AN INVESTIGATION INTO INDIGENOUS KNOWLEDGE PRACTICES ON ENVIRONMENTAL CONSERVATION AMONG THE BATSWANA IN THE NORTH WEST PROVINCE: THE CASE OF TAUNG.

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DECLARATION

I, Noluyolo Loretta Molusi declare that this research is my original work and it was not copied or duplicated from any previous work.

NL Molusi _____ 31 – 10 – 2006 _____

ABSTRACT

The study investigated the role of Indigenous Knowledge Practices on environmental conservation among the Batswana in the North West Province, with special reference to Taung.

The study found the following aspects:

(i) The Taung area has a diversity of indigenous biological resources, such as lengana, ditlhekwa, tlhoka la tsela, etc. Most of the Batswana in Taung especially the elderly are of.

(ii) Due to western influences, some community members were not aware of these biological resources and their uses. Some members of the community utilize these indigenous biological resources for their own survival. They depend on raw materials such as animal skin for making their own clothing, grass and wood for making their houses and for making crafts products, which earns them a living.

(iii) The Batswana people have different strategies they use to conserve their biodiversity. They have over the years developed these indigenous strategies to ensure that what they depended on for survival was not lost.. The Kgosi was responsible for regulating cutting of trees and people

would have permits from the Kgosi to cut those particular trees. As part of conserving their trees as natural resources, community members were allowed to cut certain trees during specific times of the yea at a particular area and then move to the next area. This allowed trees that have been cut to grow again. This strategy was also applied for conservation of animals and insects. People were only allowed to hunt certain animals at certain times of the year.

The study recommends that: (i) The government and the Non governmental sector should find mechanisms of creating awareness on the importance of conserving, protecting and the sustainable utilization of indigenous biological resources in Taung. (ii) Indigenous knowledge should be incorporated into the school system, for the sustainability of Indigenous Knowledge among generations. (iii) Community members should be actively involved in all programs pertaining to conservation and sustainable use of indigenous biological resources.

CHAPTER ONE

INTRODUCTION

1.1 Background

Since life first evolved on Earth some four billion years ago, the extinction of species has been a fact of life. Of all species that ever lived on Earth, only between one and six percent exist today. During the last 200 million years, something like 90 species became extinct in each century due to natural evolutionary processes. At the same time evolution brought forth new life forms that more than replaced the species that were lost (Kahn, 1998).

Currently, the earth is the only planet people know of in the universe that can support human life. Yet human activities are progressively making the planet less fit to live on. A quarter of the world's population consumes two-thirds of the world's resources, thus planet's capacity to support people is being irreversibly reduced at the very time when increasing populations are making a demand on it (Pimbert, 2000).

Environmental issues affect every life on this planet from the smallest parasite to the human race. A single disruption in the earth's delicate balance can mean certain destruction of the very place that cradles the lives of many species. What is not simple is finding alternatives to the now dangerous and confronting acts of planet degradation that have been afflicted on the planet over recent years.

Plants provide food, clothing, shelter, and medicine. Plants, animals, and micro-organisms clean our water, regulate the composition of the atmosphere, control the structure and fertility of the soil, and regulate pests; disease often flourishes when ecosystems lose insect predators. Plants establish roots, which decrease flooding, and landslides; they affect levels of rainfall and the amount of ultraviolet radiation reaching the earth. People use micro-organisms, natural and genetically modified, for fixing our mistakes. They breed wild and commercial plants together to maintain crop yields. The loss of biodiversity means that the ability of the earth to provide for us is compromised.

With the recognition that conservation often fails to achieve its goals when local people are unsupportive, or are meaningful partners, the question of local participation is now firmly on indigenous conservation and sustainable development agenda. As a result, many people involved in the conservation development and academic communities, as well as local people themselves, are involved in the search for a sustainable future (Furze, 1994: 4).

According to Wright (1994), little was appreciated in the past centuries of exploitation of cultures, but it is undeniable now, that the world's dominant cultures cannot sustain the earth's ecological health without the aid of the world's endangered cultures. Indigenous knowledge practices on biodiversity

are of paramount importance both to sustaining viable ecosystems and to improving human existence through scientific advances.

The United Conference on Environment and Development, held in Rio de Janeiro, Brazil, in June 1992, was an important development for indigenous peoples and their rights related to the environment. The conference, or Earth Summit as it was called, recognized that indigenous peoples and their communities have a critical role to play in managing and developing the environment. The importance of indigenous people's traditional knowledge and practices was acknowledged, and the international community committed itself to promoting, strengthening and protecting the rights, knowledge and practices of indigenous peoples and their communities (www.ecologyandsociety.org).

During the Earth Summit, indigenous peoples and NGOs gathered in Kari-Oca, Brazil, to share their concerns about the environment. The Kari-Oca Declaration and the indigenous people's Earth Charter adopted at this meeting expressed the values of the world's indigenous peoples and recognized their distinct relationship with the Earth.

Another important result of the Earth Summit was the adoption of the Convention on Biological Diversity. The convention recognizes the close dependence of many indigenous communities on biological resources and the desirability of sharing the benefits that come from using traditional knowledge,

innovations and practices to conserve biological diversity, including species diversity (Khalema, 2005).

South Africa's unique biological diversity – the variety of genes, species, ecosystems and ecological processes occurring in the country, is an asset of international, national and local value and significance. Its rivers and wetlands, mountains and plains, estuaries and oceans, and magnificent coastlines and landscapes contain an exceptionally rich and varied array of life forms that are integral to the existence of all South Africans.

The remarkable richness of South Africa's biodiversity is largely as a result of the mix of temperate climate and habitats occurring in the country. Indeed, South Africa ranks as the third most biologically diverse country in the world, and as such is of major global importance for biodiversity conservation.

In South Africa, people have not yet learned to live with the one indispensable feature of the world, the biosphere, the thin covering of the planet that contains and sustains life. This failure has led to a virtually permanent reduction in the productive and regenerative capacities of the earth. People have reached a turning point, which at, depending on if and how they act, matters will be resolved for better or worse. For example, people in rural areas are cutting down trees, especially in winter to cook and to make fire without considering whether the trees will grow again or not (Pimbert, 2000).

The Minister of Environmental Affairs and Tourism supported biodiversity conservation during the Johannesburg World Summit on Sustainable Development (2002). Peoples development model is questioned daily by the earth's ecosystem on which all life and all economic activities are dependent. Nobody can truthfully argue that there is a larger human imperative or decisive constraint that makes it obligatory that people must destroy the environment. The Johannesburg Summit identified poverty eradication as the single greatest challenge facing the world today. Through the Johannesburg Plan of implementation, it linked this with global efforts to change unsustainable patterns and production of the biodiversity resource base.

In Taung, North West province, South Africa, local people are confronted with a climacteric in the sense that human beings now have to live on a planet whose carrying capacity for all practical purposes is irreversibly less now than it was previously. Unless the Batswana people in Taung take concerted action immediately, there will be a further decline in the planet's capacity to support its population. Subsequent generations will be left a sorry heritage; less productive land; less diversity; less room for manoeuvre; fever options, and more people. The decision is not that people can postpone or ignore. Doing nothing is itself a decision to allow the world to be much less fruitful a promising place than that into which the Batswana people of Taung were born in.

Furthermore, Taung has a rich heritage in which biological resources are worthy of conservation. Conservation of biological resources is in the interest of all South Africans, especially in Taung. Every person, and community and institutions have an obligation to ensure that significant elements of biological resources are not damaged or destroyed.

1.2 Statement of the Problem

The statement of the problem is expressed in the following research questions:

1. What are the different types of indigenous biodiversity resources available in Taung?
2. What are the uses of these indigenous biodiversity resources among the Batswana in Taung?
3. What indigenous strategies have the Batswana in Taung developed over the years to conserve these indigenous biodiversity resources?
4. What is the government's involvement, particularly the North West Provincial Government, in conservation of indigenous biological diversity in Taung?

1.3 Motivation for the Study

I come from a village, where nothing has been done to conserve the environment, particularly its biological diversity. People use natural resources

without developing conservation strategies for future use. For example, medicinal plants are being harvested just for economic purposes, animals being killed without consideration of the extinction of those particular species. To date, certain investigations have been undertaken into some aspects covered by this study, however, exhaustive comprehensive studies into the indigenous knowledge practices on environmental conservation among the Batswana, with special reference to conservation of indigenous biological diversity resources in Taung have not been conducted.

1.4 Aim of the Study

To investigate the indigenous knowledge practices on environmental conservation among the Batswana in the North West province, with special reference to conservation of indigenous biological diversity resources in Taung.

1.5 Objectives of the Study

The study examines the following specific aspects:

1. The different types of indigenous biodiversity resources available among the Batswana in Taung.
2. The main uses of these indigenous biodiversity resources among the Batswana in Taung.

3. The indigenous strategies that have been developed by the Batswana in Taung in trying to conserve these indigenous biodiversity resources.
4. The involvement of the government, particularly North West Provincial Government in ensuring that different types of indigenous biodiversity resources are conserved.

1.6 Literature Review and Theoretical Perspectives

1.6.1 **Literature Review**

According to Bless (1995) in order to conceive the research topic in a way that permits a clear formulation of the problem and the hypothesis, some background information is necessary. This is obtained mainly by reading whatever has been published that appears relevant to the research topic. Although acquaintance with different theories and models as well as research results takes place, by necessity, before a clear statement of the problem can be formulated, literature review is an ongoing process. This is the case not only because the relevant research results can be published at any time but also because, in the cause of research, new aspects and problems arise requiring new information. The following are the purposes of reviewing literature:

i) To sharpen and deepen the theoretical framework of the research, that is, to study the different theories related to the topic, taking an interdisciplinary perspective where possible.

ii) To familiarise the researcher with the latest developments in the area of research as well as related issues.

iii) To identify gaps in knowledge as well as weaknesses in previous studies.

iv) To identify variables that must be considered in the research as well as those that prove irrelevant.

Mc Neely et al (1990: 17) defines biodiversity as an umbrella term for the degree of natures' variety'. It encompasses all species of plants, animals and microorganisms and the ecosystem and ecological processes of which they are part. It can be seen as a measure of nature and its diversity, rather than an entity in itself, and is usually measured at three levels- genes, species and ecosystems.

Genetic diversity is the variety of genes within species. This form of diversity covers instinct populations of the same species, such as the thousands of traditional rice varieties in India, or genetic variation with a population, which is very high among Indian rhinos. Until recently, measurements of genetic diversity were applied mainly to domesticated species and populations held in zoos or botanic gardens, but increasing the techniques are being to wild species (http: www.mtnforum.org/resources/library/lamax02Ahtm; 2003/08/20).

Species diversity refers to the variety of species within a region. Such diversity can be measured in many ways. The number of species in a region 'its species richness' is one often-used measure, but a more precise measurement, but in some cases taxonomic diversity is used, as it considers the relationship of species to each other. For example, an area is more diverse if it has species from different groups than if all the species are from the same group.

Thus, even though there may be more species of beetles on earth than all other species combined, they do not account for the greater part or species diversity because they are closely related. Similarly, many more species live on land than in the sea, but terrestrial species are more closely related to each other. (http:// www.questia.com/PM.qst?action=getPage&doc1.2003/08/20).

Ecosystem diversity refers to the number and distributions of different ecosystems. It also refers to the diversity of habitats and processes occurring within ecosystems. Ecosystem diversity is harder to measure than species or genetic diversity because the 'boundaries' of communities- associations of species- and ecosystem are elusive. Nevertheless, as long as a consistent set of criteria is used to define communities and ecosystems, their number and distribution can be measured. Until now, such schemes have been applied mainly at national and sub national levels, through some course global classifications have been made (Mc Neely et al, 1990).

There are many different ethical and philosophical positions on nature and our relationship with it. Some positions, for example, would that argue nature has value beyond any that humans hold for it. Others would argue that nature is only important to the extent that it can be used for human activity. Therefore, humans relate to nature in a variety of ways.

The natural and processes of biodiversity are the fabric of life on the planet. They also provide the environment in which humans live. This ecological context, however, sits within a social context. We as human beings have a relationship with nature, which depends on complex social, cultural, economic and political processes (Batisse, 1993).

Understanding the importance of biodiversity conservation, therefore, requires not only an understanding of ecological processes, social ones as well. One commonly used categorisation of biodiversity values to humans breaks down biodiversity into ecosystem services, biological resources and social benefits (Furze et al, 1997).

Ecosystem Services are broad natural systems and functions. They provide and regulate water resources, the soil, nutrient storage and cycling, pollution breakdown and absorption, and other functions such as climate stability and recovery from unpredictable events. Humans rely heavily on these ecosystem services. Water supply is affected, for example, by whether or not catchments

are vegetated, while soil health is especially important for agriculture, and the pollution breakdown and absorption capacity of natural systems is necessary to deal with human waste.

In addition to survival needs, however, humans also use ecosystem services for non-essential purposes, specifically as a result of processes of industrialisation and development being simplistically equated with economic growth. Many conservationists are concerned that human activity has impacted upon these ecosystem services in such a way that they have now reached or exceeded the limits of their ability to support this activity (Shiva, 1991).

This category of biodiversity's importance emphasises its use value for human activity. Individual species provide the raw materials for many human uses. Domesticated and wild plants and animals provide the majority of food for the world's population. In addition to foods presently used, and species with potential food uses, other species are becoming increasingly important as sources of genetic diversity, which may provide resistance to disease or better productivity in agriculture. Biodiversity also provides medicinal resources- traditional medicines based on plant and animal species form the basis of health care for 80% of the world's population (Mc Neely et al, 1990).

Biological resources are also the source of many chemical compounds, which are now produced synthetically, such as aspirin. Raw materials, such as woods and fibres, and ornamental blooms are supplied by many species. Some production occurs in wild state, such as timber harvesting from naturally occurring forests, but cultivation is also important.

In addition to existing use values, biodiversity can also provide for potential use values. Potential uses, such as new and useful products supplied by species, or potentially important resources that can be used in improving important presently utilised species, are important reasons for biodiversity conservation (Kumar, 1999).

Another important consideration is that having a high level of biodiversity enhances the potential for future resources becoming available. Of the 30 to 50 million species that may actually exist on earth, less than one and a half million have been described, and far fewer studied in any detail. The greater the diversity that can be conserved, the more likely we are to find useful species when needs arise (Mc Neely et al, 1990).

The social dimensions of biodiversity are crucial. It is important to understand that human beings interact with the natural world and the way that this occurs is a result of a variety of ecological, historical, social, cultural and economic and

political factors. People would expect, therefore, to see a variety of ways in which biodiversity conservation can be viewed in the context of social benefits.

Some groups in society, for example indigenous people as part of their belief systems have very strong cultural attachments to species or habitats. As a result, aesthetic, inspirational, spiritual and educational needs may all depend to some extent on diverse natural systems (Davis, 1993).

The ethical and philosophical position of placing humanity as part of a broader non-human world is also very important. Such a position highlights a non-anthropocentric or non-human centred view of all life forms and many argue that a perspective is crucial for the protection of nature. The knowledge that natural systems and species exist is valuable in itself for many people. This may be despite the fact that most will never experience the places and things they think are important. These existence values can be considerable, as is evidenced by the concern and support expressed to prevent rainforest destruction or species loss in many places (Kleymeyer, 1993).

1.6.2 **The Indigenous People and the Environment**

The question of indigenous people and the environment has attracted considerable interest from conservationists, policy makers, the general public, and of course, indigenous peoples themselves. According to Burger (1990), the

Indigenous people are the original inhabitants of their lands, since colonised by foreigners. The first peoples have a strong sense of their own identity as unique peoples, with their own lands, languages and cultures. They claim a right to define what is meant by indigenous, and to be recognised as such by others. Some now live in cities, earning their living as, for example, lawyers and community workers, or in many cases, struggling to make ends meet. Others retain a traditional way of life. But the indigenous peoples are united in their desire to maintain their identity and yet be able to adapt and survive (Davis, 1993).

According to Woodwill (1992), indigenous peoples are the sole guardians of vast, little disturbed habitats that modern societies depend on, more than they realise- to regulate water cycles, maintain the stability of the climate, and provide valuable plants, animals and genes. Second, they posses, in their ecological knowledge, an asset of incalculable value: a map of the biological diversity of the earth on which all life depends. Encoded in indigenous languages, customs, and practices may be as much understanding as is stored in the libraries of modern science.

Woodwill (1992) further says conservation of biodiversity means a careful preservation and protection of all species of plants, animals and microorganisms, and to prevent them from being spoiled, wasted or even lost forever. Their

homelands may harbour more endangered plant and animal species than all the world's nature reserves.

There were times in the olden days, that people were not allowed to harvest certain plants, to kill certain animals and to cut off trees. This was a means of conserving these natural resources. It was little appreciated in past centuries of exploitation, but is undeniable now, that the world's dominant cultures cannot sustain the earth's ecological health without the aid of the world's endangered cultures. Biological diversity is of paramount importance both to sustaining viable ecosystems and to improving human existence through scientific advantages is inextricably linked to cultural diversity (Wright, 1988:132).

The indigenous people have developed over many generations a holistic traditional scientific knowledge of their lands, natural resources and the environment. Indigenous people and their communities shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination (Davis, 1993).

In view of the interrelationship between the natural environment and its sustainable development and the cultural, social, economic and physical well being of the indigenous people, national and international efforts to implement environmentally sound and sustainable development should recognise,

accommodate, promote and strengthen the role of indigenous people and their communities (Palmer, 1989).

Burger (1990) argues that the indigenous peoples have a strong sense of their own lands, languages and cultures. Burger says that in the last decades, indigenous peoples had suffered from the consequences of some of the most destructive aspect of development. They have been separated from their traditional lands, and ways of life, deprived of the means of livelihood and forced to fit into societies in which they felt like aliens. They have protested and resisted. Their call is for control over their own lives, the space to live and the freedom to live in their own ways (Wright, 1998).

1.6.3 **Cultural Systems and Processes of Biodiversity**

According to Batisse (1993), cultural systems and processes of biodiversity are the fabric of life on the planet. They also provide the environment in which humans live. Batisse adds that, this ecological context, however, sits within a social context. Human beings have a relationship with nature that depends on social complex, cultural, economic and political processes. Understanding the importance of biodiversity conservation therefore requires not only an understanding of ecological processes, but social ones as well. One commonly used categorization of biodiversity values to human breaks down biodiversity into ecosystem services, biological resources and social benefits.

Some 200 million indigenous peoples live in and have special claims to territories that, in many cases, harbour exceptionally high levels of biodiversity. Their claim rests on their long occupation of a particular pace; their cultural, spiritual and economic ties to the area; and their ability, in most cases, to manage it sustainably. At the same time, the cultural diversity inherent in the world's indigenous groups is imperilled by the encroachment of dominant societies and economies (http//www.questia.com/PM.qst?action:2003/08//20).

1.6.4 **Natural Resources and Biodiversity**

Now, the human species influences the fundamental processes of the planet. Economic development is essential if the millions of people who live in poverty and endure hunger and hopelessness are to achieve a quality of life commensurate with the most basic human rights. The conservation of biodiversity is fundamental to the success of the development process. Unless we protect the structure, functions, and diversity of the worlds natural systems on which our species and all other depend will undermine it and fail.

Yet current development paths are seriously depleting these resources with enormous consequences for human development. Current approaches to address challenges to the conservation, sustainable use, and equitable distribution of the benefits of biodiversity are too slow and too small. In fact, although significant

gains have been achieved, in the past decade, they do not come close to reducing the pressures and incentives that stimulate over-harvesting, pollution, extinction, and resource degradation (http//www.questia.com/PM.qst?action:2003/08//20).

Article 8 of the International Convention on biological diversity asserts the crucial role of protected areas in achieving the crucial role of protected areas in achieving the convention's objectives. However, according to Wells et all (1991), many protected areas are at risk because of the hardship they place on local communities. The protection of biodiversity may therefore be seen to be one of the most pressing issues in development. He adds that with the recognition that conservation often fails to achieve its goals when local people are unsupportive or are not meaningful partners, the question of local participation is now firmly on international conservation and sustainable development agendas.

Agenda 21 agreed to, at the June 1992 United Nations Conference on Environment and Development (UNCED), emphasises the importance of involving people affected by activities in the decision making process, of developing a consensus between local and national stakeholders and of the need to mobilise resources at all levels from the local to the global.

1.6.5 **Conservation of Biological Diversity**

In conservation of the world's biological diversity, Mc Neely et all (1990) highlights this and recognises the link between conservation, development and local people in protected area management. According to Wells et al (1991) traditional approaches to park management and enforcement activities have not always been to reconcile competing environment uses which exist between a protected area's existence and the needs of a rural populace. As a result, the biodiversity conservation role of protected areas is increased, becoming integrated with a process of social economic and political development based on models of sustainable development (Furze, 1997).

A number of laws regulated biodiversity conservation outside protected areas, including human activities around areas, water catchments and resorts, use of pastures, and collection of species. However, many of these regulations are now economic situation. Three regulations are implemented by the Ministry of Nature Protection: (1) licensing of hunting fisheries, (2) licensing for the collection and storage of wild medicinal plants, and (3) ecological assessment of any new business activity.

Law can only conduct under license and with special contract hunting and fisheries. Each season a range of expert bodies are consulted with guidance on populations, hunting methods and likely impacts (Furze, 1997).

1.6.6. **Underlying Causes of Biodiversity Loss**

Many of the proximate threats to biodiversity in Africa are due to wider underlying causes. These factors affect Africa as a whole, not only its biodiversity. These underlying factors increase the pressures on biodiversity, while also reducing the ability to react to biodiversity loss. Some of the key underlying causes of biodiversity loss in Africa includes:

- The current economic problems
- Population changes
- Over-reliance on natural resources.
- Lack of alternative environmentally sustainable sources of income (www. Biodiversity. am/ eng/strategy/2/index. 2003/11/11.

1.6.7 **Main threats to Biodiversity Conservation**

The Global biodiversity strategy (WRI, 1992) has identified six fundamental causes of biodiversity loss. These are: unsustainable high rate of human population growth and natural resource consumption, the steadily narrowing spectrum of trade products from agriculture forestry and fishing, economic systems that fail to value the environment and its resources, inequity in the ownership, management and the flow of benefits from the use and the conservation of biological resources, deficiencies in knowledge and its

application, and legal institutional systems that promote unsustainable exploitation.

a) **Human Population Growth**

The global population issue is well known to most people. The Global Biodiversity strategy identifies the rates and magnitude of growth, and the eventual size of the global population as critical for biodiversity. Human use of the earth's resources has increased as the population has grown. At present, it is estimated that people use or destroy 39% of photosynthetic material produced on land. As human population grows, resource needs increase, and most agree that the present rates of resource use are unsustainable (WRI et al, 1992).

b) **Narrowing Spectrum of Trade Products**

The global exchange economy that has emerged over the past century has narrowed the range of products used and traded, and made countries more dependent on each other. Agriculture has specialised in crops that were more on world's markets, leading to the decline of local species that were more suitable in traditional agricultural ecosystems. Forests with many species are converted to cash crops in order to satisfy demand for one product. Fisheries are also affected, as drift netting captures huge quantities of desired species and massive numbers of other species (WRI et al, 1992).

c) **Economic Systems that Fail to Value the Environment**

Natural environment qualities are commonly undervalued or not included at all in decision making, which is often made purely on the basis of market economies. Natural areas are converted to agricultural uses or logged even when the net effect on society is negative. This occurs because the market values of exploitation are easily recognised while conservation values are hidden or difficult to quantify. The fact that biodiversity accrue to many people means that benefits are diffuse, and exacerbate the problems of biodiversity being undervalued and therefore disadvantaged in the decision making processes. In many cases, property rights for areas with high biodiversity values are more likely to be obtained by those who clear or change natural areas than those who use them in a subsistence manner.

d) **Deficiencies in Knowledge and its Application**

The emphasis on scientific knowledge for understanding biodiversity conservation has resulted in traditional knowledge being lost or having little legitimacy in the eyes of many people. Even when knowledge is sufficient to make relatively informed decisions, it often does not reach decision makers. In addition, the relationship between the policy process and local communities may be problematic. The communication of information and decision making

between policy makers who wish to conserve biodiversity, and local communities who are not aware of the benefits to them of doing so, may fail.

e) **Legal and Institutional Systems that Promote Unsustainable Exploitation**

Biodiversity conservation requires a cross-sectoral approach. Most national and international institutions, however, operate strictly along sectoral lines. Government and planning functions also tend to be centralised and closed, hindering local participation and obstruction access to groups within society and non-governmental organisations. Institutions with responsibility for conservation are often financially and politically disadvantaged, even when they are part of government, and they may lack co-ordination between them and be unable to plan strategically. Conservation and environmental protection laws are also lacking in many areas, and the breakdown of traditional or customary law is replaced with a culturally inappropriate system that allows exploitation (WRI et al, 1992).

Ntiamoa Baidu et al (1992) further argues that to maximize biodiversity conservation both within and outside protected areas, there is urgent need to co-ordinate conservation efforts and integrate traditional knowledge and practices in modern conservation strategies.

1.6.8. **Biodiversity Conservation Issues of Mountain Tourism**

In seeming contrast to their mighty images and abundant variation, mountain environs are extremely fragile and highly susceptible to disturbances to their delicately balanced ecosystems. Such vulnerability is compounded by the fact that high altitude, a harsh climate, thin soils, steep topography and in many places low precipitation, hamper vegetation growth and re-growth: it takes trees up to 60 years to mature at high elevations. Besides being repositories of high concentrations of endemic species and vital reservoirs of genetic diversity, mountain regions also function also function as critical corridors for migrating for migrating animals and as sanctions for plants and animals whose natural habitat have been squeezed for modified by natural and human activities.

Thus, unmanaged tourism can exert a high degree of impact on sensitive mountain environments, here-to-fore buffered from disturbance by remoteness and isolation. These impacts include:

-Removal of vegetation both on large scale (i.e., for roads, land clearance for ski areas or hotel construction, etc), even by well-meaning "ecotourists" watching for wildlife.

-Disturbance to wildlife and reduction of wildlife habitat area; Mountain tourism is fast growing: Some wildlife may respond by retreating, others become accustomed to humans and human food.

-Increased incident of forest and grassland fires from tourists activities.

-Degradation of forests from cutting of timber and fuel wood for tourism.

-Simplification of agro-diversity: Sustainable practices that promote ago-biodiversity become geared to tourism market demands, creating a chain effect on cropping patterns, loss of soil productivity and soil erosion, and ultimately destruction of habitats and ecosystems (Wright, 1993).

1.6.9 **Socio-economic Issues**

The relationship between people and the natural environment dates back many thousand of years, and in that time nature has influenced African culture, while man has in turn shaped the landscape of modern Africa. A large sector of the economy is based upon agriculture, and this has developed using the natural resources of the country. The use of wild genetic resources of plants and animals for agriculture has been complemented by preparation of the land for cultivation through widespread irrigation. Further changes to the natural landscapes of Africa have resulted from the development of mountain terraces to increase the land available for farming. Today the socio-economic situation of the country reflects the availability of biological resources, and also determines the context foe biodiversity conservation (Wright, 1994).

1.7. Hypothesis

•There are different types of indigenous biological resources available in Taung.

•The Taung community has different types of uses of these indigenous biological resources available in their area.

•There are different indigenous strategies that the Batswana in Taung have developed to conserve these biological resources.

•The North West Provincial government's involvement seems to be inadequate in approaches to conservation of indigenous biodiversity in Taung.

1.8. Significance of the Study

The study provides the government (policy makers) and other stakeholders with the extent of indigenous knowledge practices on environmental conservation with special reference to biodiversity conservation. Interested students and researchers will be provided with relevant information regarding biodiversity conservation in the North West province, especially in Taung. Best practices identified will serve as a benefit to other rural communities and they will learn from the experienced shortfalls.

1.9. Methodology

This is a case study of the indigenous knowledge practices on environmental conservation among the Batswana, with special reference to Taung, North West province. This area is rural in nature and the researcher originates from the area. It was easy for the researcher to have an in-depth understanding and access to information because she is acquainted with knowledge holders in this area.

A combination of research methods both qualitative and quantitative was used in order to cross reference/validate information form different sources.

1.9.1. **Subjects**

The following were the sources of information for this study:

•Key persons, such as the chief of Taung, local government Officials in Taung and elders around Taung. These people were included because they have a general knowledge about indigenous practices on conservation of biological resources. An interview was scheduled to gather information from the key persons, as they are the ones who are more knowledgeable on all things in their local communities. An interview is more appropriate as these people may not have the time to fill in a questionnaire, but can manage to give an interviewer five minutes of their time.

•A stratified random sample of 40 residents in Taung was selected to examine views on indigenous knowledge practices on conservation of biodiversity. The principle of stratified random sampling is to divide a population into different groups, called strata, so that each element of the population belongs to one and only stratum. Then, within each stratum, random sampling is performed using either the simple or the interval sampling method. Although many samplings are performed, each is done for a relatively small population only. This increased the availability of adequate lists and facilitates selection of a simple random sample without decreasing the quality of the sample in any way. The intention was to ensure that both males and females are selected so as to avoid any form of sample bias.

1.9.2. **Methods of Data Collection**

Taking into consideration the different characteristics of the sources of information, qualitative and quantitative methods of data collection were used. An interview was used to collect data from key persons. A questionnaire with both close-ended and open-ended questions was used to collect data from the randomly selected community members. The main distinction between the two types is that the open-ended questions are not based on already conceived answers. They are thus well adapted to exploratory studies, case studies or based on qualitative analysis of data. Answers may be quite complex and not easily

comparable to those of other respondents. Their recording and scoring gives rise to some difficulties

(Bliss, 1995).

In contrast, structured questions, by restricting the number of possible answers, may produce bias if important categories are left out. Their quality is largely determined by a good pre-analysis and a pilot study using open-ended questions to discover the major possibilities and to classify them. They have the great advantage of being simple to record and score and they allow for an easy comparison and quantification of the results. The open-ended questions provided the respondents with the opportunity to express their views. Close-ended questions were used to collect demographic data of the respondents such as ethnic grouping, place of origin, etc. Focus group discussions were conducted with a group of 5 – 10 community members. According to Bliss (1995) in order to use focus groups the researcher must be skilled at facilitating group discussions. Apart from the obvious practical advantages of interviewing several people at the same time, it is often very useful to allow participants to share their thoughts with each other. In this way they spark off new ideas in each other and consider a range of views before answering the researcher's questions. The most important disadvantages of focus groups is that they do not allow all individuals to express themselves freely and this is likely to increase the effects of social desirability.

a) Interviews and Questionnaires

An interview involves direct personal contact with the participant who is asked to answer questions. A method of getting people to express their views broadly on a certain issue is the non-scheduled interview, which consists of asking respondents to comment on widely defined issues. Those interviewed are free to expand on the topic as they see fit, to focus on particular aspects, to relate their own experiences. The interviewer will only intervene to ask for clarification or further explanation, but not to give directives or to confront the interviewee with probing questions. Usually, no time limit is fixed for completing an interview (Tuckman, 1988).

This method is very useful in exploratory research where the research questions cannot be narrowly defined. It is also an excellent technique when no comparison is sought between the responses of different participants, but when each participant is considered as a specific case, such as in the case-study. The interviewer is mainly present to record the information. However, it is also essential to direct the flow of ideas and to intervene and ask questions. One can influence an interview in many ways. For example, the quality of personal contact can induce a respondent to speak with more or less confidence. The interviewer's presence may enhance comprehensiveness and objectivity in the recording of information, but it can also cause interviewed people to refrain from expressing their real opinions or true feelings (Tuckman, 1988).

Frequently, there is a need for more specific and detailed information, which can facilitate comparison of the reactions of different participants. In this case, the interviewer has a much more precise goal and the types of questions to be answered by all interviewees are fixed. This is a non-scheduled interview. It is structured in the sense that a list of issues, which have to be investigated, is made prior to the interview. The list will contain some precise questions and their alternatives, depending on the answer to the main questions. It is non-scheduled in the sense that the interviewer is free to formulate other questions as judged appropriate for the given situation (Bulmer, 2000).

The most structured way of getting information directly from respondents is by means of a scheduled structured interview. This method is based on an established questionnaire, a set of questions with fixed wording and sequence of presentation, as well as more or less precise indications of how to answer each question. A questionnaire must be presented to each respondent in exactly the same way to minimize the role and influence of the interviewer and to enable a more objective comparison of the results. Questionnaires must be used without direct personal contact with respondents, that is, without the help of an interviewer. These are self-administered questionnaires, to be filled by respondents themselves. This can be done either by distributing the questionnaire and collecting it after it has been filled out, or by mailing it and asking respondents to send it back (Bliss, 1995).

b) Comparison of the different techniques

Bliss (1995) states that the aim of the methods illustrated above is to convert into data information given directly by a person, as opposed to information gathered by the observation of a person. The type of information gathered directly is mainly:

- what a person knows: knowledge, factual information;
- what a person likes or dislikes: values, preferences, interests, tastes;
- what a person thinks: attitudes, beliefs;
- what a person has experienced or what happens at present.

Since this information is gathered by asking people rather than by observing their behaviour, some basic conditions must be met to assure objectivity. First, the respondents must co-operate. They must be willing and motivated to share their knowledge. Secondly, respondents must express what they perceive as their reality rather than what they wish reality to be, what they think it ought to be, or what they believe to be the best answer to satisfy the researcher. Thirdly, respondents must be aware of what the feel and think and be able to express it in order to communicate the information.

c) Advantages and Disadvantages of Unstructured and Semi-structured Interviews

They help to clarify concepts and problems and they allow for the establishment of a list of possible answers or solutions, which, in turn, facilitates of a list of multiple-choice questions, the elimination of unnecessary questions and the reformulation of ambiguous ones. They also allow for the discovery of new aspects of the problem by investigating in detail some explanations given by respondents (Bulmer, 2000).

The weakness of unstructured interviews lies partly in the fact that if the interviewers are not competent they may introduce many biases. In particular, recording the comments of participants is a delicate matter because of the great variety of answers and their complexity. Moreover, interviews are time-consuming and thus expensive (Bulmer, 2000).

d) Advantages and Disadvantages of Structured Interviews

Based on categories of answers already known, their aim is mainly to determine the frequency of certain answers and to find relationships between answers to different questions. Comparing the responses of large numbers of participants does this. The competence and influence of the interviewer are much less important and the recording of the answers is usually quite straightforward.

Moreover, compared to self-administered questionnaires, questionnaires filled out by an interviewer have definite advantages. First of all, they can be administered to respondents who cannot read or write. Secondly, they help overcome misunderstandings and misinterpretations of words or questions; as a result, the answers given are clear. Thirdly, interviewers can ensure that all items on the questionnaire have been considered and that respondents did not omit difficult questions (Bliss, 1995).

However, structured interviews have quite important disadvantages. To begin with, personal interviews are costly in time and money. Interviewers have to spend a certain number of hours interviewing each participant separately and they may also have to travel extensively to reach respondents. Unless interviewers have been carefully trained, there is a danger that serious disparities will arise in the results and this will reduce their comparability (Bliss, 1995).

Lastly, the presence of an interviewer can be perceived as a handicap as far as anonymity and respect for the private life of the interviewees are concerned. The respondents may be embarrassed by questions which touch on confidential and private issues in front of an interviewer, whereas they would answer more freely and honestly if left alone to fill out the questionnaire (Bliss, 1995).

1.9.3. **Data Analysis**

The field data that was collected were both qualitative and quantitative. Content analysis was used to analyse such qualitative data as opinions, attitudes and knowledge of respondents on conservation of biological resources. Demographic data such as age, place of origin, etc of the respondents were analysed using descriptive statistics in order to describe the characteristics of the respondents.

1.9.4. **Limitations of the Study**

The researcher anticipated problems such as; respondents who were not co-operative imposed implications. Not all questionnaires were returned and some did not honour appointments. Some respondents did not tell the truth. The research did not cover the whole sample, due to financial constraints.

1.9.5. **Ethical Considerations**

Throughout the process of data collection the problem of persuading participants to co-operate with the researcher is ever present. Lack of co-operation leads to non-response, to incompletely filled-out questionnaires, and to unreliable results. While lack of co-operation can be disastrous in a research project, participants have a right to refuse to participate.

a) Privacy or Voluntary Participation

Social research often invades a person's privacy. An interviewer may want information of a private nature or a scientist may need to observe people in situations harmful, or at least uncomfortable to participants. The research may involve stress, discomfort or even harm to the participants, which they may not be prepared to tolerate. On the other hand, their suffering may lead to positive and more general social benefits, thus by explaining positive and negative aspects, co-operation can be assured.

The researcher took into consideration the cultural values of the society, such as not asking questions that respondents do not want to be asked about them. The researcher made sure that she did not harm others while carrying out the study and she made sure that participation in the research was voluntary.

b) Confidentiality

The respondents were assured that the information given would be treated with confidentiality. That is, they were assured that data would only be used for educational purposes and that no other one would have access to the interview data.

1.10 Organisation of the Final Report

Chapter one is the introduction. It includes background of the study, statement of the problem, rationale of the study, aims of the study and objectives of the study. It also includes literature review and research methodology.

Chapter two examines the socio-economic and demographic details of respondent community members.

Chapter three focuses on the existing knowledge of respondents towards indigenous knowledge practices on indigenous biodiversity conservation in Taung.

Chapter four examines the government's involvement in trying to conserve indigenous biodiversity resources in Taung.

Chapter five presents on conclusions and recommendations.

CHAPTER TWO

SOCIO ECONOMIC AND DEMORGRAPHIC CHARACTERISTICS OF RESPONDENT COMMUNITY MEMBERS

This study was interested in examining the demographic characteristics of the respondents of the community of Taung area in terms of ethnic origin, educational level, occupational status and their age. In terms of gender, out of 30 respondents, 16 were female and the remaining 14 were male, representing 60% and 40% respectively. The population grouping revealed a 100% of Africans, considering that this is a rural area established by the apartheid system that intended to separate whites and blacks. The differences in age category determined the trends in ages of rural communities so as to establish whether the communities are aging or otherwise.

2.1 Ethnic Origin

The ethnic origin of the community members was to show an in-depth knowledge on which biological resources are found in their area. The results are shown in Table 2.1

Table 2.1 Percentage Distribution of Ethnic Origin of Respondents

Ethnic Group	Frequency	Percentage
Tswana	20	66
Pedi	3	10
Sotho	2	7
Zulu	2	7
Xhosa	3	10
TOTAL	30	100

Table 2.1 shows that 68% of the respondents were Tswana. This is a predominant ethnic group in the study area.

2.2 Educational Level

The educational level of a community member has a great bearing on his/her knowledge of the importance of conservation on existing local biodiversity resources. It is on the basis of this consideration that the study wanted to establish the educational levels of the respondents. The findings were shown in Table 2.3.

Table 2.2 Percentage Distribution of the Educational levels of the Respondents

Educational Level	Frequency	Percentage
Informal Education	18	60
Primary	6	20
Secondary	4	14
Tertiary	2	6
TOTAL	30	100

Table 2.2 shows that 60% of the respondents had an informal educational level and below, and these are the people who had an in-depth knowledge on the local biodiversity resources. Informal education can be defined as education that is learnt through intuition especially, from everyday interaction with the elderly people and through people's experiences. The respondents who had formal education represented only 30%. Interviews with them indicated limited knowledge and interest on

biodiversity resources. The reason for this was that most of them had sources of income; therefore they did not depend on biodiversity resources for their survival, hence this influenced their interest on biodiversity resources.

2.3 Occupational Status

Wage employment is one of the sources of income in sustaining livelihoods of the poor in Taung. Given the fact that the majority of the population in Taung areas had an informal education, it became evident that employment is scarce in Taung areas, they had to depend on indigenous biological resources such as raw materials for crafts and wild animals such as rabbits and many more for their survival. Sixty percent depended on the Social Welfare Grant, 15 % from selling crops and livestock, 5 % from selling artefacts and 20 % from daily labour.

2.4 Age Distribution

The age of a community member could have influence on his/her participation in protecting and conserving local biodiversity resources. The study wanted to establish the age distribution of respondent community member. The findings are shown in Table 2.5.

Table 2.4 Percentage Distribution of Age Distribution of the Respondents

Age Distribution	Frequency	Percentage
Less than 20	0	0
20 – 39	4	13
40 – 50	8	27
50 +	18	60
TOTAL	30	100

Table 2.5 indicates that the majority (60%) of the respondents both Male and female in the study area were 50 years and above. It proved that being matured one would have knowledge and experience on indigenous biodiversity resources. This was because the older people are the ones who had knowledge on the indigenous biodiversity resources in their area.

South Africans have a vast traditional knowledge of biodiversity, which has developed over millennia. Sadly, South Africa's colonial and apartheid past and have fractured much of this knowledge by increased urbanisation, and today only pockets of traditional knowledge still exist, generally amongst older people in rural areas and traditional healers (White Paper on Biodiversity).

The development of indigenous medicine and healing systems are well recorded ancient Egypt to modernity. With a certain amount of indigenisation different ethnic groups developed unique systems within

their traditions for advancing healing practices. African herbal medicine is extremely impressive. Africans knew several Western medicines before the Europeans discovered them. African doctors have also pioneered the treatment of psychosis through herbs. A Nigerian traditional doctor used decoctions made from rauwolfia root. The rauwolfia family of plants is today the source of Reserpine, which was first used as a major tranquilliser to treat severe psychosis, and is now used against hypertension. Africans have their own aspirin, which is made from the bark of Salix capensis to treat musculoskeletL pains. This plant yields salicylic acid, which is an active ingredient in aspirin (Ntsoane, 2005).

Customary practices to maintain or enhance biodiversity have similarly been impacted by previous policies, particularly in instances where people were forcibly removed from their land and denied access to resources such as medicinal and edible plants, thatching grass, and hunting and grazing grounds. Past policies also resulted in the banning of traditional medicine, despite the fact that over 80 percent of South Africans depend upon traditional herbal remedies for their primary health care. An issue of particular contention relates to the fact that the considerable benefits which modern society has gained from the traditional knowledge and innovations of South Africa's people have

resulted in few, of such benefits being returned to the people from whom knowledge was derived (White Paper on Biodiversity).

There is therefore a clear need to strengthen traditional knowledge, practices and cultures by protecting and recognising the value of such systems and preventing their loss. This may be achieved by ensuring that benefits arising from the innovative use of traditional knowledge of biodiversity are equitably shared with those from whom knowledge is gleaned, and also by incorporating traditional knowledge and practices into biodiversity research and conservation programmes (White Paper on Biodiversity).

CHAPTER THREE

KNOWLEDGE AND AWARENESS OF RESPONDENTS TOWARDS BIODIVERSITY CONSERVATION IN TAUNG

The study investigated the awareness and knowledge of the community respondents towards existing indigenous biodiversity resources in Taung. The study also wanted to establish if the respondents conserved these indigenous biodiversity resources for their future use.

3.1 Knowledge of Community Members and Conservation Strategies Towards Existing Indigenous Biodiversity Resources.

Table 3.1 Percentage Distribution of Respondent Knowledge about the Existing Indigenous Biodiversity Resources.

Responses	Frequency	Percentage
Yes	12	40
No	14	46
Uncertain	4	14
TOTAL	30	100

Table 3.1 shows that 46% of the respondent community members did not know about the existence of indigenous biodiversity resources in their area. The study also found out that 14% of the respondents lacked knowledge about indigenous biodiversity resources in their area. The reasons that some respondents raised for not knowing these resources were that these resources are no longer available.

Biodiversity is important for a variety of reasons. First, biodiversity promotes ecosystem stability. The more diverse a system, the greater its ability to withstand shocks and stresses. If biodiversity promotes ecosystem health and function, then biodiversity promotes all the services derived from ecosystems, such as protection of fresh water supplies, production of oxygen, absorption of carbon dioxide, nutrient cycling and provision of habitat.

Second, plants and animal species have a value because they may be used to produce economic goods. The species may provide goods directly, or they may be a direct source of natural chemicals and compounds. Third, the organisms' genes may be a source of genetic information. Such information may be used in the development of new varieties of plants with different properties than existing varieties (Myburg et al, 1999).

3.2 The Importance of these Indigenous Biodiversity Resources for the Sustainability of the Lives of the Batswana in Taung.

Long before Herodotus concluded that Egypt's cultural origins lay in continental Africa; long before the historical Jesus took refuge in Egypt; and long before Dr David Livingstone penetrated into the heart of Africa, propagating the gospel of three C's: Christianity, Commerce and Civilization, the indigenous people on the continent has accumulated a

large body of knowledge on the rich array of biological and other resources found in their various ecosystems (Mshigeni, 2004).

As outlined by Mshingeni (2001) they would disappear into their montane forest ecosystems, picking ripe wild fruits off the branches of the mdaria tree. Its fruits are very tasty, and very tantalizing to the taste buds. When parents suspected that their children were infested with the common intestinal parasite, Ascaris lumbricoids, they would boil roots of the mdaria tree, to produce a decoration, which children were to drink. That decoction would, without any fail purge away the unwelcome intestinal parasites (Mshigeni, 2004).

Examining the economic aspects of biodiversity is becoming increasingly important within the South African context. As the custodian of a national asset, the State has a responsibility to increase the financial investments required to conserve biodiversity. However, this must be reconciled with the fact that the basic needs of South Africa's people have not yet been met. Innovative ways must therefore be found and promote and develop economic activities that are compatible with and which complement the conservation and sustainable use of biodiversity.

There are many opportunities to do this. In some instances, the informal medicinal trade, a thriving industry exists but the importance of traditional medicine for primary health care is poorly recognized. Consequently, few measures are in place to ensure that resources are harvested sustainably, that the cultivation-harvested species is promoted, and that the local economic value of such resources is maximized. In other cases, such as biodiversity prospecting, opportunities to reap benefits are not optimized because of the absence of an enabling policy framework that controls access to generic resources and sets conditions for benefit sharing and sustainable use (www.environment.gov.za).

Based on the data collected from the questionnaire, 70% of the population believed that these indigenous biodiversity resources were important in the olden days, because more people were not working. It is a different story today because people do not longer depend on these indigenous resources, but on wage employment.

Only 30% of the respondents believed that these indigenous biodiversity resources are important in their lives because they do not have a source of income, therefore these resources are their only source of food such as ditlheku, lekatana, lerotse, mmutla (rabbits) and morogo. They also mentioned that they depended on these indigenous resources such as

bojang (grass), dikgong (wood), etc for their raw materials for making crafts. One other important thing that they mentioned was that they depend on resources such as longana, tshupu ya poo, konkoane, makgabenyane, tlhoka la tsela, etc for their medication, hence they could not afford going to a doctor.

According to the Traditional Medicine Strategy of the World Health Organization (WHO), Traditional Medicine is widely used, in a rapidly growing health system with economic importance. In Africa, up to 80 percent of the population use traditional medicine to help meet their health care needs. In Asia and Latin America, populations continue to use traditional medicine because of historical circumstances and cultural beliefs. In China, traditional medicine accounts for around 40 percent of all health care services.

In developing countries, broad use of traditional medicine is often attributable to its accessibility and affordability. In Uganda, for instance, the ratio of traditional medicine practitioners to the population is between 1:200 and 1:400. This contracts severely with the availability of allopathic practitioners, for which the ratio is 1:20 000 or less.

Moreover, distribution of such personnel may be uneven, with most being found in cities or other urban areas, and therefore difficult for rural populations to access. Traditional medicine is sometimes the only affordable source of health care, especially for the world's poorest patients.

According to the WHO, the most important issues affecting the practice of traditional medicine fall into four categories:

• National policy and regulatory frameworks – crucial to overall delivery.

• Safety, efficacy and quality – crucial to extending and regulating traditional medicine care.

• Access – making traditional medicine available and affordable; and

• Rational use – ensuring appropriateness and cost-effective.

In recognizing the important de facto role of traditional medicine in South Africa, the department of Health has promulgated the Traditional Health Practitioners Act. This Act addresses the categories listed above and proposes the establishment of a regulatory body.

Mr Gasekoma who is an old-aged resident in Taung mentioned that the age-old indigenous knowledge and practice, that when one made a paste leaves of a local leguminous shrub, which is known as Mokala in Taung, and dropped the paste onto the dam water surface, the catfish in the water would, in no time, come float paralyzed. He also mentioned that when

insect pests attacked their crops, especially the maize stock-borer pest, the Mokala was traditionally used as an insecticide.

Here again, leaves of the Mokala plant were made and applied on the stem of insect-infested maize. The parasitizing insect pest would soon succumb, much to enjoy of the farmer.

But then, when colonization and the western civilized came, when coffee was introduced as the dominating agricultural cash crop, a wide spectrum of insecticides were imported into the village. These included non-biodegradable chlorinated hydrocarbons, which, in fact, were disastrous to the environment. With these impositions, the indigenous knowledge on the Mokala plant was belittled, downtrodden, and almost obsolete.

Mrs Seokamo who resides in Choseng, said that when she recalls her childhood years, she used to be a keen mushroom hunter. In their rural village communities, they knew mushrooms follow the rains. Various species had specific local names. Already at that tender age, they knew what type of mushrooms grew in association with termite mounds; and what types grew on tree trunks and decaying branches.

They also knew what types were edible, and what types were just left to rot in the field. She mentioned that they then did not know that in fact, in many respects, the eating of mushrooms is healthier than eating of meat. This was virtue of their high vitamin content, their high level of inorganic minerals, including some vital trace of elements; their low level of cholesterol, and their low level of fat; and their wide array of medicinal curative attributes.

3.3 Conservation Strategies Developed by the Batswana to Conserve these Indigenous Biodiversity Resources.

Human activities such as pollution, habitat destruction, over-exploitation and foreign plant and animal invasions are resulting in the ever-increasing of the earth's biological wealth. The implications of these are considerable. If continued undebated, people stand a chance to lose crucial life support systems through the loss of important habitats; to undermine rural livelihoods, with the degradation of the natural resource base on which people depend; and to diminish economic opportunities, as options for developing medicines and foods are reduced (Myburgh et al, 1999).

The term conservation has in the past been used broadly to include protection, as well as use, maintenance, restoration and enhancement of the natural environment. However, the Convention on Biological Diversity uses conservation in a different way in that it refers both to the conservation of biological diversity and the sustainable use of its components (www.enviroment.gov.za).

Based on the data collected, the Batswana in Taung have over the years developed indigenous strategies to ensure that what they depended on does not be wiped out. Mr Sedumedi, who is a resident of Matlapaneng village, mentioned that, there were systems put in place to manage tree cutting in Taung. He said the Chief was the only one who regulated this cutting of trees and people would have permit from the Chief to cut those particular trees. People were allowed to cut certain trees during specific times of the year. People would cut at a particular area and then move to the next area, and this allowed trees that have been cut to grow again. He also mentioned that trees were only cut 2 m from the top.

This strategy was also applied to conservation of animals and insects. People were only allowed to hunt certain animals at certain times during the year. This was to avoid the species to go extinct. The Chief had

knowledge on when would the animals be pregnant, and after they had given birth that was when people were allowed to hunt for these animals.

Interviews with Mr Sedumedi indicated that the indigenous plants were also used for medicinal and nutritional purposes. For instance Lengana was used for flu and as tea. These resources were not found during winter. They would then dry them and store them to make sure that they have a supply for even when they were out of season. This applied to all other resources that they used which were not found throughout the year.

Mr Sabole who is a resident of Mokgareng village mentioned that because of the living conditions that have changed, some of the indigenous plants and animals that were found 50 years back are no longer found. He also mentioned that he is even afraid that the few species that is left will go extinct because in rural areas these are no longer conserved, only urban areas considered. He said that motorists are killing these indigenous animals because nothing is being done to protect them. He suggested that fencing should be erected and that there should be game reserves in rural areas as well to ensure the safety of these resources.

Mr Sabole also mentioned that due to changed climatic conditions, indigenous plants are scarce. The reason for this was that 20 years back, rain was not a problem as compared to now. He said that the soil is dry that is why most of these resources are no longer available.

Table 3.2 Percentage Distribution of Respondent Community Member's Knowledge on Protection of Indigenous Biodiversity.

There is little knowledge among the people regarding how to protect the indigenous biological resources in Taung.	1	2	3	4	TOTAL
Frequencies	0	3	7	20	30
Percentage	0	10	23	67	100

Key: 1 = Strongly Disagree and 4 = Strongly Agree

Without the support and commitment of all South Africans, efforts to conserve this country's biodiversity are unlikely to succeed. Government considers this to be one of the most critical issues to address the implementation of the White Paper on Conservation and sustainable use of South Africa's biological diversity.

Past efforts to improve awareness and appreciation of the importance of biodiversity have frequently been culturally biased, focusing largely on the value systems of the affluent. Thus a narrow interpretation of biodiversity has predominated, directed at the need to preserve endangered species and maintain protected areas rather than at the

broader which development context, which makes biodiversity relevant to the millions of people in South Africa who are dependent upon the country' s biological resources to fulfill their basic needs. This has been aggravated by the inaccessibility of protected areas to the poor, leading to the perception that conservation is elitist and irrelevant to the majority of South Africans.

Table 3.2 indicates that the majority of the respondents, which is represented by 67 % strongly agreed that there is little knowledge among the Batswana in Taung regarding conservation of their indigenous biodiversity resources. There was no one who disagreed with the statement, which said there is little knowledge regarding conservation of indigenous biodiversity resources.

CHAPTER 4

THE GOVERNMENT INVOLVELMENT IN CONSERVATION OF BIODIVESRSITY REOURCES IN TAUNG

This section discusses the involvement of government, especially the North West Provincial Government in conservation of biodiversity resources by identifying the efforts and programs that the government undertook to protect these resources.

4.1 Role of Government in Protection of Indigenous Biodiversity Resources

These were some of the programs that the North West Provincial Government put in place to conserve indigenous biodiversity resources:

The Protected Areas of the North West, while serving as a base for the conservation of biodiversity are being utilized as nodes for socio-economic development and job creation in the rural area of the province, especially Taung. At the same time, expanding the conservation base through protected areas, to the Board has continued to rationalize its management of areas that have little conservation value. The combination of the protected area function with the tourism marketing and development function, unique to the North West Province, will ensure that the protected area fulfill their potential, as nodes for rural development, while at the same time meeting their obligations in respect

of national and international conventions for the conservation of biodiversity.

4.2 The Involvement of the North West Provincial Government in Conservation of Indigenous Biodiversity Resources.

According to the data collected from interviews and questionnaires administered, it was shown that the government has put in place some programs to conserve indigenous biodiversity in Taung. This is based on the fact that only 10 out of 30 respondents, representing 30%, believed that the government was trying to conserve and to ensure that species do not go extinct. This was done through implanting policies on Conservation and Sustainable use of indigenous biodiversity.

Interviews were also conducted at the North West Province Department of Agriculture, Conservation and Environment, and some documents were handed out which outlined some of the important aspects were mentioned below.

The South African Government has three overriding priorities, which are; the eradication of poverty, the sustainable development of its economy and the social development of its people. These priorities, together with the national environmental policy presently being formulated, provide the context within which consideration will be given to achieving the three of

the Convention on biological diversity, which are; the conservation of biological resources and fair and equitable sharing of benefits arising from the use of genetic resources.

In addition to fulfilling these objectives, Government commits itself to a biodiversity policy and strategy that will promote the reconstruction and development of South Africa.

The North West Provincial Department of Agriculture, Conservation and Environment, mentioned that, very little is known about the extent of Indigenous plant use in the Province. For an example, the extent and use of Devil's claw (Hypagophytun procumbens) in the North West Province is being investigated. This plant is a medicinal plant that has been used by local communities as an anti-inflammatory and painkiller, for the treatment of allergies, arthritis, liver, and kidney and bladder problems.

One of the biggest concerns that the Department raised was that the major impact for wild populations being harvested is overexploitation of the target species. This may lead to population decline or animals or plants becoming rare, endangered or even extinct.

Even where harvesting of wild populations is not as intensive, negative impacts on ecosystem functioning and species richness may occur.

They also mentioned that the undermining of indigenous knowledge and indigenous rights is another negative impact resulting from the trade in indigenous biodiversity, particularly medicinal plant species. When indigenous communities are asked to sell their knowledge to corporations, they are being asked to sell their birthright to continue to practice their traditions in the future, and to provide for themselves through their knowledge and their resources. This may lead to the loss Of Intellectual Property Rights, copyrights, the plundering of natural resources, knowledge associated with nature for local people.

The impact of globalisation on biodiversity and indigenous people is another important factor. The emerging trend in southern Africa including the North West province is that global trade and technology inherently works against justice and ecological sustainability in areas where tribal communities have little control or influence in how their indigenous biodiversity is exploited. Local communities are often insufficiently remunerated and face the threat of having to buy the products from those who now own the rights to them at much higher prices.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The study makes the following conclusions and recommendations about the investigations into indigenous knowledge practices on environmental conservation among the Batswana in the North West Province. The Case of Taung.

5.1 Conclusion

There are different indigenous biological resources that are found in Taung, although most of the people did not know anything about these indigenous resources. These indigenous resources are the only sources of survival for most people in Taung, especially those that are unemployed. Some of these indigenous resources that are found in Tang are ditlhekwa, mokgalo, thepe, lengana, tlhoka la tsela. These resources can be used for medicinal purposed and can be used as food.

The indigenous people had strategies in place that ensured that what they depended on was not lost over the years. This was to ensure sustainability of their livelihoods because indigenous biodiversity resources were only what they had.

5.2 Recommendations

The following aspects should be considered for the conservation of indigenous biodiversity resources in Taung.

- The Government with interested parties should develop and implement targeted public awareness programmes for groups of people such as decision makers and politicians, business executives, consumers, non – governmental organizations and children.
- The Department of Education should encourage organizations engaged in researching, managing or conserving indigenous biodiversity to popularize their work, to disseminate information about biodiversity, and develop and strengthen biodiversity education and interpretative programmes in such places as protected areas, museums, botanical gardens, public open spaces and community centers.
- Support the further development of outreach programmes, which will enable people to have access to nature and the experiences associated with nature.
- The Tourism sector should promote and support efforts by the public and private sector to make protected areas more accessible to the people of Taung.

- The Media should encourage those in the public eye, such as radio commentators, entertainers, artists, religious leaders and politicians to popularize indigenous biodiversity and the actions needed to conserve it.
- The Department of Arts and Culture should promote integration of traditional knowledge in their programmes wherever possible.
- Promote the integration of traditional knowledge and in particular previously ignored and undermined cultural knowledge and practices concerning the conservation and sustainable use of biodiversity into research programmes and formal sector innovations.
- Review and where appropriate modify national policies and legislation to ensure that they support rights of holders of traditional knowledge.
- The Department of Justice should investigate, through appropriate structures the development of a system to provide legal protection for collective intellectual property rights.

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8/04

ANNEXURE 1

Dear resident of Taung

Your sincere participation is requested in completing the attached questionnaire, which is intended to help the research gather information on the perceptions of Batswana regarding the indigenous knowledge practices on conservation of biological resources in Taung.

The study is conducted by a student, in part fulfilment of the requirement of the degree of Master of Indigenous Knowledge Systems in the Department of Sociology in the faculty of Human and Social Sciences at the North West University.

Your answers will enable the research to understand Challenges and opportunities of rural residents regarding conservation of biological resources.

Thank you for your participation

Ms Noluyolo Loretta Molusi

PLEASE TICK THE APPROPRIATE BOXES

1. Gender of respondent

1 [ ] Male
2 [ ] Female

2. Indicate your approximate age

1. [ ] 20 – 30
2. [ ] 31 – 40
3. [ ] 41 – 50
4. [ ] Over 50

3. What is your Ethnic Origin?

1. [ ] Tswana
2. [ ] Pedi
3. [ ] Sotho
4. [ ] Zulu
5. [ ] Xhosa

4. What are your sources of survival during the last 12 months?

1 [ ] Selling crops (grain crops)
2 [ ] Selling livestock
3 [ ] Daily labour
4 [ ] Wage employment
5 [ ] Social Welfare grant
6 [ ] Selling artifacts
7 [ ] Providing services
8 [ ] Other_____

5. Indicate your Educational Level

1. [ ] Informal Education
2. [ ] Primary
3. [ ] Secondary
4. [ ] Tertiary

1. What are the different types of local biological resources available in this area including their uses?

Biological Resources	Use/s
1.	
2.	
3.	
4.	
5.	

2. Why do you think that these biological resources are important for the lives of Batswana in Taung?

_____

_____

_____

2. What do the Batswana in Taung do to conserve biological resources available in their area?

_____

_____

_____

_____

3. What do you think should be done to ensure that these biological resources are conserved?

_____

_____

_____

4. What types of problems do you encounter in trying to conserve these biological resources?

_____

_____

_____

5. What organizations are involved in the conservation of biological resources?

_____

_____

_____

6. What does the government do in this community in trying to conserve these biological resources?

_____

_____

_____

Please indicate your position regarding the following statements, in a continuum of 1 to 4 where:

1 – Strongly Disagree

4 – Strongly Agree

1.	Nothing has been done to preserve biological resources in Taung.	1	2	3	4
2.	There are few protected areas around Taung.	1	2	3	4
3.	There is little knowledge among the people regarding how to protect the indigenous biological resources in Taung.	1	2	3	4
4.	People in Taung are aware of the government's involvement related to conservation of biological diversity.	1	2	3	4

THANK YOU FOR YOUR PARTICIPATION

ANNEXURE 2

PICTURES OF THE INDIGENOUS BIODIVERSITY RESOURCES FOUND IN TAUNG

TYPES OF TREES THAT ARE FOUND IN MATLAPANENG AREA. THIS IS MOSTLY USED FOR SHELTER

PHOTOS BY: N L MOLUSI

MOOKA TREE FOUND IN BUXTON HERITAGE SITE IN TAUNG

DEVILS CLAW PLANT FOUND IN TAUNG

Tree chopping inside the Taung Heritage Site is becoming a problem. Sustainable levels will have to be determined and wood collection practices negotiated with the local community. Fencing and controlled access are prerequisites to the fuelwood gathering management strategy

Fuelwood from the heritage Site on its way to the numerous local rural settlements. Buxton village is largely dependent on fuelwood for energy requirements

THE THEN KGOSI AND MMAKGOSI MANKURUAONE OF BATLHAPING WEARING THEIR ROYAL CLOTHES MADE FROM ANIMAL SKIN

THE TRADITIONAL ATTIRE THAT MEN USED TO WEAR IN TAUNG

WILD ANIMALS KNOWNS AS DIKGATLA (Monkeys) FOUND AT THE HERITAGE SITE IN TAUNG

THESE ARE SOME OF THE WILD ANIMALS FOUND AT TAUNG

THESE ANIMALS ARE KNOWN AS DIPHOKOJE.

MOST BATLHAPING IN TAUNG USE THIS ANIMAL (THOLO) AS THEIR TOKEN

THESE ARE SOME OF THE ARTS WORKS MADE FROM INDIGENOUS RAW MATERIAL THAT MOST PEOPLE IN TAUNG MAKE A LIVING FROM