3 \pm 4.4	0.1 – 44.7
Weight (kg) per annum	1,347 \pm 1,023	1,344 \pm 698	0 – 9,268
Replacement Time (in years)	3.2 \pm 2.8	2.9 \pm 1.6	0.5 – 23
Economic Value per annum (\$)	24.0 \pm 28.0	17.9 \pm 15.8	0 – 208.9
Weight (kg per annum)	759.0 \pm 771.4	521.5 \pm 418.2	2.6 – 4,745.8
Economic Value per annum (\$)	31.8 \pm 28.6	24.1 \pm 16.5	0.1 – 210.9

¹⁶ This figure reveals the number of times this species was selected in the household survey.

¹⁷ These values have been converted at exchange rate of \$1=R6.70, August 2004.

Table 6: Maintenance of *ubublanti* for each household by wealth

	Household Wealth Cluster		Test Statistic
	Poorest Cluster (n=130)	Richest Cluster (n=157)	
	Mean \pm Sd	Mean \pm MAD	
Weight (kg) per annum	39.4 \pm 31.3	51.6 \pm 44.4	t = -2.6, df = 278.1, p = 0.0094
Economic Value per annum (\$)	5.8 \pm 5.3	8.2 \pm 7.9	t = -3.0 df = 273.0, p = 0.0025
Weight (kg) per annum	559.1 \pm 574.9	893.6 \pm 881.2	t = -3.9 df = 271.0, p = 0.0001
Economic Value per annum (\$)	20.4 \pm 20.7	26.9 \pm 24.1	t = -2.4 df = 284.5, p = 0.0145
Weight (kg per annum)	598.5 \pm 579.3	994.7 \pm 889.9	t = -3.9 df = 270.7, p < 0.0001
Economic Value per annum (\$)	26.2 \pm 21.3	35.1 \pm 26.4	t = -3.1 df = 284.8, p = .00174

5.3.2 *Igoqo*

For the construction and maintenance of the *igoqo* only stem wood is used. Specific dimensions of selected species are used for this purpose. In total forty-nine species were recorded as being selected, the main ones being *Acacia karroo* (106), *Olea europaea* subsp. *africana* (95) and *Gymnosporia capitata* (65). The mean amount of material used per household is 1,043 kg per annum (Table 7). Some households maintain their *igoqo* by replacing at least some material weekly, whilst others wait as long as 16 years before replacing some or all of the material resulting in very large variations in annual cost of maintenance between households. This appears to be based only on personal preference. The amounts of resources used by the 'richest' and 'poorest' households are shown in Table 8. Even though wealth seems to have an impact on whether or not a household owns an *igoqo*, there is no statistical difference in the amount of material collected by the 'richest' and 'poorest' households. The gross net annual value of the woody biomass required to maintain an *igoqo* is \$44 per annum per user household. It is clearly more costly to maintain an *igoqo* than an *ubublanti*.

5.3.3 Comparison to fuel wood use

The annual amounts of the woods used for maintaining the *ubublanti* and *igoqo* are considerable when compared to the amounts of fuel wood use. In a separate analysis of the overall biomass use in one of the study villages it appeared that the average annual amount of fuel wood use was 1,627 kg per household against 835 and 517 kg of wood used for the maintenance of *ubublanti* and *igoqo* respectively (Cocks and Wiersum 2003).

Table 7: Woody biomass needed per user household for maintenance of an *igogo*

Collected material (n=387)	Mean \pm St. Dev	Median \pm MAD	Range
Replacement Time (in years)	2.2 \pm 2.8	1.0 \pm 0.7	0.02 – 16
Weight (kg) per annum	1,043.0 \pm 909.1	750.0 \pm 784.3	4.6 – 4 500
Economic Value per annum (\$)	44.3 \pm 57.4	25.0 \pm 27.4	0.4 – 402.8

Table 8: Maintenance of *igogo* for each household by wealth

Collected Material (n = 153)	Household Wealth Cluster				Test Statistic
	Poorest Cluster		Richest Cluster		
	n	Mean ± Sd	n	Mean ± Sd	
Weight (kg) per annum	69	1,193.0 ± 983.9	84	1,025.3 ± 893.9	t = 1.0 df = 139.0 p = 0.200
Economic Value per annum (\$)	69	55.5 ± 70.5	84	37.5 ± 42.5	t = 1.8 df = 106.8 p = 0.066

5.3.4 Species used

In total 72 species were selected for the maintenance of these cultural artefacts, confirming the importance of biodiversity for cultural purposes. *Acacia mearnsii*, *Eucalyptus* sp. and *Pinus* sp. were the only alien species selected.

6. DISCUSSION AND CONCLUSION

The study clearly demonstrates the significant role that wild plants play in the construction and maintenance of cultural artefacts. An *ubublanti* is foremost a sacred temple for the male lineage of the homestead to communicate with their ancestors and receive their blessings and protection. The maintenance of a livestock enclosure is also a visual display of household tribal affiliation and the significance occupants attach to the ancestral belief. Similarly, an *igogo* represents a sacred venue for the women of the household and is a visual presentation of tribal affiliation and prowess as a hardworking housewife. The significance attached to *ubublanti* and *igogo* results in a visual display of the persistence of cultural practices amongst modernized communities.

Although the study was carried out in a region with non-traditional conditions and where most people depend on urban-based jobs or welfare grants, still 79% and 40%, of the households owned an *ubublanti* or *igogo*. Moreover, no statistical relationship was found between the education level of the household head and the maintenance of an *ubublanti*

and a high proportion of 'wealthy' households maintained an *ubuhlanti* and an *igoqo*. This demonstrates the endurance of these cultural artefacts in the livelihoods of the communities. In other studies on cultural dynamics in the study area, it was noted that such adherence to cultural traditions should not be considered as a retreat into cultural essentialism, but rather as involving subtle interactions between traditional and modern cultural orientations and experiences; this process involves a re-articulation of tradition (Bank, 2002 p. 649). Consequently, the findings of this study should not be interpreted as illustrating stagnation in the traditional past, but rather as pointing at the need for improved understanding of the significance of bio-cultural diversity in a dynamic sense.

The findings of the study also demonstrate that the direct-use values of wild plants do not only relate to utilitarian uses for physical needs, but also to the fulfilment of important cultural functions. The estimated economic value per household is \$47 per year, which is equal to approximately 3% of the average state pension received by people in the study area. However, this economic value only reflects the use value of wild plants as expressed in market prices. Such economic valuation does not give full credence to the cultural significance attached to the artefacts constructed by these plants (Ferguson 1988). In addition to valuing biodiversity on the basis of market prices reflecting utilitarian needs, there is a need for extended valuation methods that reflect affective needs such as belongingness and identity (Douglas and Isherwood 1997). The use of wild plants need to be represent not only referring to "socially neutral units of exchange" (Appaduria 1988), but rather as being wrapped in the user's belief system (Strang 1997). This is necessary to fully appreciate the scope of bio-cultural conservation. It is therefore of paramount importance that bio-diversity conservation programs develop awareness campaigns which illustrate the link between cultural and biodiversity conservation as well as the diversity and dynamics of cultural values regarding biodiversity. Biodiversity conservation programs should include a careful adaptation of the multitude of cultural values regarding biodiversity to newly emerging socio-economic conditions. This message needs to become a central thrust in bio-diversity programs (M. Cocks personal communication).

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CHAPTER 5

'RICH MAN POOR MAN' – INTER-HOUSEHOLD AND COMMUNITY FACTORS INFLUENCING THE USE OF WILD PLANT RESOURCES AMONGST RURAL HOUSEHOLDS IN SOUTH AFRICA

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Figure 1: Collecting dry fuel wood in *Euphorbia* Thicket (Photo A. Dold)



Figure 2: Fragmented forest patch (Photo R. Lubke)

1. ABSTRACT

Biodiversity is recognized as an integral part of people's daily livelihoods. This study therefore aims to understand the use of NTFPs at an intricate level by determining what role these resources fulfil in six rural villages across 1,015 households' livelihoods. It examines how the use of NTFPs are influenced by intra-household variables such as wealth and gender and inter-community variables such as accessibility to the natural resource. The results reveal that approximately 6,600 kg of wild material is used annually per household of which 2,628 kg is used for cultural purposes representing 65% of the total amount of material utilized. The influence of vegetation type and differences between villages are statistically more significant than inter-household variables. At an inter-household level an increase in the financial status of households did not result in a decrease in the use of natural resources nor in the quantity of material used. Similarly, gender only influenced the use of cultural resource use categories. Over 200 plant species were identified as being used demonstrating the crucial role for biodiversity in rural livelihoods which has implications for conservation of biodiversity to also occur outside of protected areas. An appreciation of the multitude of cultural values that affect the use of biodiversity would add value to biodiversity conservation approaches.

Key Words: inter-household, community factors, NTFPs, rural households, South Africa

2. INTRODUCTION

Over the past decade, scholars from various fields have increasingly emphasized the detrimental effects of global socio-economic processes on biodiversity (Wood *et al.* 2000). From the late 1980s onwards biosystematics and conservation biology have successfully brought this concern to the attention of the public (Cunningham 2001; Maffi 2001). As a result, biodiversity is increasingly recognized as an integral part of people's livelihoods because it is an essential resource on which families, communities, nations and future generations depend. This has resulted in paradigm shifts whereby more attention is being given to the conservation of biodiversity outside conservation areas, especially in agro-ecosystems (Scoones *et al.* 1992; Shackleton 2000; Wiersum and Shackleton 2005). As a result, biologists, ecologists and conservationists are increasingly grasping the harsh reality that solutions to biological problems often also lie in the mechanisms of social, cultural, and economic systems (Mascia *et al.* 2003).

Over the last two decades numerous studies have demonstrated the significant role and value of non-timber forest products (NTFPs) to rural livelihoods in areas of southern Africa that have undergone major rural transformations (Cavendish 2000; Shackleton *et al.* 2001; Dovie *et al.* 2002; Shackleton *et al.* 2002a; Clarke and Grundy 2004; Shackleton and Shackleton in press). It is often assumed that this use is of special significance to poor people who cannot afford the use of more modern substitutes. Consequently, the role of natural resources in poverty alleviation has become a highly topical issue (Wunder 2001;

Campbell and Luckert 2002; Sunderlin *et al.* 2005). However, as noted by Shackleton and Shackleton (in press), studies on biodiversity use often provide only a mean or composite picture, averaged across the sample of households within each community, and there is still little focused attention given to the question of how biodiversity use is stratified within rural communities. This is despite the well-known fact that within any given community there is significant socio-economic differentiation between households. Some recent studies (e.g. Cavendish 2000) suggest that not only the poor, but also wealthier sections of the population continue to use wild plant products. For example, in a recent South African study Shackleton and Shackleton (in press) report no differences in the proportion of households using NTFPs, nor in the total number of NTFPs used per household, across different wealth classes. The reason given for this is that wealthier households, who have greater access to disposable income, often purchase NTFPs from their neighbours and vendors rather than collect their own. It has therefore been suggested that natural resources are not simply a means of livelihood for low-income rural populations alone. Moreover, there is also significance use by urban populations (Cocks and Bangay submitted).

Most studies use of NTFPs focus on material uses for food (fruits, vegetables), health (medicinal products) and energy (fuel wood). Recent studies have demonstrated that in addition biodiversity products are often used for ritual and spiritual purposes (Douglas and Isherwood 1997; Goebel *et al.* 2000; Cocks *et al.* in press; Cocks and Dold in press). For example, a study in the former Ciskei area of South Africa reported that approximately one-third of the wild plant species used, and just over half of their estimated use value, served cultural and spiritual purposes rather than basic utilitarian purposes (Cocks and Wiersum 2003). As demonstrated by Cocks *et al.* (in press) several forms of cultural uses of biodiversity products are not restricted to rural areas, but are also common in urban areas where these products are used by both 'poor' and 'rich' people (Cocks and Bangay submitted). In addition to wealth, also other factors have been reported to impact on the use of biodiversity products, such as gender (Howard-Borjas 2001; Nabanoga 2005).

Despite the above very little recognition is being given to the use variables which influence use of natural resources other than household wealth status, for example, community-level variables that may contribute to the use of natural resources. One being the type of vegetation that the community has access too, which is particularly relevant in a country such as South Africa which has as many as 68 vegetation types in seven biomes (Low and Rebelo 1996). The nature of the local vegetation influences both the quantity of material that can be collected as well as the presence of different species. Furthermore, access to natural resource products may vary between communities as a result of differences in land tenure rights and the degree of adherence to regulations on biodiversity conservation (Everson and Underwood 2004; Grundy and Michell 2004).

Within the context of the above this study aims to assess what factors influence the use of wild plant resources at both a household and community level, as well as the differentiation of such use between utilitarian and cultural dimensions.

3. STUDY SITES

3.1 HISTORICAL INFLUENCES

The study was undertaken during 2001 to 2003 in six villages in the Peddie and King William's Town Districts (Benton, Chata, Crossroads, Ntloko, Pirie Mission and Woodlands) in the Eastern Cape Province, South Africa (Figure 3). These areas display many of the unfavourable conditions created during the apartheid regime and as a result are characterised by poor infrastructure, high population densities, and high poverty levels (Ainslie *et al.* 1994; Beinart 1994; De Wet and Whisson 1997; Palmer 1997) and there is a heavy dependence on urban earnings and government welfare payments.

Rural families in the region have come to rely heavily on the natural environment for a number of resources such as fuel wood, construction poles, thatching, food supplements and medicines (Shackleton *et al.* 2002b; Cocks and Wiersum 2003). These resources are either collected for individual household use or for supplying the ever-growing commercial market (Cocks and Dold 2000; Cocks *et al.* 2001; Dold and Cocks 2002).

3.2 VEGETATION TYPES

Three different vegetation types occur in the study area viz. Eastern Thorn Bushveld, Valley Thicket and Afromontane Forest (Low and Rebelo 1996). These represent a gradient from the coast to the Amatola mountain escarpment dissected by dense thicket following major river systems such as the Fish and Keiskamma rivers. Two villages in each of the three vegetation types were selected. The Eastern Thorn Bushveld is a component of the Savanna Biome and represents the largest biome in southern Africa, and occupies 92,294 km² of which less than 1% is conserved. The valley Thicket (Figure 1), occurs in the river valleys of the eastern parts of the Western Cape, extending through the Eastern Cape to KwaZulu-Natal. The total area is 228,767 km² of which 51% is transformed and only 2% is conserved. The Forest Biome (Figure 2) covers less than 0.25% of southern Africa's surface area, thus making it the smallest biome of the subcontinent. The total area of occurrence of Afromontane Forest is 58,800 km², of which 44% is already transformed and 18% is conserved.

3.3 CHARACTERISTICS OF STUDY VILLAGES

Within each vegetation type two villages were randomly selected for assessing the villagers' use of plant material. A comparative characterization of the villages is given in Table 1. The initial survey was carried out in Woodlands village; the results of this survey were reported by Cocks and Wiersum (2003). Although the six villages are at different distances from the regional capital, the key differentiating characteristics are the vegetation type and size of the villages.

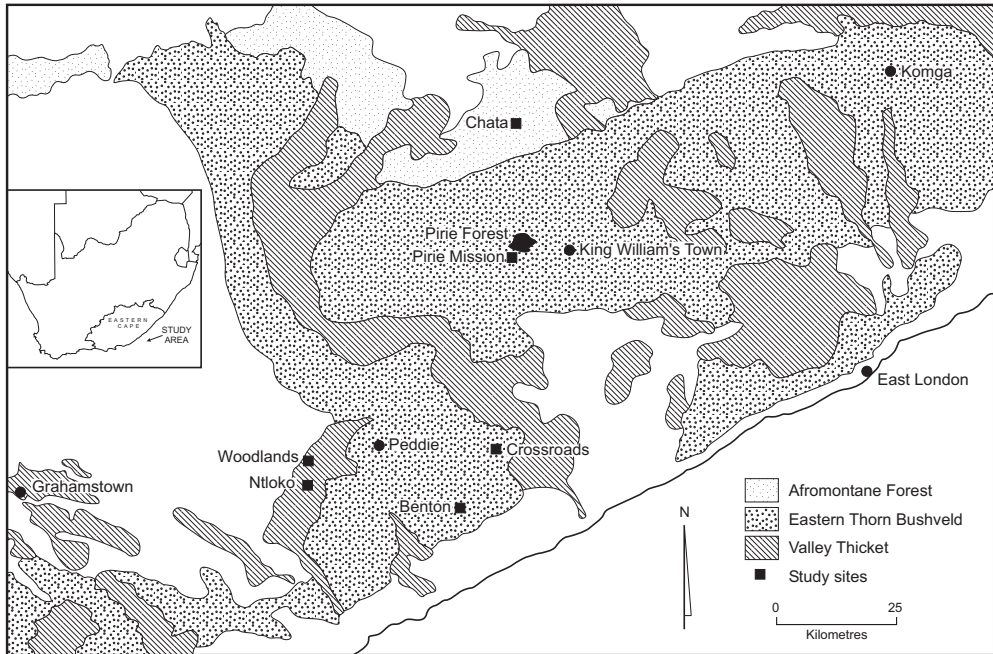


Figure 3: Study site localities and adjacent vegetation type

3.4 TENURE

The majority of the harvested NTFPs reported on here are collected from communal lands surrounding each village, State owned forests and a few resources from community members' home gardens. Within the communal lands open access conditions generally prevail, although nominally each village has a committee of elected members that consider rights of access and land allocation but these are largely ineffective (Ainslie 1999).

4. METHODS

Within all six villages a 100% census was undertaken. In total 1,015 households were interviewed. The questionnaire included questions on household demography, household assets such as electrical appliances ranging from radios to video recorders and motorized transport as well as the use and the amount of wild plant material collected. Information regarding the amounts of woody plant use was collected by recording the quantity and frequency of collection and use for different types of resources for each household. The local measurement units for collection were transferred to weight units on the basis of the average weight and dimensions of each unit as determined in the field. Information regarding the life span of the wild plant material harvested was gathered to enable a replacement estimate to be calculated.

The vernacular names of plant species used were recorded in the household interviews. The questionnaire was designed to allow for the capturing of the most commonly used species per household and did not allow for the interviewers to probe respondents to gather a comprehensive list of species used. Fieldtrips were undertaken with household members to gather plant specimens and household knowledge over a diverse range of species within each community. The specimens were identified at the Selmar Schonland Herbarium (GRA) in Grahamstown and vouchers were deposited here for future reference. Appendix 1 provides specimen data on the top 50 species utilized. Plant species names follow Germishuizen and Meyer (2003). Where it was not possible to collect fertile specimens botanical names for these species were sourced from Dold and Cocks (1999).

For data analysis the full data set was first subjected to cluster analysis to identify different wealth classes. The resulting clusters showed significant overlap, and therefore two extreme clusters representing the 'richest' and 'poorest' households were selected for further statistical testing (for further details see Cocks *et al.* in press). The cluster of 'poorest' households included 215 households and the cluster of 'richest' households 180. The information on these two clusters was used to test the impact of selected variables on the use of various products (% of households in each village) and amount of material used (kg per household per annum using the material). Where the data were right skewed, which occurred frequently, robust estimators of the centre and spread were used in numerical summaries and Wilcoxon rank sum and the Kruskal-Wallis test is used in inference. The median was used as a more robust estimator of the centre of the distribution, and the MAD (Median Absolute Deviation) is used instead of the usual standard deviation where the data are very right skewed (Venables and Ripley 1999). Further investigation into possible interaction between variables was done, but no satisfactory model could be found that would explain such interaction (should it exist).

Table 1: Summary of the six villages' characteristics

Villages	Woodlands	Ntkolo	Benton	Crossroads	Pirie Mission	Chata
Latitude and longitude	33°14'25"S 26°59'56"E	33°15'59"S 27°01'14"E	33°17'52"S 27°19'46"E	33°13'09"S 27°16'12"E	32°46'59"S 27°12'50"E	32°32'56"S 27°06'54"E
Elevation above sea level	200 m	150 m	160 m	200 m	640 m	900 m
Vegetation type	Valley Thicket	Valley Thicket	Eastern Thorn Bushveld	Eastern Thorn Bushveld	Afromontane Forest	Afromontane Forest
Number of households	145	170	115	172	137	272
Availability of piped water	No	Yes	Yes	Yes	No	Yes
Electricity	Yes	Yes	Yes	Yes	Yes	Yes
Number of schools	1 Primary school	1 Primary & 1 secondary	1 Primary & 1 secondary	1 Primary & 1 secondary	1 Primary & 1 secondary	1 Primary & 1 secondary
Clinic	Mobile clinic	1	1	1	1	1
Tenure arrangements	Communal tenure	Communal tenure	Communal tenure	Communal tenure	Communal tenure and state forests DWAF	Communal tenure and state DWAF
Distance from regional capital	67 km	75 km	84 km	75 km	20 km	80 km
Condition of roads to regional capital	Tar	Gravel & tar	Gravel & tar	Tar	Gravel & tar	Gravel & tar

5. RESULTS

5.1 VILLAGE PROFILES

Between the six villages variations in respect to socio-economic conditions occurred (Table 2). For instance, male headed households dominated in Benton, Crossroads, Pirie Mission and Woodlands whereas female headed households dominated in Chata and Ntkolo. In Benton the most of household heads were employed in low or medium skilled employment (23%) whereas in Chata (32%) and Crossroads (19%) most of the household heads were not formally employed. In Ntkolo and Woodlands most of the household heads (21% and 29% respectively) were employed in other occupations, such as self-employment and in Pirie Mission (20%) they were employed in professional occupations such as government services.

5.2 USE OF WILD PLANT SPECIES

All households within all the villages used wild plants for their domestic needs, collecting them personally, or buying them from informal markets operating within each of the villages, (Table 3). In total 243 plant species were recorded as being used within all six villages, only 14 of the species were exotic. Households used a mean number of 7.3 ± 3.8 species and these were used for a wide variety of purposes, see Appendix 1. Some species were used for a number of different purposes, such as *Olea europaea* subsp. *africana* and *Ptaeroxylon obliquum* which were used for the maintenance of kraals and *amagoqo*, for fuel wood, ritual, fencing, medicinal and construction purposes.

Not all the resource categories displayed in Table 3 are self-explanatory. A kraal (*ububhlantshi*) is commonly portrayed as a livestock enclosure but is foremost a sacred temple for the male lineage of the homestead to communicate with their ancestors and receive their blessings and protection. It acts as a visual display of the household tribal affiliation and the significance occupants attach to the ancestral belief (Cocks and Wiersum 2003; Cocks *et al.* in press). Religious rituals (*amasiko*) are performed on specific occasions during the year, predominantly in December and June. They invariably involve the slaughtering of a domestic animal, either an ox or a goat, as propitiation to the ancestors. The host invites extended members of the family, neighbours and friends to attend and large quantities of food and traditional beer are prepared requiring large quantities of fuel wood (Cocks and Wiersum 2003). An *igogo* (plural – *amagoqo*) refers to the wood stockpile collected by women and represents a sacred venue for the women of the household as well as a visual presentation of tribal affiliation and prowess as a hardworking housewife (Cocks and Wiersum 2003; Cocks *et al.* in press). *Amayeza esiXhosa* means 'Xhosa medicines' and comprises plant-based medicines for both physical illness recognized by Western biomedicine and afflictions believed to be caused by the supernatural (Cocks and Dold 2006).

Table 2: Demographic profile of the households surveyed within each village (n = 1,011)

	Benton		Chata		Crossroads		Nikolo		Pirte Mission		Woodlands	
	%		%		%		%		%		%	
1. Gender of household head												
Male	12%		24%		18%		15%		15%		15%	
Female	10%		31%		16%		18%		11%		14%	
2. Occupation of household head												
Pensioner	9%		29%		16%		19%		14%		13%	
Professional	6%		17%		16%		20%		20%		21%	
Not formally employed	11%		32%		19%		13%		10%		16%	
Low/Med skill	23%		13%		18%		14%		16%		16%	
Other	0%		21%		0%		21%		29%		29%	
3. Educational level of household head												
None	26%		15%		26%		22%		3%		10%	
Primary	5%		35%		17%		14%		13%		16%	
Secondary	7%		30%		9%		19%		20%		14%	
Further	0%		15%		5%		19%		33%		28%	
4. Household members												
	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Adult female	2.3	0 - 6	2.4	0 - 9	2.3	0 - 9	2.3	0 - 6	2.4	0 - 9	1.6	0 - 8
Adult males:	1.7	0-9	1.7	0-9	1.8	0-8	1.7	0-6	2.1	0-9	1.6	0-8
Children (<18 years)	2.3	0-8	1.7	0-9	2.2	0-11	1.9	0-7	2.0	0-10	1.9	0-10
Pensioners/Grants	0.6	0-2	0.7	0-2	0.7	0-3	0.8	0-3	0.9	0-4	0.6	0-3
Formally Employed	0.5	0-4	0.5	0-5	0.3	0-3	0.7	0-5	0.8	0-4	0.4	0-5
Informally Employed	0.3	0-3	0.1	0-3	0.2	0-3	0.3	0-5	0.1	0-5	0.5	0-5

Table 3: Use of natural resources at household level

Resource category	% of households	No. of species	Mean quantity of material utilized (kg) per annum
Utilitarian use			4,030.4 ± 3,924.9
Fuel wood	79	71	3,673.1 ± 3,581.3
Timber	55	47	47.0 ± 23.8
Fencing	37	22	57.3 ± 50.4
Wild fruit	29	30	210.1 ± 261.3
Thatching	24	10	42.9 ± 8.1
Cultural use			2,627.9 ± 2,697.3
Kraal material	79	65	799.5 ± 776.8
Ritual material	68	53	744.6 ± 973.5
<i>Imifino</i>	49	19	35.1 ± 30.3
<i>Amagoqo</i> material	40	51	1,043.4 ± 909.1
<i>Amayeza yesiXhosa</i>	31	89	3.9 ± 6.4
Traditional sticks	13	13	1.4 ± 1.2

The mean number of resource use categories used per household was 4.9 ± 2.0 , whereas the mean amount of green biomass utilized per household per annum was $4,452.6 \pm 3,894.9$. The amount collected however varied considerably between households with some utilizing as little as 1.2 kg while others utilized as much as 22,688.5 kg per annum. This is reflected by the high standard deviations in the descriptions for each resource use category provided below.

5.3 RESOURCE USE PATTERNS

5.3.1 Influence of wealth

In order to assess whether the household wealth status influenced wild plant use, differences in the number of species, resource use categories as well as the total amount of biomass used between rich and poor households was assessed. The mean number of species utilized by poor households was 7.2 ± 3.8 and wealthy households 7.6 ± 3.8 . Consequently, no statistically significant relationship was found between wealth and the number of species utilized ($W = 17,906.5$, $p\text{-value} = 0.4282$). The wealth of the household only influenced significantly the use of four of the 11 resource use categories significantly viz. rituals, kraals, thatching and *igoqo* material (Table 4).

The wealth of the household similarly only influenced three of the 11 resource use categories in terms of the quantities. A significant difference in mean quantities of material used was found between the wealthy and poor households for the maintenance of a kraal ($W = 7668$, $p = 0.0003$), with the wealthy households collecting a mean amount of 945 kg (± 889.9) compared to 598 kg (± 579.2) collected by poor households. A significant difference was also found for the mean quantities of medicinal plant material utilized per household ($W = 2,946.5$, $p = 0.002$), with poorer households collecting the mean amount of 4.2 kg (± 5.5) per annum in contrast to 1.9 kg (± 2.5) by wealthy households. A statistically significant result was also found between wealth and the use of timber

($W = 4,345$, $p = 0.03$) (Table 4) with richer households using more construction timber than the poor households.

5.3.2 Influence of gender of household head

The mean number of species utilized by female headed households was 7.4 ± 3.5 and the mean male headed households was 7.4 ± 4.0 . Consequently no statistically significant relationship was found between genders for the number of species utilized ($W = 0.3017$, $p\text{-value} = 0.5828$).

In addition to the influence of wealth, the gender of the household head was also found to influence wild plant use. Significant relationships were found regarding the use of kraal material, thatching material, medicinal plant material and the making of traditional sticks. Regarding the use of kraal material, sticks and medicines, significantly more male headed households used these. For example, households owning a kraal (*ubuhlanti*) were predominately male headed (58%, $n=461$). In contrast, amongst the households without an *ubuhlanti*, a greater proportion were female headed (66%). This is because an *ubuhlanti* is foremost a sacred temple for the male lineage of the homestead to communicate with their ancestors and receive their blessings and protection. The maintenance of a livestock enclosure is also a visual display of household tribal affiliation and the significance occupants attach to the ancestral belief. Likewise, the owning of a stick is very much a part of male attire as in the past it was customary for Xhosa men to carry a stick (*intonga*) made of *umnquma* (*Olea europaea* subsp. *africana*) when leaving the homestead (Soga 1931). These findings clearly demonstrate the important role that gender plays in the cultural use of natural resources as well as the persistence of cultural practices amongst modernized communities (Cocks *et al.* in press). The gender of household head did however not significantly influence the quantity of material collected for each resource use category (Table 5).

5.3.3 Influence of vegetation types

The mean number of species collected per household from the Eastern Thorn Bushveld amounted to 8.2 ± 4.3 , 7.3 ± 3.4 from the Afro-Montane Forest and 6.4 ± 3.7 from the Valley Thicket. These were significantly different, and hence the vegetation type does influence the number of species used per household ($\chi^2 = 7.36$, $p\text{-value} = 0.025$). The vegetation type also significantly influenced ten of the resource use categories, namely the collection of wild fruits, fuel wood, thatch, timber, ritual, *imifino* and *igogo* material as well as the collection of material for fences poles and the maintenance of a kraal, Table 6.

Table 4: Use and quantity of natural resource use categories according to wealth status of households

Wealth	Cluster 1 ('poorest')		Cluster 2 ('richest')		Test Statistic	
	n ¹⁸	n				
Fruits	Using	214	30 %	179	32%	$\chi^2 = 0.28$ df=1 p = 0.5943
	Mean \pm SD		265.8 \pm 265.3		238.6 \pm 288.9	
	Median \pm MAD	59	242.9 \pm 351.7	58	121.4 \pm 176.8	W = 1,849 p = 0.4528
Fuel wood	Using	214	79%	179	75%	$\chi^2 = 1.17$ df=1 p = 0.2801
	Mean \pm SD		4,034.2 \pm 4037.8		3,487 \pm 2976.8	
	Median \pm MAD	159	2,600.0 \pm 1927.4	131	2,600.0 \pm 1927.4	W=10,911 p = 0.4838
Thatch	Using	209	20%	173	33%	$\chi^2 = 8.14$ df=1 p = 0.0043
	Mean \pm SD		47.8 \pm 41.2		42.9 \pm 37.7	
	Median \pm MAD	41	36.0 \pm 27.4	55	27.5 \pm 18.5	W = 1,199 p = 0.5987
Timber	Using	212	58%	179	50%	$\chi^2 = 2.34$ df=1 p = 0.1257
	Mean \pm SD		42.3 \pm 22.5		51.3 \pm 28.9	
	Median \pm MAD	123	37.8 \pm 22.8	85	47.4 \pm 31.7	W = 4,345.5 p = 0.03885
Fence	Using	213	30%	175	36%	$\chi^2 = 1.59$ df=1 p = 0.2077
	Mean \pm SD		55.3 \pm 38.3		58.2 \pm 47.3	
	Median \pm MAD	65	48.0 \pm 37.8	64	45.8 \pm 38.2	W = 2,066.5 P= 0.9512
Ritual	Using	215	53%	180	82%	$\chi^2 = 36.4$ df=1 p < 0.0001
	Mean \pm SD		747.3 \pm 988.6		729.8 \pm 852.0	
	Median \pm MAD	114	442.0 \pm 647.6	144	442.0 \pm 651.2	W=8,078.5 p = 0.8284

¹⁸ The sample sizes used in quantity calculations are only for households where data were available, hence the sometimes reduced sample size for the quantity data.

<i>Imifino</i>	Using	214	36%	179	43%	$\chi^2 = 2.74$	df=1	p = 0.0974
	Mean \pm SD	110	37.1 \pm 36.1	76	33.1 \pm 26.0	W=4,399.5		p = 0.5279
Kraal material	Median \pm MAD		22.8 \pm 17.3		22.8 \pm 16.9			
	Using	215	60%	180	91%	$\chi^2 = 46.3$	df=1	p < 0.0001
	Mean \pm SD	130	598.5 \pm 579.3	157	944.7 \pm 890.0	W=7668		p = 0.0003
	Median \pm MAD		424.6 \pm 402.7		688.8 \pm 602.4			
<i>Igoqo</i>	Using	215	33%	180	48%	$\chi^2 = 8.98$	df=1	p = 0.002733
	Mean \pm SD	69	1193.0 \pm 983.9	84	1025.3 \pm 893.9	W=3220		p = 0.2379
	Median \pm MAD		967.5 \pm 940.2		788.8 \pm 983.1			
	Using	214	13%	178	18%	$\chi^2 = 2.18$	df=1	p = 0.1394
Sticks	Mean \pm SD	26	1.4 \pm 1.2	30	1.4 \pm 1.1	W = 354.5		p = 0.5599
	Median \pm MAD		0.8 \pm 0.7		1.0 \pm 0.7			
<i>Amayeza</i>	Using	215	38%	178	33%	$\chi^2 = 1.06$	df=1	p = 0.3043
	Mean \pm SD	78	4.2 \pm 5.5	58	1.9 \pm 2.5	W =		p = 0.0026
	Median \pm MAD		1.9 \pm 1.7		1.0 \pm 1.0	2946.5		

Regarding the quantity of material collected, significant statistical differences were found between the vegetation types, for nine of the 11 resource use categories. In this instance considerably higher quantities of fruit were collected per household per annum from the Valley Thicket, 293 kg (\pm 299) compared to only 7.7 kg (\pm 6.3) from the Afromontane Forest. A significant relationship was also found between the vegetation type and the median quantity of material collected to maintain an *igogo* ($W = 66.6$, $df = 2$, $p = 3.51$) and for medicinal purposes ($W = 19.8$, $df = 2$, $p = 5.11$). The highest mean quantity of material collected was 818 kg (\pm 745) from the Valley Thicket compared to 778 kg (\pm 891) from the Afromontane Forest per household per annum. For medicinal purposes the highest mean quantity collected was from the Valley Thicket, 5.8 kg (\pm 8.4) and only 1.6 (\pm 2.3) per annum from the Eastern Thorn Bushveld. In contrast, for rituals (849 kg \pm 1,074) and timber (49.1 \pm 24.4) greater quantities were collected from the Afromontane Forest (Table 6).

Regarding medicines and fruit the actual physical mass of the material is a determining factor, as a significant proportion of the medicines collected from the Valley Thicket are tubers whereas the Eastern Thorn Bushveld and Afromontane Forest vegetation types provide greater quantities of leaf and bark material, respectively. The dominant fruit species collected from the Valley Thicket is *Opuntia ficus-indica*, which is a large fleshy fruit, compared to the small berries harvested from the Afromontane forest. In the case of kraal and fencing material Woodlands and Ntkolo are located adjacent to a dense woody biomass within the Valley Thicket. The Eastern Thorn Bushveld is a considerably less woody vegetation type than Valley Thicket.

5.3.4 Differences between villages

Resource use patterns were also significantly different between all six villages as all 11 resource use categories were statistically influenced. Similarly, the village was a key variable in influencing the quantity of material collected for each resource with the exception of fuel wood (Table 7). These differences obviously reflect the influence of the wealth of the village as well as the type of vegetation that the village has access to. In terms of the wealth status of the six villages, Woodlands and Ntkolo represented the poorest villages and Crossroads and Chata represented the wealthiest of the six villages in terms of households, which fell in each of the two wealth clusters. It is however also important to bear in mind that different tenure arrangements exist between the villages, reflecting different types of access to natural resources.

Table 5: Use and quantity of natural resource use categories according to gender of household head

Household Head	Female		Male		Test Statistic	
	n ¹⁹		n			
Fruits	Using	457	29%	550	29%	$\chi^2 = 0.003$ df = 1 p = 0.953
	Mean \pm SD	128	195.4 \pm 241.6	155	222.2 \pm 276.8	$W = 9,885.5$ p = 0.9604
	Median \pm MAD		60.7 \pm 88.5		121.4 \pm 176.9	
Fuel wood	Using	450	81%	548	78%	$\chi^2 = 1.3$ df = 1 p = 0.250
	Mean \pm SD	348	3591.4 \pm 3705.7	416	3741.5 \pm 3476.8	$W = 67,000.5$ p = 0.0755
	Median \pm MAD		2600.0 \pm 1927.4		2600.0 \pm 1927.4	
Thatch	Using	444	27%	540	22%	$\chi^2 = 4.1$ df = 1 p = 0.0417
	Mean \pm SD	117	42.3 \pm 43.4	114	43.6 \pm 40.2	$\chi^2 = 0.1$ df = 1 p = 0.7623
	Median \pm MAD		26.0 \pm 17.4		27.5 \pm 18.9	
Timber	Using	449	58%	548	53%	$\chi^2 = 2.9$ df = 1 p = 0.0885
	Mean \pm SD	254	47.4 \pm 25	285	46.7 \pm 22.8	$W = 36,442$ p = 0.8914
	Median \pm MAD		45.3 \pm 25.8		42.2 \pm 24.0	
Fence	Using	451	37%	544	36%	$\chi^2 = 0.01787$ df = 1 p = 0.8937
	Mean \pm SD	166	59.4 \pm 56.7	197	55.5 \pm 44.4	$W = 16,772.5$ p = 0.6725
	Median \pm MAD		48.4 \pm 40.6		43.5 \pm 37.8	
Ritual	Using	457	68%	553	70%	$\chi^2 = 1.9$ df = 1 p = 0.1622
	Mean \pm SD	292	766.3 \pm 1008.6	379	727.8 \pm 946.6	$W = 56,738.5$ p = 0.5727
	Median \pm MAD		442.0 \pm 649.4		442.0 \pm 652.0	
<i>Imifino</i>	Using	456	51%	552	46%	$\chi^2 = 3.0$ df = 1 p = 0.0808
	Mean \pm SD	234	34.8 \pm 31.8	253	35.3 \pm 28.9	$W = 6,515.5$ p = 0.7631
	Median \pm MAD		22.8 \pm 16.9		22.8 \pm 18.0	

¹⁹ The sample sizes used in quantity calculations are only for households where data were available, hence the sometimes reduced sample size for the quantity data.

Kraal material	Using Mean \pm SD	457	74%	554	83%	$\chi^2 = 12.4$	df = 1	p = 0.0004
	Median \pm MAD	334	821.5 \pm 777.6 597.9 \pm 497.7	450	783.2 \pm 776.6 518.1 \pm 426.3	W = 78,526.5		p = 0.2816
<i>Igogo</i>	Using	457	39%	554	40%	$\chi^2 = 0.2$	df = 1	p = 0.6314
	Mean \pm SD Median \pm MAD	175	1,087.2 \pm 917.8 827.5 \pm 856.2	212	1,006.6 \pm 902.4 645.0 \pm 659.8	W = 19,735		P = 0.2789
Sticks	Using	456	7%	549	17%	$\chi^2 = 25.8$	df = 1	p < 0.000107
	Mean \pm SD Median \pm MAD	28	1.3 \pm 1.1 1.1 \pm 0.7	94	1.4 \pm 1.2 1.0 \pm 0.7	W = 1291.5		p = 0.8825
<i>Amyyeeza</i>	Using	122	27%	548	34%	$\chi^2 = 6.5$	df = 1	p = 0.01105
	Mean \pm SD Median \pm MAD	119	4.2 \pm 6 1.5 \pm 1.8	183	3.7 \pm 6.7 1.5 \pm 1.7	W = 11320		p = 0.5606

Table 6: Use of natural resource use categories by households according to vegetation type

Vegetation	Afromontane Forest		Eastern Thorn Bushveld		Valley Thicket		Test Statistic
	n ²⁰	n	n	n	n		
Fruits	% using	406	10%	287	34%	304	$\chi^2 = 138.3$ df = 2 p = 9.227e-31
	Mean \pm SD		7.7 \pm 6.3		169.7 \pm 187.1		
	Median \pm MAD	41	5.4 \pm 4.9	95	121.4 \pm 174.3	147	292.7 \pm 299.9 242.9 \pm 356.4 df = 2 W = 40.4 pP < 0.001
Fuel wood	% using	408	75%	284	88%	306	$\chi^2 = 20.5$ df = 2 p < 0.0001
	Mean \pm SD		3,620.4 \pm 3,311.9		3,192.6 \pm 2,419.8		
	Median \pm MAD	295	2,600.0 \pm 1,927.4	241	2,600.0 \pm 1,927.4	228	4,249.3 \pm 4,705.1 2,600.0 \pm 1,927.4 df = 2 W = 0.4832 p = 0.7854
Thatch	% using	214	90%	10	4%	14	$\chi^2 = 331.8$ df = 2 p = 8.787e-73
	Mean \pm SD		44.1 \pm 42.6		20.5 \pm 13.2		
	Median \pm MAD	207	27.5 \pm 18.5	10	17.5 \pm 11.1	14	42.4 \pm 40.1 33.0 \pm 27.4 df = 2 W = 4.4 p = 0.1136
Timber	% using	356	65%	159	29%	35	$\chi^2 = 420.7$ df = 2 p < 0.0001
	Mean \pm SD		49.2 \pm 24.5		44.3 \pm 21.3		
	Median \pm MAD	350	47.1 \pm 25.8	154	41.4 \pm 22.9	35	37.4 \pm 24.7 37.0 \pm 30.8 df = 2 W = 9.1 p = 0.01077
Fence	% using	155	43%	118	32%	91	$\chi^2 = 10.3$ df = 2 p = 0.00589
	Mean \pm SD		54.3 \pm 45.6		59.4 \pm 42.7		
	Median \pm MAD	155	42.2 \pm 37.7	117	52.4 \pm 42.0	91	59.8 \pm 65.3 48.4 \pm 41.0 df = 2 H = 2.2 p = 0.3385
Ritual	% using	309	45%	172	25%	207	$\chi^2 = 20.6$ df = 2 p < 0.0001
	Mean \pm SD		849.7 \pm 1074.5		448.3 \pm 685.5		
	Median \pm MAD	306	483.2 \pm 714.7	172	248.4 \pm 356.7	193	841.9 \pm 974.2 442.0 \pm 653.8 df = 2 W = 12.5 p = 0.001906

²⁰ The sample sizes used in quantity calculations are only for households where data were available, hence the sometimes reduced sample size for the quantity data.

<i>Imifino</i>	% using	137	28%	186	38%	166	34%	$\chi^2 = 70.6$	df = 2	p < 0.0001
	Mean \pm SD	136	32.1 \pm 36.4	185	33.6 \pm 25.5	166	39.2 \pm 29.4	W = 11.6	df = 2	p = 0.002962
	Median \pm MAD		22.8 \pm 16.9		22.8 \pm 16.9		22.8 \pm 25.3			
Kraal material	% using	318	40%	247	31%	235	29%	$\chi^2 = 13.0$	df = 2	p = 0.0015
	Mean \pm SD				808.1 \pm					
	Median \pm MAD	309	778.8 \pm 891.6 435.0 \pm 490.7	245	640.9 678.0 \pm 573.3	230	818.3 \pm 745.3 588.5 \pm 345.8	W = 13.8	df = 2	p = 0.0010
<i>Igoqo</i>	% using	122	30%	160	40%	120	30%	$\chi^2 = 47.6$	df = 2	p < 0.0001
	Mean \pm SD		1,489.3 \pm		637.8 \pm					
	Median \pm MAD	111	1,065.8 1,350.0 \pm 889.6	159	621.3 411.2 \pm 424.2	117	1,170.4 \pm 845.7 967.5 \pm 1,106.8	W = 66.6	df = 2	p < 0.0001
Sticks	% using	39	31%	38	30%	50	39%	$\chi^2 = 6.6$	df = 2	p = 0.03733
	Mean \pm SD		1.5 \pm 1.1		1.6 \pm 1.3		1.1 \pm 1.1	W = 10.0	df = 2	p = 0.00672
	Median \pm MAD	35	1.2 \pm 0.9	38	1.3 \pm 1.1	49	0.6 \pm 0.4			
<i>Amapyeza</i>	% using	115	37%	87	28%	107	35%	$\chi^2 = 2.8$	df = 2	p = 0.2447
	Mean \pm SD		3.9 \pm 5.8		1.7 \pm 2.4		5.8 \pm 8.5	W = 19.8	df = 2	p < 0.0001
	Median \pm MAD	113	1.6 \pm 1.9	87	1.0 \pm 1.0	102	2.6 \pm 3.1			

Table 7: Use of natural resource use categories by households according to village

Wealth	Benton (115)	Chata (272)	Crossroad s (172)	Ntkolo (170)	Pirie (137)	Woodlands (145)	Test Statistic			
Fruits	% using	46%	10%	26%	60%	10%	38%	$\chi^2 = 172.0$	df = 5	p < 0.001
	Mean \pm SD	214.0 \pm 221.2	6.9 \pm 5.6	113.8 \pm 111.6	397.3 \pm 298.8	9.3 \pm 7.6	9.3 \pm 7.6	f = 23.4	df = 5,277	p < 0.001
Fuel wood	% using	90%	68%	87%	76%	87%	78%	$\chi^2 = 40.3$	df = 5	p < 0.001
	Mean \pm SD	3,287.5 \pm 2,549.6	3,848.1 \pm 3,566.6	3,128.7 \pm 2,335.2	2,968.2 \pm 1,975.5	3,278.8 \pm 2,866.6	5,776.6 \pm 6,308.5	f = 1.05	df= 5,758	p = 0.389
Thatch	% using	3%	75%	3%	8%	15%	0%	$\chi^2 = 504.0$	df = 5	p < 0.001
	Mean \pm SD	14.4 \pm 11.6	46.7 \pm 43.8	24.6 \pm 13.5	42.4 \pm 40.1	18.0 \pm 26.2	0	f = 8.5	df = 4,226	p < 0.001
Timber	% using	82%	96%	39%	12%	71%	10%	$\chi^2 = 493.2$	df = 5	p < 0.001
	Mean \pm SD	43.6 \pm 22.8	52.2 \pm 24.0	45.2 \pm 19.1	42.5 \pm 23.7	41.0 \pm 24.0	29.9 \pm 25.1	f = 652.7	df = 5,533	p < 0.001
Fence	% using	35%	41%	45%	9%	35%	54%	$\chi^2 = 82.8$	df = 5	p < 0.001
	Mean \pm SD	68.9 \pm 50.4	55.6 \pm 35.5	54.4 \pm 37.6	43.5 \pm 34.9	50.9 \pm 64.0	63.2 \pm 70.0	f = 2.613	df = 5,357	p = 0.0248
Ritual	% using	56%	76%	63%	57%	74%	76%	$\chi^2 = 34.2$	df = 5	p < 0.001
	Mean \pm SD	549.2 \pm 797.0	894.7 \pm 1,075.2	388.5 \pm 606.1	656.0 \pm 942.8	755.8 \pm 1,072.3	1,018.5 \pm 975.4	f = 7.63	df = 5,665	p < 0.001
<i>Imifino</i>	% using	90%	28%	49%	79%	45%	22%	$\chi^2 = 229.2$	df = 5	p < 0.001
	Mean \pm SD	36.9 \pm 25.0	33.5 \pm 38.7	29.6 \pm 25.6	37.7 \pm 28.3	30.4 \pm 33.1	45.9 \pm 33.6	f = 4.31	df = 5,481	p < 0.001
Kraal material	% using	85%	79%	87%	66%	75%	84%	$\chi^2 = 30.0$	df = 5	p < 0.001
	Mean \pm SD	811.2 \pm 624.3	847.8 \pm 1,011.9	806.0 \pm 653.6	737.6 \pm 609.5	620.8 \pm 507.6	898.4 \pm 847.7	f = 3	df = 5,778	P = 0.0108

<i>Igoqo</i>	% using	55%	33%	56%	40%	23%	36%	$\chi^2 = 52.9$	df = 5	p < 0.001
	Mean \pm SD	687.3 \pm 579.6	1,328.2 \pm 919.7	606.2 \pm 647.6	1,189.8 \pm 836.4	2,073.2 \pm 1,347.6	1,144.4 \pm 865.9	f = 17.33	df = 5,381	p < 0.001
Sticks	% using	24%	6%	6%	11%	18%	22%	$\chi^2 = 47.0$	df = 5	p < 0.001
	Mean \pm SD	1.5 \pm 1.1	1.2 \pm 1.1	2.0 \pm 1.2	1.4 \pm 1.4	1.7 \pm 1.1	0.9 \pm 0.8	f = 3.64	df = 5,116	p = 0.00425
<i>Amoyeza</i>	% using	44%	21%	21%	35%	43%	34%	$\chi^2 = 2.8$	df = 2	P = 0.2447
	Mean \pm SD	2.0 \pm 2.9	4.0 \pm 5.9	1.3 \pm 1.2	6.8 \pm 10	3.9 \pm 5.8	4.5 \pm 5.8	f = 4.57	df = 5,296	p < 0.001

6. DISCUSSION AND CONCLUSION

Although it is clear that factors influencing the use of natural resources in the study area are complex, the results of this study indicate that the influence of vegetation type and the different geographical locations of the villages are more significant than inter-household variables such as wealth and gender. For example, numerous statistically significant differences were found between the number of species, resource use categories and quantities utilized amongst households located within the three vegetation types. In particular, more species were collected from the Eastern Thorn Bushveld and significantly higher quantities of natural resource material were utilized from the Valley Thicket. These findings consequently demonstrate the complexity and interplay of community level variables in the utilization of natural resources.

At an inter-household level an increase in the financial status of households did not result in a decrease in the use of natural resources nor in the quantity of material used as wealthier households continued to utilize natural resources that had either collected or had purchased from local vendors. These findings confirm the sentiments expressed by Cavendish (2000), Nababoga (2005) and Shackleton and Shackleton (in press) that few wealth related differences exist between households in with respect to the use of wild resources. For example, wealth was not a determining factor in four of the utilitarian resource use categories, such as the collection of wild fruits, fuel wood, timber and fence poles, revealing that an increase in disposable income does not necessarily result in these households purchasing alternative commercial supplies such as paraffin and gas, etc. Wealth also did not play a major influencing factor in the quantity of resource material utilized per household. These findings confirm the concerns raised by Cavendish (2000) that when considering the impact of rising quantities of resource demands and resource utilization on environmental stress we have to realize that comparative affluence rather than comparative poverty is a primary concern for environmental stress.

This concern is further enforced by the fact that wealthier households continued to use natural resources for specific ritual and spiritual practices for the hosting of rituals, the construction and maintenance of kraals and *amagoqo* and for thatching. Indeed in these cases an increase in wealth resulted in a higher percentage of households utilizing the resource thus confirming that wealth does not lessen the importance of these activities in rural areas. This finding substantiates the preliminary results of the Woodlands survey (Cocks and Wiersum 2003) which revealed that just more than half, 53%, of the total resources used per household on an annual basis were used for cultural and religious purposes.

Similarly, gender tended to statistically only influence those resource use categories classified as representing cultural uses, most notably the use of kraal material, material utilized for *amayeza* purposes and for the making of traditional sticks. In all three cases the use of these resources was dominated by male headed households as they represent important cultural practices for male members of the household. With regards to the

resource use categories classified as fulfilling utilitarian purposes, no statistically significant differences were found which is similar to those reported by Nabanoga (2005) in Uganda.

Over 200 hundred plant species were identified as being commonly used in the study area, demonstrating the crucial role of biodiversity in the lives of rural households. This finding also reiterates the need to recognize the integral role that biodiversity plays in peoples livelihoods both for utilitarian and cultural purposes. As has already been stated, biodiversity conservation should not only be pursued within protected areas but also outside such areas, including communal areas, as the adherence to cultural traditions within the study area should not be viewed as a retreat into cultural essentialism, but rather involves the subtle interactions between traditional and modern cultural orientations and experiences (Cocks 2006). Therefore, conservationists, development practitioners and policy analysts should develop an appreciation of the multitude of cultural values that affect the use of biodiversity and should incorporate these values in novel biodiversity conservation approaches. If these values are incorporated, the implementation of bio-cultural diversity conservation campaigns could have far greater success in maintaining bio and cultural diversity because solutions to conservation, as has already been well acknowledged (Cunningham 2001; Cocks 2006) in the literature, often lie in the mechanisms of social, cultural, and economic systems (Mascia *et al.* 2003).

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Appendix 1: list of the top 50 plant species used and number of times cited for each resource category by household members (n = 1 011)

No.	Species selected	K ²¹	FW ²²	R ²³	F ²⁴	I ²⁵	WP ²⁶	I ²⁷	A ₂₈	CI ²⁹	O ³⁰	Total
1.	<i>Acacia mearnsii</i>	335	129	70	80	48	1			524	3	1,190
2.	<i>Olea europaea</i> subsp. <i>africana</i>	158	84	263	43	68			6	45	64	731
3.	<i>Praeroxylon obliquum</i>	228	95	92	89	22			2	84	12	624
4.	<i>Trichocladus ellipticus</i>	130	138	89	10	54				131	29	581
5.	<i>Acacia karroo</i>	10	204	141		60			1		1	417
6.	<i>Solanum retroflexum</i>							327				327
7.	<i>Pinus</i> sp.	6			3					283		292
8.	<i>Coddia rudis</i>	236	8	1		2						247
9.	<i>Olea capensis</i> subsp. <i>capensis</i>	43	85	57	2	20				25	4	236
10.	<i>Sonchus oleraceus</i>							222				222
11.	Unidentified	65	8	2	8	3		1	1	85	20	193
12.	<i>Amaranthus hybridus</i>							153				153
13.	<i>Vepris lanceolata</i>		79	39		28				1	3	150
14.	<i>Ebretia rigida</i>	39	14	1		11				83	1	149

²¹ Kraal material

²² Fuelwood

²³ Ritual material

²⁴ Fencing

²⁵ *Igoqo*

²⁶ Wild fruits

²⁷ *Imifino* – wild vegetables

²⁸ *Amayeza yesixhosa* – medicinal plants

²⁹ Construction timber

³⁰ Other (utensils, circumcision huts, mats, yokes, etc.)

[illegible]

43.	<i>Acalypha glabrata</i>	4	2	1	31	1	39
44.	<i>Grewia occidentalis</i>	10	9	3	3	6	39
45.	<i>Mystroxydon aethiopicum</i>		7	1		29	39
46.	<i>Pittosporum viridiflorum</i>	1	10	1	27		39
47.	<i>Rhamnus prinoides</i>	30	3	4			37
48.	<i>Amaranthus</i> sp.				36		36
49.	<i>Marrubium vulgare</i>				36		36
50.	<i>Scolopia zeyheri</i>	2	2	30			34

CHAPTER 6

A NEW BROOM SWEEPS CLEAN: THE ECONOMIC AND CULTURAL VALUE OF GRASS BROOMS IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA

Cocks, M.L. and Dold, A.P. 2004. A new broom sweeps clean: The economic and cultural value of grass brooms in the Eastern Cape Province, South Africa. *Forests, Trees and Livelihoods* 14: 33-42.



Figure 1: Making of grass brooms for sale (Photo A. Dold)

1. ABSTRACT

In southern Africa over the last twenty years, much attention has been given to the importance of NTFPs for rural livelihoods through their household consumption and sale. They have been classified as having either subsistence consumption or commercial values. These values are mostly related to their utilitarian functions, but recent studies show that NTFPs also hold strong cultural functions. Such cultural functions can play a role in both rural and urban livelihoods; consequently the values of NTFPs may be related to both utilitarian and cultural functions. This paper demonstrates the cultural functions of grass brooms in urban areas in South Africa and the impact of their trade on income generation in rural areas, and discusses the concept of culture as a significant factor in the understanding of the role of NTFPs in livelihoods, and their values.

Key Words: Non-timber forest products (NTFPs), South Africa, utilitarian and cultural values, Xhosa people.

2. INTRODUCTION

Recently in southern Africa, much attention has been given to the importance of wild plants for rural livelihoods, both through their household consumption and sale (Campbell and Luckett 2002; Shackleton *et al.* 2002a). Wild harvested plant products are normally classified as having either a subsistence consumption value or a commercial value (Goebel *et al.* 2000; Campbell and Luckett 2002). Wild plants may also have cultural functions, but the significance of these has been poorly documented. The majority of studies that address cultural functions focus on areas or units of vegetation, such as sacred forests, rainmaking sites, land marks etc. (Posey 1999; Goebel *et al.* 2000). The cultural functions of harvested plants have for the most part been ignored. In South Africa this has largely been a result of the domination of a neo-marxist political paradigm within anthropology over the last two decades (McAllister 1997). This has meant that there was virtually no place for in-depth analyses of critical concepts such as culture and tradition (Spiegel and Boonzaier 1988; Kuper 1986). Notwithstanding the apartheid policy, the Xhosa people did not lose their cultural identity and traditions. Such traditions include the use of wild plants for cultural functions. Cocks and Wiersum (2003) for instance, show that wild harvested plant material and derived products can still hold a strong cultural value within rural and urban livelihoods.

Several studies have indicated that significant numbers of wild plant products are used in urban areas. This has been documented notably in connection with medicinal plant products (Mander 1998; Williams *et al.* 2000; Dold and Cocks 2002). Such medicinal use of wild plant products also has an important cultural dimension. For instance, in a study in the Eastern Cape it was found that 61% of the purchases of indigenous plant medicines were used for protection against evil spirits, 23 % for good luck, and 10% for removing poison inflicted through sorcery or cleansing the blood (Cocks and Møller 2002). Such

data indicate the significance and value wild plants have for urban communities through commercialisation (Wiersum and Shackleton 2006) for either utilitarian or cultural functions. The commercialisation of natural resources is a growing phenomenon with recent studies now investigating rural–urban links (Wiersum and Shackleton 2006). In South Africa, much attention has been given to the flow of cash and remittances from urban to rural areas, however, far less acknowledged is the reverse flow of goods and culture to urban areas (Wiersum and Shackleton 2006) and the significance of NTFPs to urban cultural diversity.

The lack of understanding of the complex role that NTFPs fulfil in the lives of its users in South Africa is caused by the historic lack of attention to assessment of the relationship between nature and culture. The study of the nature and importance of bio-cultural diversity should be a focus in South Africa because of its unique historical, political and economic past and the current drive towards sustainability of use of natural resources. It is thus important to collect empirical information on the nature of cultural practices and to develop fresh and relevant explanations of the nature and significance of so-called continuities in cultural practices, in spite of the onslaught of the apartheid state and ongoing impact of global economic change.

The purpose of this paper is to demonstrate the flows between country and town using the cultural and economic value of grass brooms and the role of grass brooms in maintaining rural-urban links, and complement the studies that report on the manufacture and use of brooms at a household level (Shackleton 1990; Shackleton *et al.* 2002b). The article focuses on the following questions:

- What factors contribute to the continued use and cultural value of grass brooms within an urban context?
- How are grass brooms produced and marketed, and what role does this trade play in income generation?

3. METHODS

Information pertaining to the urban use of the brooms was collected from Nelson Mandela Metropole (NMM) in the Eastern Cape Province of South Africa (Figure 2). NMM is home to 775,255 people, of whom 56% are black Africans (Statistics South Africa 1996). The broom producers (Figure 1) hawk their products from door to door or sell them informally at the taxi ranks. The areas selected for study in NMM included both suburban and informal settlements, viz. KwaZakhele, New Brighton, Motherwell, KwaMagxaki, Costine and Njoli. Interviews were conducted with 204 broom buyers while they were purchasing a broom.

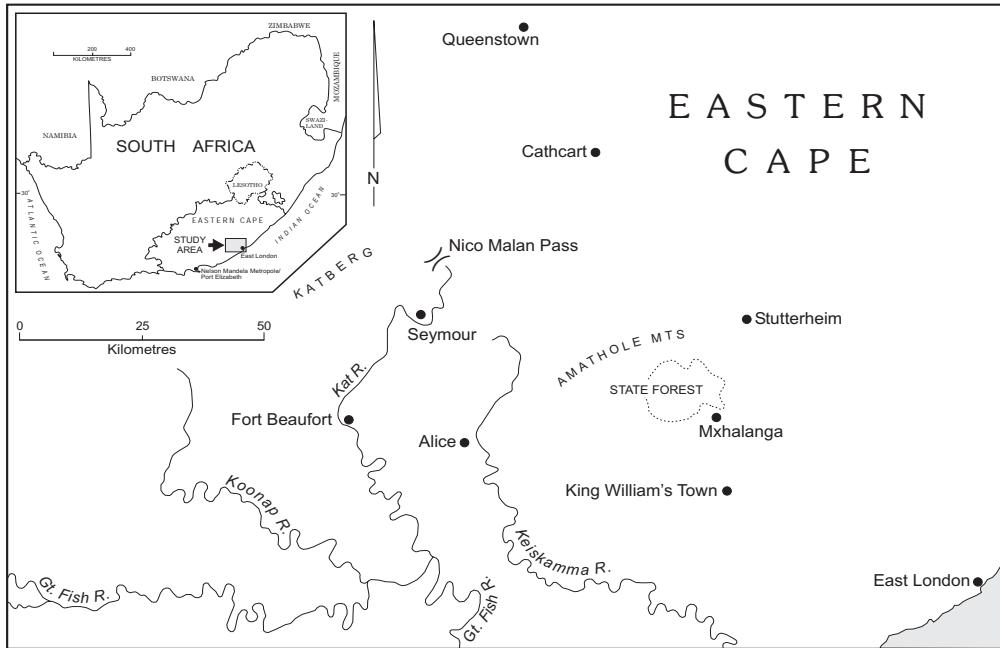


Figure 2: Study sites

The grass brooms used in NMM are mostly produced in Mxhalanga, a village located in the former Ciskei homeland of the Eastern Cape Province of South Africa (Figure 2). The homelands are the result of resettlement policy implemented by the former apartheid government. They are characterised by poor infrastructure, high population densities, and high poverty levels (Viljoen 1994). A large proportion of the population of Mxhalanga is not formally employed and relies on welfare payments, or on urban earnings, rather than on subsistence based economies.

Mxhalanga village comprises 427 households comprising 2,241 people.

- 9% are employed;
- 14% are not formally employed and looking for work;
- 11% are pensioners;
- 37% are < 15 years of age and
- 29% represent other categories (those not looking for work, housewives, students and disabled people).

Seventy six percent of the population have no formal income (Statistics South Africa 1996).

Fifty percent ($n=31$) of all the broom producers in the broader Mxhalanga district were interviewed to obtain information on the production system. Demographic profile and household socio-economic status were recorded together with particulars regarding broom

making such as production and marketing activities, number of brooms sold annually, costs and gross surplus.

4. USE OF GRASS BROOMS IN NELSON MANDELA METROPOLE

In Nelson Mandela Metropole two types of grass brooms are sold, i.e. large brooms (*umtshayelo wentonga*) and small grass broom (*umtshayelo wesandle*) (Figure 3).

Eighty-four percent of grass broom buyers were female while only 16% were male (demographic profiles are provided in Table 1). Seventy five percent of the buyers purchased a grass broom for themselves, 19% purchased a broom for their mothers and 6% for their wives. The reasons for purchasing a broom varied with 59% purchasing a broom for cultural purposes. The remaining 41% indicated that they used a grass broom for cleaning purposes as it was considered to be more effective than a commercially available broom. Grass brooms are replaced up to three times a year. Three main cultural uses of grass brooms were reported:

- as a traditional wedding gift;
- as a protective talisman against lightning, and
- as an implement for the application of traditional protective medicine.

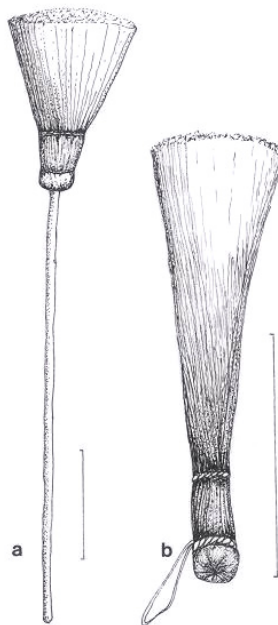


Figure 3: Hand made grass brooms from Mxhalanga: a) *umtshayelo wentonga*, b) *umtshayelo wesandle*. Scale bar 300 mm. Illustrations A.P. Dold

Table 1: Buyers' profiles

Buyers' profiles		Percentage
1. Gender	Male	17% (n = 32)
	Female	83% (n = 172)
2. Age	> 60	12% (n = 25)
	30–59	81% (n = 165)
	18–29	7% (n = 14)
3. Household status	Head	49% (n = 100)
	Wife	39% (n = 79)
	Daughter	12% (n = 25)
4. Education level	None	15% (n = 31)
	Primary	34% (n = 71)
	Secondary	42% (n = 88)
	Further	9% (n = 14)

Seventy percent of the broom purchasers recorded in this study bought the broom as a wedding gift for a family member; furthermore an equal proportion of the buyers had also received a broom as a gift at their own weddings. The traditional ceremonial presenting of the broom is called *ukutyiswa amasi* (literally to present a gift of sour milk) (Hunter 1936). The broom is symbolic of traditional Xhosa culture and symbolises respect to the ancestral faith in the newlyweds' home, irrespective of religious affiliation, economic status and geographical location. The brooms are used on a daily basis and replaced when necessary.

A large majority (72%) of those who purchased a broom for cultural purposes indicated that the presence of the small broom (*umtshayelo wesandle*) in the home served to protect the inhabitants from lightening, most often attributed to sorcery (Soga 1931; Hunter 1936). A broom purchased for this purpose is not used for cleaning, but is placed above the door as a talisman.

A similar proportion of the respondents (72%) who purchased a broom for cultural purposes also reported that a grass broom is used to apply protective medicines in and around the homestead. The ritual in which an infusion of various plant materials is splashed or sprayed on the floor, walls and roof is called *ukutshiza* (Dold and Cocks 2000). This ritual cleansing and purification ensures the good health and prosperity of the inhabitants (Soga 1931; Hunter 1936; Cocks and Møller 2002). The small broom used in this ritual is not used for cleaning.

Several socio-economic factors influence the use of grass brooms in the study site (Table 2). The most significant of these is level of education, family origin, followed by economic status and age. The cultural importance of brooms decreased with higher levels of education. Families originating from the former homeland regions were significantly more likely to use brooms for cultural purposes than those families originating from the former Republic of South Africa. Economic status (expressed by means of housing type) was

significant, with people in lower economic groups more likely to purchase brooms for cultural purposes. Older people tended to buy brooms more for cultural purposes than for cleaning. However the length of the period of urbanization was not significant. These findings clearly show that the use of wild plant products in urban areas is not exclusively utilitarian.

Table 2: Percentage of buyers using the brooms for cultural and cleaning uses (n=204). X² results are shown (NS=Not significant, $p > 0.05$; $* = p < 0.05$; $*p < 0.001$)**

Variables	Cultural	Cleaning	X ²	Significant
1. Respondent's level of education			32.73	***
None	26	0		
Primary	50	26		
Secondary	37	51		
Further	5	9		
2. Origin of household			23.98	***
Former homeland	66	20		
Former R.S.A. ³¹	49	67		
3. Type of house			7.27	*
Brick	52	54		
Informal shack	56	26		
Wattle and daub	7	7		
4. Respondent's age			6.62	*
> 60 years	20	5		
30-59 years	92	73		
18-29 years	6	8		
5. Years living in NMM			3.80	NS
Less 10 years	41	23		
Betw 10-20 years	51	37		
> 20 years	23	27		

5. GRASS BROOM PRODUCTION AND MARKETING IN MXHALANGA VILLAGE

The grass brooms referred to in this study are made from *Cymbopogon validus* (Stapf) Stapf ex Burtt Davy), an aromatic tufted perennial reaching 2.4m high that is widespread

³¹ Former Republic of South Africa

and common throughout the eastern regions of South Africa (Van Oudtshoorn 1992). The Xhosa name for this species is *Irwashu*.

5.1 PRODUCTION CHARACTERISTICS

Thirty-one grass broom makers were interviewed in Mxhalanga village. Broom makers are all female and are predominantly (61%) between the ages of 30 and 59 years of age. Few younger women have the interest or skills for this craft. The majority (59%) are heads of their households and only have primary level education (77%).

Material to produce brooms is harvested on a privately owned farm on the Nico Malan Pass in the Seymour district (Figure 1). Both types of broom are produced at Mxhalanga. The producers consider the smaller — *umtshayelo wesandle* — to be of traditional Xhosa origin, a sentiment supported by early historical records (McLaren 1919). The long-handled broom is made in the same way but a wooden handle is attached. According to Shaw and Van Warmelo (1981) this type of broom was originally copied from a European broom but has been in existence for more than a century.

5.2 MARKETING ACTIVITIES

Grass brooms are seldom sold within Mxhalanga but the producers travel extensively to sell them — indicating a strong rural-urban linkage. Sale localities include Alice, Cathcart, East London, King William's Town, NMM, Queenstown and Stutterheim (Figure 1).

Two methods of sale are employed; sellers may sell from door to door in residential areas, or they may set up an informal roadside stall near taxi ranks and bus stations where commuters are targeted as potential customers. No advertisement or discourse other than simply displaying the brooms is employed during the selling process, so there must be an inherent awareness of the cultural significance of the small brooms.

5.3 INCOME GENERATION

Approximately 7,200 large brooms and 1,400 small brooms are produced in Mxhalanga per year. The average price for a large broom is \$1.40 and \$0.49 for a small broom. In total the thirty-one grass producers interviewed gross \$10,800 per year. This equates to approximately \$350 per producer per year. The expenses incurred by the broom producers' amount to approximately \$110 per year. These costs include transportation to and from the harvesting site, permit fees to harvest the grass, the cost of harvesting saplings to produce the handle, accommodation and transportation costs to and from the urban areas. This consequently results in a net profit of \$240 a year per producer.

6. DISCUSSION AND CONCLUSION

This example, of grass brooms demonstrates that the use of wild plant products is not restricted to rural utilitarian use, but constitutes an important element in the performance

and conservation of cultural practices and traditions. Fifty nine percent of the buyers of grass brooms in the urban centre did so for cultural purposes. This indicates that many households living in urban centres still adhere to their cultural norms and practices and rely, to some degree, on NTFPs to fulfil these functions. The predominance of women purchasing grass brooms suggests that these fall within the women's domain. The extent to which urban people still adhere to such cultural practices is complex and is influenced by variables such as family origin, economic status, level of education and age.

As a result of their multiple functions there is a high demand for grass brooms in urban areas. This provides the opportunity for people living in disadvantaged areas such as the former homelands to generate an income. The trade value of grass brooms to producers in Mxhalanga is significant (\$240 per producer per year) considering that 77% of residents are not formally employed. Shackleton (1990) showed that harvesting of the *Cymbopogon* grass promotes annual growth and observations in the production area indicated that *C. validus* is a sustainable resource for Mxhalanga broom producers at the current level of harvesting.

Additional links between rural and urban areas are illustrated by urban-based families and individuals return to their rural family home to participate in important cultural events (Cocks and Wiersum 2003; Wiersum and Shackleton 2006). In the case of the grass brooms another link exists as women from the rural production areas commute regularly to urban centres to sell grass brooms. Similar linkages have been reported for the urban sale of medicinal plant products (Dold and Cocks 2002). This finding illustrates how NTFPs from rural areas help to maintain cultural customs in urban areas. It is sometimes suggested that indigenous communities are losing their ethnobotanical knowledge through acculturation pressure and intrusive knowledge forms (education and bilingual ability) emanating from urbanised areas (e.g. Zent and Zent 2002). This may be particularly relevant in South Africa, where apartheid has resulted in a breakdown of traditional rural structures in the former homelands (Van Wyk *et al.* 1997). The fact that younger people with higher education use brooms more frequently for cleaning rather than for cultural purposes indicates that the cultural importance of brooms is declining in the study site. Nevertheless the impact of urban-based cultural uses needs to be factored into equations predicting market demand for natural resources.

This study provides a clear example of the continuities in cultural practices in spite of the onslaught of the apartheid state and the ongoing impact of global economic change. Cultural practices are still significant even in contemporary highly urbanized settings. We therefore need to reintroduce the concept of culture into our analyses and not simply portray the significance of the environment and its products in terms of just economic values to users.

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CHAPTER 7

CULTURAL SIGNIFICANCE OF BIODIVERSITY: THE ROLE OF MEDICINAL PLANTS IN URBAN AFRICAN CULTURAL PRACTICES IN THE EASTERN CAPE, SOUTH AFRICA

Cocks, M.L. and Dold, A.P. 2006. Cultural significance of biodiversity: The role of medicinal plants in urban African cultural practices in the Eastern Cape, South Africa. *Journal of Ethnobiology* 26(1): 60-82.



Figure 1: Informal medicinal plant street market (Photo A. Dold)

1. ABSTRACT

Since the International Convention on Biodiversity in 1992 conservation biologists, ecologists and conservationists have devoted considerable attention to the conservation of biodiversity. With this has come the realization that solutions to biological problems often lie in the mechanisms of social, cultural, and economic systems. This shift has emphasized the relationship between biodiversity and human diversity, or what the Declaration of Belem (1988) calls an 'inextricable link' between biological and cultural diversity. The term bio-cultural diversity was introduced by Posey to describe the concept denoting this link. To date this concept has been used only in reference to 'indigenous people' who, as part of their traditional lifestyles, use biodiversity to sustain their cultural identity. Our research, however, demonstrates that Xhosa people (*amaXhosa*) living in an urban context in the Eastern Cape Province of South Africa continue to use wild plants for cultural purposes and often access these through commercial trade. We suggest that recognition of the cultural and spiritual values associated with wild plants would greatly enhance biodiversity conservation efforts. Recognition of the significant role that wild plants play in fulfilling cultural needs for urban Xhosa people would go a long way towards achieving this.

Key Words: bio-cultural diversity, medicinal plants, South Africa, Xhosa people.

2. INTRODUCTION

The 1992 International Convention on Biodiversity stressed the vital role biodiversity plays in the ecological health of the planet. Since then scientists and environmentalists have paid greater attention to the conservation of biodiversity. As a result, biologists, ecologists, and conservationists have come to realize that solutions to environmental problems often lie in the mechanisms of social, cultural, and economic systems (Mascia *et al.* 2003). This shift in emphasis has resulted in increased attention being directed towards the relationship between biodiversity and human cultural diversity. Many of the planet's areas of highest biological diversity are inhabited by indigenous and traditional people, providing what the Declaration of Belem (1988) calls an 'inextricable link' between biological and cultural diversity, termed bio-cultural diversity by Posey (1999). Although there is a growing use of the term in current literature, there has been little critical reflection on precisely what it refers to. In particular, people at all levels of acculturation to their national societies may have knowledge and use of the 'natural' environment. Therefore, to take full advantage of the term 'bio-cultural diversity' for conservation efforts, key concepts related to it, such as 'indigenous' and 'local' people, must be embedded to include peri-urban and urban contexts (Cocks 2006). The reason is that increased urbanization does not necessarily imply a loss of traditional cultural values related to biodiversity use. For example, Cocks and Wiersum (2003) estimate that in peri-urban resettlement areas in South Africa, 50% of the harvested wild plant material utilized between households is used to fulfill religious, ritual and spiritual requirements

rather than serving purely a utilitarian function in the household. Such continued adherence to rituals and cultural practices in southern Africa often goes unnoted (Bank 2002; Beinart and McGregor 2003).

Furthermore, those who use the concept of bio-cultural diversity must fully understand the relationship between humans and the environment including the way people use the resources available to them from a biologically diverse environment. In this regard it is important to recognize not only the spiritual values of sacred sites and plant and animal species as has been commonly documented (Laird 1999; Posey 1999), but also the use of wild harvested resources for spiritual, ritual and religious purposes. For example, we refer to the trade of traditional grass brooms within urban centers in the Eastern Cape Province of South Africa. The brooms are given to a bride as a wedding gift. The ceremonial presentation of these gifts is symbolic of traditional Xhosa culture and symbolizes respect for the ancestral faith in the newlyweds' home. The broom is also used to apply protective medicine (*amayeza*) to the home by ritually splashing an infusion of plant material against the walls and roof of the house (*ukutshiza*) (Cocks and Dold 2004).

We do not yet fully understand the reasons for the continuing use of wild plants in urban areas in southern Africa. Many studies have documented the economic value of the trade in medicinal plants within urban contexts (Cocks *et al.* 2004; Dold and Cocks 2002; Mander 1998; Williams 2004; Williams *et al.* 2000) and the problematic relation to biodiversity conservation through unsustainable harvesting (Cunningham 1991, 1997; Dold and Cocks 2002). However, there has not been much reflection on why urban South Africans continue to purchase 'medicinal plants' on such a massive scale (Figure 1). There are a few qualitative accounts of the continued adherence to culturally inspired uses of medicinal plants (Hammond-Tooke 1989; Hutchings 1989), but there have been no quantitative analyses of such usage among the Xhosa living in cities. This research begins to qualify and quantify *amayeza* plants used in an urban context. In the medical and anthropological literature, the term *amayeza* is usually translated simply as 'medicinal plant' in relation to the treatment of physical ailments and their respective causes. We however suggest that *amayeza* refers to well-being and healing practices in the broadest sense of the word, including non-physical spiritual, ritual, and religious functions, which helps explain the reasons for its importance in 'non-traditional' setting.

3. AIMS AND RESEARCH METHODOLOGY

Several studies show that the use of and trade in medicinal plants in the Eastern Cape Province of South Africa is poorly understood. The aim of this research is to contribute towards an understanding of why Xhosa people living in urban areas continue to use wild plants. We document the uses and assess the value of the most frequently traded plants regarding their physical and non-physical use and evaluate the significance of these plants to a sample of urban users stratified by income as defined by cluster analysis. Furthermore, we suggest that the cultural value attributed to many plant species could be

used as an argument to support the conservation of biodiversity as well as cultural diversity.

The following questions are posed:

- What are these plants used for?
- What is the significance of these plants to the users?
- What socio-economic factors influence the urban use of 'medicinal' plants?

Information on the urban use of medicinal plants by Xhosa people was collected during two studies, in King William's Town and East London, in the Eastern Cape Province of South Africa. The Xhosa people are of Nguni descent and are concentrated in the Eastern Cape Province, with a large rural population in the former Homelands of Ciskei and Transkei and the urban areas in the province. Xhosa is the second most commonly spoken language in South Africa, with about 7 million primary speakers (constituting just over 17% of the total South African population).

The first study, completed in 2000, documented the urban trade of wild plant species including the quantities and market values of each (Dold and Cocks 2002). This survey was conducted in six urban centres in the Eastern Cape Province, including King William's Town, Port Elizabeth, Queenstown, Uitenhage, Umtata and East London. Two hundred and eighty two questionnaires were answered by key participants in the medicinal plant trade, including medicinal plant street traders, medicinal plant store owners (African chemists), traditional healers, and clinic patients. This study showed that approximately 525 tonnes of plant material, comprising at least 166 taxa and valued at approximately US\$4 million, are traded annually in the region. Details of the economic value of the 60 most frequently traded plant species are provided by Dold and Cocks (2002), but the uses of these plants are given, categorized, and discussed for the first time in this paper (Appendix 1). This elaboration of data detailing the use of the medicinal plant species was gained through additional in-depth interviews with key informants (traders and collectors) and specialist users (traditional healers, diviners and herbalists) over an extended period.

A second study, completed in 2004, constituted a survey amongst medicinal plant users living in King William's Town and East London. Five hundred and thirteen households were interviewed to document their use of medicinal plants over a period of one year. Data on household composition and economic status were collected from 302 of these households. A summary of the household profiles is provided in Table 1. Cluster analysis techniques were used to identify wealthy and poor households. The households were found to cluster statistically into three groups, identifiable as poor, middle income and wealthy. Variables used to cluster the households included assets such as a motor vehicle, television, or refrigerator; the size of the house (number of rooms); construction type (brick, zinc, wood) and number of household members and income (employment, pension, state grants). A summary of the main socio-economic conditions of the different categories of households and their statistical comparisons are provided in Table 2. Where the variables were categorical, a Chi-Squared test of independence was used. For numerical

variables, we used the Kruskal-Wallis test to determine significant differences in locations among the three groups.

4. THE ROLE OF 'MEDICINAL' PLANTS—*AMAYEZA YESIXHOSA*

Directly translated, *amayeza yesiXhosa* means 'Xhosa medicines' and comprises plant-based medicines for both physical illness recognized by Western biomedicine and afflictions recognized by Xhosa people as being caused by the supernatural (Kropf 1915; Soga 1931). For most indigenous non-European South Africans, good health requires not only a healthy body, but also a healthy environment because it is possible to absorb harmful elements from the environment that can cause misfortune and ill-health (Ngubane 1977).

Table 1: Socio-economic profile of the households surveyed (n = 302 households)

Household members	Frequency			As a percentage of the household		
	Mean	Median	Range	Mean	Median	Range
Adults	2.8	3	0–7	63.6	60	0–100
Children (< 18 years)	1.7	2	0–8	33.8	33	0–100
Pensioners	0.1	0	0–2	2.4	0	0–33
Formally Employed	1.0	1	0–4	24.4	20	0–100
Informally Employed	0.3	0	0–4	7.8	0	0–100
Self Employed	0.0	0	0–2	3.0	0	0–100

For Xhosa people, good health, disease, success or misfortune are seldom considered to be chance occurrences, but are often the result of active intervention by individuals or the ancestors (*izinyanya*) (Gelfand 1957; Bührmann 1986; du Toit 1998; Hirst 1990). Indigenous South Africans take measures to protect themselves by strengthening their own resistance and that of their family members to withstand harm. It is important to establish and maintain a form of balance with one's surroundings (Ngubane 1977). A number of ritual activities are engaged in to maintain ones' health. Communication with the ancestors is of foremost importance and using medicines, remedies and wearing protective necklaces are further health strategies (du Pisani 1988). Certain forms of ritual purification such as a ritual body wash (*ukubhlamba ngeyeza*), use of a purgative (*ukugabha* and *ukucima*), spraying (*ukutshiza*), fumigating (*ukugxotha*) or a steam treatment (*ukufutha*) as counteractive and protective measures often involve the use of plant material (du Toit 1998). Some illnesses (*ukufa kwamaXhosa*) are perceived as only being treated with traditional Xhosa medicine (*amayeza yesiXhosa*), although symptoms may be relieved simultaneously with patent medicines (Cocks and Møller 2002).

In accordance with the above discussion, the non-physical uses of *amayeza* were assigned to four broad categories, namely spiritual cleansing, luck, protection against evil spirits, and sorcery. *Amayeza* used to treat physical complaints, such as fevers, headaches and high

blood pressure, are generally called *umkhublane* and refer to physically caused illness (Kropf 1915). Medicines to treat these conditions are considered potent and effective and therefore do not require ritual action (Ngubane 1977).

Table 2: Socio-economic conditions of the households interviewed

	Poor	Middle income	Wealthy	Test Statistic
1. Household Head				
Gender (%)				$\chi^2 = 5.4$; df = 1; p < 0.05
Female (n = 125)	33%	34%	33%	
Male (n = 172)	24%	31%	45%	
Education Level (%)				$\chi^2 = 76.9$; df = 6; p < 0.0001
None or Primary (n = 64)	39%	44%	17%	
Secondary (n = 48)	33%	40%	27%	
Higher secondary (n = 55)	32%	33%	35%	
Further (n = 60)	2%	10%	88%	
2. Household Income (Mean \pm SD)				
Number of formal jobs within the household (n = 298)	0.5 \pm 0.5	1.0 \pm 0.8	1.3 \pm 0.8	H=55.1; df=2; p < 0.0001
Number of pensions or welfare grants within the household	0.2 \pm 0.4	0.3 \pm 0.5	0.2 \pm 0.5	H=2.26; df=2; p < 0.001
Number of informal jobs within the household	0.5 \pm 0.6	0.3 \pm 0.6	0.1 \pm 0.4	H=21.3; df=2; p < 0.0001

5. RESULTS

5.1 SPECIES TRADED IN URBAN MARKETS AND THEIR USES

The 60 most frequently traded plant species in urban markets in the Eastern Cape are listed elsewhere (Dold and Cocks 2002). Analysis of their uses reveals that 52 of the species were sold for more than one use. Of these, 49 were found to have non-physical functions with 27 being used exclusively to treat *ukufa kwamaXhosa* related ailments and afflictions. Forty were used to treat 33 physical ailments.

Thirty of the plant species traded in urban markets (Dold and Cocks 2002) are administered as emetics (*iyeza lokukugabha*) and enemas (*iyeza lokukucima*) used either routinely as a preventive health measure or at the onset of illness symptoms.

It is often believed that a cure or relief is to be found only through ritual purging and cleansing of the body, internally and externally. In agreement with Pujol (1993) and Leclerc-Madlala (1994), we find that purging in all its forms is often the first course of action in the quest for a cure for illness. Purging is often accompanied by washing with an infusion of plant material (*iyeza lokuhlamba*) (29 species) as a protective measure against afflictions caused by the ancestors, sorcery and evil spirits (*umgqwaliso*), and non-physical afflictions such as 'dirty blood' (*igazi elimdaka*), presumed to be caused by the supernatural. Similar infusions are sprayed and sprinkled (*ukutshiza*) on the walls, roof, and floor of the home and the cattle byre (9 species) with a traditional grass broom (Cocks and Dold 2004), also as a protective measure. Plant material is burnt as incense to fumigate (*ukugxotha*) the home and the body by inhalation (6 species) and boiled to steam the body and face (*ukufutha*) (13 species) as a protective measure, and in preparation for rituals honoring the ancestors. Charm plants often living, are positioned in and around the home and cattle byre as protective agents, (*intelezi*) or are carried on the person (*ikhubalo*) to ensure positive results in, for example, sporting events, court cases, exams, business transactions, and courting (9 species). Specific plants are used in various ways to facilitate communication with the ancestors (*ubulawu*), most often during rituals (3 species). These data clearly demonstrate the importance of what has been called well-being' enhancing medicines (Cocks and Møller 2002).

5.2 URBAN HOUSEHOLD USE OF *AMAYEZA*

The urban household surveys in King William's Town and East London indicated that 67% (n = 513) of the households interviewed had made use of *amayeza* within the past year. In total 64 plant species were used: 17 species had multiple uses, 45 species were used for non-physical purposes and 26 species were used to treat physical complaints.

A total of 674 use occurrences during 2004 were recorded of which 45% (306) were for non-physical complaints and 55% (367) for physical symptoms. Forty five percent (306) of the *amayeza* utilized were purchased from urban vendors. Of these, 58% (175) were used for non-physical complaints while 42% (128) were purchased to treat physical symptoms. Thirty two percent (215) were collected from home gardens and 19% (132) from surrounding natural vegetation. The remaining 4% were not given a location. Of the collected *amayeza* 34% (119) were used for non-physical purposes and 66% (228) for physical symptoms.

The highest level of *amayeza* use was recorded amongst households that were classified as poor, followed by middle income and wealthy households (Table 3). Subsequently a statistical relationship was established between wealth and the use of *amayeza* (Table 4). Households using *amayeza* were predominately headed by a male (46%), between the age of 30 and 59 years old (47%), employed in low and medium skilled occupations (21%) and with secondary levels of education (36%).

Table 3: Influence of wealth on household use of *amayeza* in King William's Town and East London in 2003

	Poor households n = 84		Middle income households n = 98		Wealthy households n = 119	
	Use <i>amayeza</i>	Do not use <i>amayeza</i>	Use <i>amayeza</i>	Do not use <i>amayeza</i>	Use <i>amayeza</i>	Do not use <i>amayeza</i>
Percent	75	25	66	34	54	46
Test significance	$\chi^2 = 10.003$, df = 2, p < 0.01					

Poor households utilized the highest percentage of *amayeza* for non-physical purposes (50% of 84 households), followed by middle income households (47% of 98), and wealthy households (44% of 119). Although wealth clusters showed few differences regarding non-physical use of *amayeza* it was found that 7% of the middle income and 7% of the wealthy households used *amayeza* for protection against sorcery whereas no poor cluster households did. A higher proportion of the poor (26%) and middle income (29%) households made use of *amayeza* for spiritual cleansing whereas only 15% of the wealthy households reported this use.

Table 4: Household demographic factors affecting urban use of *amayeza* in King William's Town and East London in 2003

	<i>Amayeza</i> use (%)		Test Statistic and p-value
	No	Yes	
1. Gender of household head (n = 469)			$\chi^2 = 5.3$; df = 1; p < 0.05
Male	18	46	
Female	9	27	
2. Occupation of household head (n = 334)			$\chi^2 = 23.0$; df = 4; p < 0.001
Pensioner	4	15	
Professional	9	10	
Not formally employed	2	13	
Low/medium skill	13	23	
Other	1	8	
3. Education level of household head (n = 339)			$\chi^2 = 28.4$; df = 3; p < 0.001
None or primary	3	23	
Secondary	16	36	
Further	10	12	
4. Age of household head (n = 388)			$\chi^2 = 7.6$; df = 2; p < 0.05
> 60	5	20	
30 – 59	25	47	
18 – 29	1	2	

6. DISCUSSION AND CONCLUSION

An analysis of the trade survey data reveals that the majority of *amayeza* species are sold for more than one use (52 species), including both physical ailments (40 species) and non-physical ailments (48 species), those being perceived to be of supernatural causes. Of the 60 most frequently traded *amayeza* species, 50% were used for purging and 48% for ritual washing of the body, where both practices use infusions of plant material. These ritual applications are requirements for the treatment of and protection against sorcery, for communicating with the ancestors, for counteracting evil forces, for spiritual well-being and as good luck charms.

Although it is widely acknowledged that some urban indigenous Africans make use of traditional medicine, the urban household survey reveals that as many as 67% of urban dwellers in the study site used *amayeza* during a one-year period. The majority of the 64 *amayeza* plants used by these households addressed non-physical afflictions. Due to the large diversity of plant species required for non-physical purposes, many of these plants had to be purchased at informal medicinal plant markets supplying the urban market. Clearly urban dwellers, particularly those from poor households, are prepared to spend cash to obtain these resources. This demonstrates that elements of traditional world views related to health care and well-being are still strongly adhered to in urban areas. A smaller percentage of plants were grown in home gardens, and were used primarily to treat physical ailments such as the common cold and coughs. Some plants were also collected from natural vegetation in neighbouring areas.

The highest level of *amayeza* use was recorded amongst poor households, followed by middle income and wealthy households. The reason for this may be twofold: pharmaceutical medicines are often not within the financial reach of poor households, and wealthy households, being financially and socially more secure, are less likely to encounter misfortune requiring protective *amayeza*. In contrast, the middle income and wealthy households use *amayeza* to treat symptoms associated with sorcery, indicating that with an increase in wealth members of the household experience the threat of witchcraft, most often attributed to jealousy, more frequently than do poor households.

Despite less use of *amayeza* by wealthy households, still more than half of the wealthy urbanized households used *amayeza*, indicating that Xhosa beliefs and practices are still retained by these households. This study demonstrates the significant role that wild plants play in providing health services and a feeling of 'well-being' among urban groups. Furthermore, both Cocks and Wiersum (2003) and Lieshout (2002) show that children and youths in the study area expected to continue using wild plants for physical and non-physical ailments in the future.

Dold and Cocks (2002) found that 93% of the *amayeza* species traded in the Eastern Cape are harvested unsustainably. Consequently Dold and Cocks (2002) recommend giving high priority to 34 species for conservation management, as wild plant stocks are being depleted to dangerously low levels. Three species are listed as IUCN Red List species as a result of their over-exploitation for the *amayeza* trade (Victor and Dold 2003). These three

species are used to treat *ukufa kwamaXhosa* afflictions, thus indicating that such practices are also potentially threatened by the loss of these species.

If a goal of biodiversity conservation includes managing change in dynamic environmental systems (Infield 2001), conservation programs need to take into account ever changing cultural circumstances (Cocks 2006). In our view it is of paramount importance that biodiversity conservation programs develop campaigns which emphasize the link between cultural and biodiversity conservation. Biodiversity conservation programs must take cognisance of the multitude of cultural values that affect biodiversity, as these factors are an integral part of the newly emerging socio-economic group in newly emerging socio-economic conditions. This message needs to become the central thrust in biodiversity programs. Conservationists need to be made aware not only of the link between the loss of the natural habitat and cultural practices, but also of the options for incorporating cultural values in novel biodiversity conservation approaches. It is believed that the implementation of such educational campaigns would have far greater success than species-focused conservation approaches, which are perceived to benefit only the elite and not the ordinary person in the street. Highlighting the significant role that *amayeza* species play in fulfilling ritual and spiritual practices and needs amongst the Xhosa they would go a long way towards achieving this.

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Appendix 1: The 60 most frequently traded plants in order of frequency and their uses. (Frequency refers to the number of respondents who listed the plant species amongst their top ten most commonly sold plant species.) Botanical nomenclature follows Germishuizen and Meyer (2003) and Xhosa orthography follows Dold and Cocks (1999). Voucher specimens are lodged in the Selmar Schonland Herbarium (GRA).

No.	Xhosa name; Latin binomial & Family name (voucher specimen number)	Recorded uses
1.	<i>inongwe, ilabatbeka</i> <i>Hypoxis hemerocallidea</i> Fisch. & C.A. Mey., Hypoxidaceae (Dold 4000)	An infusion of the tuber is taken orally to treat kidney pain, high blood pressure, diabetes and arthritis, and as a general tonic for poor health; a paste is applied topically to treat pimples and acne and skin rash (<i>umlambo</i>) caused by <i>abantu bomlambo</i> .
2.	<i>isidumo</i> <i>Ilex mitis</i> (L.) Radlk., Aquifoliaceae (Dold 4027)	An infusion of the bark is taken orally to treat excess bile (<i>inyongo</i>) in the stomach; a gargle for sore throat; a steam treatment /wash for pimples or acne; an emetic to ensure good fortune; powdered bark is applied as a cosmetic to protect women from evil spirits (sorcery).
3.	<i>uchithibhunga</i> <i>Rhoicissus digitata</i> (L. f.) Gilg & Brandt, Vitaceae (Dold 1717) <i>Rhoicissus tridentata</i> (L. f.) Wild & R.B. Drum. subsp. <i>tridentata</i> , Vitaceae (Dold 1764)	An infusion of the tuber is taken for high blood pressure and acute headaches; used as a ritual wash (<i>iyeza lokublamba</i>) and an emetic for luck and protection against sorcery or evil spirits; a facial steam treatment (<i>ukufutha</i>) to ensure good fortune; a small piece is held in the mouth for protection at times of vulnerability such as court cases; a treatment for goats and sheep with paratyphoid (<i>umkhondo</i>).
4.	<i>impendulo, ubulawu</i> <i>Rubia petiolaris</i> DC., Rubiaceae (Dold 1831)	An infusion of the leaves is used as an emetic (<i>ukugabha</i>) to relieve body rash; as a ritual wash and emetic for luck and protection against sorcery or evil spirits and to facilitate communication with ancestral spirits during rituals; as an emetic in preparation for a court case to ensure positive results; leaves are burnt as incense to ensure positive results in court case. Leaves are used in the preparation of a lucky charm called <i>isiphondo</i> .
5.	<i>impepho</i> <i>Helichrysum odoratissimum</i> (L.) Sweet, Asteraceae (Dold 3991, 4004)	Dry leaves are burnt as incense in rituals to facilitate communication with ancestral spirits and as protection against sorcery or evil spirits.

6.	<i>umlahleni</i> <i>Curtisia dentata</i> (Burm. f.) C.A. Sm., Cornaceae (Dold 1819, 4038)	An infusion of the bark is taken as an emetic or used as a steam treatment for luck or protection against sorcery or evil spirits. Leaves are chewed to counteract sorcery (<i>ukuthakatha</i>); bark is used in a treatment for heartwater disease in cattle.
7.	<i>Uzintlwa</i> <i>Protorbus longifolia</i> (Bernh.) Engl., Anacardiaceae (Dold 1751)	An infusion of the bark is used as an emetic to ensure good fortune; treatment for heartwater disease and paratyphoid in cattle.
8.	<i>irooiwater, ingcelwane</i> <i>Bulbine latifolia</i> (L.f.) Roem. & Schult., Asphodelaceae (Dold 1509, 3974; Cocks 18)	Leaf sap is applied topically to treat skin disorders; taken orally to treat bladder infection and as a treatment for childbirth difficulties; an infusion of root is taken to purify the body internally by cleaning 'dirty blood' (<i>igazi elimdaka</i>). Dried, powdered tuber is used cosmetically by women to protect against bad luck attributed to witchcraft (<i>umgqwaliso</i>).
9.	<i>intelezi</i> <i>Gasteria bicolor</i> Haw. var. <i>bicolor</i> , Asphodelaceae (Dold 1517, 1697) <i>Haworthia attenuata</i> Haw., Asphodelaceae (Dold 3989)	An infusion of the leaf is used as a ritual wash to dispel nightmares and fear of the unknown; sprayed and sprinkled on floor and walls (<i>ukutshiza</i>) of the home and the cattle byre to drive off evil spirits; taken orally as an emetic to ensure good fortune; used as a ritual wash to ensure positive results in exams etc. Live plants are grown around the homestead as protection against sorcery or evil spirits.
10.	<i>umaphipha</i> <i>Rapanea melanophloeos</i> (L.) Mez, Myrsinaceae (Dold 3969)	An infusion of the bark is used as a ritual wash against sorcery; bark is burnt as incense to dispel evil spirits from the home; taken as an emetic to cleanse/protect the body from sorcery; an infusion of bark is taken to purify the body internally by cleaning 'dirty blood' and as a treatment for asthma (<i>isfuba</i>). The bark is used in a treatment for heartwater disease in cattle.
11.	<i>inceba</i> <i>Polygala serpentaria</i> Eckl. & Zeyh., Polygalaceae (Dold 1832)	An infusion of the root is taken orally as an emetic and used as a ritual wash to ensure good fortune; powdered bark is used as a snuff to treat headache inflicted by sorcery.
12.	<i>umnonono</i> <i>Strychnos henningsii</i> Gilg, Strychnaceae (Dold 3967) <i>Strychnos decussata</i> (Pappe) Gilg, Strychnaceae (Dold 1752)	An infusion of the bark is taken orally to purge and counteract poisoning (<i>idliso</i>) and to purify the body internally by cleaning 'dirty blood'.
13.	<i>idabulitye, umayisake</i> <i>Cissampelos capensis</i> L. f., Menispermaceae (Dold 1712)	An infusion is used as a ritual wash against evil spirits or bad luck and taken orally for chest pain, stomach ache and sexually transmitted disease. Wood is burnt as incense against evil spirits and sorcery.

14.	<i>impinda bamshaye</i> <i>Rhoicissus tomentosa</i> (Lam.) Wild & R.B. Drumm., Vitaceae (Dold 1749, 4028)	An infusion of the tuber is used as a ritual wash against evil spirits or bad luck and as a treatment for paratyphoid in sheep and goats.
15.	<i>ufudo, usikolipati</i> <i>Dioscorea sylvatica</i> (Kunth) Eckl., Dioscoreaceae (Cocks 5)	An infusion of the tuber is used as a ritual wash, a steam treatment and an emetic against evil spirits or bad luck attributed to sorcery.
16.	<i>umrateni</i> <i>Drimia elata</i> Jacq., Hyacinthaceae (Dold 1704)	An infusion of the bulb is used as a ritual wash against evil spirits or bad luck attributed to sorcery and taken orally to purify the body internally by cleaning 'dirty blood'.
17.	<i>umathunga</i> (also <i>umvenyathi</i>) <i>Asparagus africanus</i> (Lam.) Oberm., Asparagaceae (Cocks 3)	An infusion of the root is taken orally to treat broken or fractured bones and physical injury, to promote healthy delivery during childbirth and taken to treat sexually transmitted diseases (<i>igcushuwa</i>).
	<i>Haemanthus albiflos</i> Jacq., Amaryllidaceae (Dold 3973)	An infusion of the bulb is taken orally to treat broken or fractured bones and physical injury in humans and livestock.
18.	<i>inkomoyentaba, ungcana</i> <i>Dianthus thunbergii</i> Hooper, Caryophyllaceae (Dold 1810, 3997)	An infusion of the root is used as a ritual wash against evil spirits or bad luck attributed to sorcery and taken orally to facilitate communication with ancestral spirits through dreams.
19.	<i>inkathazo, iqwili</i> <i>Alepidea amatymbica</i> Eckl. & Zeyh. var. <i>amatymbica</i> , Apiaceae (Cocks 100)	An infusion of the root is taken orally to counteract poisoning inflicted by sorcery and as a treatment for asthma and stomach ache. The root is chewed and spat out in a ritual is called <i>ukuchila</i> .
20.	<i>iphuzi</i> <i>Gunnera perpensa</i> L., Gunneraceae (Dold 1808)	An infusion of the root is taken orally to treat rash caused by <i>abantu bomlambo</i> ; an infusion of the root is taken to purify the body internally by cleaning 'dirty blood'.
21.	<i>uyakayakana, iikubalo</i> <i>labantwana</i> <i>Bulbine abyssinica</i> A. Rich., Asphodelaceae (Cocks 21, Dold 1510)	An infusion of the root is taken orally to treat bladder infections and menstrual pain; used as an enema (<i>ukucima</i>) to relieve colic (<i>nemoya</i>) in weaning infants; a treatment for Red Water disease (<i>umanzabomvu</i>) in cattle.
22.	<i>umavumbuka</i> <i>Hydnora africana</i> Thunb., Hydnoraceae (Cocks 101) <i>Sarcophyte sanguinea</i> Sparrm., Balanophoraceae (Cocks 97)	An infusion of the dried fruiting body is taken orally to treat diarrhoea as well as stomach cramps; a paste of the dried fruiting body is applied topically to treat acne and related skin complaints.

23.	<i>ishwadi</i> <i>Boophone disticha</i> (L. f.) Herb., Amaryllidaceae (Dold 3988, 4011, 4048)	An infusion of the bulb is taken orally to treat a hysteria called <i>ifufunyane</i> ; bulb scales are used as a bandage to treat circumcision wound; a treatment for Red Water disease in cattle.
24.	<i>Isilawu</i> (also <i>ububhubhu</i>) <i>Behnia reticulata</i> (Thunb.) Didr., Behniaceae (Dold 1756) <i>Helinus integrifolius</i> (Lam.) Kuntze, Rhamnaceae (Dold 1760, 3994)	An infusion of the root is taken orally to treat <i>ifufunyane</i> ; used as a ritual body wash and an emetic for luck or good fortune and positive results in court cases, exams, competitions etc.
25.	<i>ujojo, umvuthuza</i> <i>Ranunculus multifidus</i> Forssk., Ranunculaceae (Dold 4043)	An infusion of the root is used as an emetic and as a steam treatment to treat rash caused by <i>abantu bomlambo</i> .
26.	<i>inqwebeba</i> <i>Albica setosa</i> Jacq., Hyacinthaceae (Cocks 98)	An infusion of the bulb is used as a ritual wash, an emetic and a facial steam treatment as protection against bad luck and sorcery; an infusion is splashed on floor and walls of the home to drive off evil spirits.
27.	<i>umayime</i> <i>Dracaena aletiformis</i> (Haw.) Bos, Dracaenaceae (Dold 4031)	An infusion of the root is used as a ritual wash against evil spirits or bad luck; leaf sap is applied directly to treat earache.
28.	<i>uvendle</i> <i>Pelargonium reniforme</i> Curtis, Geraniaceae (Dold 3986)	An infusion of the tuber is taken orally to treat internal bleeding and diarrhoea; used as a ritual wash against evil spirits or bad luck; a treatment for paratyphoid and heartwater disease in cattle.
29.	<i>iperepes, isifutho, isiqhumiso</i> <i>Clausena anisata</i> (Willd.) Hook. f. ex Benth., Rutaceae (Dold 1689)	Leaves are burnt (<i>ukugxotha</i>) to dispel evil spirits; an infusion is used to treat coughing, sore throat, fever and measles.
30.	<i>Isikolokotho</i> <i>Sansevieria hyacinthoides</i> (L.) Druce., Dracaenaceae (Dold 4061)	Leaf sap is applied directly to treat earache; an infusion is taken orally to expel internal parasites; to treat conjunctivitis (<i>isifo samehlo</i>) in sheep and goats.
31.	<i>Ityholo</i> <i>Clematis brachiata</i> Thunb., Ranunculaceae (Dold 1894, 1821)	An infusion of the bark is taken orally to treat rheumatism and asthma; used as a facial steam treatment to ensure luck or good fortune and to treat infection of pig lice (<i>untwala zehagu</i>) attributed to sorcery.
32.	<i>icimamlilo</i> <i>Pentanisia prunelloides</i> (Klotzsch ex Eckl. & Zeyh.) Walp., Rubiaceae (Dold 4010)	An infusion of the root is taken orally to treat rash or itching (<i>izigxala</i>) caused by <i>abantu bomlambo</i> ; splashed and sprinkled around the home as a protection against lightning caused by sorcery.

33.	<i>Isindiyandiya Bersama lucens</i> (Hochst.) Szyszyl., Melianthaceae (Dold 1272, 1907)	A small piece of bark is carried under the tongue in times of trouble or danger as a protective charm; an infusion of bark is taken to purify the body internally by cleaning 'dirty blood'.
34.	<i>wvuma</i> <i>Dolichos falciformis</i> E. Mey., Fabaceae (Dold 4008)	An infusion of the root is used as an emetic for cleaning the blood and to treat excess bile.
35.	<i>inyamyempunzi</i> <i>Diospyros villosa</i> (L.) de Winter, Ebenaceae (Dold 1914)	An infusion of the bark is used as an emetic as protection against bad luck and sorcery; a poultice is applied to bruises and internal injury.
36.	<i>umwelela, itswele lomlambo</i> <i>Tulbaghia violaceae</i> L.f., Alliaceae (Dold 1554)	An infusion of the tuber is used as an emetic and ritual wash to ensure luck or good fortune and protection against evil forces; a treatment against heart attack; drops into nose and ears of infants protects them from contamination by evil spirits and sorcery; splashed and sprinkled around the home as a protection from evil spirits; plants are grown around the home and in containers as protection from evil spirits and sorcery; tuberous root is chewed to treat panic attack (<i>umbilini</i>).
37.	<i>ummemezi</i> <i>Cassipourea flanaganii</i> (Schinz) Alston., Rhizophoraceae (Dold 1743, 3966)	A paste made from the bark is applied topically as a cosmetic (<i>ukumemeza</i>); to treat pimples and improve complexion; bark infusion taken as an emetic to ensure success in business.
38.	<i>umgqeba</i> <i>Brachylaena ilicifolia</i> (Lam.) Phill. & Schweick., Asteraceae (Dold 1504, 4052)	An infusion of the leaves is taken orally to treat diabetes, coughs, sore throat and asthma; a gargle to treat pimples in the mouth; treatment for sheep with paratyphoid.
39.	<i>uphuncuka</i> <i>Talinum caffrum</i> (Thunb.) Eckl. & Zeyh., Portulacaceae (Dold 1675)	An infusion of the tuber is used as a ritual wash, steam treatment and emetic for protection against evil spirits and bad luck. Dried leaves are burnt as incense in preparation for a court case to ensure positive results; preparation of a lucky charm called <i>isiphondo</i> .
40.	<i>umagaqana</i> <i>Bowiea volubilis</i> Harv. ex Hook. F., Hyacinthaceae (Dold 2467)	An infusion of the bulb is taken orally to counteract poisoning inflicted by sorcery; used as an enema to treat impotence (men only).
41.	<i>ubhoqo</i> <i>Ipomoea crassipes</i> Hook., Convolvulaceae (Dold 3995) <i>Ipomoea crispa</i> (Thunb.) Hallier f., Convolvulaceae (Dold 4002)	An infusion of the tuber is taken orally as an emetic for cleansing the blood; an infusion is sprinkled on floor and walls of the home to drive off evil spirits; a small dry piece is carried, for confidence and strength (<i>isthunzi</i>).

42.	<i>iphamba</i> <i>Cyrtorchis arcuata</i> (Lindl.) Schltr., Orchidaceae (Dold 1747) <i>Polystachya pubescens</i> Reichb. f., Orchidaceae (Dold 1746) <i>Eulophia streptopetala</i> Lindl., Orchidaceae (Dold 1836)	An infusion of the pseudobulb is used as a ritual wash and facial steam treatment to ensure good fortune; splashed against the walls of the kraal to protect the animals from evil and ensure good health (administered by traditional healer); a ritual wash and emetic to insure positive results in a court case, exams, sports competitions, etc.
43.	<i>ulatile, umfazongxolo</i> <i>Hippobromus pauciflorus</i> (L. f.) Radlk., Sapindaceae (Dold 1677, 1834)	An infusion of the bark is used as a ritual wash to ensure good fortune and protection against evil spirits and sorcery; emetic for gall problems; treatment for heartwater disease and paratyphoid in cattle.
44.	<i>isilawu, iyeza lamebho</i> <i>Scabiosa columbaria</i> L., Dipsacaceae (Dold 4003)	An infusion of the root is applied directly to treat eye infection; as an emetic to facilitate dreams (applied by traditional healers).
	<i>isilawu esibomvu</i> <i>Tritonia lineata</i> (Salisb.) Ker-Gawl., Iridaceae (Dold) 4013	An infusion of the corm is used as an emetic to ensure good fortune.
45.	<i>imvane, inqatha, isilawu esimhlope</i> <i>Asparagus suaveolens</i> (Burch.) Oberm., Asparagaceae (Dold 3984, 4015)	An infusion of the root is used as a ritual wash to ensure good fortune and protection against evil spirits; an infusion of root is taken to purify the body internally by cleaning 'dirty blood'; treatment for sexually transmitted disease; treatment for weak cows after calving.
46.	<i>isibara, umkhublu</i> <i>Trichilia dregeana</i> Sond., Meliaceae (Dold 4033)	An infusion of the bark is used as an emetic to ensure good fortune and as a general tonic for HIV – AIDS symptoms.
47.	<i>utuvisho</i> <i>Kedrostis foetidissima</i> (Jacq.) Cogn., Cucurbitaceae (Dold 1710, 1681)	An infusion of the tuber is used as a ritual wash for luck, e.g., in a court case; a small piece is held under the tongue in dangerous or troubled times.
48.	<i>isidikili, umsilawengwe</i> <i>Gnidia capitata</i> L.f., Thymelaeaceae (Dold 3972)	An infusion of the bark of the root is taken orally to treat menstrual pains; treatment for heartwater disease in cattle.
49.	<i>ublungublungu</i> <i>Vernonia mespilifolia</i> Less., Asteraceae (Dold 1759)	An infusion of the climbing stem is used as a treatment for wounds that will not heal, these are known as <i>umlambo</i> caused by <i>abantu bomlambo</i> ; treatment for heartwater disease in goats.

50.	<i>igwejobomvu, intolwane</i> <i>Elephantorrhiza elephantina</i> (Burch.) Skeels, Fabaceae (Dold 4089, 4112)	An infusion of the root is used to treat high blood pressure and asthma; an infusion of root is taken to purify the body internally by cleaning 'dirty blood'; treatment for mange in domestic animals; a piece of the stem is cut and buried underground at the entrance to the cattle kraal so that all animals walk over it when leaving the kraal, this ensures safety and good health, administered by traditional healers only.
51.	<i>itshongwe</i> <i>Pachycarpus concolor</i> E.Mey. Apocynaceae, (Dold 2966) <i>Xysmalobium orbiculare</i> (E.Mey.) D. Dietr. Apocynaceae, (Dold 4001) <i>Xysmalobium undulatum</i> (L.) W.T. Aiton Apocynaceae, (Dold 2219)	An infusion of the root is taken orally as a treatment for sexually transmitted disease (<i>ukubhabha</i>); a snuff from the dried root is used to treat headaches caused by sorcery.
52.	<i>ukreletsane</i> <i>Ledebouria revoluta</i> (L.f.) Jessop, Hyacinthaceae (Cocks 22)	An infusion of the bulb is used as a ritual wash and an enema for luck and protection against sorcery/evil spirits; back-ache; colic in infants; a wash to treat nappy rash; treatment for paratyphoid in goats.
53.	<i>intsiblo</i> <i>Capparis sepiaria</i> L. var. <i>citrifolia</i> (Lam.) Tölken Capparaceae, (Dold 1721)	An infusion of the bark is used as a ritual wash, emetic for protection from evil and sorcery; a branch is attached to the entrance of the kraal to protect stock from lightning caused by sorcery; leaves are burnt as incense for protection from evil and sorcery; bark is chewed for coughs.
54.	<i>Intsema</i> <i>Xysmalobium</i> sp., Apocynaceae (Dold 4001) <i>Euphorbia clava</i> Jacq., Euphorbiaceae (Dold 4045)	A paste made from the dried root is applied to pimples and rash; an infusion is used as a ritual wash for luck and protection against sorcery/evil spirits.
55.	<i>iyeza lamasi</i> <i>Senecio coronatus</i> (Thunb.) Harv., Asteraceae (Dold 1694, 1809) <i>Gerbera viridifolia</i> (DC.) Sch. Bip., Asteraceae (Dold 4005) & <i>Nidorella</i> sp., Asteraceae (Dold 1691)	An infusion of the root is taken orally as a treatment for stroke; given to weaning infants to prepare them for solid foods; to treat internal parasites in infants. An infusion of the root is given to weaning infants to prepare them for solid food; to treat internal parasites in infants.
56.	<i>ikhubalo likathikoloshe</i> <i>Hypoxis</i> sp. c.f. <i>filifolia</i> , Hypoxidaceae (Cocks 99)	An infusion of the tuber is taken orally to treat high blood pressure, diabetes, arthritis and as a general tonic for poor health.

57.	<i>Umnukane</i> <i>Ocotea bullata</i> (Burch.) Baill., Lauraceae (Dold 4040)	An infusion of the bark is used as a ritual wash and facial steam treatment for luck and protection against sorcery/evil spirits; to treat rash caused by <i>abantu bomlambo</i> .
58.	<i>umathunga, umphompo</i> <i>Eucomis comosa</i> (Houtt.) Wehrh., Hyacinthaceae (Dold 1278)	An infusion of the bulb is taken orally to treat broken/fractured bones, to promote healthy delivery during childbirth; a decoction of the bulb is taken orally to soothe physical aches and pains, bruises and backache.
59.	<i>Ibhosisi</i> <i>Pteronia incana</i> (Burm.) DC., Asteraceae (Dold 4170)	An infusion of the fresh leaves is taken orally to treat coughs and expel excessive phlegm.
60.	<i>Idololenkonyane</i> <i>Rumex steudelii</i> Hochst. ex A. Rich., Polygonaceae (Dold 4080)	An infusion of the tuber is taken orally to treat kidney pains (<i>isinge</i>), bladder infection and internal parasites; dried root is burnt as incense to ensure good fortune; a paste from the dried tuber is applied to infections caused by <i>abantu bomlambo</i> .

Some Xhosa terms in table:

abantu bomlambo: mythical River People associated with ancestral spirits; *idliso*: poisoning perceived to be inflicted by sorcery; *ifufunyane*: a non-physical hysteria indicating possession by evil spirits, caused by sorcery; *igazi elimdaka*: poor physical health with a wide range of symptoms attributed to 'irty blood' but causes poorly understood; *igcushuwa*: sexually transmitted disease; *inyongo*: excess bile, heartwater disease; *isfuba*: asthma; *isinge*: kidney pain, lower back pain, causes poorly understood; *isiphondo*: a charm prepared by traditional healer; *isthunzi*: confidence, strength; *ieyeza lokublamba*: a ritual body wash against evil spirits or bad luck attributed to sorcery; *nemoya*: colic; *ukuchila*: to terminate nightmares caused by witchcraft; *ukucima*: to administer an enema; *ukufutha*: steam treatment to ensure good fortune; *ukugabha*: emetic; *ukugxotha*: the burning of plant material in the same way as incense with the purpose of expelling evil spirits, the equivalent of 'smudging'; *ukumemeza*: to apply traditional cosmetics; *ukuthakatha*: sorcery; *ukutshiza*: spraying and sprinkling of an infusion of plant material against the floor and walls of the home and cattle byre; *umanzabomvu*: red water disease in cattle; *umbilini*: panic attack, anxiety; *umgqwaliso*: witchcraft; *umkhondo*: paratyphoid; *umlambo*: skin rash caused by *abantu bomlambo*.

CHAPTER 8

THE SIGNIFICANCE OF NATURAL RESOURCES TO URBAN HOUSEHOLDS: IMPLICATIONS FOR BIO-CULTURAL DIVERSITY IN SOUTH AFRICA

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Figure 1: An urban kraal in Grahamstown (Photo A. Dold)

1. ABSTRACT

There is a well documented and growing demand for wild resources in urban areas in South Africa demonstrating that not only rural but also urban people value biodiversity. Still little is known, however, on the precise nature of such urban values regarding biodiversity use. This paper reports on the use and significance of wild plants for urban households under different socio-economic conditions in South Africa. Urban Africans still use wild plant resources not only for practical utilitarian purposes, but also for cultural purposes. In a survey in two urban centres in Eastern Cape Province it was found that almost 78% of the volumes of used wild plant material is used for a variety of cultural practices. Some of these uses were more common amongst poor than wealthier households, but other uses prevailed under all wealth categories. An increased understanding of the resilience of such cultural practices is crucial to fully appreciate the scope of bio-cultural conservation in non-traditional areas.

Key Words: urban communities, wealth, utilitarian and cultural use, bio-cultural diversity, South Africa, wild resources

2. INTRODUCTION

Rural conditions are changing rapidly and the livelihood strategies of local communities are diversifying (Ellis 1998) with many rural families attempting to access multiple sources of income (Wiersum and Shackleton 2005). One of the options is the harvesting of wild resources (Campbell *et al.* 1997; Cavendish 1999; Shackleton *et al.* 2001). This activity has increased in importance in response to a growing urban demand for these resources. The increasing network links between rural and urban areas (Ellis 1998) has facilitated the drawing of natural resources from rural areas to the towns and cities (Cunningham 2001). This emerging process has mostly been analysed in terms of their implications for rural livelihood strategies (Ellis 1998) and rural development (Tacoli 1998). Thus the focus of attention has been on the significance of this process for rural communities, and little attention has yet been given to the question of the significance of this process for urban people.

Recent studies show that significant quantities of wild plant products are used in urban areas by urban consumers, notably in the form of medicinal plant products (Mander 1998; Williams *et al.* 2000; Williams 2004; Botha *et al.* 2004; Dold and Cocks 2002; Cocks and Dold 2004). Wild plant products are also used for a variety of other purposes by urban people, for instance in the form of wines and jams (Leakey and Izac 1998), fruit products (Shackleton 2002) and wood carvings (Shackleton 2004a). Still little attention has been

given to the reasons why such wild plant use is maintained and to the significance that wild resources³² may hold for urban households.

It has often been assumed that increased impacts of urban lifestyle would entail a loss of traditional cultural values, and that the traditional use of wild plants would gradually fade out. However, recent data indicate that this is not necessarily the case. For instance, in a recent South African study in a peri-urban settlement area where many people depend on urban employment or state pensions it was found that wild plant use was still common. Much of this use was not primarily for utilitarian purposes, but for use in cultural practices (Figure 1). It was estimated that the cultural use of wild plants accounted for just over half of the total use values of all wild plant use (Cocks and Wiersum 2003). This example indicates that many people who have migrated from their rural homes to semi-urbanized areas and who have become engaged in the modern economic sector still used wild plants for cultural-specific purposes such as ritual purification of the body (Cocks and Møller 2002) or ritual cleansing of the house (Cocks and Dold 2004). Indeed, many urban dwellers remain in close contact with their ancestral rural homes for generations where they partake in cultural festivities and ceremonies featuring the use of wild resources (Wiersum and Shackleton 2005). In order to understand the scope and significance of the nature and significance of continuities in cultural practices (Cocks 2006) and its impact on biodiversity conservation, it is necessary to collect empirical information on the nature of wild plant use in urban areas.

One of the main factors impacting on the continued use of wild plant material in urban areas as well as on the amounts of material used may be hypothesized to be the wealth status of the urban households. Authors such as Cavendish (2000) and Shackleton (2004b) have demonstrated that wealth significantly influences the amount and value of wild resources used amongst rural households in southern Africa. Thus, poorer households are often more dependent on the natural resource base. The relationship between wealth and wild resource consumption and its significance to users has not yet been examined in urban areas. It might be assumed that the urban use of wild plant material is mainly maintained by poor immigrants who have not yet been incorporated in the modern economic sector and therefore maintain their rural customs.

The purpose of this paper is therefore to assess the role and the significance attached to wild resources used amongst a diverse range of socio-economic urban conditions in the Eastern Cape Province of South Africa. The following questions are posed:

- How many people in two cities are still using wild plant material and how is this use is affected by different wealth categories of the household?

³² The term wild plants has been used to distinguish between wild and domesticated species and not to suggest that the landscapes where they occur are virgin land or unaffected by human influence or tenure (Cunningham 2001, p. 9). The term wild resources has been used in this document to include non timber forest products, and species other than plant material such as animal, insects and marine species.

- For what purposes are the wild plants used and what is the influence of wealth status on the different types of use?
- What conclusions can be drawn from this information regarding the impact of enduring cultural values on the use of wild plants?

3. STUDY SITES AND METHODOLOGY

Information on the use of wild resources by urban households was collected by a survey in two cities, King William's Town and East London, in the Buffalo City regional municipality in the Eastern Cape province of South Africa. For data collection a stratified survey was carried out amongst poor, middle-class and wealthy African households. To ensure a diverse range of economic conditions questionnaires were administered in suburbs perceived to represent high income, middle income and low income classes. Within each type of suburb households were selected through random sampling a total of 302 households were interviewed; one hundred and fifty one questionnaires in each city. For interviewing a standard questionnaire was used to document information on household's structure and wealth status and on the amounts of wild plant material collected for utilitarian use and for the maintenance of cultural artefacts and practices. Criteria used for documenting the economic wealth status of households included: number of formal jobs in the household, number of pensions/grants in each household and types of household assets and appliances owned (fridges, stoves, cars, etc.). Information regarding the amounts of plant use was collected by recording the quantity and the frequency of collection of different types of resources by each household. The local measurement units for collection were transferred to weight units on the basis of the average weight and dimensions of each unit as determined in the field.

For data analysis first a cluster analysis was made to statistically identify the wealth status of households. Variables used to cluster the households included assets, e.g. motorcar, television, refrigerator, the size of the homes in terms of the number of rooms, the nature of the building (e.g. brick, zinc sheets and wooden structures) and the number of residents, in categories such as the number of adults, children, pensioners, occupying formal jobs, not formally employed, etc. For the analysis of the amounts of wild resources used by households for each resource use criteria, only data from the households who cited using the material were used for analysis purposes. Resource use categories representing less than 5% of all households were not considered for further analyses.

Set retail prices exist for standard amounts of specific resources, and these were recorded to determine their direct-use value. Vernacular names of the species were recorded and botanical names for these species were sourced from Dold and Cocks (1999).

In order to assess differences in wild plant use between wealth categories, if the variables were categorical, a Chi-Squared test of independence was used and percentages shown are percentages of rows. For numerical variables the Kruskal-Wallis Test was used to test for significant differences was used amongst the three wealth groups.

4. RESULTS

4.1 SOCIO-ECONOMIC CONDITIONS OF SURVEY HOUSEHOLDS

The urban households surveyed were mostly male headed with low-skilled employment, however only 21% of the household heads had no education or only a primary level of education. Households tended to be dominated by adults of which only 24%, on average, were formally employed. Very few of the households owned livestock, but two-thirds continued to grow crops in home gardens, almost exclusively for subsistence use rather than for resale purposes. Summaries of the socio-economic conditions of the households after clustering according to wealth of the three clusters are shown in Table 1.

Table 1: Demographic profile of the three wealth cluster groups

	Poor	Middle	Wealthy	Test Statistic	
1. Household Head:					
Gender: (n=297)				$\chi^2=5.48$;	
Female	41 (33%)	44 (34%)	41 (33%)	df = 2;	
Male	41 (24%)	52 (30%)	78 (46%)	p = 0.065	
Education Level: (n=252)					
None or Primary	25 (39.1%)	28 (43.8%)	11 (17.2%)	$\chi^2=76.96$;	
Secondary	16 (33.3%)	19 (39.6%)	13 (27.1%)	df = 6;	
Higher Secondary	25 (31.6%)	26 (32.9%)	28 (35.4%)	p<0.001	
Further	1 (1.6%)	6 (9.8%)	54 (88.5%)		
2. Household Income (n=298)					
Formally Employed	0	42 (55%)	18 (24%)	$\chi^2=67.97$;	
	1	39 (26%)	59 (39%)		df = 6;
	2	3 (6%)	10 (19%)		p<0.001
	3 or 4	0 (0%)	8 (44%)		10 (56%)
Informally Employed	0	47 (22%)	71 (43%)	$\chi^2=22.6$;	
	1	28 (43%)	19 (29%)	df = 4;	
	2	9 (60%)	5 (33%)	p<0.001	
Pensions or Grants	0	70 (30%)	70 (30%)	$\chi^2=4.45$;	
	1	11 (22%)	21 (43%)	df = 4;	
	2	3 (20%)	4 (27%)	p=0.348	
3. Agricultural Involvement (n=298)					
Yes	41 (22%)	72 (39%)	72 (39%)	$\chi^2 =$	
No	43 (38%)	23 (20%)	47 (42%)	14.0;	
				df = 2;	
				p<0.001	
4. Livestock (n=300)					
Yes	4 (44%)	4 (44%)	1 (12%)	$\chi^2= 3.2$;	
No	80 (27%)	93 (33%)	118 (40%)	df = 2;	
				p = 0.120	

4.2 OVERALL USE OF WILD PLANT SPECIES

Despite representing a wide range of urban socio-economic conditions, 99% of the total households surveyed made use of wild plant species for one use or another. These were collected or, purchased within the urban centre and/or collected and utilized at the rural home of origin as 42% of the urban households retained strong contact with their rural home of origin.

In total 96 plant species were used by households on a regular basis. Twenty-two species were cited by more than 10 households. The mean amount of green biomass utilized per user household amounted to $2,301 \pm 2,949$ kg, equating to \$84³⁴ per annum. The amount collected varied significantly between the households with some households utilizing as little as 0.2 kg while others utilized as much as 15,586 kg per annum. These plants were used for a wide variety of purposes that have been collated into 12 use categories and assigned as having either utilitarian or cultural value, *sensu* Cocks and Wiersum (2003). The percentage of households utilizing each resource and the number of species cited for each category is provided in Table 2. The predominant use of the plants was for cultural purposes, overall 85 % of the total biomass was used for this purpose.

The use of wild plant material differed significantly between the various wealth categories both in respect to biomass used and in respect to the importance of cultural uses.

4.2.1 Poor cluster households

Poor cluster households utilized a mean amount of $3,518 \text{ kg} \pm 3,634$ kg of plant material with a financial value of $\$134 \pm \140 per household per annum. Approximately 57% of this material ($2,619 \text{ kg} \pm 3,046$ kg equating $\$56 \pm \61 per annum) was used for cultural requirements (Table 3c, d). The mean number of species used per household was 6.2 ± 3.4 (0 - 15). The mean number of resource use categories utilized was 5.4 ± 2.9 (0 - 11) (Table 4).

³⁴ These values have been converted at exchange rate of \$1=R5.83, February 2005.

Table 2: Summary of resource use utilization by urban households

Resource use	Percentage of households utilising each resource use category	Number of species utilized per resource use category
Utilitarian use		
Wild fruits	65%	1
Fuel wood	35%	5
Utensils	6%	4
Fencing	3%	2
Timber	3%	6
Cultural use		
<i>Amayeza</i> ³⁵ (traditional medicines)	64%	56
Rituals	56%	9
Kraal material	53%	25
Traditional grass brooms	425	2
<i>Imifino</i> (wild vegetables)	42%	7
<i>Igoqo</i> ³⁶	27%	10
Traditional sticks	10%	2

³⁵ As advocated by Cocks and Dold the use of term *amayeza* is used rather than medicinal plants as it has been revealed that a large percentage of plant species are used to fulfil cultural, spiritual, and ritual purposes and are not medicines *sensu stricto* (2006).

³⁶ An *igoqo* refers to the wood stockpile collected by women. These woodpiles are not kept solely for fuel purposes but have high cultural value, particularly for the women of the household. The species used for maintaining an *igoqo* differs to those collected solely for fuel purposes (Cocks and Wiersum 2003; Cocks *et al.* submitted).

Table 4: Number of species and resource use categories utilized according to wealth status

Description	Wealth cluster						Test Statistic	
	Overall use (n = 302)		Poor cluster (n = 84)		Middle cluster (n = 99)			Wealthy cluster (n = 119)
	Mean±S t.Dev	Median ±MAD	Mean ± St. Dev	Median ±MAD	Mean±St .Dev	Median ±MAD	Mean±St. Dev	Median ±MAD
Species cited	5.4 ± 3.0	5.0 ± 3.0	6.2 ± 3.4	6.0 ± 3.0	5.8 ± 2.8	6.0 ± 3.0	4.6 ± 2.8	4.0 ± 3.0
Resource categories	4.6 ± 2.5	4.0 ± 3.0	5.4 ± 2.9	5.0 ± 4.4	4.9 ± 2.5	5.0 ± 2.9	3.9 ± 2.0	4.0 ± 3.0

4.2.2 Middle cluster households

Middle cluster households utilized a mean amount of 2,163 kg \pm 2,732 kg of plant material, equating to \$74 per household per annum. Approximately 90% of this material (2,016 kg \pm 2,579 kg equating \$34 \pm \$52 per annum) was used for cultural requirements (Table 3c, d). The mean number of species used per household was 5.8 \pm 2.8 (1 - 13). The mean number of resource use categories utilized was 4.9 \pm 2.5 (1 - 11) (Table 4).

4.2.3 Wealthy cluster households

Wealthy cluster households utilized a mean amount of 1,561.1 kg \pm 2,284 kg of plant material, equating to \$56 per household per annum. Approximately 90% of this material (1,401 kg \pm 1,991 kg equating \$34 \pm \$52 per annum) was used for cultural needs (Table 3c, d). The mean number of species used per household was 4.6 \pm 2.8 (1 - 13). The mean number of resource use categories utilized was 3.9 \pm 2.0 (1 - 9) (Table 4).

4.3 SPECIFIC USES OF WILD PLANTS

4.3.1 Utilitarian use of wild resources

Wild fruits

Wild fruits represented the highest utilitarian resource use category, with 65% (Figure 2) of households citing a single plant species (*Opuntia ficus-indica*). Of these households, only 5% collected their own wild fruit compared to 95% who purchased these from street vendors.

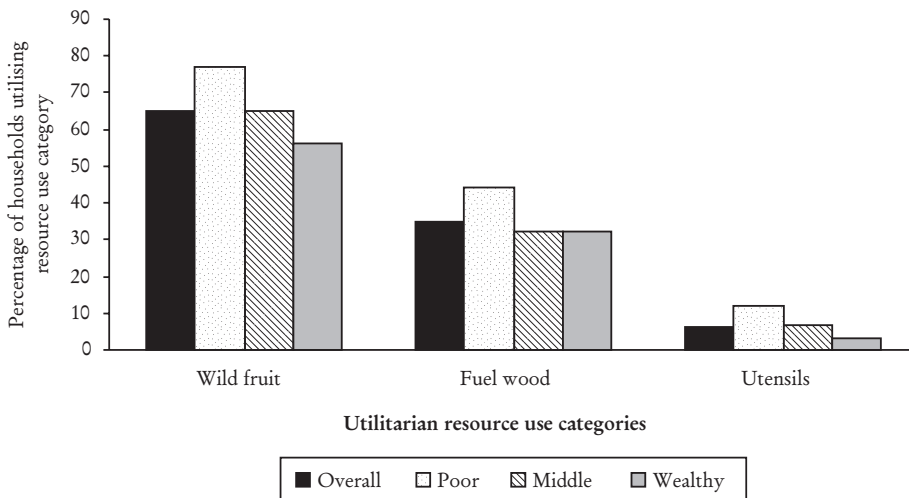


Figure 2: Frequency of resource usage amongst the wealth clusters for utilitarian use categories

The wealth of the household is strongly related to whether or not a household purchased wild fruit ($\chi^2 = 9.634$, $df = 2$, $p = 0.008$). Similarly, wealth influenced the mean amount collected/purchased per annum ($H = 8.3686$, $df = 2$, $p = 0.015$). The households in the wealthy cluster only purchased a mean amount of 79 kg, equating to \$22 per annum per household, whilst the poor cluster households purchased 140 kg, equating to \$29 per annum (Table 3a, b).

Fuel wood

Thirty-five percent ($n=107$) of the households made use of wild resource material for fuel wood purposes (Figure 2). The majority, 82%, purchased fuel wood from vendors in their neighbourhood. Only 16% collected their own fuel wood from surrounding natural vegetation. Two percent both collected and purchased their fuel wood. Although five species were cited, *Acacia karoo* and *Acacia mearnsii* were the most frequently used.

Surprisingly the wealth of the household was not significant in determining if the household made use of fuel wood ($\chi^2 = 3.69$, $df = 2$, $p = 0.158$). The wealth of the household did however significantly influence the amount used ($H = 27.97$, $df = 2$, $p < 0.001$). The poor cluster households used significantly more material, 1,864 kg equating to the mean amount of \$134 per annum. Only a slight variation exists between the middle and wealthy households (Table 3a, b). The middle income cluster households tended to use fuel wood for heating followed by cooking purposes, whereas the wealthy cluster used fuel wood predominantly for recreational cooking purposes such as barbecuing, and for heating purposes.

4.3.2 Cultural use of wild resources

Amayeza

Sixty four percent of the households used wild plants for *amayeza* purposes (Figure 3). Of the 292 use occurrences recorded, forty seven percent were used to fulfil cultural needs. This is because amongst the *amaXhosa* illness and disease are commonly attributed to either natural or supernatural causes with the idea of 'contamination' entering from both the physical and the spiritual plane. A cure therefore often requires as much a restoration in the balance of supernatural forces and social relationships as the use of therapeutic medicine. In the study site this may call for certain forms of ritual purification in the form of a body wash, purgative, spraying, fumigating or steaming as counteractive and protective measures often involving the use of plant material. These actions are imbued with symbolism (Cocks *et al.* submitted; Cocks and Dold 2006).

Sixty percent of the *amayeza* plants utilized were purchased from various vendors such as herbal street traders, herbal stores and traditional healers. The remaining 40% were collected by a household member either from their garden, the surrounding vegetation or when they visited rural areas.

The wealth status of the household was significant in determining if the household made use of *amayeza* ($\chi^2 = 10.003$, $df = 2$, $p = 0.007$). The wealth of the household also influenced the amount of material used ($H = 2.40$, $df = 2$, $p = 0.302$). The mean amount of material utilized by the poor cluster households amounted to 4.0 kg and equating to \$17 per annum versus only 1.9 kg equating to \$7 by wealthy cluster households (Table 3c, d).

Material for rituals

Material for use in rituals was the third most commonly cited wild resources category, 56% (Figure 3). Rituals are performed on specific occasions to elicit ancestral blessings and protection from malevolent forces such as sorcery. A ritual invariably involves the slaughter of a domestic animal, usually an ox or a goat (Wilson *et al.* 1952; Poland *et al.* 2003). The most commonly used species cited for ritual purposes included *Olea europea* subsp. *africana* and *Ptaeroxylon obliquum*. Both these species are selected for their cultural significance (Cocks and Wiersum 2003; Cocks *et al.* submitted). The host family invites extended members of the family, neighbours and friends to attend and large quantities of food and traditional beer are prepared for which large quantities of fuel wood are required (Cocks and Wiersum 2003). Seven species were cited, the most frequent being: *Acacia karroo*, *Acacia mearnsii* and *Noltea africana*. Seventy one percent of the urban households performed their rituals at their rural family home where the ancestral spirits reside. Only 28% performed rituals within their urban homestead.

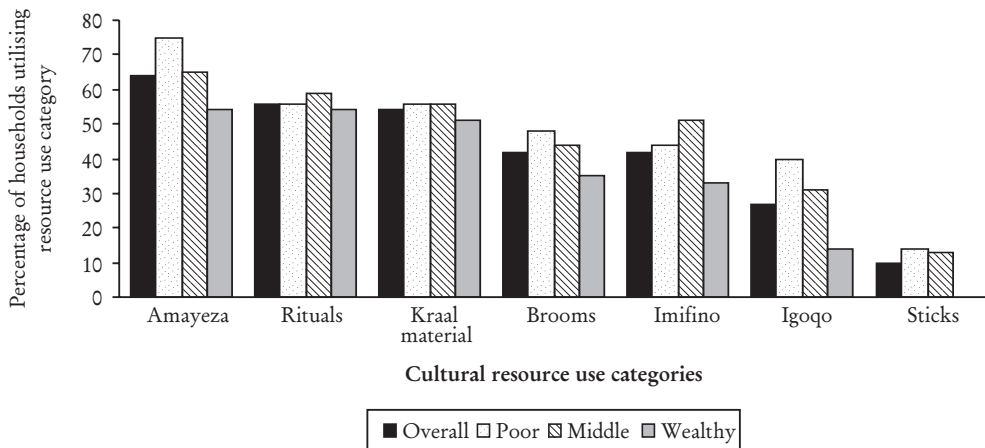


Figure 3: Frequency of resource usage amongst the wealth clusters for cultural use categories

The wealth of the household was not significant in determining if the household made use of material for rituals ($\chi^2 = 0.56$, $df = 2$, $p = 0.764$) consequently demonstrating the cultural importance of these activities. The wealth of the households did however influence the amount of material used per household ($H = 9.09$; $df = 2$, $p = 0.011$). In this instance the wealthy cluster households used significantly more material, averaging 668 kg

and equating to \$12 per household per annum, compared to 494 kg (\$9) for middle cluster households and 574 kg (\$11) for poor cluster households (Table 3c, d). This example represents one of the few resource use categories where the wealthy cluster households utilized a greater quantity than the poor cluster households. This can be attributed to the wealthy cluster households being economically in a better position to host larger and more elaborate rituals.

Material for kraals

Fifty three percent of the urban households contributed towards the maintenance of a kraal (Figure 3). As demonstrated by Cocks and Wiersum (2003) and Cocks *et al.* (submitted), a kraal is foremost a venue to host traditional Xhosa rituals and where family members can communicate directly with their ancestors, but can also be a livestock enclosure for the family herd. Of the households who maintained a kraal, 82% were located at the rural family home. The remaining 18%, having no rural home, constructed a temporary kraal within their urban homestead yard.

Urban households contributed towards the maintenance of the family kraal either in the form of assisting with the physical collection of the material when they returned to their family home (80%), or by providing a financial contribution to the purchase of material when it is required (8%). Twenty-five species were cited, the most common being *Acacia karroo*, *Coddia rudis* and *Ptaeroxylon obliquum*.

Regarding the maintenance of a kraal the wealth of the household was not significant in determining if the household did so or not ($\chi^2 = 0.72$, $df = 2$, $p = 0.698$). The wealth of the households did however influence the amount of material used. In this instance poor households utilised significantly greater amounts of material as the mean amount of material utilised was 2,662 kg (\$34) per annum per household compared to 1,901 kg (\$28) by middle cluster households and 1,396 kg (\$29) by wealthy cluster households (Table 3c, d).

Traditional grass brooms

Forty two percent of urban households owned a traditional grass broom – *umtshayela* (Table 4b). Grass brooms have an important cultural significance attached to them (Cocks and Dold 2004). Several species were cited as being used to produce a broom: *Cymbopogon validus*, *Cyperus* sp. and *Phoenix reclinata*.

The wealth of the household was not significant in determining if the household owned a grass broom or not ($\chi^2 = 3.62$, $df = 2$, $p = 0.163$) nor did it influence the quantity of material utilized ($H = 1.66$, $df = 2$, $p = 0.437$) (Table 3c) as households owned only one or two brooms.

Imifino

The consumption of *imifino* remained relatively high, as 42% of the households still cited collecting and consuming *imifino* (Figure 3). All *imifino* species were collected from either

their home garden or the neighbour's garden as the majority represent common ruderal species (Dold and Cocks 2000). *Imifino* is either boiled in water and served as a vegetable, or mixed and cooked with other foods such as maize (Cocks and Wiersum 2003). Seven species were cited as being collected as *imifino* and the dominant three species cited included: *Amaranthus hybridus*, *Sonchus asper* and *Chenopodium album*.

In terms of collecting *imifino* the wealth of the household was only slightly significant in determining if the household did so or not ($\chi^2 = 8.34$, $df = 2$, $p = 0.015$), thus demonstrating that the consumption of *imifino* is not solely determined by the economic conditions of the household. The wealth of the household did however influence the amount of material collected significantly ($H = 9.65$, $df = 2$, $p = 0.008$). Poor cluster households collected the highest mean quantity per user household, 41 kg (\$6) per annum, and the middle and rich clusters collected similar quantities 25 kg (\$3) and 29 kg (\$4) respectively per annum (Table 3c, d).

Material for an igoqo

Twenty seven percent of the urban households contributed towards the maintenance of an *igoqo* (Figure 3). An *igoqo* is a stockpile of fire wood kept outside the homestead. The wood is seldom used for fuel purposes because the structure has important cultural value, particularly for the women of the household as it is where the female ancestral spirits reside (Cocks and Wiersum 2003; Cocks *et al.* submitted). Ten species were cited for the construction and maintenance of an *igoqo*. The three most common species collected included: *Acacia karoo*, *Rhus dentata* and *Tarchonanthus camphoratus*.

As with the kraal, urban households contribute towards the maintenance of the *igoqo* at the family's rural ancestral home. In contrast to the kraal the maintenance of an *igoqo* is significantly influenced by the wealth status of the household ($\chi^2 = 18.45$, $df = 2$, $p < 0.001$). The wealth of the household did however not influence how much material was used ($H = 2.51$, $df = 2$, $p = 0.285$). For example, the poor cluster households utilized the mean amount of 1,807 kg equating to \$31 per annum versus 1,799 kg equating to \$30 by the wealthy cluster households and 1,511 kg equating to \$35 by the middle cluster households (Table 3c, d). The material required for the maintenance of the *igoqo* was primarily collected by household members whilst they were visiting the family homestead in the rural area (84%).

Traditional wooden sticks

Ten percent of the male members of the households still continued to make use of a traditional carved stick (Figure 3). In historical literature the carrying of a wooden walking stick by men was described as being a part of traditional dress. From the age of five boys begin carrying a stick (*intonga*) when they are away from the homestead and when they reach manhood they usually carry one or more knobbed sticks (Shaw and Warmelo 1981). Two species, *Olea europaea* subsp. *africana* and *Brachylaena ilicifolia*, were cited.

The ownership of a traditional sticks is somewhat influenced by the wealth status of the household ($\chi^2 = 7.34$, $df = 2$, $p = 0.025$). The wealth of the household did however not influence how much material was used as the amount of material used to make a stick is relatively standard ($H = 3.23$, $df = 2$, $p = 0.199$) (Table 3c).

Table 3c: Biomass (kgs) utilized per household per year according to wealth status for cultural resource use category

Resource use	Overall use			Poor cluster			Middle cluster			Wealthy cluster			Test Statistic
	n	Mean ±St. Dev	Median ±MAD	n	Mean ±St. Dev	Median ±MAD	n	Mean ±St.Dev	Median ±MAD	n	Mean ±St Dev	Median ±MAD	
Complete cultural use (kg) per annum	283	1,954±2,557	1,433±2,122	81	2,619±3,046	1,433±2,122	91	2,016±2,579	312±461	111	1,401±1,991	345±510	H = 4.88, df = 2, p = 0.087
<i>Amyeza</i> (kg)	189	2.9±5.1	1.7±1.5	61	4.0±6.6	1.7±1.5	65	2.8±5.1	1.7±1.7	63	1.9±2.3	1.7±1.2	H = 2.40, df = 2, p = 0.302
Rituals (kg)	168	582±617	442±288	46	574±433	442±288	58	494±795	343±254	64	668±544	514±457	H = 9.09, df = 2, p = 0.011
Kraal material (kg)	160	1,937±1,817	2,649±2,830	46	2,662±907	2,649±2,830	56	1,901±1,883	1,348±1,934	58	1,396±1,500	784±1096	H = 10.71, df = 2, p < 0.005
Traditional grass broom (kg)	126	0.6±0.3	0.7±0.0	40	0.6±0.2	0.7±0.0	44	0.7±0.3	0.7±0.0	42	0.6±0.2	0.7±0.0	H = 1.66, df = 2, p = 0.437
<i>Imifino</i> (kg)	127	31±27	36±23	37	41±31	36±23	51	25±22	20±15	39	29±27	20±23	H = 9.65, df = 2, p = 0.008
<i>Igogo</i> (kg)	82	1,689±961	1,320±664	34	1,807±884	1,768±1,097	31	1,511±990	1,028±1,087	17	1,799 ±1,080	1,028±213	H = 2.51, df = 2, p = 0.285
Traditional Sticks (kg)	30	0.14±0.10	0.10±0.06	12	0.15±0.10	0.10±0.06	13	0.16±0.11	0.12±0.09	5	0.07±0.05	0.06±0.04	H = 3.23, df = 2, p = 0.199

Table 3d: Biomass (\$) utilized per household per year according to wealth status for cultural resource use category

Resource use	Overall use			Poor cluster			Wealth Cluster			Wealthy cluster			Test Statistic
	n	Mean ±St. Dev	Median ±MAD	n	Mean ±St. Dev	Median ±MAD	n	Mean ±St.Dev	Median ±MAD	n	Mean ±St Dev	Median ±MAD	
Complete cultural economic value per annum (\$)	271	45±58	49±60	79	56±61	49±60	87	34±52	23±28	105	34±52	16±15	H = 7.52, df = 2, p = 0.023
<i>Amayeza</i> (\$)	189	12.3±29. 6	3.4±5.1	61	16.6±37.6	4.1±6.1	65	13.0±31.9	0.4±0.6	63	7.3±13.7	4.2±6.2	H = 0.33, df = 2, p = 0.847
Rituals (\$)	168	10.9±11. 1	6.9±4.6	46	11.2±9.0	7.2±4.5	58	9.0±12.9	6.3±4.1	64	12.3±10.6	8.6±5.7	H = 8.51, df = 2, p = 0.014
Kraal material (\$)	160	30.0±44. 8	14.2±17.5	46	33.9±38.4	21.3±20.8	56	28.0±45.9	14.6±16.9	58	28.9±49.1	8.9±10.5	H = 8.70, df = 2, p = 0.013
Traditional grass broom (\$)	126	0.76±0.3 8	0.86±0.08	40	0.77±0.37	0.86±0.10	44	0.80±0.40	0.86±0.51	42	0.70±0.36	0.86±0.00	H = 1.69, df = 2, p = 0.430
<i>Imifino</i> (\$)	127	4.23±3.7 2	2.80±3.11	37	5.65±4.26	4.94±3.17	51	3.42±2.97	2.80±2.08	39	3.94±3.76	2.80±3.11	H = 9.65, df = 2, p = 0.008
<i>Igoqo</i> (\$)	82	32.2±30. 6	28.9±17.3	34	31.3±16.1	28.8±17.3	31	34.8±45.8	24.0±14.2	17	30.0±17.7	18.9±6.6	H = 1.02, df = 2, p = 0.601
Traditional Sticks (\$)	30	0.012± 0.010	0.007 ±0.005	12	0.010 ±0.007	0.007 ±0.004	13	0.012 ±0.007	0.010 ±0.009	5	0.015 ±0.021	0.007 ±0.005	H = 0.810, df = 2, p = 0.667

5. DISCUSSION AND CONCLUSION

The continued use of wild resources remained high amongst urban households with 99% still utilizing these resources. The mean amount of wild material utilized is 2,300 kg per household per annum, thus clearly demonstrating that the use of wild resources is still prevailing in urban areas. Approximately 1,401 kg of wild material collected or purchased per annum was utilized for cultural purposes. This equates to about 85% of all wild material utilized per household. The high cultural value attached to natural resources was further demonstrated by the fact that the cultural types of use were not restricted to the poor households only. Even amongst the cluster of wealthy households all the cultural resource use categories were maintained by at least 10% of the households. This included the use of *imifino* demonstrating that the use of *imifino* does not simply represent a resource, which is utilized by the poor as a form of nutrition. Furthermore three of the seven cultural resource use criteria were not significantly influenced by the wealth of the household, i.e. the use of material for the performance of rituals, the maintenance of the kraal and the ownership of grass broom. The cultural use categories which were significantly influenced by wealth included the maintenance of an *igoqo*, the use of *amayeza*; the ownership of a traditional stick and the collection of *imifino*. The latter however was only slightly significant. With regards to the maintenance of an *igoqo* the same statistical relationship was found, regarding wealth and maintaining an *igoqo* amongst rural communities (Cocks *et al.* submitted).

Clearly, the utilitarian uses of wild plants were much smaller than the cultural uses. All five categories of utilitarian use earlier recorded for rural communities (2003) were also present in the studied urban communities. However, this use was mostly restricted to the poorer households and three use categories, namely utensils, fence poles and timber. The finding that the use of wild plants for cultural purposes is more enduring than that for utilitarian purposes is in accordance with observations of Cocks and Wiersum (2003) that school children in peri-urban communities believed that the cultural uses of wild plant resources would continue in the future, while more utilitarian uses such as fuel wood would be replaced by commercial goods.

The majority of wild plant resources documented in the urban study were purchased from vendors. The only expectation being *imifino* species which are commonly ruderals and collected by users. This finding demonstrates that urban dwellers' ability to sustain cultural practices is largely facilitated by the increase in rural to urban linkages and the diversification in rural livelihood strategies (Wiersum and Shackleton 2005). These factors represent the key driving forces behind the continued use of wild plant resources by communities living in urban centres (Cocks 2006). Such insights need to be factored into new equations for predicting future market demands for natural resources as well as to assess the impact of increased modernization on the cultural use of wild resources.

The findings presented here also reveal that the flow of culture and wild resources is not simply from the rural areas to meet the demands in the urban centres but that there is also

a reverse flow from the urban areas to the rural areas. Urban dwellers return to their ancestral homes with cash and invest time and effort in the maintenance of the family kraal and *igogo* and the hosting of rituals.

These findings add support to the notion put forward by Cocks (2006) that the concept of culture must be understood as a dynamic process of trans-cultural exchange with constant re-articulations of tradition resulting in the persistence of certain cultural practices amongst groups of people. Even people who have migrated to (peri)urban areas and have become involved in modern economic sectors still perform certain cultural practices for maintaining a sense of well-being and expressing their identity (Cocks 2006). An increased understanding of this process is crucial so as to fully appreciate the scope of bio-cultural conservation in developing countries.

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CHAPTER 9

SYNTHESIS AND CONCLUSION



Figure 1: Gender defined activities, women collecting fuel wood (*ukuTheza*) for the cooking of the sacrificial meat (Photo A. Dold)

1. INTRODUCTION

The preceding chapters have demonstrated how biodiversity is used to fulfil a range of livelihood and cultural needs and household members' sense of well-being. In this final chapter I will return to the original research question and reflect on the scientific and conservation implications of the empirical research findings. First, a final assessment of the empirical research findings will be made. This will be followed by a consideration of the theoretical implications of the research findings in relation to the concept of bio-cultural diversity. I will also reflect on the study approach that was adopted. Following this, the repercussions of the research findings will be reflected upon in order to offer new conservation strategies within the order of community-based conservation in South Africa. At an international level, the research findings will give further credibility to the recent calls made by the newly established Task Force on Cultural and Spiritual Values of Protected Areas (CSPVPA) which emphasizes the need for the spiritual, cultural and aesthetic dimension of nature to be recognised. In conclusion, the answers to the research questions will be summarized.

2. CONCLUDING ASSESSMENT OF EMPIRICAL RESEARCH FINDINGS

As discussed in Chapter 2, it is often assumed that the use of wild plant material is mostly taking place in traditional societies or by poor people. To test whether this is indeed the case in South Africa, surveys on the use of wild plants were carried out in both rural, Chapter 5, and urban households, Chapter 8. These surveys demonstrate that the use and value attached to natural resource material remains significant despite the increasing urbanization in the study area. The utilization of natural resources in households in rural and urban areas represented 100% and 99% respectively, as one or more natural resource is used on a regular basis. In urban areas a total of 96 plant species were identified as being used regularly, whereas in the rural areas over 200 plant species were recorded. Within the rural areas a higher proportion of the overall resource material collected was utilized for utilitarian purposes, 60%, whereas in the urban areas more material was utilized for cultural purposes, 85%. This finding adds significant substance to the conclusion drawn in Chapter 3 that the use of wild plants for cultural purposes is enduring and not restricted to traditional indigenous and local communities but remains important to both peri-urban and urban communities.

The importance of natural resources in fulfilling household members' cultural needs was also reiterated by the finding that wealthy households in both the rural and urban communities continue to utilize natural resources for cultural purposes. In some instances the proportion of wealthy households and quantities utilized for cultural purposes was greater. For example, in the rural survey a significantly higher proportion of wealthy households' hosted rituals, consumed *imifino*, maintained kraals and *amagoqo*, and kept

traditional sticks compared to poorer households, see Chapter 5. Within the urban areas no statistically significant relation was found between wealth and the proportion of households performing rituals and maintaining a kraal, see Chapter 8. With regard to the other cultural use of resources, statistically significant relations were found between wealth and the use of *imifino*, maintaining an *igogo*, and keeping a traditional stick and using *amayaza*. However it is important to note that in terms of quantities utilized and wealth, no statistically significant relation was found in the instances of maintaining an *igogo* and traditional sticks, see Chapter 8.

Gender tended to only statistically influence the resource use categories classified as representing male orientated cultural uses, such as the use of kraal material and for the making of traditional sticks within the rural areas, see Chapter 5. A statistical significant relationship was however found between gender and the use and quantity of material utilized for *amayeza* purposes. However no statistically significant relationship was found between the gender of the household head and presence/absence of an *igogo*, in Chapter 4. Moreover, no statistical relationship was found between the education level of the household head and the maintenance of an *ubublanti*, see Chapter 4. Inter-household variables therefore seldom resulted in the decrease in the cultural significance of natural resources or in the quantity of material used.

The high prevalence of usage of wild plant material within urban communities for cultural purposes, Chapter 8, demonstrates that one does not have to live geographically close to the natural resources for them to be utilized. The trade in wild plant material has made it possible for these resources to move from rural to urban areas through informal market networks and thus remain accessible to urbanized communities. The two case studies presented on the trade in grass brooms, Chapter 6, and the trade in *amayeza* species, Chapter 7, illustrate this point clearly. This has often resulted in an increase in sales of wild resources and products.

The case study on the cultural significance of kraal and *amagoqos* Chapter 4, also demonstrates the high level of interconnectedness between rural and urban areas and that it is not just a one way flow of rural people to urban areas. Large numbers of migrated families in southern Africa regularly return to their ancestral lands to partake in cultural festivities and ceremonies (Bank 2002; Wiersum and Shackleton 2005) which often feature the use of wild plants.

These findings are obviously in contradiction to current thinking, as pointed out in Chapter 2, which largely portrays natural resources as only contributing to rural households' subsistence livelihood and 'safety-net' needs (Cavendish 2000; Wunder 2001; Shackleton *et al.* 2002). Thus, the use of biodiversity is not solely restricted to representing a poor man's activity but it also fulfils a very important cultural role in peoples' livelihoods and provides an important sense of well-being for communities. This brings with it increased rates of commercialization of culturally-esteemed wild plant products. Thus, it can be concluded that the empirical results clearly demonstrate the need not to assume that the use of wild plants is restricted to specific socio-economic conditions, and

the need to give more attention to the social processes impacting on the use of wild plant products.

3. REFLECTION ON THE STUDY APPROACH

The study approach has profited from the use of a number of different research methods, which complemented one other. These ranged from anthropological methods such as participant observation and in-depth interviews, to the administration of large quantitative household surveys. These spanned from rural villages to large urban areas, both in a replicated approach at each site. The data collected through the household surveys provided an overview of both the range and extent of natural resource use within rural and urban areas. The surveys also made it possible to statistically determine how inter-household factors such as wealth, education and gender may influence natural resource use. Initially only a rural survey was conducted; however it became apparent from the case studies that the urban use of natural resources was significant, and that it would be interesting to extend the survey to urban areas to reveal to what extent cultural uses of wild plants are still maintained under urbanized conditions and to assess the connections between rural and urban areas.

The surveys however did not provide me with the necessary insight into the precise nature of cultural value and the significance attached to natural resources and its products. This level of detail was only obtainable through the individual case studies. The use of participant observation techniques and in-depth interviews allowed me to embellish the concept of culture into my analysis of natural resource use.

It is however also necessary to point out the difficulties that were experienced in implementing a large quantitative household survey in the rural areas. I must acknowledge that it was valuable to cover different vegetation types but in hindsight it was not necessary to conduct a complete sample size survey as a sample survey within each village would have been adequate. The time spent on conducting a complete sample size could have been better spent on collecting better quality data. The lessons learnt from the rural survey were however improved upon in the urban survey and as a result a smaller number of households were interviewed by engaging in sampling techniques to cover different wealth classes. The implementation of this approach ensured that an even proportion of households were interviewed from each wealth category.

Furthermore, in terms of the statistical data collected, assigning a cultural and utilitarian value was in some instances problematic as the use was not always absolute. For example, in the instance of the kraal material utilized, the kraal was also used as a livestock enclosure in some instances. It was however impossible to assign what proportion of the overall use represented an utilitarian versus a cultural use. Moreover, as demonstrated by the case-study on broom (Chapter 6) even presumably utilitarian uses of wild plant material may have a cultural meaning. Due to the overwhelming cultural significance attached to the maintenance of the kraal in the analysis of the survey data the amount and

value of material utilized a purely cultural value was assigned. A similar argument was used in respect to *imifino* products. Despite this difficulty it is felt that the data still clearly portrays the significant amount of material used for cultural purposes.

4. REFLECTION ON BIO-CULTURAL DIVERSITY THEORY

The empirical results of this study have several repercussions on the presently prevailing theories concerning bio-cultural diversity. As noted, in Chapter 2, the theory on bio-cultural diversity mostly only pays homage to cultural values that communities and individuals attach to components of the vegetation or fauna, e.g. forests as dwelling places for spirits, burial places for ancestors, sites for ritual ceremonies, and sacred natural features such as springs and caves (Laird 1999; Posey 1999; Seeland 1997). This study however clearly indicates that households attach significant cultural value to harvested wild resources and their products; for instance in the form of the construction and maintenance of cultural artefacts such as kraals and *amagoqo*, Chapter 4 as well as natural brooms, Chapter 6.

Furthermore, the case studies also indicate that cultural values of the natural environment may take on several manifestations. The cultural values of wild plant products do not just relate to their material use in cultural ceremonies and practices, but also involve cultural values in a social sense. The collection of the material for construction and maintenance of a kraal is often collected when a clansman of the household arranges a collecting trip, referred to as *amalima*, to share the workload. A whole day affair is made of the event which is followed by the serving of traditional beer or tea and a meal for all the participants who partook in the event. Women do not engage in this activity. Similarly, in the instance of the stacking of an *igoqo* this activity must only be undertaken by women. The collection of material is arranged by hosting a social event (*ibhoxo*) and ended by providing tea and a meal to all the participants. The *igoqo* also represents an important informal social gathering place for female visitors and acts as a formal venue where women from foreign clans will congregate when a ritual sacrifice is being performed in the kraal.

The fact that many of these practices are still being maintained even by significant number of urban people demonstrates that cultural values concerning the use of wild plant resources are not restricted to traditional indigenous and local communities as currently defined. Thus, one does not have to live geographically close to the natural environment for it to continue to hold spiritual, social and cultural values for its users.

It may be hypothesized that the continued cultural use of wild plant material is due to the fact that this use contributes towards the maintenance of the cultural identity of the formally disadvantaged black people in South Africa. Although the relationship between bio-cultural diversity and identity was not specifically addressed in this study, its results forcefully raise the question of whether the use of natural resources contributes to identity formation and/or strengthening of cultural identity. An emerging field of study examines

this questions, as demonstrated in the recent publication of books such as *Identity and Natural Environment* (Clayton and Opatow 2004) in which environmental identity has been proposed as representing “a sense of connection to some part of the nonhuman natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we perceive and act towards the world; a belief that the environment is important to us and an important part of who we are” (Clayton and Opatow 2004).

Identity formation has recently been described as the way in which people constitute and position themselves in the world and how they render themselves (Siebers 2004). Concepts which have been developed and adopted around identity formation have stressed the need to depict how people cope and react to challenges, problems and issues that face them, and how they position themselves in the world and try to make the best out of their situations. In line with these developments, scientific approaches to identity formation have stressed the need for the concept to reflect the dynamic, hybrid, fluid and indeterminate nature of the phenomenon.

Such an approach allows us to investigate the operational concepts involved in the processes of identity formation (Siebers 2004) and thus makes it possible to explore how within the South African context the cultural use of natural resources has been used to maintain cultural identity amongst black South Africans. As noted by several authors, under the policies of apartheid ordinary people coped by clinging onto newly plausible and relevant explanations by continuing to attach significance to the continuation of their cultural practices (Beinart 1994; Kiernan 1997; Ainslie 2005). It is believed that the continued use of natural resources in many ways facilitated this process as the hosting of ritual practices and ethnically marked rites of passage, not only survived but even flourished, albeit in modified forms, during this era (Beinart 1994). The case studies and overviews presented here clearly provide examples of such continuities as 68% the households in the rural areas, Chapter 5, and 56% in the urban areas, Chapter 8, continue to host rituals.

Although this study focused only on the *amaXhosa* and *Mfengu* people of the Eastern Cape, there are several indications that the use of natural resources for cultural purposes is not restricted to these groups. For instance, it has been extensively documented that the trade in *amayeza* species represents a huge informal economy in other provinces in South Africa such as KwaZulu Natal amongst the Zulu (Cunningham 1991; Mander 1998) and Mpumalanga Province amongst the Tsonga and Venda (Botha 2001; Botha *et al.* 2004). The use of other natural resource products for cultural purposes has not as yet been investigated and can only be verified by conducting regional research. Furthermore the use of natural resources in identity formation is not unique to the South African context. Authors, such as Rival (1997), have described how the social life, knowledge of the world, and cultural understanding of the Huaorani Indians of Amazonian Ecuador are all, in one form or another, inspired by plant-life and that they are therefore acutely aware of their unique identity as forest dwellers. The Aboriginal people in Australia consider themselves to be a part of the landscape, which provides them with a material, spiritual, and ethical connection to past and future generations (Maffi 2004). Similarly, Kusel (2001) and

Wiersum *et al.* (2000) have hypothesized that community forestry arrangements in the USA and Europe provide an important sense of place and belonging to communities living in these areas. Notwithstanding this, it is still of importance to recognize that due to South Africa's historical past this link could possibly be stronger. These sentiments can however only be verified by further research.

5. PRACTICAL IMPLICATIONS OF RESEARCH FINDINGS

The enduring cultural value of wild plants reported in this study has two important implications in respect to biodiversity conservation. On the one hand, it may result in increased use pressures and even result in overexploitation and hence biodiversity loss, see Chapter 7. This has already been noted, particularly with regards to the medicinal plant trade in southern Africa (Cunningham 1991; Cunningham and Davies 1997; Dold and Cocks 2002). Also, in other countries it has been noted that cultural uses of wild plants may result in a high use pressure. For instance, amongst the Nepalese in Nepal an objective of religious forests is to provide a sacred landscape dedicated to the worship of a supernatural being. To facilitate access to temples, rest-houses and paths are needed. The establishment and maintenance of these facilities involves the use of timber and the hosting of religious ceremonies involves the consumption of large quantities of forest products and fuel wood (Ingles 1997). Such over exploitation of biological resources obviously does not only apply to flora species but also to fauna species such as rhinoceros products. For example, powdered rhino horn has been used as a folk remedy in China to treat ailments ranging from high fevers to convulsions to failing vision. Horns have also been smuggled into North Yemen and used as handles for *jambiyas* (curved daggers) that symbolize masculine power (Rosenthal 1996; Martin *et al.* 1997). This has resulted in the decline of the species to such an extent that in 1975 all three Asian Rhinoceros species were placed on the CITES Parties listed. By 1977, all remaining rhinoceroses were listed thereby creating a ban on international commercial trade in all rhinoceroses and their parts (Martin *et al.* 1997).

On the other hand, as has been mentioned already in previous chapters, the cultural values could also be used as an argument to stimulate biodiversity conservation by local communities. To date however such strategies have largely only been implemented in respect to communities living adjacent to religious or sacred forests (Ingles 1997; Posey 1999) or amongst more 'exotic' type communities (Posey 1999). For example, an initiative is currently underway amongst the Pikangikum elders to guide the development of new forest-based livelihood opportunities for the youth, in such a way that the community's knowledge traditions, language, and stewardship values play a leading role. The maintenance of the forest cover and biodiversity is explicitly linked to the maintenance of the indigenous language, culture, and knowledge tradition of the region (Maffi 2004). Similarly amongst the Wanniyalaeto (Veddas), Sri Lankan with the help of an international NGO, are developing a plan to protect and maintain both the local biodiversity and their indigenous culture in an integrated fashion. The plan will allow

Wanniyalaeto families to return to live in and manage their ancestral habitat, creating a sanctuary both for the local flora and fauna and for Wanniyalaeto culture (Maffi 2004).

It is proposed that in South Africa the cultural values regarding the use of wild plants could also be incorporated in strategies for biodiversity conservation strategies. In several South African studies it has been demonstrated that most of the wild plants used by rural villagers are collected in the different land-use zones of rural communities (Wiersum and Shackleton 2005) rather than in specific conservation reserves. As a result of such observations, increasing attention is being given to the conservation of biodiversity outside of conservation areas. This study clearly demonstrates the urgent need for such a conservation approach as most of the resources utilized to perform cultural rituals and practices are harvested from community lands rather than official biodiversity reserves. Several authors have indicated, however, that such local collection is not always sustainable. In several places it was noted that the stress on natural resources in communal areas is largely caused by the over utilization of the indigenous vegetation and that this problem is often compounded by the lack of management and utilization conditions (Shackleton and Scholes 2000; Fabricius 2004; Von Maltitz and Shackleton 2004). In light of these findings and the failure of many community-based natural resource management (CBNRM) initiatives in southern Africa (Campbell *et al.* 2001; Fortmann *et al.* 2001), suggestions have been made to explore other development pathways or conservation strategies and to modify aspects of CBNRM on the basis of improved understanding of the relationship between people and biodiversity (Fabricius 2004). In this regard, several practical implications of this study can be identified at both local and international level.

5.1 PRACTICAL IMPLICATIONS AT LOCAL LEVEL

At a local level conservationists and policy analysts need to take cognisance of the multitude of cultural values that affect the use and management of biodiversity and thus reflect the link between the loss of the natural habitat and cultural practices. It is believed that the implementation of bio-cultural diversity conservation campaigns based on stressing the cultural role of biodiversity together with improved organisation of CBNRM strategies could significantly contribute to maintaining biodiversity in South Africa. Such a strategy would demonstrate to the still-often disadvantaged black people in South Africa that biodiversity conservation is not a 'white men's' pre-occupation, but that it can contribute to the maintenance and strengthening of their own cultural identity.

One of the ways to improve CBNRM strategies in southern Africa is to find a way that increases the 'buy in' by local communities to manage their natural resources on a more sustainable basis. This can be achieved by following the recommendations made by Ainslie (1999), where he prioritizes the need to identify and rank resource management shortfalls in communal areas into 'resource bundles'. Each 'resource bundle' should be related to specific user groups that can contribute and engage in strategies for the management of the identified resource. Following from the current research survey, it is proposed that a 'resource bundle' should be formed around cultural resources as these resources and related species were used by all households. The formation of such a group could cut across wealth classes within communities as wealth has frequently been

identified as segregating different community groups and making community-based conservation difficult to achieve (Ainslie 1999; Campbell *et al.* 2001; Von Maltitz and Shackleton 2004). By stressing the cultural values of wild plants to the community as a whole, it might be possible to overcome the limitations to CBNRM caused by inter-community heterogeneity. The need to work with as many people as possible within a community has been identified as one of the 12 working action-orientated guidelines to be adopted by sectoral role players when implementing CBNRM (Fabricius *et al.* 2004).

The institutionalization of 'cultural groups' would be highly feasible as informal groupings already exist around such resources, for example men's groups exist around kraals, women's groups around *amagoqos* and healer groups around traditional healers, collectors and users of *amayeza* (Figure 1). In order to be effective such groupings would have to receive institutional support from the State in the form of training, greater authority and responsibility. Under such an approach it is also advised that the concept of 'in-domo' conservation of biodiversity (Wiersum 2003) be implemented. In many places communities' needs for biodiversity have resulted in the transformation of native vegetation to suit their resource needs, ultimately resulting in the formation of a forested landscape. As described by Wiersum and Shackleton (2005), for South Africa these landscapes reflect a combination of land-use zones ranging from nature areas to cultivated fields. 'Domiculture' has been coined to refer to such a creation of a series of localized areas of interaction between people and resources, each characterized by a specific set of resource technologies (Wiersum 1997; 2003). Within such a context, the conservation of species utilized for cultural purposes could either be accomplished through conscious preservation by restricting exploitation or/and through encouraging the cultivation of specifically identified cultural species in specific landscape niches. The combined incorporation of the concepts of 'domiculture' and the institutionalization of 'cultural groups' would greatly assist in ensuring that communities' cultural needs are reflected in biodiversity conservation strategies.

In South Africa the option of increased cultivation of especially medicinal plants has already received attention. Wiersum *et al.* (2006) have already noted that local people within the rural areas of the study area are cultivating *amayeza* species that they regularly use in their home gardens, albeit on a small scale. This is despite the fact that some studies have indicated that African people in South Africa traditionally believe that cultivated medicinal plants 'lose power' (Prins 1996). The latter perception was not found to be strong in the study area (Wiersum *et al.* 2006), as well as other areas (Cunningham and Davies 1997; Botha 2001). This demonstrates that beliefs concerning the cultural uses of the medicinal plants may be more enduring than the traditional beliefs concerning their cultivation (Wiersum *et al.* 2006). My data shows that the use of the species used for cultural purposes is likely to continue in the future, whereas the more practical oriented utilitarian uses of wild resources will be replaced by commercial goods, see Chapter 3. It is therefore proposed that in programs to stimulate the cultivation of wild and endangered species special attention is given to include species used for cultural purposes.

It has been proposed that the stimulation of cultivation of useful wild plants might form a good strategy for poverty alleviation (Leakey *et al.* 1996; Ros-Tonen and Wiersum 2005).

However, as indicated by Wiersum *et al.* (2006) we should not be too optimistic about the scope of cultivation of culturally-valued plants by poor people as a practical strategy for the conservation of threatened species. In a study on options for cultivation of medicinal plants as a strategy for poverty alleviation, it was found that the preferred species for cultivation by people were not necessarily the most threatened species, but the most easily to cultivate and the most financially profitable species. For instance, cultivation mostly concerned bulbous or tuberous species. Tree species were not selected for a number of reasons; ranging from limited seedling availability in the area, slow growth rate as well as the tendency of these species to compete for space with other crops. Furthermore, when considering the option of cultivation, it is important to determine beforehand the extent to which the cultural usages of the plants are directly related to the wild status of the plant as the collection of these plants from the wild may form part of their ceremonial use (Wiersum *et al.* 2006).

These concerns do not mean that cultivation efforts should be disregarded as a conservation strategy. As noted by Wiersum *et al.* “rather than judging the impact of cultivation on its direct impact on conserving threatened species, its scope should be considered within a more general context of protecting and strengthening the cultural values of biodiversity and thus creating a positive attitude towards biodiversity conservation in general” (2006).

Furthermore the adoption of such a culturally-inspired conservation approach could be extended from a species approach to an approach also focusing on the protection of landscape and ecosystems. As discussed above, not only species, but also landscapes may hold cultural values and contribute towards identity and a sense of place. In this context, the recently established Task Force on Cultural and Spiritual Values of Protected Areas (CSVPA) has identified that aesthetic landscapes often inspire and move us and provide a deep personal understanding that all is related

(<http://www.iucn.org/themes/wcpa/theme/values/values.html#publications>). In view of the rapidly changing rural conditions (Ellis 1998) there is a need to also investigate the value and significance that peri-urban and urban communities attach to different landscapes and natural areas and how such values endure or not under the impact of modernization, because as yet there is no documented understanding of this relationship. African spiritual and cultural perceptions of the landscape need to be explored and investigated and one of the ways in which this information can be uncovered is by recording users' and communities' narratives and myths around such phenomena (see. Rival 1997; Bernard 2003; Maffi 2004; Lewis and Sheppard 2005). This knowledge is considered crucial to assist in implementing appropriate strategies to conserve and manage not just species but also landscapes and ecosystems in an age characterized by rapid rural change and increased urbanization. Such approaches to management are already being explored in other parts of the world, for example amongst the Cheam of British Columbia (Lewis and Sheppard 2005).

It is important to note that the author does not consider the adoption of these approaches as the only necessary strategy, which should be implemented to ensure the conservation of biodiversity as there is still a role for protection and preservation of certain species and

ecosystems through national parks. But in addition strategies based on cultural values and needs should be adopted, notably outside of formal nature reserves.

5.2 IMPLICATIONS AT INTERNATIONAL LEVEL

This research also has an important contribution to make to the international discussion concerning strategies for biodiversity conservation. As noted in Chapter 1, the Convention on Biological Diversity has formulated its commitment to increase efforts of biodiversity conservation and simultaneously recognizing biodiversity related values of traditional tribes and communities. Until a decade ago the World Commission on Protected Areas (WCPA) only gave attention to the value of protected areas which represented the conservation of biodiversity, and no acknowledgement or recognition was given to the spiritual, cultural and aesthetic values attributed to biodiversity. As discussed in Chapter 2, an increase in commitment has been witnessed, in recent years, to encapsulate the complete range of supportive values and significance that people find in, and bring to, nature in general. This is illustrated by the establishment of the task force on Cultural and Spiritual Values of Protected Areas (CSVPA) by the International Union for the Conservation of Nature and Natural Resources (IUCN) in 1998. The CSVPA has emphasised that the cultural and spiritual values do not simply represent past or physical aspects of heritage but include living cultures that continue to change and grow in response to the contemporary world. These values are not only associated with protected areas, but with all dimensions of nature

(<http://www.iucn.org/themes/wcpa/theme/values/values.html#publications>). As noted by Maffi (2004) in order to further develop these new strategies, there is a desperate need for more context-specific studies across the world so as to refine our understanding of human-environment ecosystems from a bio-cultural perspective as such an understanding would allow us to flesh out policy and implement frameworks at a regional level. My study provides an example of how region-specific studies can contribute towards obtaining a better understanding of the scope of the new strategies to biodiversity conservation. In the first place, the findings demonstrate that such an approach should not only focus on venerated vegetation types or landscape units, but also on land-use zones from which culturally-esteemed wild plants are collected. The results also demonstrate how cultural values may endure even under processes of modernization. On the one hand, however this brings with it hazards for overexploitation but on the other hand it does also provides opportunities for biodiversity conservation strategies to be based on local value systems.

6. FINAL CONCLUSION

Several areas of the South have been identified as representing the largest concentration of biodiversity as well as representing rich cultural diversity. This has resulted in the identification of what the Declaration of Belem calls an 'inextricable link' between biological and cultural diversity. The term bio-cultural diversity has been used as a concept denoting this link. The term has largely only been used in relation to indigenous communities adhering to traditional cultural values and as a result there has been very

little systematic analysis of the interaction between culture and biological diversity in terms of impact of the processes associated with modernization. This question is of special relevance, as serious concerns have been raised concerning the issue of the impact of colonialism on the South, which resulted in people becoming historically disenfranchised and marginalized and very little consideration has been given to the oppression experienced during this time has often been perceived as shaping, modifying and impoverishing peoples' 'cultures' (Borrini-Feyerabend *et al.* 2004). This study has however clearly demonstrated that peoples' culture has continued to survive even if an altered form and, more importantly, in terms of this study, that biodiversity continues to fulfil an intricate role in peoples' cultural practices. The dynamic nature of the relationship between biodiversity and culture is thus demonstrated.

The study also illustrates how the concept of bio-cultural diversity needs to not only represent the cultural values of vegetation and indigenous and traditional communities, but to also include the cultural values of plant products and people living in peri-urban and urban communities. By extending the concept in this way, it has been transformed from a rather 'conservative' concept to a more dynamic one which aims to reflect the true nature of cultural diversity in current times.

This study also shows how the cultural use of wild plants may endure in the face of the processes of modernization. Both richer people and people living in urban areas tended to continue their cultural uses of wild plants, whereas the more practical utilitarian uses of wild plants have diminished. This finding demonstrates that the notion of wild plants uses representing a 'poor men's overcoat' needs modification and more attention should be given to the continued use of wild plants by more affluent people. It is suggested that such continued use may be due to the fact that such use forms an important component in the maintenance of cultural identity.

In conclusion these findings give credibility to conservation movements whose future depends on their ability to deal with the relation between history, culture and conservation in all its complexity. The new approaches adopted should therefore bridge two contrasting opinions; that the continued use of culturally-valued wild plants by people living geographically segregated from their area of collection may increase the use pressure and result in overexploitation. The other being that the enduring cultural values of wild plants could be used to develop context-specific biodiversity conservation strategies, adding local cultural values to global ecological concerns.

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SUMMARY

During the past decade the relationship between biodiversity and human diversity has received increased attention. This has resulted in the identification of what the Declaration of Belem calls an 'inextricable link' between biological and cultural diversity. The term bio-cultural diversity has been introduced as a concept denoting this link. The studies used to reflect this link largely represent more 'exotic' type communities who by their very nature represent remote and isolated communities and whose modes and relations of indigenous production systems are typically subsistence and kin based and involve extraction of wild products from the natural environment. Rural conditions are however rapidly changing in many tropical countries, and the livelihood strategies of communities are becoming increasingly diversified. As a result the worldviews, cultural values and knowledge of large sectors of the population can no longer be classified as 'traditional' nor as representative of western culture. Despite these changes, many of these communities are still reliant on wild resources both for utilitarian and cultural needs. Unfortunately, as it stands, the theory on bio-cultural diversity still only pays homage to one end of the continuum — the more 'exotic' and under political represented sectors of the population. This has resulted in very little systematic analysis of the interaction between culture and biological diversity because by only focussing on the more 'exotic' communities has resulted in the failure to fully comprehend the resilience, or rather the persistence, of culture and how the networks of globalization are often used to maintain aspects of cultural practices linked to the use of biodiversity. In response to these shortcomings, the overall aim of this study was to assess the importance of biodiversity with respect to cultural and utilitarian value amongst different categories of non-traditional community households in South Africa and to evaluate factors which contribute to the persistent use of biodiversity for cultural practices. In order to address this objective I proposed to answer the follow research questions:

- To assess how the concept of culture can be brought into our analyses of understanding the complete role of biodiversity and to develop an appropriate theoretical framework to explain the relationship between nature and culture.
- To determine the relative importance of the utilitarian and cultural value of biodiversity to both urban and rural populations.
- To assess how different socio-economic factors such as gender, age, wealth and level of education impact on local use of biodiversity resources for cultural practices.
- To reflect how the cultural values of biodiversity contribute towards biodiversity conservation.

The study was based on an accumulative approach in which the literature study and the field study proceed in a cyclical manner. Both sociological and anthropological research methods were used to collect the data in the former Ciskei homeland region of the Eastern Cape Province in South Africa. The methods employed were spanned from rural villages to large urban areas, and were replicated in each site. The data collected through the household surveys provided an overview of both the range and extent of natural resource use within rural and urban areas. The use of participant observation techniques

and in-depth interviews provided the detailed data for the individual case studies. The individual case studies provide information on several poorly documented cultural practices related to wild plant use amongst peri urban and urban communities.

The theoretical orientation of the study and the empirical data collected has been submitted and published in seven peer journals and these are summarized below.

Part one consists of Chapters 2 and 3 which place the research in a general theoretical and empirical context. Part two consists of Chapter 4 and 5 which provides details on the use and significance of wild plant products in rural areas. Part three consists of Chapter 6, 7 and 8 which provides details on the use and significance of wild plant products in urban areas. Part four consists of Chapter 9 which provides the overall reflection and conclusion.

Chapter 2 identifies the need for the concept of bio-cultural diversity to not only be used in reference to 'indigenous traditional' communities but that its relevance be extended to include communities living in peri-urban and urban communities as the study has demonstrated that peoples' culture continues to survive, albeit in a modified form, and that the use of biodiversity continues to fulfil an intricate role in peoples' cultural practices. The concept of bio-cultural diversity as it currently stands only pays homage to cultural values that communities and individuals attach to components of the vegetation or fauna despite the value that communities attach to harvested wild resources and their products. Amendments to the concept of bio-cultural diversity are made by reviewing the concept of culture. It is shown that the concept of culture must be understood as involving a dynamic process of trans-cultural exchange and constant re-articulations of tradition which is in the persistence of certain cultural practices. This re-conceptualization ultimately reveals that the cultural value of wild resources remains applicable to non-indigenous traditional communities.

Chapter 3 provides a detailed assessment in one of the studied villages of the value of biodiversity for both utilitarian and cultural purposes in an integrated manner. It documents the various uses of biodiversity, in terms of the species used, the mean amounts of material harvested and its economic value. In total 103 plant species were recorded as being used on a regular basis. The use of these resources was not purely utilitarian as approximately one-third of the species and just over half of the total use values were used for cultural purposes. This finding illustrates that plant diversity plays a crucial role in serving the cultural needs of non-traditional local communities.

Chapter 4 concentrates on the role of woody resources for two gender specific household cultural artefacts amongst the *amaXhosa* and *amaMfengu*, i.e. the kraal and *igogo*. A kraal has often been depicted as an animal enclosure, although scattered in historical ethnographies mentions their significance as an area for performance of ritual ceremonies to the ancestors of the homestead. Our data emphasize this last function of the kraals and indicates that kraals are foremost a male domain. *Igogo* have not been described ethnographically, but it is shown that these woodpiles are an important female domain for ceremonies and social gathering. The use and cultural significance of these cultural artefacts still persists today, both amongst poor and richer people. The over emphasis on

the immediate utilitarian values of wild resources for rural livelihoods tends to overlook their cultural value.

Chapter 5 provides an overview of the use of biodiversity in six rural villages which amounted to 1,015 households being individually surveyed. It examines how the use of these resources is influenced by intra-household variables such as wealth and gender and inter-community variables such as accessibility to the natural resource. The results reveal that approximately 6,600 kg of wild material is used annually per household of which 65% is used for cultural purposes. At an inter-household level an increase in the financial status of households did not result in a decrease in the use of natural resources for both utilitarian and cultural resource use categories, revealing that an increase in disposable income does not necessarily result in these households purchasing alternative commercial supplies such as paraffin and gas, etc. Wealth also did not play a major influencing factor in the quantity of resource material utilized per household. Gender influenced the use of certain gender specific cultural resource use categories. Over 200 plant species were identified as being used thus demonstrating the crucial role that biodiversity fulfils in rural livelihoods and highlighting the need for biodiversity conservation to also be practised outside of protected areas.

Chapter 6 provides an account of the cultural significance of traditional grass brooms to urban users and its impact on income generation in rural areas. The trade in wild plant material has made it possible for these resources to move from rural to urban areas through informal market networks and thus remain accessible to urbanized communities. The concept of culture as a significant factor towards the understanding of the role of wild resources in peoples' daily life is also discussed.

Chapter 7 provides an account of how the *amaXhosa* and *amaMfengu* people living in an urban context in the Eastern Cape Province continue to use wild plants for cultural purposes and ritual applications. A large diversity of plant species are required for these purposes, many of which are purchased through informal medicinal plant markets within the urban areas. Medicinal plants are not just used for pharmaceuticals, but also have an important cultural value as demonstrated by their use for ritual purification of the body and/or ritual cleansing of the house. The highest level of *amayeza* use was recorded amongst poor households, followed by middle income and wealthy households. Despite the lesser use of *amayeza* by wealthy households, more than half of the wealthy urbanized households surveyed still used *amayeza*, indicating that Xhosa and Mfengu beliefs and practices are still retained. Wild plants thus play a significant role in providing health services and a feeling of 'well-being' among urban groups.

Chapter 8 describes the use and significance of wild plants for urban households under different socio-economic conditions in South Africa. The findings exemplify that 99% of urban African households still use wild plant resources, not only for practical utilitarian purposes, but also for cultural purposes. As much as 85% of the total volume of wild plant material utilized was used for a variety of cultural practices. This use was not restricted to the poor households. The majority of wild plant resources documented in the urban study were purchased from vendors. This finding demonstrates that urban dwellers' ability to

sustain cultural practices is largely facilitated by the increase in rural to urban linkages and in the diversification in rural livelihood strategies and places the findings of the trade in brooms and *amayeza* species in a more general frame. These factors represent the key driving forces behind the continued use of wild plant resources by communities living in urban centres. Such insights need to be factored into equations for predicting future market demands for natural resources as well as to assess the impact of increased modernization on the cultural use of wild resources.

Chapter 9 provides a synthesis of key considerations, of the theoretical implications of the research and the empirical findings. This is followed by practical recommendations around conservation strategies within the order of community-based conservation in South Africa being given. The re-conceptualization of the concept of bio-cultural diversity reveals that it need not only apply to the cultural values of vegetation and indigenous and traditional communities but also includes the cultural values of plant products and people living in peri-urban and urban communities. By extending the concept in this way, it has been transformed from a rather 'conservative' concept to a more dynamic one which aims to reflect the true nature of cultural diversity in current times.

The extensive trade in wild plant resources in urban areas demonstrates that urban dwellers' ability to sustain their cultural practices is largely facilitated by the increase in rural to urban linkages and the diversification in rural livelihood strategies. Thus, the use of biodiversity is not solely restricted to representing a poor man's activity as it also fulfils a very important cultural role in peoples' livelihoods and provides an important sense of well-being for all socio-economic sectors of rural and urban communities. Consequently only evaluating biodiversity in terms of its market price does not take into account the affective needs these resources provided for their users nor of the social processes impacting on the use of wild plant products.

The study also gives further credibility to conservation movements whose future depends on their ability to deal with the relation between history, culture and conservation in all its complexity. At a practical level conservationists need to be made aware not only of the link between the loss of the natural habitat and cultural practices, but also of the options for incorporating cultural values in novel biodiversity conservation approaches.

SAMENVATTING

De afgelopen tien jaar heeft de relatie tussen biodiversiteit en mensen steeds meer aandacht gekregen. In de 'Declaration of Belem' wordt gesproken over een 'onontkoombare link' tussen biologische en culturele diversiteit. De term bioculturele diversiteit is geïntroduceerd om deze relatie aan te duiden. Studies ter illustratie van deze relatie gaan over het algemeen over 'exotische' gemeenschappen die in afgelegen gebieden wonen en dicht bij de natuur staan. Hun productiesystemen zijn hoofdzakelijk gericht op zelfvoorziening en zijn georganiseerd op basis van familiebanden. Het dagelijks bestaan is voor een belangrijk deel gebaseerd op het gebruik van wilde producten uit de natuurlijke omgeving. In veel tropische landen veranderen de rurale omstandigheden echter snel en de lokale strategieën voor levensonderhoud worden steeds diverser. Dientengevolge kunnen levensvisies, culturele waarden en kennis van grote groepen van de plattelandsbevolking niet langer meer als 'traditioneel' worden beschouwd. Maar evenmin kunnen zij als representatief voor de westerse cultuur worden beschouwd, want ondanks de veranderingen zijn veel lokale gemeenschappen nog steeds deels afhankelijk van natuurlijke hulpbronnen voor zowel dagelijks gebruik als voor culturele behoeften. Ondanks deze ontwikkelingen wordt het begrip bioculturele diversiteit nog steeds voornamelijk toegepast bij de meer exotische en politiek-erkende inheemse bevolkingsgroepen. Dit heeft geresulteerd in een beperkte analyse van de interactie tussen cultuur en biologische diversiteit. Omdat de aandacht vooral gericht is op de inheemse gemeenschappen, wordt geen aandacht besteed aan de vraag in hoeverre de culturele waarden ten aanzien van biodiversiteit gehandhaafd worden onder meer moderne omstandigheden. Dit gebrek aan aandacht voor de persistentie van culturele waarden ten aanzien van biodiversiteit is opvallend gezien het feit dat thans op internationaal niveau pogingen ondernomen worden tot het behoud van culturele praktijken die gerelateerd zijn aan het gebruik van biodiversiteit.

In reactie op deze beperkingen in de toepassing van het begrip bio-culturele diversiteit is de algemene doelstelling van deze studie om een analyse te maken over het belang van biodiversiteit met betrekking tot culturele en gebruikswaarden bij verschillende categorieën van niet-traditionele huishoudens in Zuid-Afrika. Tevens is het doel om factoren te evalueren die bijdragen aan het eventueel continueren van het gebruik van biodiversiteit voor culturele praktijken. Hiertoe heb ik de volgende onderzoeksvragen geformuleerd:

Welke betekenis kan in het kader van het concept van bioculturele diversiteit aan het begrip cultuur toegekend worden en welk theoretisch kader kan gebruikt worden om de relatie tussen natuur en cultuur te kenmerken?

Wat is het relatieve belang van het praktische en culturele gebruik van verschillende wilde planten voor zowel rurale en stedelijke bevolking?

In hoeverre hebben verschillende socio-economische factoren zoals geslacht, leeftijd, welvaart en niveau van onderwijs invloed op het lokaal gebruik van natuurlijke hulpbronnen voor culturele doeleinden?

Welke conclusie kan uit de antwoorden op deze vragen getrokken worden ten aanzien van de vraag in hoeverre de culturele waarde van biodiversiteit bijdraagt aan het behoud van biodiversiteit?

De studie was gebaseerd op een reïteratieve werkwijze waarin literatuurstudie en veldstudie elkaar afwisselden en complimenteerden. De veldstudie werd uitgevoerd in de voormalige 'Ciskei' regio in de Oostkaap provincie in Zuid-Afrika, een van de thuisland-gebieden uit de apartheidperiode. Voor het verzamelen van gegevens werden zowel sociologische als antropologische onderzoeksmethoden gebruikt. Door middel van systematische huishoud surveys in zes dorpen en twee stedelijke gebieden werd een overzicht verkregen van zowel de aard als de omvang van het gebruik van wilde planten in ruraal en stedelijk gebied. Daarnaast werd informatie over het gebruik van wilde planten voor specifieke vormen van cultureel gebruik verkregen via participatieve observatie technieken en diepte interviews. Deze ethnografische case studies leverden gedetailleerde beschrijvingen op van verschillende, nog niet of weinig gedocumenteerde, vormen van cultureel gebruik van wilde planten door rurale en stedelijke gemeenschappen.

De theoretische oriëntatie van deze studie en de empirische gegevens zijn gepubliceerd als zeven artikelen in wetenschappelijke tijdschriften. In dit boek zijn zij opgenomen als hoofdstukken 2 t/m 8; deze hoofdstukken worden gecompimenteerd met een algemene inleiding (Hfd 1) en een reflectie (Hfd 9) op het onderzoek. De theoretische en empirische hoofdstukken zijn onderverdeeld in drie delen. Deel één bestaat uit twee artikelen (hoofdstuk 2 en 3) die het onderzoek in een algemeen theoretische en lokale context plaatsen. Deel twee bestaat uit twee artikelen (hoofdstuk 4 en 5) die het gebruik en het belang van wilde planten producten in rurale gebieden beschrijven. Deel 3 bestaat uit drie artikelen (hoofdstuk 6, 7 en 8) die dieper ingaan op het gebruik en belang van wilde planten producten in stedelijke gebieden. Deel 4 (hoofdstuk 9) bevat een wetenschappelijke reflectie op de eerdere informatie en bespreekt de relevantie van de onderzoeksresultaten voor programma's ter bescherming van biodiversiteit.

Hoofdstuk twee beschrijft hoe het concept van bioculturele diversiteit overwegend gebruikt wordt in relatie tot traditionele inheemse gemeenschappen en beargumenteert dat dit concept ook relevant is voor gemeenschappen levend in meer gemoderniseerde rurale gebieden en in stedelijke gebieden. Algemene cultuurstudies hebben duidelijk gemaakt dat menselijke culturen dynamisch zijn en dat ze sociaal-economische veranderingen vaak overleven, ofschoon soms in gewijzigde vorm. Het is algemeen aanvaard dat het concept 'cultuur' het best geïnterpreteerd kan worden als verwijzend naar een dynamisch proces, waarbij culturele praktijken enerzijds worden gehandhaafd en anderzijds worden aangepast als gevolg van transculturele uitwisseling en een constante herinterpretatie van culturele tradities. Deze interpretatie roept de vraag op in hoeverre ook het gebruik van biodiversiteit voortduurt bij modernisering van traditionele gemeenschappen. Het huidige concept bioculturele diversiteit richt zich thans voornamelijk op de culturele waarden die traditionele inheemse gemeenschappen hechten aan bepaalde 'heilige' vegetatietypen en landschappen. Het begrip kan door twee aanpassingen een meer universele betekenis krijgen. In de eerste plaats dient het begrip uitgebreid te worden van vegetatie en landschapstypen naar geoogste producten van de natuurlijke hulpbronnen. In de tweede

plaats dient de culturele dynamiek in het begrip geïncorporeerd te worden. Op basis van deze twee vormen van herinterpretatie van het concept bioculturele diversiteit kan empirisch getoetst worden in hoeverre culturele waarden ten aanzien van bijvoorbeeld wilde planten toepasselijk blijven voor niet-inheemse gemeenschappen.

Hoofdstuk drie geeft ter verduidelijking van de lokale context van het onderzoek een gedetailleerde beschrijving van een van de onderzoeksdorpen. Een geschiedkundige beschrijving van dit dorp maakt duidelijk dat het geen traditionele nederzetting is, maar een onder het apartheidsregiem gesticht dorp bewoond door getransmigreerde amaXhosa en amaMfengu bevolkingsgroepen. Een deel van de bevolking is werkzaam (geweest) in de mijnbouw en stedelijke dienstverlening. Vervolgens wordt een overzicht gegeven van het gebruik van wilde planten voor zowel culturele doeleinden als voor dagelijkse gebruiksdoeleinden. Het artikel documenteert de verschillende vormen van gebruik van biodiversiteit en beschrijft deze in termen van gebruikte soorten, de gemiddelde hoeveelheid geoogste materialen en hun financiële waarde. In totaal werden 103 plantensoorten gedocumenteerd die regulier worden gebruikt. Het gebruik van ongeveer een derde van de soorten en iets meer dan de helft van de totale gebruikswaarde betreft culturele doeleinden. Deze uitkomsten illustreren dat plantendiversiteit een cruciale rol speelt in het vervullen van culturele behoeften van niet-traditionele lokale gemeenschappen.

Hoofdstuk vier beschrijft vervolgens een specifieke vorm van cultureel gebruik van wilde planten. Op basis van informatie uit zes rurale gemeenschappen wordt de aard en betekenis geschetst van twee specifieke culturele objecten die vaak voorkomen op de erven van de lokale bevolking, namelijk de 'kraal' en 'igogo'. Een kraal wordt vaak aangezien als een omheining voor het vee. Verschillende historische beschrijvingen geven echter aan dat een kraal met name een plek is voor het houden van rituele ceremonies ter ere van de voorouders; deze worden uitgevoerd door mannen. Het ethnografisch onderzoek gaf aan dat deze functie van de kraal nog steeds erg belangrijk is. De *igogo* worden vaak als een brandhoutstapel geïnterpreteerd, maar er zijn geen wetenschappelijke beschrijvingen van beschikbaar. Uit het ethnografisch onderzoek bleek dat deze houtstapels een sociale verzamelplek en locatie voor ceremonies voor vrouwen vormen. Zowel de kraal en de *igogo* worden tegenwoordig nog steeds gehandhaafd en benut voor culturele doeleinden, zowel door arme als rijke mensen. De vorm van de constructies verschillen tussen de amaXhosa en amaMfengu bevolkingsgroepen. Dit voorbeeld illustreert dat het gebruik van wilde planten voor culturele praktijken niet beperkt is tot traditionele gemeenschappen en voort kan duren in gemeenschappen die geïncorporeerd zijn in de moderne economie. En tevens dat bepaalde vormen van cultureel gebruik van wilde planten in niet-traditionele gemeenschappen tot nog toe nog weinig gedocumenteerd is.

Hoofdstuk vijf geeft een meer algemeen overzicht van het gebruik van wilde plant producten in rurale gebieden. Op basis van de resultaten van een survey onder 1500 huishoudens in zes dorpen beschrijft dit hoofdstuk de verschillende vormen van praktisch en cultureel gebruik en hoe dit gebruik varieert tussen dorpen onderling en tussen de vegetatietypen waarin zij liggen. Ook wordt beschreven hoe huishoud variabelen (zoals bijvoorbeeld mate van welstand en geslacht van gezinshoofd) het gebruik beïnvloeden. In

totaal worden meer dan 200 plantensoorten gebruikt, terwijl per jaar per huishouden ongeveer 6600 kg aan wild plantenmateriaal wordt gebruikt. Vijfenzestig procent hiervan wordt benut voor culturele doeleinden. Een toenemende welvaart op huishoudniveau gaat niet gepaard met een afname van het gebruik van wilde plant producten voor zowel praktische als voor culturele doeleinden. Een toename van het inkomen resulteert bijvoorbeeld niet in een stijging in aanschaf van commerciële alternatieven zoals bijvoorbeeld paraffine of gas in plaats van brandhout. Echter het geslacht van het gezinshoofd beïnvloedt wel of bepaalde vormen van gebruik meer of minder voorkomen. Dit onderstreept de conclusies uit hoofdstuk 4 dat het culturele gebruik van wilde planten geslachts-specifiek kan zijn. De gegevens illustreren de cruciale rol van biodiversiteit niet alleen voor levensonderhoud van de rurale bevolking, maar met name ook voor het handhaven van culturele gebruiken. De meeste soorten worden verzameld buiten formeel beschermde gebieden; dit bewijst het belang van bescherming van biodiversiteit op lokaal dorpsniveau.

Hoofdstuk zes betreft een case-studie over het culturele belang van traditionele grasbezems voor stedelijke bevolking en de gevolgen die dit heeft voor het ontstaan van informele commerciële netwerken tussen stedelijke consumenten en de rurale bewoners die de bezems maken. De traditionele grasbezems worden hoofdzakelijk voor culturele gebruiken benut, bijvoorbeeld in de vorm van gift bij trouwerij of voor ceremoniële inzegening van een huis. De handel in producten van wilde planten heeft het mogelijk gemaakt om de grenzen van gebruik van wilde plant te verschuiven van rurale naar stedelijk gebieden. Deze case-studie bewijst dat het culturele en rituele gebruik van wilde planten niet beperkt is tot rurale gebieden, maar ook voortduurt in verstedelijkte gemeenschappen.

Hoofdstuk zeven beschrijft een tweede voorbeeld van het voortdurende gebruik van wilde planten voor culturele doelen en rituele toepassingen in verstedelijkte gemeenschappen. Dit betreft het gebruik van medicinale planten, die lokaal als *amayeza* worden aangeduid. Deze worden niet alleen gekocht voor farmaceutische doeleinden, maar hebben ook een belangrijke culturele waarde. Zo worden ze bijvoorbeeld gebruikt voor het reinigen van het lichaam, afweren van kwaadaardige invloeden en/of de rituele reiniging van het huis. Een grote diversiteit van plantensoorten worden voor deze doeleinden gebruikt, de meeste worden gekocht op informele medicinale plantenmarkten die in stedelijke gebieden te vinden zijn. Een survey in twee stedelijke gebieden onder 302 huishoudens toonde aan dat wilde planten een belangrijke rol spelen in het bieden van gezondheidsdiensten en het geven van een gevoel van welbehagen onder stedelijke groepen. Arme huishoudens maken het meest gebruik van *amayeza* gevolgd door gemiddelde en rijke huishoudens. Echter ondanks het feit dat *amayeza* minder worden toegepast door de rijkere huishoudens blijft bij deze bevolkingsgroep het rituele gebruik erg belangrijk; in meer dan de helft van de rijke huishoudens wordt *amayeza* voor rituele toepassingen gebruikt. Dit bewijst eens te meer dat ook bij de stedelijke bevolking geloof in en gebruik van wilde planten voor culturele doeleinden nog steeds voortduurt.

In hoofdstuk acht wordt in aansluiting op deze twee case-studies een verder overzicht van het gebruik en het belang van wilde planten voor stedelijke huishoudens in het

onderzoeksgebied gegeven. Ook wordt op basis van een survey onder 302 huishoudens in twee stedelijke gebieden een nadere analyse gemaakt over welke sociaal-economische factoren het gebruik van wilde plant producten beïnvloeden. Negenennegentig procent van de onderzochte huishoudens gebruikt nog steeds wilde plant producten voor zowel praktische gebruiksdoeleinden als culturele doeleinden. Vijfentachtig procent van het totale volume van het gebruikte wilde plantenmateriaal wordt benut voor culturele praktijken. Dit gebruik is niet beperkt tot de armere huishoudens. Het merendeel van de gebruikte wilde plant producten wordt ingekocht door verkopers. In aansluiting op de eerdere cases betreffende grasbezems en *amayeza* onderstrepen deze bevindingen dat de mogelijkheid voor stedelijke bewoners tot het handhaven van op wilde planten gebaseerde culturele praktijken grotendeels afhankelijk is van een toename van commerciële netwerken tussen rurale naar urbane gebieden. De ontwikkeling van dergelijke netwerken impliceert een diversificatie in levensonderhoudstrategieën in rurale gebieden. De continuering in gebruik van wilde plantenbronnen door verstedelijkte bevolkingsgroepen is dus alleen mogelijk dankzij veranderingen in de traditionele rurale levenswijze. Dit inzicht onderstreept het belang om het concept van bioculturele diversiteit niet als een statisch, maar een dynamisch begrip te hanteren. Het geeft aan dat in studies over het culturele gebruik van biodiversiteit niet alleen uitgegaan kan worden van traditionele processen van zelfvoorziening, maar dat tevens aandacht besteed dient te worden aan de impact van het voortdurende gebruik van wilde hulpbronnen onder niet-traditionele omstandigheden en de gevolgen daarvan op de marktvraag naar biodiversiteits producten.

Hoofdstuk negen geeft een synthese van het onderzoek. Het eerste deel betreft een reflectie op de uitgangspunten van het onderzoek en de theoretische implicaties van de onderzoeksbevindingen. Dit wordt gevolgd door een beschouwing ten aanzien van de praktische relevantie van de onderzoeksresultaten voor de verdere ontwikkeling van de Zuid-afrikaanse strategieën voor biodiversiteitsconservering op het niveau van lokale gemeenschappen. De onderzoeksresultaten tonen duidelijk aan dat het concept 'biodiversiteit' niet alleen toepasbaar is met betrekking tot culturele waarden van inheemse en traditionele gemeenschappen met betrekking tot de vegetatie, maar ook wat betreft de culturele gebruikswaarden van planten voor meer moderne en zelfs verstedelijkte gemeenschappen. Door het concept in deze zin te herinterpreteren en verbreden wordt het getransformeerd van een meer conservatief begrip naar een meer dynamisch begrip. Een begrip dat recht doet aan de doelstelling om de ware aard van huidige culturele diversiteit tot zijn recht te laten komen bij de conservering van biodiversiteit.

Dat het voor mensen in de stad nog steeds mogelijk is om hun culturele praktijken uit te voeren komt door de handel in wilde plantmaterialen in de stedelijke gebieden. Dit wordt mogelijk gemaakt door de dynamiek in levensonderhoudstrategieën van mensen in de rurale gebieden en de toename van handelsnetwerken tussen ruraal en urbaan gebied. Het gebruik van biodiversiteit is derhalve niet alleen beperkt tot arme mensen voor wie wilde planten een wezenlijk deel van hun levensonderhoud vormen. Het komt voor onder verschillende sociaal-economische groeperingen in zowel rurale als urbane gemeenschappen voor wie wilde planten een belangrijke rol in culturele identiteit vervult. Dit heeft tot gevolg dat het evalueren van de waarde van biodiversiteit in alleen economische termen een onvolledig beeld van de waarde van wilde planten geeft, omdat

deze benadering geen rekenschap houdt met het welbehagen en ook niet met de sociale processen die voortvloeien uit het gebruik van deze wilde plantproducten.

De studie onderschrijft de relevantie en geloofwaardigheid van natuurbeschermingsinitiatieven, die gebaseerd zijn op de relatie tussen geschiedenis, cultuur en biodiversiteit conservering in al zijn complexiteit. Natuurbeschermers dienen zich meer bewust te worden van het feit, dat er niet alleen een relatie bestaat tussen het verlies van natuurlijke leefomgeving en bepaalde culturele praktijken van de inheemse bevolking, maar ook een relatie tussen gebruik van biodiversiteit en behoud van culturele identiteit onder meer moderne omstandigheden. Een beter begrip van deze laatste relatie biedt de mogelijkheid voor de ontwikkeling van nieuwe natuurbeschermingsactiviteiten die niet gebaseerd zijn op culturele waarden ten aanzien van natuur in een statische, maar in een dynamische betekenis.



COMPLETED TRAINING AND SUPERVISION PLAN

Description	Department/Institute	Month/year	Credits
<i><u>I. Orientation</u></i>			
- Literature research	Wageningen University	2001 and 2003	4
- Writing and presenting proposal - "The utilitarian and cultural significance of NTFP utilisation in rural and urban households"	Forest and Nature Conservation Policy group, Wageningen University	October 2001	3
- IAC/FNP Seminar programme 'Leadership in Forest Environment (LIFE)'	International Agricultural Center, Wageningen	October 2001	1
- Advanced research seminar	Forest and Nature Conservation Policy group, Wageningen University	September/October 2001 and November 2003	3
<i><u>II. Research Methods and Techniques</u></i>			
- Course 'Research methods for non-timber forest products'	Centre for International Forestry Research (CIFOR)	2000	2
- Course 'statistical methods'	Rhodes University, South Africa	September, 2002	2
<i><u>III Seminar Presentations</u></i>			
- "Ex-situ conservation of medicinal plants in the Eastern Cape, South Africa"	Global Summit on Medicinal Plants, Mauritius	September 25-30 th , 2003	1
- "The significance of plant species diversity to rural households livelihoods and cultural diversity in the Peddie District, Eastern Cape Province"	University of Port Elizabeth, South Africa	May 26 -27 th , 2004	1
- "A new broom sweeps clean: The economic and cultural value of grass brooms in the Eastern Cape Province, South Africa"	9 th International Congress and Society for Economic Botany, Canterbury, UK	June 13 – 17 th , 2004	1
- "The significance of natural resources to urban households:	Fourth Natural Forests and Savanna Woodlands	May 15 -18 th , 2006	1

Implications for bio-cultural diversity in South Africa”	Symposium, Summerstand Inn, Port Elizabeth, South Africa		
- “Cultural significance of biodiversity: The role of medicinal plants in urban African cultural practices in the Eastern Cape, South Africa”	7 th Conference of the International Society for Quality-of-Life Studies, Rhodes University, Grahamstown	July 17-20 th , 2006.	1
- “Rich man poor man: Inter-household and community factors influencing the use of wild plant resources amongst rural households in South Africa”	Thicket Forum, Dohn, Stutterheim, Eastern Cape South Africa	July 17 – 20 th , 2006	1
<hr/> Total			<hr/> 24 <hr/>

CURRICULUM VITAE

Michelle Linda Cocks was born in 1971 in the Herschel district of South Africa. Herschel formed part of the former Bantustan homeland of Transkei where she spent her early childhood and her love for its beautiful environment and warm people was kindled.

In 1980, she moved to the Eastern Cape where she completed her secondary schooling at Victoria Girls High School in Grahamstown. In 1989 she attended Rhodes University and obtained her B.Soc.Sc (MA) in Anthropology in 1997. Her MA contributed to understanding the role that *amayeza esixhosa* stores (African chemists) fulfilled in providing healthcare services. This research exposed her to the cultural importance of *amayeza* (medicinal plants in the broad sense) in the Eastern Cape. After graduating, she remained affiliated to Rhodes University through the Institute of Social and Economic Research (ISER) as a research associate and continued to conduct research in the Eastern Cape as well as in neighbouring southern African countries such as Mozambique, Zimbabwe and Tanzania. In 2003 she became a permanent research officer at the ISER and is still based there.

Her research experience to date has included work on the medicinal plant trade in the Eastern Cape (1994-2000), land reform issues in southern Africa (1996-1998), ethnobotanical research in southern Africa (1997-1999), interaction between indigenous mammals and humans (1999-2000), domestication of indigenous medicinal plants (2002-2005) and natural resource use and their cultural significance of plants (2001-on going). She has written and published over 20 scientific and 17 popular articles on these topics. She has also supervised a number of post-graduate studies.

She feels passionate about the link between different cultures and the environment and together with her husband and colleague, Tony Dold, they continue to research these issues. They believe their shared passion has birthed a new vision for the conservation of biodiversity and cultural diversity.

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