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***THE CONTRIBUTION OF TRADITIONAL BELIEF SYSTEMS IN BIODIVERSITY
CONSERVATION AMONG THE NDAU PEOPLE OF NYAGADZA COMMUNITY IN
CHIPINGE***

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APPROVAL FORM

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for acceptance as a dissertation entitled:

*The contribution of traditional belief systems in biodiversity conservation among the Ndau
people of Nyagadza community in Chipinge.*

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DEDICATION

I would like to dedicate this research project to my son Hastings, my parents Mr and Mrs Muzondi and husband Adolf Mavheneke.

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This research is indebted to my husband Adolf Mavheneke for his financial assistance and academic advice. I also cherish the emotional support from my parents, and not forgetting my two late sisters for igniting the motivation to study in the family. Surely the academic journey goes on, and this study is just but part of the many success stories that are coming.

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Acronyms

ABS Access and Benefit Sharing

ACHPR African Commission on Human and Peoples' Rights

CBNRM Community Based Natural Resources Management

CBO community-based organization

CGRFA Commission on Genetic Resources for Food and Agriculture

FAO Food and Agriculture Organization

GATT General Agreement on Tariffs and Trade

GDP Gross Domestic Product

GoZ Government of Zimbabwe

ICJ International Court of Justice (ICJ)

ILO International Labour Organization

IP Intellectual Property

IPACC Indigenous Peoples of Africa Coordinating Committee

IPR Intellectual Property Rights

IPRGI International Plant Genetic Resources Institute

IUCN The World Conservation Union

NGO Non-Governmental Organization

OAU Organization of African Unity

OECD Organisation for Economic Co-operation and Development

SANparks South African National Parks

SDC Swiss Agency for Development and Cooperation

TK traditional knowledge; traditional and indigenous knowledge

TRIPS Agreement on Trade-Related Aspects of Intellectual Property Rights

UN United Nations

UNCBD United Nations Convention on Biological Diversity

UNCED United Nations Conference on Environment and Development

UNCTAD United Nations Conference on Trade and Development

UNDP United Nations Development Programme

UNDRIP United Nations Declaration on the Rights of Indigenous Peoples

UNEP United Nations Environment Programme

UNGA United Nations General Assembly

UNHRC United Nations Human Rights Council

UNICCPR United Nations International Covenant on Civil and Political Rights

UNPFII United Nations Permanent Forum on Indigenous Issues

UNWGIP United Nations Working Group on Indigenous Populations

WHO World Health Organization

WIPO World Intellectual Property Organization

WTO World Trade Organization

ZINATHA Zimbabwe National Association of Traditional Healers

ZBC Zimbabwe Broadcasting Corporation

Definition of Key Terms

Traditional Indigenous Knowledge/Traditional Knowledge: This is local knowledge, which is unique to a given culture or society (Warren, 1991; Flavier et al, 1995). Indigenous traditional knowledge refers to the cultural knowledge, innovations and practices of indigenous and local communities around the world, developed from experience gained over centuries of adaptation to the local environment (Gadgil et al, 1993). This knowledge is transmitted orally from generation to generation and is collectively owned (Berkes, 1999). It takes the form of stories, songs, folklore, proverbs, cultural values, traditional beliefs, rituals, community laws, local language, and agricultural practices and development of plant species and animal breeds, particularly in such fields as agriculture, fisheries, health and forestry (<http://www.biodiv.org/programmes/socio-eco/traditional/>)

Traditional Belief Systems: Spiritual belief systems are those traditional/indigenous knowledge envisioned in spiritual circles and practices. They encompass mysterious beliefs and traditional religious understanding and practices (Appiah-Opoku, 2007). They stem from the whole structure of a community's traditional indigenous knowledge systems. They range from taboos, ritual beliefs, sacredness, folklores and totemic beliefs among others.

Traditional Indigenous People/Traditional People: Refers to a combination of indigenous inhabitants and people who have migrated, and/or stayed in a certain locality for a long time of even more than a century (UNEP, 2008). Their knowledge became known as “indigenous traditional knowledge systems or simply traditional knowledge.”

Traditional Indigenous Communities/Traditional Communities: These are societies made up of indigenous inhabitants of the area and those local people who have stayed long within a given area.

Biodiversity: Article 2 of the (UNCBD, 1992) outlined that, “biological diversity” is the range of all plant and animal life found in all sources that include those found on and under the earth, marine and other aquatic ecosystems, and the ecological complexity within species, between species and ecosystems (UNCBD, 1992). Biodiversity is the variety of life at all levels from plant and animal populations, species, ecosystems, biomes, to the biosphere. (<http://www.eoearth.org/view/article/51cbeecf7896bb431f69a6f4>; Manjengwa and Stilles, 1999).

Biological Resources: These are genetic resources and organisms or other life forms and components of ecosystems with actual and potential use or value for humanity.

ABSTRACT

The study strengthens the role played by Ndaou taboos, folklore and sacredness in biodiversity conservation. The belief systems' relevance and resilience around conserved landscapes / sites is symbolic and a reality when contrasted with other open landscapes across the same community where unregulated human activity is common. The latter depict landscapes under degradation with soil erosion leading to loss of arable land and biodiversity. This research paper therefore highlights contrasting conservation realities in the same community across adjacent landscapes.

It is interesting to note how the spiritual belief systems have played out a significant role in nature conservation in Nyagadza area. However, the resilience of spiritual belief systems to both local and transnational forces of globalisation for example whilst exhibiting dualistic contrasting landscapes in the same community is of great interest to this study. In essence, traditional knowledge systems are not simply relics of the past, in fact; they remain essential and relevant today for sustainable biodiversity conservation.

Chapter 1: Introduction

1.1. Historical Background

Chipinge is largely divided into two distinct districts which are Chipinge urban and rural. The former falls in natural region one, (GoZ 1986) which is characterised by vegetated landscapes due to high annual rainfalls. The latter stretches from natural region two to four, and covers Nyagadza area which is a Ndaу speaking community found under chief Musikavanhu. It is located south east of Zimbabwe in Manicaland province near the border with Mozambique on the eastern side of the Save river. According to the (ZimStats, 2012) Chipinge rural district has a population of 300792 people.

Nyagadza is inhabited by the minority indigenous Ndaу speaking people who the majority trace their historical origin from Zululand in South Africa and have relatives spread in Mozambique. It is therefore clear that the Ndaу speaking share some cultural traits with communities in neighbouring Mozambique and in Zululand in South Africa. They depend on subsistence farming and a bit of small-scale cash crop farming for survival (Zamchiya, 2011).

The Ndaу in Nyagadza are still deeply rooted in numerous cultural, mysterious and spiritual practices which encompass sacredness, rituals and taboos. Ndaу people are also known to be very good herbalists, and they are openly known for black magic and traditional healing prowess. There are therefore widespread claims of witch craft and sorcery practiced by the Ndaу. The community value and respect the spirits of the dead and spiritual gods whom they believe dwell in animal species, plant species (*mirombo*), mountains, rivers, pools, and grave sites (Appiah-

Opoku, 2007). Rituals are therefore often done in honour of these spirits whom they associate with rainfall and good harvests (Byers et al, 2001).

1.2. Background to the Study

This study took place at a time when there is massive natural resources exploitation and environmental degradation in many areas across Zimbabwe (Tanyanyiwa and Chikwanha, 2011). This can be attributed to lack of stringent policy and legislative measures to protect biodiversity, and also failure to integrate cultural conservation mechanisms into national planning policies and programmes. Even at a global level biodiversity degradation has continued without check under numerous commercial and industrial interests which are behind the extraction and exploitation of flora and fauna resources from indigenous communities for scientific and industrial purposes. (Degeoges & Reilly, 2009; Crawhall, 2011). Thus industrial and commercial production has remained key impediments in coming with strategies for biodiversity conservation.

The above explanation captures an environmental crisis which stretches from village, national to global levels, and this has contributed to urgent calls for biodiversity conservation. The calls and efforts won significant global recognition at the United Nations Convention on Biological Diversity (UNCBD) of 1992 which made a bold call for the conscious consideration of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biodiversity (UNCBD, 1992). It also stressed the importance of biodiversity conservation for posterity and maintenance of the structure of the ecosystems. It further emphasised that biodiversity conservation should become a primary concern of humankind

because humans through agricultural and industrial activities remain a threat to the survival and diversity of the natural environment.

The Convention also recognised the close link between traditional indigenous communities, indigenous knowledge systems and biodiversity conservation (UNCBD, 1992). It therefore gave national governments the mandate to develop national strategies, policies, plans or programmes for sustainable conservation of biological resources by integrating indigenous local knowledge systems into sustainable conservation of biodiversity. World Resources Institute (WRI, 1991; WRI/IUCN/UNEP, 1992) indicated that deforestation was occurring at a rapid rate of between 16, 4 and 20, 4 million hectares per year. In addition, in 1980 the United Nations Food and Agriculture Organisation estimated that the world's forests were disappearing at the alarming rate of nearly 114,000 square kilometres (FAO, 1992). The 1992 records showed rapid increase in deforestation of 170,000 square kilometres (54%) a year (FAO, 1992).

From the 1980s biologists and anthropologists have therefore been advancing biodiversity conservation as a powerful mechanism for environmental research, education, and action. This carried with it a profound sense of recognition, significance and urgency at regarding life on earth as increasingly endangered (Wilson, 1984). The UN Conference on Environment and Development (WRI/IUCN/UNEP, 1992) also highlighted the urgent need to craft mechanisms that would protect the earth's biological diversity by emphasising on incorporating indigenous local knowledge in resource conservation and management (IUCN/UNED/WWF, 1991). The World Conference on Science held in Hungary 1999 recommended that scientific and indigenous local knowledge should be integrated particularly in the field of environment and development (UNEP, 2008). The United Nations Millennium Ecosystem Assessment (2005) further warned

that, if current patterns of biodiversity loss continued to increase, then future generations of humanity would be at risk (<http://www.unep-wcmc.org>). It went on to estimate that current species extinction rates may be a thousand times greater than normal in nature, and that 12% of bird species and 23% of mammalian species were being threatened with extinction (<http://www.unep-wcmc.org>).

Given the foregoing background, this research paper therefore makes critical reflections on how traditional beliefs contribute to biodiversity conservation. It looks at the unique and culturally evolving attributes of the Ndau traditional belief systems in Nyagadza especially in their relationship with nature in the context of biodiversity conservation. The study also reflects on how sacred places and landscapes have emerged through spiritual belief systems as new frontiers for interdisciplinary research for their own merits and relevance in biodiversity conservation (Appiah-Oppoku, 2007).

The research embraced the fact that sacred places often designated by spiritual belief systems complement other biodiversity conservation mechanisms like establishment of national parks and other protected areas usually done by governments. This highlights the collaboration that exists, or may exist among religious, governmental, scientific, and conservation agencies for the protection of sacred sites and landscapes and species resulting in biodiversity conservation. The spiritual and cultural designation of sacred natural areas in this instance may either intentionally or unexpectedly promote biodiversity conservation.

What captures the interest of this research work is the practical existence of isolated conserved forests / bushes and landscapes in Nyagadza community which are connected to some traditional belief systems. This prompted a prudent investigation of the salient implications of Ndaun spiritual belief systems like taboos, rituals, and sacredness in conserving biodiversity. This helped to ascertain whether cultural conservation mechanisms and techniques have contributed to the existence of such landscapes particularly sacred forests, mountains, gravesites, caves, river pools and specific tree and animal species. All this provided overall insights on how some cultural belief practices are linked to biodiversity conservation, not only of certain plant and animal species, but the whole natural habitat.

It is clear that various kinds of government sanctioned and protected areas throughout the world like national parks, nature reserves, and wildlife refuges are significant achievements and certainly necessary, but they have proved insufficient for biodiversity conservation. This is because they cover only a small portion of the planet, and exhibit the usually exploitative conflict between humans and nature. In addition they do not adequately cover the entire range of species, and life forms found within the ecosystem.

Indigenous local protected areas have therefore developed since ancient times in connection with a multitude of diverse cultural beliefs enshrouded in sacredness. Cultural belief systems provided sanctions and restrictions on access to these sacred places and species. This often resulted in protection all life forms found in an area as it assisted in reducing and eliminating human exploitative action on the natural environmental.

The above pays tribute to the fact that since time immemorial indigenous people were exemplary conservationists, and this gained widespread acknowledgement in popular media as well as

academic circles (Smith and Wishnie, 2000). However it is only a few decades ago that sacred places became a new frontier for interdisciplinary research on their own merits and for their relevance to biodiversity conservation (Appiah-oppoku, 2007).

1.3. Statement of the Problem

The sight of *unspoiled* landscapes linked to Ndaou traditional spiritual belief systems and open degraded landscapes existing adjacent to each other in Nyagadza area prompted this study. The study therefore examined and ascertained how such contrasting, and/or conflicting conservation realities co-existed. The contrast in the landscapes created interest and a unique investigation and discussion into understanding the value of indigenous knowledge systems particularly the spiritual belief systems in biodiversity conservation.

In essence, the existence of clearly conserved landscapes across Nyagadza which are enshrouded in sacredness and connected to the spiritual world which gave life to the Ndaou people exist at the centre of this research. Interest was on how such landscapes could be explained by the same spiritual belief systems and practices. How the two frontiers have co-existed in the first place with the virgin landscapes remaining intact and resilient and the other facing continuous degradation is an issue that this research explored. The reality is the virgin landscapes have distinctly stood out as ‘traditional belief /spiritual relics’ with untainted and untapped plant and animal life under protection, sanctioned and sustained by Ndaou taboos, folklore and custom narrative for generations.

It is all puzzling, and perhaps, the degraded landscapes represent the frontier struggle between traditional indigenous spiritual belief systems and contemporary knowledge / practices. It also

raises questions on whether the degraded landscapes are a result of population growth and pressure on the land, economic priorities or just ignorance and rejection of spiritual restraints that are inherently finding expression on the pristine landscapes.

1.4. Purpose of the Study

This study was inspired by two critical observations across Nyagadza area. The first is the existence of untainted and forested landscapes such as mountains, gravesites, streams and pools that are enshrouded in sacredness. Secondly, adjacent the wooded landscapes are openly degraded landscapes that seem to exist outside the spiritual sacredness. The study therefore captured the role played by Ndaus sacredness, taboos, and folklore in biodiversity conservation.

The belief systems' relevance and resilience around conserved landscapes/sites are symbolic and a reality when contrasted with other open landscapes across the same community where unregulated human activity is common. The latter depict landscapes under degradation with soil erosion leading to loss of agricultural land and biodiversity. This research paper therefore highlights contrasting conservation realities in the same community across adjacent landscapes. It is interesting to note how the spiritual belief systems have played out a significant role in nature conservation in Nyagadza area. However, the resilience of spiritual belief systems to both local and transnational forces of globalisation for example whilst exhibiting dualistic contrasting landscapes in the same community is of great interest to this study.

1.5. Significance of the study

The scope of this research is a wake-up call to individuals, communities, researchers, and policy makers in Zimbabwe and elsewhere, to document and incorporate indigenous local knowledge

particularly traditional spiritual belief systems as a valuable knowledge base, particularly in biodiversity conservation. This is a critical framework which exists at the junction of culture and sustainable development, and this is an emerging and indispensable theme in the development discourse. The focus of this research also calls for policy formulation and implementation that promote positive cultural practices, identity and language of a community.

It is beyond doubt that the existence of local conservation frontiers sustained by Ndaou traditional and indigenous belief systems is a remarkable achievement in a world faced by climatic changes caused by anthropogenic forces like urbanisation, industrial and agricultural expansion. This is a key learning point that justifies the point that research can equally serve the future of our societies when it makes a commitment to learn from knowledge especially traditional belief systems otherwise usually dismissed as archaic. Whether the indigenous local biodiversity conservation outcomes are intentional or not, the truth is that, the survival of indigenous communities and indeed their natural environment can best be articulated by inherently existing knowledge systems and practices particularly their spiritual belief systems. It is clear that other research projects of a similar nature stand to benefit from the findings of this study as baseline data for further research.

1.6. Research Assumptions

This research was hinged on assumptions that spiritual belief systems contributed to biodiversity conservation, and that there was a symbiotic relationship involving cultural beliefs, practices and biodiversity conservation.

1.7. Delimitation / Scope of the Study

The study was conducted in ward 17 of Nyagadza resettlement scheme which consists of three villages of Machona, Mhute, and Mbiri. These are villages drawn from the first resettlement schemes that were established soon after independence between the years 1981 to 1983. This area lies approximately 50 kilometres south west of Chipinge town. The community is still deeply rooted in traditional culture and spiritual beliefs which are linked to their natural surroundings. It is important to note that this research focus much on the colonial and post colonial period among the Ndau people up until the present day. Reference to the pre-colonial times is meant for situating the discussion in the context of how traditional knowledge and belief systems have evolved over time.

1.8. Limitations of the study

Considering the sacredness of the pristine landscapes, and the traditional / spiritual cultural attachment given to the landscapes by community members and traditional leaders, the researcher was not able to gain physical entry into some of the landscapes. Entry into these areas is prohibited, unless the purpose is strictly for cultural reasons, and any entry is therefore appropriately regarded as an abomination and a desecration of the places. The researcher therefore was not able observe and note closely the physical configurations and characteristics of the virgin forest land, pools, trees, and gravesites.

It is clear that knowledge related to cultural and especially traditional belief systems and practices is a preserve of the respected elderly, spiritual leaders and others like chiefs. These people are not easily / freely reachable, neither are they open to discuss matters of the ‘spirits of

the land' with the public or individuals, and especially young people like this researcher. In that regard, this research missed on some important information on the subject because the respected individuals who abode such knowledge were few across the community and they were not keen to entertain in-depth discussions on the subject. In addition some vital information pertaining traditional herbs and deep understanding of traditional healing remained the secret of traditional healers as the healing spirits never allow the healers to disclose secrets of the trade.

Time was also an important factor, and a research of this nature requires more time in the field with communities. However, it was not possible given the limited time frame between time in the field and when the research was supposed to be ready for submission. There was also a language barrier, and this resulted in some instances the research using Ndau terms for different plant and animal species because finding the equivalent English names required more time. Nonetheless, this also served in retaining Ndau language originality and identity which is also critical in this discussion.

1.9. Research Objectives

The specific objectives of the study are:

- a) To establish the application and use of traditional indigenous knowledge, especially traditional belief systems in biodiversity conservation.
- b) To identify and determine whether Ndau traditional belief systems and practices in Nyagadza are related to biodiversity conservation.
- c) To establish the current state of biodiversity conservation in Nyagadza area.
- d) To investigate Ndau community consciousness about the importance of biodiversity.

- e) To establish any threats and challenges to Ndau traditional knowledge and belief systems in biodiversity conservation.

1.10. Main Research Question

How are Ndau traditional belief systems related to biodiversity conservation?

1.10.1. Sub-Research Questions

- a) What are the Ndau traditional belief systems related to biodiversity conservation?
- b) How are Ndau traditional belief systems used in biodiversity conservation?
- c) Does the community have consciousness about the importance of biodiversity conservation?
- d) What is the current state of biodiversity conservation in the community?
- e) What threats and challenges exist in the use of traditional belief systems and knowledge in biodiversity conservation?

1.11. Research Methodology

This is an explorative research paper which exhibited the Ndau spiritual belief systems and cultural experiences especially in their relation to biodiversity conservation in Nyagadza area. The researcher employed qualitative research methodology, and data gathering was led by open ended interview guide questions which gave room for probing issues from key community informants like the headman, chief, spirit mediums ‘*masvikiro*’, the elderly, and the traditional healers. The same interview guide was also used for selected Focus Group Discussions (FGDs) with elderly members of the community. A group of post secondary education level youth was

also randomly selected to find their views and perceptions on traditional knowledge and spiritual belief systems.

The use of qualitative research ensured a deep inquiry and understanding of Ndau cultural practices and their relationship with the natural environment. This assisted in finding out the reasons and activities that define the Ndau spiritual belief systems and biodiversity conservation.

Both the participants for key informant interviews (except for the youth groups) and the FGDs were selected using purpose convenient sampling technique basing on their age, experience, knowledge and capacity to understand issues around traditional indigenous knowledge and spiritual belief systems. Work with all the key informants and FGDs was interactive and gender sensitive with the understanding that they are some gender specific cultural roles and knowledge on Ndau spiritual belief systems. Focus on separate key informants, and FGDs with the elderly and the youth was part and parcel of cultural mapping which was done to capture the configurations and the changing dynamics of the Ndau spiritual belief systems, as well as the likely emerging threats and challenges to the belief knowledge systems over time.

It is important to note that the researcher is of Ndau origin, and this worked well in understanding the Ndau protocols for effective communication and creation of good rapport with research participants. A good example is how the researcher familiarised well with the cultural preliminaries when consulting community leaders and the elderly such as *muromo wamambo* (literally translated to the 'chief's mouth), which is a financial token for requesting permission to discuss with community leaders, and the *nhlombe* procedure which is an indispensable cultural ritual of dedicating the meetings to the community spirits through clapping hands.

The researcher was therefore in a very good position to probe further on salient issues that required clarification. This also helped in understanding essential information in its original context and language. Thus most names of flora and fauna carry Ndaou terms and descriptions so as to avoid distortion of meaning in relation to their value, use and importance.

The research also involved the use of secondary desk study data through academic journals, books, online publications, reports and news bulletins to create an in-depth understanding on the subject. Systematic direct observation was also used, and the researcher employed field notes to keep an accurate record. These notes recorded verbatim and summed first hand field information.

In total four mixed gender FGDs were conducted with two for the elderly and two for the youth to middle age group. Twenty people participated in each discussion with an equal representation of both males and females. Two traditional healers (one male and one female) were part of the six key informants which included the chief, headman, and one male and one female spirit medium.

Both primary and secondary data was collected and analysed in order to create an appropriate checklist of common indigenous knowledge terminology used in biological resources conservation. More focus was on spiritual beliefs, like taboos, totems, sacredness, rituals, witchcraft, superstition, grave sites, traditional healing, and other spiritually connected practices and their linkage to biodiversity conservation. The study was limited to cultural activities and belief systems that totally and/or partially prohibited any use of particular plant and animal species. It also focussed on all spiritual practices and beliefs aimed to conserve certain sites and landscapes like rivers, mountains, grave sites, forests, pools and caves which all became sacred within the spiritual understanding. The primary and secondary data collection and analysis was

done to capture the changing belief system dynamics and the emerging threats and challenges to traditional belief systems.

1.12. Conceptual Framework

The study employed mainly five related theoretical frameworks in exploring and understanding how Ndau people make use of their traditional knowledge, and how the traditional belief systems are related to biodiversity conservation. The first is the *ecocentric environmental ethic* which portrays all activities as right as long as they promote and preserve the identity, stability and aesthetic values of the natural environment (Berkes, 1999). It however labels any activity as otherwise if it tends to degrade the same environment.

Thus whether the aim is intentional or not, the ecocentric environmental model looks at the outcome as justification for the overall aim. It is therefore important to note that the existence of conserved sacred landscapes and sites among the Ndau people of Nyagadza fits this model. It is a positive outcome of a conservation practice which existed in the community consciousness, and born out of traditional belief systems that identified sacred places and let alone respected them by maintaining their natural outlook and endowment.

Nevertheless, the *ethnocentrism theory* is based on the deep seated belief of ‘our way’ of doing things, and inherently decides to stand out as superior to all other possible paradigms. This is rooted in the spirit of colonialism that lingered in the academia and western science (Cox and Elmqvist, 1992; Said, 1978). It is this concept that unfortunately has greatly denigrated and overshadowed traditional biodiversity conservation knowledge. Cox and Elmqvist, (1992) observed that the *ethnocentrism concept* has two facets that, first it was the unwillingness to

consider indigenous knowledge systems on their own merit rather than evaluating them in Western terms. Secondly, *ethnocentrism* often manifested an overt hostility when confronted with indigenous ways of sustaining and looking at conservation (Cox and Elmqvist, 1992).

Thus the concept greatly contributed to cultural imperialism and eco-colonialism which totally sub-valued traditional conservation knowledge (Colding and Folke, 1997). This therefore brings into focus another theoretical dimension to this research, which is how colonialism affected African-Ndau spiritual belief systems and biodiversity conservation. It is clear that the post colonial era conservation practices are to a greater extent a product of what was left between the interface of African-Ndau knowledge and colonial conservation knowledge systems with the latter taking a dominating role which threatened the survival of the former.

This captures the confrontation between western and indigenous cultures something which dates back to the earliest European views of cultural supremacy and hegemony which manifested during colonialism. The belief that western thinking and practice was fundamentally better than especially African indigenous world views is still forceful even today. A few westerners are willing to trust indigenous knowledge systems in crucial decisions pertaining medicinal care, legal adjudication of conflict and the distribution of personal property (Cox and Elmqvist, 1991). Thus this research provides an opportunity to dispute such academic and scientific flaws. It positions and values indigenous local knowledge systems in conservation rather than viewing it as obsolete, weird or a relic of the past as previously put across by some academic/scientific constructs (Dove, 1988; Edgerton, 1992).

However the *stewardship environmental ethic* which also informs this research looks at humans as stewards who takes care and managed their environment very well irrespective of

geographical location (Appiah-Opoku, 2007). In this sense, environmental stewardship challenges human beings to be good stewards, custodians, and/or shepherds of creation, and therefore charges humans with the responsibility for care of the environment (Attfield, 1983).

This notion of stewardship has featured prominently in environmental history, particularly in theological discussions of the nature of human responsibility to the nonhuman natural world (Warren 1994). The theory also goes further to state that negative management and exploitation of the environment and biodiversity entailed bad stewardship. Clearly, the existence of pristine landscapes in Nyagadza draws from this recognition which looks at communities and their belief systems acting as stewards and in protection of the natural environment. The theory as noted above acknowledges bad stewardship which in this instance may explain the open degraded landscapes across Nyagadza.

The foregoing model is related to the third *cultural conservation ethic* which identifies an indispensable link involving culture, language, indigenous knowledge and ecological diversity (Gadgil et al, 1993; Negi, 2010). Thus where the ecocentric environmental concept looked at how mankind's action on land could be exonerated as long as the outcome conserved nature's integrity, the *cultural conservation ethic* celebrates at the existence of an inextricable link and function of a people's belief system, practice, and language in biodiversity conservation.

This model identifies and strikes a rich symbiotic relationship between a people and their natural environment with generations after generations making use of the inherited knowledge to survive off the natural environment, and the latter benefitting in return through species retention, regeneration, and recovery. Indeed, this seems to exist at the heart of the survival of the forested

landscapes and other sacred sites across Nyagadza where the knowledge to conserve them has been passed down through clear spiritual belief systems, folklore and related practices.

Perhaps that symbiotic relationship and awakening is a product of experiences overtime where humankind made the realisation that biodiversity was caught at the extinction and/or depletion fault line hence needed to be conserved and/or protected. This brings into picture the fourth model to this research, which is the *extinction crisis framework*. This argues that life forms on planet Earth continues to slide into extinction, thus there is need for urgent action to reverse the scenario. Interestingly, this framework captured the human hand in both leading the crisis, and putting urgent remedial measures to combat the depletion and extinction of biodiversity. Ideally, indigenous spiritual belief systems as representing the human action to reverse biodiversity degradation and enhance diversity cannot be ignored.

The *crisis extinction theory* has given credit to the fact that humankind therefore overtime has learnt to employ means and ways to avert the crisis, of which the traditional spiritual belief system became one fundamental among the Ndau people. Over-exploitation of resources has in current generations revealed the fact that the survival of future generations is under threat if current exploitation trends are not regulated. Having realised and experienced the over-exploitation of natural resources, this brought into picture Holing et al's, (1997) '*crisis-and-learning theory*,' which looked at taboos and other belief systems as intentionally crafted to meet conservation goals.

1.13. Literature Review

Despite increasing attention in academic and development institutions, there is no unanimous understanding and agreement on the concept of indigenous local knowledge. UNEP (2008) captured a range of terms like, “local *knowledge*,” “*traditional knowledge*,” “*indigenous traditional knowledge*,” “*indigenous technical knowledge*”, “*traditional environmental knowledge*”, “*rural knowledge*” and “*traditional ecological knowledge*” to refer to the subject. This research opted for “*traditional indigenous knowledge*” which points to both indigenous and local traditional knowledge. The term “*indigenous people*” imply the original inhabitants of a particular geographic location who have a distinct culture and belief system. The people might have migrated to live long enough in an area but still retained their old traditional practices and belief systems (UNEP, 2008).

Thus in addition to the term “*traditional indigenous knowledge*” this research also uses the term “*traditional indigenous people*” to refer to this group of people who abode “*traditional indigenous knowledge*” and “*traditional belief systems*” which refer to their beliefs, knowledge and practice. Thus *traditional indigenous knowledge* becomes that local knowledge, which is unique to a given culture or society (Warren, 1991; Flavier et al, 1995). “*Traditional belief systems*” therefore stem from *traditional indigenous knowledge* bases and are those beliefs vested in the traditional religious reasoning and practice (Appiah-Opoku, 2007). Both the terms indigenous or traditional knowledge and/people are used interchangeably in this study.

Flavier (1995) and Warren (1991) added that traditional indigenous knowledge systems contrasted themselves from the international knowledge systems generated by universities, research institutions and private firms because they are crafted for local-level decision making in

numerous fields among indigenous local communities. Thus, this makes traditional indigenous knowledge systems dynamic since they are continually influenced by internal creativity and experimentation (Flavier et al, 1995).

This research therefore makes an emphasis on the uniqueness and resilience of this traditional indigenous knowledge base particularly the traditional belief systems which have stood the test of time in biodiversity conservation. The paper explores how the belief system(s) have led to the existence of untamed (natural, uncultivated and unspoiled) landscapes like gravesites areas, mountains, water courses, plant and animal species all enshrouded in traditional belief sacredness and mystery in Nyagadza area, and, yet adjacent to these natural and unspoiled areas there is evidence of clear landscapes facing degradation.

The foregoing brings into context the fact that indigenous people carry local belief systems and practices that put them as exemplary conservationists, and this has gained popularity in the mainstream academic media (Smith and Wishnie, 2000; Negi, 2010; Berkes et al, 1995). In the case of the Ndau community Martinez (1996) and Berkes (1999) validated that indigenous conservation has often been linked to a spiritual respect for, and a practical comprehension of the natural world. As a result, these areas that are protected by traditional belief systems have become the natural home to numerous plant and animal species (Appiah–Opoku, 2007; Githitho, 1998). There are therefore numerous cultural, spiritual beliefs and practices that have expressed a conservation mentality and ethic, and these place high value on looking at other species as social beings hence the richness and multiplicity of life forms found in such sacred places / sites (Gadgil et al, 1993; Githitho, 1998; Appiah Opoku, 2007; Alcorn, 1996; Bernbaum, 2006).

Naturally, traditional belief systems are still an essential broad knowledge base which has been used by communities for their survival since time immemorial (Appiah-Opoku, 2007 ; Gadgil et al, 1993). Langton and Ma Rhea (2005) however made a distinction between indigenous knowledge and indigenous belief systems with the former standing in for collective traditional knowledge, innovations, songs, local language, stories, proverbs, agricultural practices, community laws and techniques of indigenous and local communities around the world. The latter is collectively believed and come in the form of cultural values, beliefs, taboos, rituals, sacredness, including community laws and totems. The distinction is however not smart as both refer to some cultural traits, belief systems and practices.

A particularly striking case study by (Byers et al, 2001) observed that Shona people in the Zambezi Valley of northern Zimbabwe valued sacredness. The people regarded trees, rivers, pools, mountains, and even whole mountain ranges to be sacred, and their concept of a sacred place, '*nzvimbo inoera*' meant something that was life sustaining and linked to the survival of the people and especially the fertility of the land. Associated with the belief systems are certain rules of access as well as behaviours that are not allowed (taboos). Byers et al (2001) discovered that deforestation was at least 50% lower in sacred forests than adjacent places. They added that about 133 species of native plants occurred in those sacred forests, whereas they were variously threatened, endangered, or faced extinction elsewhere in places not under spiritual sacredness guardianship.

These researchers concluded that strategies for biodiversity conservation that linked cultural practices and nature were more likely to be effective than those imposed from the top down by government and/or international agencies that ignored the traditional beliefs, values, institutions,

and practices of local communities. Thus, a similar dedication of forests to a deity and spirituality, inherent taboos regarding resource exploitation and traditional beliefs and customs form the crux of understanding biodiversity conservation among the Ndau community of Nyagadza in Chipinge.

The challenge that however remains is that indigenous local knowledge significantly lack systematic documentation other than the knowledge passed down by word of mouth done by elders for it to sustain itself into the future (Gadgil et al 1993; Langton and Ma Rhea 2005). Traditional indigenous knowledge has also been dismissed as irrational; lack especially a clear conservation interest and a hindrance towards development (Edgerton, 1992; Dove, 1988; Rea, 1981). Alvard (1994; 1998) further argued that taboos may not have been adhered to by some groups and, consequently they may be of no value in biodiversity conservation. Zann (1983) contemplated that taboos related to the natural environment may have not been initially intended for nature conservation.

However the foregoing criticisms escape the ecocentricism or cultural conservation ethic celebrated by (Negi, 2010; Berkes, 1999). The ethic exists in, and celebrates at the role of practices like taboos, sacredness and rituals in biodiversity conservation. In addition, traditional belief systems experiences in Nyagadza which this research articulated clearly show that the documentation and pass on of the knowledge by word of mouth is not only unique, but is consciously woven into the survival of the community.

Berkes et al (1995); Colding and Folke (1997) went on to note that sacred places have become a new frontier for interdisciplinary research in biodiversity conservation. They further observed that the religious or cultural designation of natural areas as sacred may either intentionally or

coincidentally promote the conservation of the constituent natural resources and their diversity. Berkes (1999) noted that indigenous conservation has often been attributed to a spiritual respect for, and a practical understanding of the natural world. It is however worrying to note that with each successive generation culture slowly fades, and sometimes with its knowledge base, hence the relationship between cultural practices and biodiversity conservation is likely to change and in some instances negatively.

Notwithstanding the latter view, this research unearthed the exceptional role played by spiritual beliefs because the existence of open degraded landscapes in areas where spiritual sanctions and taboos do not operate, or are not fully enforced, whilst other neighbouring landscapes existing in traditional sacredness remain intact and forested is surely not by default, but credit is given to the belief systems and taboos.

This is how this research comes in handy and wishes to add to the existing body of knowledge on the value of indigenous knowledge systems on biodiversity conservation through focus on how Ndau spiritual belief systems are not only resilient, but that a slack, or failure to stick to the provisions of the belief systems and practices has detrimental effects on the natural environment like unregulated land degradation. It is therefore apt to suggest that spiritual belief systems value biological resources as social beings hence their conservation (Colding and Folke, 1997; Negi, 2010; Berkes 1999; Appiah-Opoku, 2007).

In that regard, the research captures the reality that conservation is not necessarily naturally vested in the mere existence of a people, but much more in their socio-cultural identity and restraint and action provided by traditional belief systems of sacredness and a connection of the natural environment to the spiritual world that define a cultural people. This is so because the

nature of mankind is marked and marred by greedy and selfishness. There is an inherent propensity to plunder if mankind is left to no instruction, and/or restraint communication or signal.

Thus this paper notes that '*fear*' of the spiritual and unknown repercussions sustained by the strong belief systems narrative is paramount in instilling a strict and conscious conservation mentality among the Ndaou people in Nyagadza. That has become to be part of their identity, and traditional authorities like chiefs, traditional healers and spirit mediums stand at the centre of enforcement and monitoring to ensure that the spiritually sanctioned places retain their profile as places where the gods that protect the people live.

This research draws inspiration from perspectives that have tried to understand biodiversity conservation in the context of natural disasters management, agricultural production and food security, food preservation and storage and health care (Colding and Folke, 1997; UNEP, 2008). From these perspectives it is clear that local knowledge has enabled communities to be adaptive and achieve stable livelihoods which identify them with their environment for generations (UNEP, 2008, Gadgil et al, 1993; Negi, 2010; Tanyanyiwa and Chikwanha, 2011).

The resilience of Ndaou spiritual belief systems in standing against the forces of colonialism and globalisation and/or technological advancement and remain relevant to biodiversity conservation is therefore remarkable and worthy exploration. This becomes critical in an age where the recognition of indigenous knowledge especially belief systems has been down played by western centric models of understanding biodiversity conservation. Despite the International Union for the Conservation of Nature and Natural Resources (IUCN) and the United Nations Conference on Environment and Development's (UNCED, 1992) recognition of indigenous knowledge as an

invaluable body of knowledge in biodiversity conservation, the process of its application has been slow and largely frustrating.

Perhaps the slow recognition and application of the knowledge is a result of the fact that traditional knowledge systems, including Ndaou spiritual belief systems have largely remained invisible in contemporary times because they mainly exist in orature and folklore, and are easily identified with rural backward areas (Berkes, 1999). This has also compromised the existence of local communities who apparently are at the centre of the survival of their traditional knowledge belief systems.

The slow pace in application is also a manifestation of the western knowledge resistance and intolerance against the authenticity of indigenous knowledge and belief systems. This has limited the full integration of indigenous knowledge systems into mainstream natural resource management. Indigenous traditional knowledge and beliefs have often been dismissed as unsystematic and obsolete (Dove, 1988), and with these misconceptions, the knowledge and beliefs have not been fully captured and stored in a systematic way thereby threatening the knowledge with extinction (Langton and MaRhea, 2005).

In addition, western knowledge's scientific supremacy over other cultural societies has rendered indigenous knowledge less important and irrelevant (Tanyanyiwa and Chikwanha, 2011, Holling et al, 1997). Tanyanyiwa and Chikwanha (2011) further pointed out that even numerous agriculturalists, scientists, botanists and biologists working in developing regions have not been willing to fully integrate indigenous knowledge systems as a strategic base of knowledge for biodiversity conservation. A lot of issues therefore have contributed to indigenous knowledge particularly the spiritual belief practices to be less acknowledged by most academics, and the

majority have failed to fully relate it with nature conservation (Rea, 1981; Dove, 1988; Edgerton, 1992; Stevens, 2009).

Nevertheless, the Ndaou people in Nyagadza represent the embodiment of a community's indigenous local knowledge systems, and the placement of value on their belief systems marked by rituals, taboos, and sacredness. Whilst the traditional spiritual belief systems might stand to serve other purposes, it is their unique relevance and reference to biodiversity conservation that is very significant and interesting in this study. It is common sight across Ndaou communities to find pristine (virgin) forest and/or bush land, and the existence of such places is inextricably linked to the people's cultural traditional belief systems which identifies, or associates the places and vegetated landscapes to sacredness and they are often regarded as places where the gods or spirits of the land live.

There are mountains and hills, as well as water sources/courses that have received a similar respect linked to the '*marombo*,' or spirits of the land that bring good harvests, rainwater and good fortune to communities. The belief systems have found relevance and expression through the custodian punitive fines that are imposed by traditional leaders on those accused of 'desecrating' the land through for example unsanctioned use, or cutting down of trees, open defecation, killing of sacred animals or unsanctioned visits to sacred places like hills, water sources and mountains.

One significant characteristic of traditional indigenous knowledge systems; beliefs and practices, has been their resilience in the face of contemporary knowledge and modern technological advancement. The resilience which is represented in cultural practices, taboos, folklore, traditional religious beliefs, and language has to a larger extent played a significant role in

biodiversity conservation among the Ndaou people of Nyagadza community in Chipinge. Negi (2010), Gadgil et al (1993), have noted that in traditional societies sustainable natural resource management was intentionally or unintentionally driven by community beliefs and behaviours, and the local cultures strengthened this close connection to the natural environment which sustained them. Interestingly, taboos became the unwritten social rules that controlled human behaviour (Colding and Folke, 1997), and many times directly managed many parts of the natural environment.

Alcorn (1992) nonetheless, observed that though conservation is biological, conservation itself is a socio-economic political issue which is vested in, and practised under socio-economic contexts. This observation by Alcorn dismissed the view of glorifying indigenous and traditional people as good conservationists by themselves as observed by (Gadgil et al, 1993, Negi, 2010, Githitho, 1998).

Thus associating cultural communities with conservation might be a question of socio-economic instances when there was low population and low population growth for example viz-a-viz abundant resources in indigenous communities. At the same time, the observation is that, human interaction with the same environment might degrade the latter when there are other pressing priorities like monetary and economic demands like agricultural cultivation and expansion, hence the existence of open degraded landscapes in Nyagadza.

These economic demands have huge effects on biodiversity. Effects on simple and normal livelihood activities by local people like exploitation of forest resources for construction and carpentry, firewood, food and other domestic needs has been overlooked and underestimated. Indigenous local communities like the Ndaou can also plunder their resources because of the need

to survive and/or earn an income through exploitation of forest/land resources. This is one area that challenges the relevance of Ndau spiritual belief systems in biodiversity conservation. The current economic priorities like agriculture have led to the development of degraded landscapes, and who knows over time the degradation may find place in the present sacred places. For now, however it remains interesting how some landscapes have remained untainted even under the same socio-economic circumstances as the situation in Nyagadza indicates.

In this instance it is interesting to note how the relevance of traditional indigenous knowledge in biodiversity conservation and degradation is, or may not be related to the presence or absence of socio-economic arrangements like modern legislation or policy arrangements. The Zimbabwean context portrays the above where, despite the existence of pieces of legislation like the Forestry Act of 1954, the Parks and Wild life Act of 1975, and more recently the Environmental Management Act of 2004, natural resource mismanagement, and unregulated exploitation of bio-resources is still rife especially in most communal areas of Zimbabwe (Tanyanyiwa and Chikwanha, 2011).

The challenge is that these pieces of legislation were enacted using the top-down approach especially during the colonial era and the public was not consulted to incorporate their knowledge in the conservation of resources, hence their depletion. It is clear that Ndau biodiversity conservation knowledge and practice is united around the sacred places, and hence participation and appreciation from all members of the community, and this has harnessed indigenous knowledge for biodiversity conservation.

Thus what also comes from this research is that one of the major causes for the degradation of biodiversity products, both land and aquatic is possibly the fact that traditional indigenous

knowledge systems which for generations were working well have been ignored and deliberately sidelined. Currently there are no pieces of legislations in Zimbabwe that fully cover the protection of indigenous identity, knowledge, language and culture in relation to biodiversity conservation.

Attempts through the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) which promoted community based wildlife and natural resources management have been in place across some rural districts since the late 1980s, but this has remained technically modelled at rural district council level, and has failed to be adopted as a national strategic framework to understand and acknowledge the importance of indigenous knowledge systems in biodiversity conservation. Though the new Constitution recognised more than sixteen (Constitution of Zimbabwe, 2013) official languages which include the minority languages like Ndaou, the education system is still dominated by English, Shona and Ndebele as the languages of study and instruction. It is beyond doubt that language, and the Ndaou language in this case is the medium within which knowledge systems and practices have been passed down from one generation to the next, thus representing an instrumental identity and qualified record of information.

This research among other things suggests that any extinction of spiritual belief systems can as well result in the disappearance of the remaining pristine landscapes, mountains, caves, pools, gravesites or even specific species currently enshrouded in sacredness and existing in their diversity. This can be possible since landscapes that are not currently enshrouded in sacredness have already been evidently degraded yet they were once vegetated (Githitho, 1998). Thus within indigenous local communities it is interesting to note how indigenous local people respect

local rules and institutions. This is evidenced by degraded landscapes that exist in areas that fall outside the boundary of sacred landscapes. Understanding of the Ndaou spirituality; taboos, customs and the attendant institutions is therefore critical in ascertaining the situation of both the degraded and untainted landscapes in Nyagadza.

The word is, governments, intergovernmental and non-state organizations should respect, record, and work toward incorporating indigenous knowledge systems into research, and development programmes for biodiversity conservation (UNCBD, 1992). This research observed the challenge to be stemming from the ignorance at national governments level to craft binding policies and commitments that safeguard the cultural identity and knowledge of indigenous local people. The policy implementation will be essential in safeguarding identity resilience, culture, language and knowledge of indigenous people which is currently being threatened by acculturation and globalisation. Safeguarding the identity of these groups will help in safeguarding huge biodiversities as well as amicably address the challenge that come with the intersection of economic opportunities / the need to survive and natural resources conservation.

Chapter 2: Ndau Cultural Practices and Biodiversity Conservation

2.1. Introduction

This chapter discusses the Ndau cultural spiritual belief systems and practices related to biodiversity conservation. It puts the history of the Ndau people and culture into perspective, and provides an in-depth understanding of the different Ndau traditional spiritual belief systems and practices.

2.2. Historical Origins of Ndau People

The Ndau people trace their origin from Zululand, South Africa where they broke away from the Zulu state during Tshaka's reign. The Ndau fled from Tshaka's tyrannical rule during the 'Mfecane,' or 'time of troubles' in Zululand. Under the leadership of Soshangana the group entered south eastern Zimbabwe and settled at Gaza in Chipinge. Some of them proceeded into modern day Mozambique and this is how the Ndau in Chipinge ended up having relatives in Mozambique.

However, during one FGD, an elderly man noted that there were Ndau people living in Chipinge well before the arrival of Soshangana from Zululand. Nonetheless, one female respondent emphasized on the link to Zululand with a reference to many Ndau family names like *Dhliwayo*, *Nkomazanza*, *Hlahla*, *Dhlakama*, and *Sithole* among others which are equally of Zulu or Ndebele origin. She further expressed how Ndau culture and practices like *madanda* carried some Zulu practices and beliefs, which are mirrored in cultural ritual practices like *madzviti*, *zvipundha*, and *hondora*.

2.3. The link between Ndaou spiritual belief systems and biodiversity conservation

In Zimbabwe, Chipinge district and especially the Ndaou people are identified by strong traditional practices often manifest in witchcraft activities, myths, belief in ancestral spirituality connected to the spirits of the dead, and the prevalence of traditional herbalists who credit their magical healing powers to their ancestral spiritual world. In sum, Nyagadza area, like many other places across the district has people who devotedly pay homage to their traditional belief systems and this is often expressed through traditional rituals and worship of their ancestral gods and spirits.

Ndaou spirituality therefore values every biological resource as a social being that should be culturally respected. One spirit medium (Guruza, 2014) noted that Ndaou people believe that there is a Great Spirit or the Creator known as (*Musiki / Musikaanhu*) meaning the creator of humankind, animals and all creatures, and indeed everything (Gelfand, 1988). One elderly man proclaimed that *Musikaanhu* is responsible for the rains, good fortune for every living organism and the community at large (Chikumba, 2014). The elderly man reiterated that Ndaou people believe that *Musikaanhu* is never seen but is great and sustains all life forms on earth. The Ndaou worship *Musikaanhu* through the dead ancestral spirits locally known as *magwasha / midzimu or marombo* (Mashandisana, 2014). If well appeased the ancestral spirits especially the spirits of dead great chiefs, grandfathers and aunts (*midzimu yeumambo*) bring good rainfall and harvests as well as blessings to the community (Guzete, 2014).

Musikaanhu and the spirits are believed to live in certain physical landscapes across the community, and these include plant and animal life. The landscapes and their vicinity all become

sacred spaces where the gods and spirits of the land live. As a result, the landscapes are supposed to be kept free from any human interference.

Clearly this is how the Ndau spiritual belief systems such as taboos and sacredness have become connected and useful in the conservation, if not *preservation* of pristine landscapes in Nyagadza area. These are naturally endowed spaces like mountains, hills, plant and animal species that are spiritually sacred, and their conservation is contained in the traditional spiritual indigenous knowledge systems of the Ndau. The spirits of dead chiefs; chieftainship spirits are also part of the forest spirits *marombo* that dwell in the landscapes and bring to the community essential resources like rains on behalf of the Creator.

All the elderly key informants during the FGD noted that the same *marombo* spirits wielded the power to cause misfortunes and other calamities to the community upon defiling (breaking the rules of conduct) places where they stay, and this could simply be any unsanctioned activity in the mountains or rivers where the spirits live. Ndau people believe that crimes such as murder and incest angered forest spirits to justify the misfortunes that might befall a certain community (Moyo, 2014). The rage from the forest spirits would result in the outbreak of drought, famine, and/or pests that destroy crops as well as diseases such as small pox (Ibid, 2014).

Mrs Garara (2014), a female spiritual medium informant stated that, the community often conducted sacrificial rituals to appease the spirits. During the rituals a black male goat would be slaughtered, offered and dedicated to the spirits at the chief's burial shrine. The goat is roasted and eaten without salt at a shrine found in the sacred forests in the community. After the ritual some cultural 'immoral' songs (*zvitsverudzo*) are sung as part and parcel of the cultural ritual specific to appeasing the spirits of the chieftain clan (Ibid, 2014).

Another female respondent also noted that beer would be taken and poured on the shrine graves as a cultural practice to further appease and calm (*kutondhodza*) the spirits of the dead. After going through such cultural protocols the community often received heavy down pours (rainfall) on their way from the shrine as a signal that their evil deeds had been forgiven, thus their prayers answered (Guruza 2014). One elderly male respondent, (Magen'a, 2014) further confirmed that the ritual is a cultural practice for rainmaking and the provision of other community necessities like edible insects and worms, wild fruits, mushroom, wild game and a bumper harvest.

In Nda culture, the chieftainship clan is associated with the *dziva*, (*water, or water pool*) totem which prohibits the consumption of any aquatic animals like fish, frogs and crabs that are commonly eaten by others in the community (Guzete, 2014). This is a special totem which symbolizes the authority of the *vadondo* clan, and it is associated with mermaid spirits in the community.

Respondents at one FGD further explained that in cases of poor rains and during droughts, the community conducted rain sourcing rituals (*makoto*) at the chief's homestead since all the chiefs belong to the *dziva* totem and the *vadondo* clan. The local chief reiterated that some rituals associated with *vadondo* were conducted at the dead chiefs' shrine or under offering trees in the community (Musikavanhu, 2014). The Chief added that Nda traditional practices were mostly centered on beliefs that if those spirits were appeased by some specific responsible elders belonging to *vadondo* clan, the spirits responded well to the community's concerns and expectations.

The local headman affirmed that these rituals were supposed to be conducted by specific and experienced elders who perform rain making rituals (*mapipi*) in special sacred offering houses

(*ngome*) at the chiefs' homestead (Guzete 2014). The elders after receiving the rains on the same or next day are expected to go into excitement where they ululate and chant '*Kowera Mambo! Kowera Mambo!*' implying 'Hail our Creator! Let it rain!' (Ibid, 2014). As confirmation that their prayers were answered, a mysterious thunder is also supposed to come from the nearby sacred *Mhungura* Mountain (Ibid, 2014).

In much the same as the rituals above Nyagadza community has some cultural resting days (*magarai*) which therefore control human activities in both forests and fields. Findings from the community reflected that these days were proposed with the consciousness that frequent human activity on the land would contribute to the depletion of the natural environment. One elderly man disclosed that it gave the land time to '*rest*' (Majazo, 2014). During such days entry into the forests is prohibited, and those breaking the law would face mysterious happenings (*maninji*) like getting lost (*chadzimira*), or being attacked by snakes or bees. Such beliefs and events invoked fear which led to people avoiding desecration of sacred places. This is a very strong narrative behind Ndaou traditional belief systems and biodiversity conservation. Essentially, if the resting days were to be calculated throughout the whole year, this contributed to significant time when human activities that degraded the natural environment were on halt thus contributing to biodiversity conservation.

The foregoing clearly indicates how Ndaou spiritual belief systems and practices carry a conservation ethic and motivation driven by the unique relationship that involves the natural environment, humans and their spiritual world. They are standard and non-negotiable rules of conduct that need to be observed to sustain the relationship. A good example is how the *makoto* practice and sacrifice is supposed to be conducted by elderly women who are past the child

bearing age as well as respected elderly men in the community. Any deviation from these protocols is considered as defilement on the spirits and the plant and animal figures / life that house them.

To reflect the symbiotic relationship involving the spiritual world, the Ndau people and the natural environment, the community offer fruits and traditional beer to the forest spirits under offering or deity trees (*mirombo*) as honour and gratitude for the good harvests (Moyo 2014). Free food offerings are also offered under the deity tree(s), and as a cultural practice the food is supposed to be eaten by anyone passing by the tree including strangers and other living creatures. Thus, desecration including defecation under these deity trees is strictly prohibited and is associated with bad omen.

The elderly informants disclosed that there were five offering trees (these include the *mutsamvu*, *mutsonzowa*, *musunganyemba*, *mutetete*, and the *muchakata* trees) in the community. These also provide shelter and life to other plant and animal species, bats, insects and birds. Therefore all plant and animal found up and under these trees is sacred. Ndau culture therefore thrives in the realm of respect and fear of the spiritual world which in the long run conserves the natural habitat. Traditional leadership both in spirit, and in the physical world continue to play a significant role in enforcing and reinforcing these cultural practices where in the latter traditional leaders are responsible for meting out stiff penalties in the form of livestock fines to those found desecrating sacred sites and landscapes.

2.4. Sacred landscapes and biodiversity conservation

The word ‘sacred’ in most societies implies something set apart as holy, honoured, respected and valued, and it is often associated with secrets and strict sanctions on entry, passage and use (Githitho, 1998, Byers et al, 2001). Sacredness (*kuera*) denotes something that is life sustaining and linked to the fertility of the land. This is based on beliefs that a sacred place (*nzvimbo inoera*) is where spirits of the community abide. Associated with it are certain taboos/rules of access as well as behaviours that are not allowed and/or are not accepted at specific sites.

Ndau people in Nyagadza community therefore consider a wide range of things that constitute their natural environment as sacred. This includes trees, rivers, pools, mountains, waterfalls, hills, caves, rocks, soil and forests among other things. Sponsel (2008) observed that there are also aquatic and marine features and life forms that are considered as sacred. These include some parts of wetlands, mangrove forests, estuaries, lagoons, beaches, islands, sea arches, sea grass, sea grass beds, coral reefs and tides.

In Nyagadza there are predominantly five sacred and traditionally protected forests, which are *Buwemarongwe*, *Soso Mhungura* and *Charowa* and the community grave sites. Their size range from less than one hectare to more than 100 hectares, and within them are different landforms, soil types as well as plant and animal species. Wildlife takes refuge in these forests to escape from fires and hunters elsewhere (Githitho, 1998), and the value of these forest is judged by the diversity of the plant and animal life forms that define the landscape.

Elderly people observed that plant species varied greatly in these forests, and some scholars like (Byers et al, 2001) have concurred with the observation, and noted that deforestation was at least

50% lower in pristine forests than in adjacent secular counterparts not spiritually sanctioned. They added that a variety of native plant species were found in abundance in sacred forest landscapes, whereas the same species were threatened by human activity and faced extinction in adjacent landscapes within the community where sacredness was not in practice.

Sacredness among the Ndaus has also been sustained by local traditional leaders who have the authority to designate certain areas like *Mhungura* forest and the local cemetery as exclusive spaces for traditional worship and burial respectively. Indiscriminate cutting of trees and other vegetation in these spaces is strictly forbidden. Any violation of the standing regulation attracts heavy fines usually in the form of cattle or goats. In addition, some trees are declared sacred; hence cutting them down constitutes a breach of community taboos and spirits. Folklore among the Ndaus has it that witches patronize some forests to practice and store tools of their trade, and this instilled fear among community members to violate the regulations, and let alone trespass the landscapes in question.

In Nyagadza *Buwemarongwe* forest is considered as sacred because it is where the great chief's aunt (*Mbiri*) was buried. She was a great aunt who used to be the leader of the Ndaus in Nyagadza. Ndaus still believe that her spirit continues to have authority, offer spiritual guidance and protection to the whole community. Nyagadza people still consult her spirit on community socio-cultural matters.

Though the sacred forests and landscapes in Nyagadza are now isolated, they represent remnants of what was once dense woodlands. As Githitho (1998) observed, such forests are botanically diverse because of their high conservation value. Closer to *Buwemarongwe* forest is also the

sacred *Mhungura* mountain range which has reports of mysterious animals that go round the mountain and are normally seen during the burial of a chief.

Sacred places are therefore regarded as places where the spirits of the dead are present, and the Ndaу people in this context believe that pristine forest landscapes are the dwelling places of spirits of the dead. Ndaу spiritual beliefs associated with such places control human entry and activities that may negatively impact on biodiversity. This forms the core of the Ndaу traditional management of sacred places. This is largely achieved through strengthening of spiritual beliefs and social rules and norms as well as the policing of passage and entry into these sacred places (Colding and Folke, 1997; Githitho, 1998). A walk around the community portrayed that these pristine landscapes stand out as the unexploited ecosystems in the community.

Taboos associated with these sacred places come with punishments for those who flout the rules and this has proven effective not only in controlling entry and passage through the forests, but the protection of the sanctity and diversity of the forests. If a breach occurs, purposely or unintentionally, intervention or mediation by spiritual leaders is done to prevent harm to the trespasser. In other instances, where desecration intentionally persisted some community elders invoked the anger of spirits to punish the trespasser (Chikumba and Nkomazana, 2014). Restrictions on access and use of sacred areas assist in the reduction and elimination of human interventions on the natural environment thereby protecting plant and animal life (Githitho, 1998; Appiah-Opoku, 2007). This is clearly contrasted with other adjacent landscapes not governed by traditional beliefs where degradation and unregulated environmental mismanagement is at play.

Sacredness in Nyagadza community is also associated with and driven by some folklore stories that invoke fear and danger, and they emphasise on unknown danger befalling those found in misconduct or in acts that defile sacred places. Sponsel (2008) noted that traditionally some sacred sites the world over are often accompanied by such stories. Though understanding of these issues remains a mystery to an outsider these beliefs and practices are real among the Ndaus. This is the secret to the power of traditional indigenous knowledge systems and falls in line with the beliefs of the Ashaninka people of the Amazon rainforests (Aljazeera, 2014) in Peru who believe that the earth has *lungs* that help it to breathe in the form of trees and rivers, hence cutting these lungs is prohibited and is believed to destroy the earth.

The strong belief among the Ndaus therefore is, calamities that affect the community are caused by the angered forest spirits and not the Great Spirit (*Musikaandhu*). This is because Ndau cultural beliefs associate the Great Spirit with blessings rather than curses (Moyo 2014). This is the reason why after a season of good harvests, the first harvest pickings are supposed to be dedicated to the spirits under the sacrificial trees (*mirombo*) as a thanksgiving ritual. Ndau spiritualism therefore has remained conscious of the importance of the diversity of biological resources because they sustain both plant and animal life.

To demonstrate their strong relationship with the natural environment, Nyagadza people commonly use a wide variety of biological resources for their socio-cultural, economic and medicinal survival. This makes the Ndaus a significant group of people to consider when exploring the relationship between sacred places and biodiversity conservation. Places like *Mhungura* Mountain, *Buwemarongwe*, *Charorwa* and *Soso* forests, are among some of the outstanding sacred places that speak of this relationship in the area, and they as well represent

the relationship between the past and the present with communities keeping the sanctity of present landscapes to fit in the jig puzzle of tradition and the future.

The relationship with the natural environment goes deep, and some sacred forests like *Soso* are only entered by ritual specialists, traditional healers, and/ or respected elders. One female local traditional healer (Moyo, 2014) disclosed that forest spirits (*marombo*) found in sacred landscapes and sites assisted the traditional healers in locating medicinal plants and knowledge. The fact that sacred places did not permit human entry implies how the landscapes have remained intact over time. Evidence of degradation in adjacent landscapes completes the justification that sacredness as a traditional spiritual belief system has significant links with biodiversity conservation.

2.5. Sacred sites and biodiversity conservation

In Nyagadza there are also numerous sacred water bodies and sites along river courses. These range from waterfalls / rapids (*fofoma*) and sacred pools (*zvizindira*). The Ndaou people associate the sites with some mermaid powers since culturally mermaids are believed to dwell in water bodies and places. Thus Ndaou cultural belief emphasize that there are mermaid spirits on almost all aquatic sites like springs, rivers, pools and waterfalls. These sacred places have for generations assisted in preservation, guardianship and management of aquatic bodies and biodiversity. In addition, water sources are essential sources of diverse medicinal species like reeds roots, frogs, water rhizome (*chitandira*) and local water beetles (*chiungurwa*).

One elderly female spirit medium disclosed that, whirl winds which blow during the dry seasons were culturally believed to emanate from sacred water bodies and associated with mermaid

spirits. Among the Nda, these whirl winds are believed to cause destruction of houses or roofs among those who might have trespassed areas and beliefs associated with sacred water bodies. The elderly disclosed that when a whirl wind destroyed some buildings in the community it culturally depicted the rage of the mermaid spirits.

Thus fear of provoking water spirits ensured community water and water sites management and protection. This in turn conserved any aquatic life forms found on / within the water sources thus contributing to biodiversity conservation. Mrs Moyo, the elderly female traditional healer narrated that whirlpools were culturally associated with the mysterious disappearance of those chosen to be granted a traditional healing gift by the mermaids which are believed to dwell under water (Moyo, 2014). She further explained that when the chosen returned on land they were endowed with traditional medicinal powers and knowledge which is highly valued within Nda tradition.

Disappearance of people in sacred rivers is a common phenomenon among the Nda people. In such incidents the relatives are not supposed to mourn over the disappearance of their relative for it would anger the mermaids resulting in the death of the captured person. Some elderly informants disclosed about the mysterious disappearance of a young boy who swam in a sacred pool along *Chipadza* River two decades ago. Despite the fact that some rituals for forgiveness were conducted at the site the boy was only returned dead after three days. One elderly male respondent (Chikumba, 2014) noted that another boy in the community had his back skin ripped off after swimming at (*madwayi*) which is a local sacred swampy area with numerous pools. Over time all these mysterious cultural beliefs have invoked fear among the Nda people, and

they ended up avoiding water sites thought to be sacred, and the sites have since retained their natural appeal and diversity

Mrs Moyo narrated how she obtained her healing powers after she went through months of underwater training. Though she was not at liberty to unpack the training protocols she acknowledged that when she came back on land she became the most highly gifted and respected traditional healer in the community (Moyo, 2014). The elderly thus confirmed that such traditional healers took the lead in promoting community consciousness on utilisation and conservation of medicinal plants and animals. Thus the conservation of biodiversity in Nyagadza is attributed to this conscious understanding of the demands of the spiritual world. Among the traditional healers conservation of all medicinal plant and animal life is also paramount in sustaining their livelihoods.

One male traditional healer (Gwerure 2014) noted that in the past most traditional healers were given additional traditional healing wisdom by mermaid spirits. He even reflected that some of their (*hakata*) bones used for sorcery (*kuringidza*) were creatures like sea shells thus depicting the fact that water spirits were paramount to traditional healing. Ndau culture embrace beliefs that sacred waters are home to mermaids (*njuzu*) which they believe contribute to the diversity of edible aquatic creatures like fish and crabs. Rituals like (*madanda*) are culturally held to celebrate and appease mermaid spirits they also believed to conserve water for domestic purposes even during dry and drought seasons. Mrs Moyo however contemplated that younger generations were drifting from this traditional knowledge thus posing a threat on the future of traditional indigenous knowledge. Most elders noted that Ndau culture was currently clashing

with other belief systems like Christianity with some people condemning Ndau spiritual belief systems and practices as evil, barbaric and acts of witchcraft (Moyo, 2014).

Nevertheless, one male traditional (Gwerure, 2014) healer observed that, without such spiritual practices and community rules of conduct their purpose and existence as traditional healers was under threat since in the long run medicinal plants and other creatures vital for the cure of critical ailments would get depleted. He further advised that the sustainability of the traditional healing practice was attributed to the existence of numerous sacred landscapes and water bodies endowed with biological resources.

Grave sites are also areas connected to serious Ndau spirituality which has seen them as the most conserved and densely vegetated places in the community. Thus visiting these burial places is strictly forbidden (except during burial of the dead or when unveiling tombstones) by beliefs that point out that any unsanctioned visits disturb and desecrate the peace and spirits of the dead.

As a result of the foregoing, the local cemetery is one of the most feared place across Nyagadza, and all this is vested on the belief that burial places abode evil spirits (*mabvuri*) which according to folklore led to fingers rotting when one pointed fingers at graves (Chikumba, 2014). Anybody who therefore enter the cemetery to collect firewood, or gather mushrooms is automatically dismissed as a witch or wizard as entry into cemeteries is traditionally linked to such groups of people (Ibid, 2014). Over time fear led to people upholding beliefs related to entry into cemeteries hence contributing to the sanctity and preservation of plant and animal life found within and around burial sites.

2.6. Sacred plant and animal species and biodiversity conservation

Ndau folklore has played a significant role in sustaining the sacredness narrative, and this has assisted in the preservation of some valuable wildlife forms. The narrative has placed value on certain specific insects, birds, plant and animal life, and all this has aided in biodiversity conservation. Small flies like the dragon fly are for example associated with rains; chameleons are linked to holiness, and regarded as messengers of peace from the Great Spirit of the land. Interestingly strikingly, there is also some unpredictable contradiction associated with the same plants and animals with the sight of a chameleon laying eggs for example believed to be associated with impending death of the individual or family member, yet meeting the same chameleon crossing one's path signals a peaceful journey (Musikavanhu, 2014).

In essence, this points to the nature of value Ndau spiritual belief systems and practice place on their immediate natural environment thereby the community has managed to conserve the same environment. Birds like the *soleya* and *maushamombe* (*stork birds*) are labeled unfit for human consumption, and yet the ultimate rationale is that such birds are important in tick control among livestock (Majazo, 2014). Sacred land and water plant/animal species play a significant in the lives of the people in Nyagadza. Some animals, birds and insects are considered “*unclean*” and therefore are not supposed to be hunted for food. Even animals considered as evil like owls, bats and hyenas are not eaten hence faced some protection. However these animals usually face unnecessary indiscriminate killings which are related to the evil label on them.

The Ndau therefore have a significant number of clans who associate most of their totems (traditional tribe and identity line belief system linked to, and only identified by a certain animal that the family pays respect and identifies with) to certain animals and plants. A good example of

such clan totems is the zebra which is linked to the *Dube* family, the *Nyoni*, *Hungwe* or *Mtisi* families which pay homage to the *chapungu* or *hungwe* birds. What it means therefore, is the zebra or, the birds in question are sacred and are not supposed to be killed and/or taken as food.

There are also some birds like the *dendera*, *konjana* and crow that are linked to certain traditional myths like rainfall prediction and are not supposed to be killed or eaten (Mapara, 2009). According to Mudenga, (2014) killing or eating one's totem contributed to teeth decay and premature death; hence people of a given animal totem fear and respect the traditional myths and beliefs related to the totems to the extent that the animals involved are sacred. This is similar to the Banyala people of western Kenya where pigeons are regarded as clan symbols and are never hunted for food (UNEP 2008).

In addition, only certain clans use products of designated animals. For example *njobo* or loin coverings made from leopard skins, pangolins, python skins are only used by members of the royal family (chieftainship clan) or during rituals. This means that leopards where they exist are only killed in small numbers and for a specific social purpose. The red feathers of *hurekure*, a rare bird in Chipinge is only reserved for the royal family, or those who have warrior or hunting spirits. The red feathers depict blood and during *madzviti* rituals the community celebrates military or political victory of the warrior and / or hunting spirits. The hunting spirits are responsible for providing good diet and enhancing food security across the community. Thus the *hurekure* feathers are only of use by a selected few individuals leading to few cases of the birds getting killed.

Animal skins and fat are also commonly used during community traditional rituals like *madanda*, *zvipundha*, *madzviti*, *hondora*. The possessed people would dress in animal leopard skins, dry

squirrel tails, python hides animal feathers and dry ox tails. Traditional drums made out of wood and animal skins, as well as reeds tied together complete the rituals set. Some elderly respondents disclosed that during such rituals some people even got possessed by monkey, python, baboons, mermaids, or lions hunting spirits. Though at this level the discussion captures humankind in an exploitative work out with the natural environment's resources, it however serves to highlight the close connection between the spiritual and cultural practice of a people to the natural environment with the two subtly working to support each other's realities.

The connection exists in taboos associated with sacredness, and have contributed to the survival of a rare monkey species locally known among the Ndau as (*ndhlandhlamo*). According to Appiah-Oppoku (2007), such cultural taboos against killing of certain animal species helped to protect the species as well as their habitats. Ideally, the protection of the *ndhlandhlamo* has become a custom, a belief and practice that all have to adhere to. This is much in line with how people in Boabeng village in Ghana used taboos and other spiritual beliefs against the killing and harming of monkeys for generations, and it was all based on a historical belief that a monkey had once shielded a chief during a tribal war (Appiah-Oppoku, 2007).

Ndau traditional spiritual belief systems also have conservation taboos that are associated with certain plants which have been left to grow and produce fruits for both human and wildlife consumption. These plants, and/or trees can also be used for other household purposes that include timber for roofing and firewood. A good example is the rare *mafavhuke* shrub which is often used when burying the dead so that the spirit of deceased does not turn into a ghost. The *mubvangazi tree* (blood wood) is traditionally used as the carrier when taking corpses for burial, and it is often used to measure the depth of the grave hole. One elderly male respondent

(Mudenga, 2014) noted that a tree locally known as *zambangoma* is also conserved and protected by taboos since it is used for carving household utensils, traditional drums, mortars and pestles.

It is clear that a significant number of plants and trees enjoy socio-cultural protection among the Nyagadza people. The *muminu* tree which in Ndaun vernacular literally means ‘*turning things upside down*,’ has strict social rules that protect, and like the name suggests, one’s life would not fare very well if the rules of using it are broken. The tree is highly used to cure numerous ailments and it is also believed to be used by witches and wizards to perform their evil deeds. The *muminu* is a are some highly sacred tree which has strict taboos against cutting it, as well as its use for any domestic purpose. This is because it would cause bad omen on whoever cut it. Trees like *musunganyemba*, *mutetete*, and *mutsamvu* are often regarded as deity sacrificial trees used during cultural thanks giving rituals in the community. They in turn are home to a lot of animal species like insects, birds, bats and squirrels.

Nyagadza people in particular value aquatic plants such as reeds (*jindwe*), bamboo (*sengere*), fibre (*chikwenga*) and water reeds (*ndhokwe*), and these are commonly used in making baskets, sleeping mats, fish cages and for thatching. These are harvested sustainably since their availability is linked to the community’s livelihood. Water reeds (*ndhokwe*) for example are used for catching termites which are a traditional delicacy very rich in proteins. Fiber is used for many purposes which range from straps (*zvitiropu*) for yokes and traditional wigs (*zvingunde*) for mermaid rituals (*madanda*) to traditional skirts (*zvichakati*), wrist and angle bands (*machoba*) which form accessory wear for traditional dance festivals like (*muchongoyo*). It is evident that the use and dependence on natural resources is also linked to traditional fashion and beauty, hence the conscious conservation of nature’s diversity.

There are even clear rules of conduct when harvesting the trees/plant products say for medicinal purposes. The part of the plant, like the tree bark is only taken and the rest of the tree/plant is allowed to recover. In some instances traditional knowledge rituals like smearing the cut part of the tree with cow dung is done to facilitate accelerated recovery. The tree bark can only be cut by making an insertion on either the eastern or western side of the tree. Any act that fails to follow the laid procedure of harvesting the bark would result in the bark losing its healing properties (Moyo, 2014).

The above is in line with the (UNEP, 2008) which pointed out that some root and tuber crops were protected during the harvesting where only the large roots or tubers were allowed through a process known as “*milking*”. By “milking,” farmers have a higher probability of not losing the whole crop, and crops such as Cocoyam (*Colocasia esculenta*), *Livingston potato* and *Zulu potato (African potato)* were conserved in this manner (UNEP, 2008, Chavhunduka, 1997). In addition, in some cases harvesting of the products of sacred trees is only done after receiving permission from the local chief.

In Nyagadza, the *muva* tree is the most endangered, however the deep-seated cultural taboos have protected it over time since it is believed to hold or preserve water along rivers (Guzete 2014). Furthermore, Gwerure (2014) disclosed that other measures for biodiversity conservation included not sending children to harvest medicinal plants, harvesting only mature plants, as well as digging up secondary roots and not the main root. He added that similar methods were used to protect indigenous food plants such as fruit trees, vegetables and tuber plants like *mungurahwe* which is edible and often used to treat stomach pains.

Ndau belief systems therefore carry expressions of recognizing the ecosystem's interrelatedness and interdependence. There is a common practice which ensures that when people harvest edible wild fruits like wild loquats (*mazhanje*) they are not supposed to collect everything, but have to leave some for animals like baboons. The rationale is, when baboons can still find *mazhanje* in the bush or mountain their raid on people's crop fields would be limited (Mapara, 2009).

It is evident that Ndau spiritual belief systems are paramount cultural structural mechanisms that still stand firm today in conserving biological diversity in the community. Credit is given to these instrumental spiritual belief systems rooted in Ndau culture. There is the strict notion of '*Chindau*' (Musikavanhu, 2014), which implies the local culture for the Ndau people that should be preserved for future generations to emulate and to have a hint of their ancestral culture and also to sustain it. This is a survival matter, and among the elders such beliefs and practices have provided for health, better livelihoods and security for the Ndau. It is clear that the belief systems embody a way of life, the '*Chindau*' concept, and that cannot be destroyed; and any such act will in turn compromise biodiversity in the area.

It is therefore important to note that this way of life has continued to be passed down from one generation to the other by folklore, elders, and the sanctions and rules put into practice by traditional leaders like chiefs. The latter know and play their role accordingly. The local chief acknowledged that human activity on natural resources was often exploitative if given unregulated action; hence Ndau culture exercised caution against human behaviour (Musikavanhu, 2014).

2.7. Ndau traditional healing and biodiversity conservation

Ndau spirituality and practice depict a closer connection with healing herbs (*mishonga*) that are harvested from different plant species. The herbs are used for curing common illnesses, complications associated with childbirth and infertility as well as providing charm and good luck within families to the wider society. It is clear therefore that Ndau traditional healing practice depend on biological resources for its survival hence the need to conserve of tree species that produce the herbs.

Some elderly informants disclosed that traditional medicinal trees like *murumanyama*, *muzeze*, *muminu* and *mubvee*, were therefore protected by certain traditional taboos. These trees are harvested sustainably with only the bark, leaves and roots collected to allow the trees to regenerate. Failure to do harvest the barks as outlined by the cultural protocols angered the spirits of the forests leading to the bark medicine becoming sterile.

Thus in Ndau culture the term (*mishonga*) refers to all healing substances which mean both magical/mysterious and medicine inputs (Ibid, 2003). It is the skill or knowledge portrayed in the use of *mishonga* collected from nature's abundance that outline each traditional healer's personal magic (*mapipi*), and becomes his or her trademark (Moyo, 2014; Frommer, 2003). The healers develop a strong relationship with the natural environment that ensures that at best the diversity of the substances or herbs for the trade is maintained. One male traditional healer observed that, traditional healing knowledge and practice (*unyanga*) was subtle and could not be stolen, or applied for since it was naturally given.

The practice of traditional healing is thus highly valued as both a source livelihood for the healer and a service to the community. Most of the elderly who are gifted in traditional healing have accumulated wealth which includes livestock and cash. Traditional healing thrives through a connection with the spiritual world which assists in locating plant and animal species for healing purposes. The connection and guidance follows the spirits of dead family members (*midzimu*) who often had the same gift during their lifetime (Gelfand, 1978).

In some cases, the other way to gain firsthand knowledge on traditional medicinal knowledge is through an intense spiritual mentorship with an elderly healer (*nyanga*) where children are initiated as traditional healing assistants, (*nyamakumbi*) (Reynolds 1993). One elderly female traditional healer disclosed that in other instances the gift came through the spiritual inspiration which descended when one was sleeping (Moyo, 2014).

She further disclosed that healers would have to go through an initiation for them to acquire ritual knowledge and practices related to collecting, preparing, narrating, delivering and storing the substances related to the healing. This knowledge also promoted conscious biodiversity conservation since most biological resources sustained the traditional healers' trade. Induction into these customary practices is significant at an early age since Ndaou people believe that younger individuals are free from evil, and therefore closer to the spirit of the ancestors (Frommer, 2003). This also inspired and instilled conservation of herbs and other forest resources at a tender age.

In support of the above, Chavunduka, (1997) asserted that the practical side of initiation involved introduction to the physical elements of traditional medicinal knowledge which included any parts of plant roots, leaves, bark, stems, fruits, grasses, seeds, thorns, climbers, as well as

symbiotic plant growths, as well as any part of an animal and its excretions. One elderly male herbalist (Gwerure, 2014) disclosed that collection of medicinal species was accompanied with folklore knowledge that ensured sustainable harvesting practices like avoiding the complete cutting down of the medicinal tree. Destroying the whole tree would anger the spirits behind the healing authority and the trees. This in return this has ensured conservation and protection of medicinal species in Nyagadza area.

The foregoing pays tribute to the fact traditional medicinal practices among Ndaу people of Nyagadza community are very peculiar, spiritual and symbiotic to biological diversity. Their success thrives on the diversity of flora and fauna species and a unique connection to the spiritual world. Some of the traditional healers confessed planting some medicinal plants like (*dungurazvirombo*) closer to their homesteads, which is a local herb used to cast evil spells, and it is clear that this has played a part in biological diversity.

The spiritual link is embedded in Ndaу traditional indigenous knowledge which is rooted in the understanding that human life is twofold, that is the spiritual being that exists as *midzimu* after the death of somebody, and the flesh that decomposes and stays on the earth Moyo (2014). The spiritual aspect is called into action to give guidance on which herbs to use when healing. The spiritual sorcery (*kuringidza*) is done by using tobacco snuff often thrown on the ground to summon the spirits as a form of respect. Some traditional leaders confirmed that they used some bones and sea shells (*hakata*) while others used mirrors for their sorcery.

One elderly traditional healer added that their knowledge and industry thrived on exploiting diverse flora and fauna species to heal sick people. He further noted that the genesis of Ndaу culture in formulating taboos that sanctioned the use of certain species depicted a conscious

strategy in protecting these species that many people in the community depended on for their health. Most elders acknowledged that it was this conscious realisation of the importance of species in traditional healing which led to the crafting of belief systems related to biological and natural resource conservation.

Chapter 3: The Emerging Dynamics of Biodiversity Conservation in Nyagadza

3.1. Introduction

The following chapter explains and justifies the fact that despite the instrumentality demonstrated by Ndaun spiritual belief system in biodiversity conservation, the link to conservation is not as conscious as may be portrayed. Arguably, Ndaun spiritual belief systems and practice are bedevilled by systemic contradictions and exist on the edge of extinction with serious challenges from the without.

The existence of open degraded landscapes across Nyagadza itself point to the waning strength and impact of indigenous spiritual belief systems in biodiversity conservation. It is clear that the conservation ethic demonstrated by the Ndaun spiritual belief systems stand against survival and economic demands for land use like agriculture. This rather explains mankind's exploitative relationship with the natural environment other than conservation as indigenous spiritual belief systems and practice posited in the last discussion.

3.2. The Waning Relevance of Traditional Practices in Biodiversity Conservation

In Nyagadza community traditional knowledge on biodiversity conservation is an essential asset for indigenous communities yet it is currently facing extinction. The greatest challenge has been population explosion and the infiltration by other cultures brought by intermarriages, human migration, and the proliferation of western dominant conservation knowledge.

This has resulted in erosion and distortion of Ndaun indigenous identity which include cultural values and language. Yet cultural values and language are fundamental in sustaining and passing down traditional indigenous knowledge. Berkes et al (1995) emphasized on the role language

plays in the transmission of indigenous knowledge and practice, implying therefore that the distortion of a language often affect the survival of knowledge systems attached to it. More social activities like Christian doctrines and faith, as well as economic activities like agriculture have undermined and increased demand for the exploitation of natural and biological resources for human survival respectively.

Land degradation in Nyagadza is also an outcome of abandoning some traditional, effective techniques and approaches to environmental conservation. Some elderly respondents noted that, in the past some of the traditional approaches, such as shifting cultivation, mixed cropping and intercropping were commonplace and important in protecting the soil (Mapara, 2009). They noted that these approaches were very peculiar to their local environments and culture and could not be replicated elsewhere easily (UNEP, 2008). The elderly noted that the younger generations instead were only paying attention to what agricultural extension workers were teaching them.

One elderly female spirit medium (Guruza, 2014) disclosed that environmental degradation in Nyagadza was being caused by the dominance of alien Christian values and principles. She contemplated that this was leading to the young generation(s) losing attachment and respect for their cultural values and tradition. Mashandisana (2014) also reiterated that degradation in the community was being caused by the fact that people no longer had respect for the community laws and the spiritual world. She acknowledged that in the past people respected almost all forest resources even those that were not located or attached to some traditional sacredness, and over time this prompted the sustainable utilization of the natural environment and its constituent resources.

These emerging issues have totally transformed the whole meaning and sense of what constitute traditional indigenous knowledge systems and practice. The communities themselves have slowly been going through a metamorphosis which involves adoption of ‘contemporary’ practices with the latter threatening to take over their traditional lifestyles and belief systems. In reality, it has become largely difficult to conceive of a purely Ndaou traditional indigenous spiritual belief systems.

The recognition is that the community stands at the intersection of some resolute grains of indigenous spiritual belief systems and practice, and a transformation wave where numerous monetary economic activities that range from market gardening, carpentry, handcraft work, exploitation of timber for construction to the adoption of Christian values dominate. These have all created and increased pressure on biological resources across the community.

What is further worrying is the fact that, those who still pay serious homage to the spirits are mostly the elderly and some of the middle-aged. This brings in doubt and fear that the traditional belief systems will fail to be carried into the future. Some elderly respondents noted that many young people in the community had switched to Christian beliefs and practices. Christian beliefs are clearly more structured as they are captured in various media that include books, and are also taught in schools than traditional knowledge which relies on folklore and taboos which are usually passed from one generation to the other by relying on the power of memory recall and transmitted by word of mouth. Thus, in the event of the death of the respected elderly in the community, what will also disappear is the institutional traditional identity, memory, knowledge and practice of a people.

It then becomes difficult to project and predict the future of Ndau spiritual belief systems in terms of their use and relevance in biodiversity conservation when some youth have divorced themselves from the beliefs and practices. Input from randomly selected youth during the research highlighted the fact that a number of youth are not comfortable with sticking to some cultural practices which unfortunately have been at the centre of conserving biodiversity. Some youth indicated that they would take part in some traditional and cultural rituals only to the extent to which the rituals provided entertainment especially during the traditional dances like *muchongoyo*.

Others doubted the authenticity of some of the taboos and practices led by spiritual belief systems among the Ndau. Otherwise, they looked at the practice as some ‘backward’ thinking among the elderly. It was however interesting to note that the same youth who challenged the relevance of the belief systems took heed of the sanctions on trespassing and harvesting of biological/forest resources from scared places and landscapes across the community. One male youth respondent firmly indicated that they feared the unknown consequences of going against the taboos, which they confirmed was usually associated with bad omen.

3.3. Biodiversity Conservation and the Community Livelihoods’ Dilemma

The greatest threat to the respect of Ndau spiritual belief systems and practice so far has come from the dominant narratives that look at Ndau indigenous knowledge systems as archaic, evil and mysterious. It therefore lacks a conscious and structured relationship with biodiversity conservation. These narratives borrow from the Eurocentric discourses that posit the hegemony of western scientific knowledge over other cultures. Sadly, more often this fails to acknowledge

and respect the relevance of inherent community knowledge systems found in local communities like Nyagadza (Cox and Elmqvist, 1992; UNEP, 2008).

What the Eurocentric narratives have done is to cast doubt on the relevance of traditional institutions and belief systems, and this is winning hearts across a section of the young population in Nyagadza. The rear of the narrative has it that humankind was put in charge of nature hence especially in the struggle for survival, the natural environment is best looked at as nature's providence upon which people have to extract food and other resources for survival.

The struggle for survival has meant that people continue to extract resources from the natural environment even in cases where it goes against traditional taboos on harvesting the resources. Some elderly respondents noted that some community members had turned stream and river banks into vegetable gardens resulting in siltation of the water sources. The elders strongly believed that this was disturbing the mermaid spirits found in pools downstream resulting in the spirits leaving the pools.

According to Ndau beliefs, pools were mermaids live never dry up unless the mermaids have been angered. These mermaids are angered and disturbed by desecration of water pools as they are home to the spirits that preserve water. Desecration come in the form of using dirty or metallic water collecting cans/ objects at spring sources. Thus only calabashes or gourds as well as clay pots are culturally accepted in fetching water from *Ndari*, *Muvava* and *Nyazvindete* springs (Nkomazana, 2014). Bathing close to the springs, and defecation in water bodies are some of the activities believed to offend mermaid spirits which often revenge by causing mysterious deaths, and/or disappearance at the water sites. Nonetheless, in the struggle for

survival these water sources/sites are being threatened by slow setting human activity like gardens.

There is an evident subtle struggle between community survival needs and the sanctions put in place by Ndaou spiritual belief systems of sacredness. This is the reason why perhaps the fear and bad omen narratives are emphasized because by their very nature human beings especially in agro-based rural economies like Nyagadza largely survive on land and forest resources. Interestingly, this falls in line with Alcorn's (1994:11) observation that: "...while proof of conservation success is ultimately biological, conservation itself was a social and political process, not a biological process. An assessment of conservation required therefore an assessment of social and political institutions that contributed to, or threaten, conservation."

In Nyagadza it is clear that land degradation is a result of competition for scarce resources to sustain livelihoods. Forest clearance for subsistence farming on steep slopes (*matema*) and cultivation of river banks and beds was reported as the major cause of deforestation since most of the *matema* were not terraced (Guzete, 2014). This has taken its toll on landscapes that are not enshrouded in sacredness.

The community headman further disclosed that most farmers were failing to construct contour ridges (*madhunduru / michinjiri*) across the steep slopes with farmers citing that the exercise was labour intensive. This has led to unregulated soil erosion which has even affected the environment down the slope with grazing land and spaces where firewood was once harvested getting destroyed. The ultimate effect has been that local rivers like *Chipadza* and *Nyazvindete* are slowly experiencing siltation with landscapes up the slopes losing their fertility.

This manifestation of degradation in Nyagadza clearly shows how traditional practices have been affected by emerging socio-economic dynamics of globalization, and economic opportunities for survival. Numerous economic activities like carpentry, brick molding, harvesting of wild edibles like fruits, mushroom, insects and worms has increased demand for forest resources. Over harvesting is therefore prevalent especially across landscapes not originally protected by traditional spiritual beliefs. Some of the fruits like wild loquats, *tsvubvu*, *matamba* and *hacha* are not being gathered for local household consumption only, but are being sold as far as Chipinge town and the lowveld areas of Checheche.

Recent Ndaou communities have experienced significant socio-economic and political transformation and this has distorted and destroyed most indigenous practices, customs, identities, language and values that defined traditional people and their relation to nature. Families are competing to take up new fertile arable landscapes in steep rocky slopes (*matema*) where they move on to occupy virgin landscapes in the event of depletion of soil nutrients. Chief Musikavanhu (2014) sadly noted that communities were even clearing areas that had been originally designated as grazing areas under the first resettlement models at independence in 1980.

Degradation has also been linked to activities like the use of some pesticides as a fishing method. In many instances the pesticides have indiscriminately destroyed other life forms in the water sources that they are administered. Stream bank cultivation has also deposited fertilizers in the adjacent rivers leading to the development algae (*makaurwe*) which the elderly respondents noted led to the depletion of oxygen in the river thus leading to the death of other life forms in the water (Manjengwa and Stiles 1999).

The foregoing captures the conservation dilemma in Nyagadza. In areas where sacredness and taboos are not operating the need to survive has led to people clearing mountain landscapes for arable agriculture. To most people in the community it is not seen as degradation, instead the people including some elderly understand it in livelihoods survival contexts. The line between what constitute degradation and what is not degradation has therefore become blurred especially in circumstances where community members are quick to lay their claim to survival.

The reality on the ground is that land clearance for farming which peaked during the fast track land reform programme period since the year 2000 has destroyed the natural outlook that used to exist just two decades ago (Moyo, 2000). Chikumba, 2014 noted that, their sons who had married in the last decade were in dire need of land for agriculture, and these formed the largest group of people that were taking up land in new areas, and the mountainous range adjacent to Chipadza river was now a degraded conflict zone as community members were constantly fighting over grazing rights and space for cultivation.

Mrs Nkomazana (2014) was reminiscent on the fact that the contested and degraded landscapes once used to provide in abundance food for households in the form of mushroom, and edible worms like *harati*, *ndhowa*, *tsetsee*, as well as *insects* like *mandere*, and *makurwe*. In the sacred Soso forest mushroom still thrive very well with huge humus deposits from the *msasa*, *boza* and *munhondo* trees providing the manure for growth (Ibid, 2014). One elderly man (Magen'a, 2014) also highlighted that some wetlands had been lost or encroached by vegetable and sugar cane gardens as well as some banana orchards. He further disclosed that swamps and/or wetlands (*madwayi*) along *Nyazvindete* river used to be perennial, and provided home to birds, fish and

wild ducks and other aquatic creatures but most of them had since disappeared due to agricultural activities.

What has stood to surprise therefore is these open degraded landscapes are adjacent to sites, landscapes, and mountains and forests that have remained distinct with their natural foliage and diversity of living organisms untapped and untainted. These exhibit a physical natural outlook which is enough evidence that all places where human entry was disapproved by spiritual beliefs are still endowed with trees and animals and numerous biological living things and organisms compared to other degraded adjacent landscapes in the community. It goes a long way to indicate how unregulated human use of natural resources means for biodiversity conservation.

The discussion also captures the fact that it does not take foreign wisdom to retain life forms diversity, but it is something that community members can work on. Needless to say, external influences like policy measures that do not seek to, and receive buy-in from communities have to a larger extent negatively affected inherent traditional indigenous conservation knowledge systems and their practice.

Caution however, should be exercised in attributing biodiversity conservation to the traditional beliefs and knowledge systems of a people. The evidence of open degraded landscapes in Nyagadza justifies the concern that not all communities are good stewards of the environment. An analysis of the survival strategies and livelihood activities in Nyagadza has reflected that there is great competition which is putting pressure on landscapes and species. In areas that are still intact it has been more a question of disapproval provided by sacredness and taboos than claims for an intimate and conscious relationship with the natural environment.

Chapter 4: Challenges, Threats and the Future of Indigenous Traditional Belief Systems and Biodiversity Conservation

4.1 Introduction

This chapter takes a closer look at the challenges the traditional indigenous knowledge system face in terms of its relevance in biodiversity conservation. Ideally, there is structural ambivalence and contradictions within the indigenous knowledge system itself. Nevertheless, it is also important to recognize that the importance of traditional indigenous knowledge systems remains critical, and efforts from community to international level remain in place to safeguard the knowledge system and practices. This has continued to serve communities very well, and indigenous knowledge has instead created a body of knowledge that even modern science can ride on.

4.2. Limitations of traditional belief systems in biodiversity conservation

Despite its diversity and versatility IKS has been neglected in both most academic and non academic spaces. The main reason for its marginalization include lack of documentation, cultural prejudice, professional pride, problems of language, political power exercised by outsiders, and the gap between practitioner and academic cultures (Webster, 1990). Though traditional knowledge systems have been significant for the survival of local communities the oral and rural nature of traditional knowledge has made it largely invisible and marginalised in contemporary times (Berkes, 1999).

There is still much resistance by western science to accept the authenticity of indigenous knowledge and belief systems and to fully integrate them into natural resource conservation and management. Indigenous knowledge and belief systems in particular have often been dismissed

as unsystematic and as past relics (Dove 1988, Appiah-Opoku, 2007) hence have not been fully captured and stored in a systematic way, thereby threatening the knowledge system with extinction (Colding and Folke, 1997; Langton and MaRhea, 2005).

This lack of systematic documentation to sustain it for future generations results in disappearance of information down the generation lane as elders with valuable knowledge pass on (Gadgil et al, 1993; Langton and Ma Rhea, 2005). As a result, Appiah-Oppoku, (2007) and the UNEP, (2008) observed that at global level processes at fully integrating and recognising the importance of traditional knowledge in natural resource conservation and management have been very slow, and in fact recognition only started in the last two decades from the nineties (Colding and Folke, 1997; (<http://www.eoearth.org/view/article/51cbeecf7896bb431f69a6f4>)).

It is also clear that earlier studies on the subject were focussed on anthropology and not ecological conservation per se. Tanyanyiwa and Chikwanha (2011), and UNEP (1992; 2008) pointed out that even agriculturalists, scientists, botanists and biologists working in developing regions where indigenous knowledge still dominate have not been so willing to fully integrate this knowledge base in biodiversity conservation. In addition, the supremacy of western science and education over cultural and traditional knowledge systems has rendered the latter less important (Tanyanyiwa and Chikwanha, 2011; Holling et al, 1997; Mapara, 2009; Said 1978; Ranger, 1989; Rodney, 1985). Other scholars like Rea (1981); Dove, (1988); Edgerton (1999) and Stevens (2009) have doubted and failed to fully establish the link between traditional knowledge and nature conservation.

The foregoing is linked to the ethnocentrism theory which is based on the deep seated colonial belief that emphasises on '*our way of doing things, our world view; our paradigm,*' and speak of

inherent superiority over all other thought processes and possible paradigms (Cox and Elmqvist, 1992:8). This has greatly undermined the authenticity of traditional beliefs and knowledge systems. In some instances western knowledge hegemony has sustained itself through clear hostility when confronted with indigenous knowledge systems beliefs and practices (Cox and Elmqvist, 1992).

Notwithstanding the fact that traditional knowledge is richly endowed, and in turn contributes to biodiversity conservation, health care, food security, cultural and religious identity as well as sustainable development, traditional knowledge and beliefs are being used and patented by third parties with relatively few or no benefits accruing to the custodians of this valuable knowledge. Interestingly, such concerns have pushed traditional indigenous knowledge to the forefront of the international agendas through discussions and debates on the best mechanisms to preserve, protect, further develop and sustainably use it (Twarog and Kampoor, 2004). This entails that, preservation, protection and promotion of the traditional knowledge, innovations and practices of traditional indigenous communities is a key globally especially for biodiversity conservation.

The discussion so far has clearly challenged the relevance and effectiveness of Ndaou traditional spiritual belief systems in biodiversity conservation. This falls in line with what scholars like Berkes et al, 1995; Chapman, 1985 & Beggossi, 1992 captured when they looked at humans as inherently conservation minded. The existence of open degraded landscapes in Nyagadza is clear evidence that the relevance of Ndaou taboos and sacredness in biodiversity conservation has its own structural and relevance weaknesses.

The mere existence of patchy forested landscapes is a clear indicator that human activities are at play in degrading landscapes than conservation. This shows that traditional conservation of

biodiversity has been over emphasized or over glorified by earlier and other prominent researchers like Gadgil et al, 1993; Negi, 2010 and Berkes et al, 1995. In the fullness of time, especially considering that indigenous knowledge is vulnerable to extinction; traditional communities should not be fully embraced as good biological conservationists since they are capable of destroying nature to sustain livelihoods as portrayed in degraded landscapes in Nyagadza community.

In essence, traditional indigenous knowledge has been over glorified by numerous researchers as contributing to biodiversity conservation yet a closer analysis captures some bad practices that deplete biodiversity. Indigenous peoples have also committed environmental ‘sins’ through over grazing, over hunting, or over cultivation of the land (Tanyanyiwa and Chikwanha, 2011) and veldt fires. Thus it becomes very misleading to think of indigenous beliefs as always harmonious and consistent with biodiversity conservation.

A critical assumption of traditional beliefs and approaches therefore is that local people have a good understanding of the natural resource base because they have lived in the same, or similar, environment for many generations, and have accumulated and passed on knowledge of the natural conditions, soils, vegetation, food and medicinal plants and so forth. However, this is not always true especially under conditions where the local people are in fact recent migrants from a different ecological zone; they may not have much experience with the new environment. In such circumstances the use of agricultural systems adapted from other ecological zones may cause problems (Tanyanyiwa and Chikwanha, 2011). In this instance, it is therefore important to evaluate the relevance of different kinds of indigenous knowledge and belief systems to local conditions.

Wider social and economic forces can also erode indigenous belief systems and related knowledge. This might be caused by pressure on indigenous peoples to integrate with larger societies and the structures which generate traditional belief practices can break down. Grenier (1998) observed that the growth of national and international markets, the imposition of educational and religious systems and the impact of various development processes often led to the 'homogenization' of the world's cultures. Consequently, indigenous beliefs, values, customs, know-how and practices may be altered resulting in the whole traditional knowledge base becoming irrelevant to biodiversity conservation.

Thrupp (1998) suggested that sometimes indigenous beliefs and knowledge that was once well adapted and effective for securing a livelihood in a particular environment can become inappropriate under conditions of environmental degradation. Though traditional belief systems have a certain amount of flexibility in adapting to ecological change, when change is particularly rapid or drastic, the knowledge associated with them may be rendered unsuitable and possibly damaging in the altered conditions (Grenier, 1998).

In the context of the foregoing the Ndau in Nyagadza have certain belief practices that are associated with labeling certain animal and bird species as evil, and these animals are usually killed. Examples are hyenas, owls, bats and snakes like (*ndara*). Most elderly respondents remarked that they associated hyenas with witchcraft. The hyena sound at night is therefore linked to impending evil, and hyenas are in most cases killed when they are seen during the day Chikumba (2014). Moyo, (2014) noted that owls are the most despised birds among the Ndau as they are believed to be used by witches and wizards.

The *ndara* snake is linked to *divisi*, which is a mysterious traditional concoction used to ensure bumper harvests at the expense of other farmers in the village. Magen'a (2014) disclosed that when the *ndara* crossed one's path it signaled impending evil and curse, and to reverse the bad omen one is supposed to kill the snake and/or urinate on its track after it has passed. Other animals like the civet cat is believed to signal bad omen as well, and hunters would kill them to curb the curse (Mudenga, 2014). All these Ndaou beliefs and practices are related to Thrupp's (1998) observation that some indigenous knowledge contributed to biodiversity mismanagement and the consequent degradation of plant and animal life.

In addition, there are also numerous flowers, climbers, shrubs and weeds that are associated with evil and are often uprooted when they grew near people's homesteads. *Uriri* a climber that produces itchy powder is often seen as a bad climber and Ndaou people uproot it wherever they see it growing. A flower called *jerusarema* is linked to the death of the head of the family, and the flower is quickly destroyed once people see it (Moyo 2014).

An often overlooked feature of indigenous knowledge therefore, which needs to be taken into account, is that, indigenous belief systems and knowledge unlike scientific knowledge might be wrong or even harmful or degrade biodiversity. Thrupp (1998) added that some bad practices based on, for example, mistaken beliefs, faulty experimentation, or inaccurate information can be dangerous and may even be a barrier to improving the well being of indigenous people and often lead to the depletion of biodiversity.

Numerous challenges therefore surround Ndaou spiritual belief systems today. The main challenge as highlighted earlier is its existence in oral form and storage which makes it prone to distortion and extinction from one generation to the next. Most of its salient aspects are forgotten

or disappear along the generation lane (Tanyanyiwa and Chikwanha, 2011; Mapara, 2009). Sithole (cited in Mapara, 2009) observed that since indigenous knowledge is mostly stored in people's minds and passed on through generations by word of mouth rather than in written form, it is vulnerable to change since it highly depends on one's memory not to omit vital information (Langton and MaRhea 2005).

There are also a number of factors that contribute to the loss of indigenous knowledge particularly traditional belief systems. These range from development processes like inward migration to acculturation by dominant cultures which normally overshadow and undermine indigenous beliefs and knowledge systems (Gadgil et al 1993). Others scholars have pointed on displacement due to war, natural disasters which permanently or temporarily shift traditional indigenous people from their environment, and resources resulting in mixture with other dominant cultural practices which may result in the erosion of the less dominant indigenous knowledge, language and identity (Cadgil et al 1993).

Nyumba (as captured in Mapara, 2009) observed that indigenous knowledge is under threat from modern technology which has infiltrated in even remote areas like Nyagadza. This has been strengthened by an emerging modern youth culture which denigrates Ndaу folklore, traditional dances, games, diet and rituals. The elderly in Nyagadza concurred with this, and also expressed concern that the rest of the young population who surprisingly represent the future of Ndaу spiritual belief systems expressed little interest and knowledge on the subject. One female elderly respondent noted that most elders in Nyagadza were dying with the knowledge on Ndaу spiritual belief systems, and there was need to look for proper documentation and storage of the

traditional knowledge and spiritual belief systems before they all become extinct (Nkomazana 2014).

Most elderly people in Nyagadza expressed concerns that the future of Ndau spiritual belief systems and biodiversity conservation was so gloomy. Relating to these concerns they expressed that the challenge with traditional belief systems was that the elderly were the only custodians of the knowledge and belief systems and many young people were not very much aware and keen to know how to carry such practices like the traditional worshipping protocols in communicating with dead spirits (*kudira*). They expressed concern on how their children would sustain and carry those cultural legacies in the future. They expressed that this challenge was rooted within Ndau culture that it was not culturally accepted for the young to perform the practice in the midst of elders, Ndau culture only permitted the elderly in the family or community to perform the protocols.

The clash of civilizations and religious practices is also one practice and reality that continues to exert pressure on the survival and relevance of Ndau indigenous knowledge and spiritual belief systems and practices. The advent of Christianity has come with a wave that has alienated especially the youth from their traditional beliefs as the latter is regarded as evil, archaic and barbaric. Christian practice has in fact openly challenged Ndau sacredness with some churches and their followers worshipping and baptizing each other at community sacred sites. In many cases this has attracted the attention of traditional leaders who have moved in to quell such practices. This religious clash is more or less the same as the one posed by economic opportunities existing in the exploitation of biodiversity, and stretches from community to international interests.

The calls by the World Intellectual Property Organization on the need to protect the whole indigenous traditional knowledge from exploitation for financial gains by third parties, has been received with slow and difficult progress both at community and national level. Hammersmith (2007) pointed out the hegemony that has been imposed by Western scientific knowledge on non-western societies like Nyagadza which has resulted especially in post colonial societies failing to fully address the rights and concerns of indigenous communities who have remained marginalized. Hammersmith further observed that this hegemony had resulted in the exploitation of indigenous knowledge for financial gains by multinational and international drug companies without linked benefits to the local communities thus robbing the indigenes of their heritage.

A good example of the foregoing discussion is the situation in Zimbabwe where years after independence the government has been overlooking indigenous minority languages and culture like Ndau, Shangaan and Tonga with preference given to English, Shona and Ndebele. Some San communities in Tsholotsho and Plumtree are still asking for their representation in the Chief's Council so as to retain their cultural identity (ZBC 2014). This is clear failure to uphold the rights of other ethnic and indigenous groups who should also have their languages integrated in the mainstream school curricula. Though the new Constitution made a significant step in the recognition of minority languages and culture by way of making them official languages in Zimbabwe, it is not clear how this is going to be implemented in schools across the country.

The reality on the ground is that most post colonial governments in Southern Africa inherited segregatory colonial pieces of legislation which has settlement models around crowding people in villages. This has resulted in communities exerting pressure on the available natural resources. Population growth over time forces communities to exploit the natural environment for survival

at a rate which is more than it can recover resulting in degradation. In communities like Nyagadza degradation therefore is often seen as an indispensable outcome of a livelihood practice and the struggle for survival.

Ideally, the struggle for survival has posed the greatest threat to the survival of Ndaun indigenous knowledge and spiritual belief systems. There is a systemic contradiction and reality which explains that communities need to survive and therefore cannot fail to make use of constituent resources abundant in the natural environment on the mere basis of a belief system of sacredness. In the struggle for survival even sacred trees like *zambangoma*, *muganu* and *mubvee* have since time immemorial been extracted and used for household purposes like the carving of mortars, pestles and traditional drums (*ngoma*) which are traditionally important for grain processing and for cultural and ritual festivals respectively. The majority of Ndaun huts are made out of forest products which include thatching grass, plastering mud, roofing poles (*ndhungo*), roof reinforcers (*hasha*) and tiny poles for weaved hut walls (*mapanhleyo*). The traditional round huts (*kichi*) and traditional upstairs huts (*zvitumba/zvigugu*) are exclusively built using forest materials only. These are common structures across the Nyagadza community, and stretching from way back into history they demand the use of trees and tree resources.

There is also traditional craft work across the community which makes use of forest resources. One elderly man (Tasa 2014) noted that some men in the community crafted winnowing baskets, cooking utensils and wooden plates. They make use of shrubs, water reeds, and bamboo among other resources. Women make use of local fibre (*chikwenga*) to weave wall hangers, traditional ritual skirts (*zvichakati*) and ritual wigs (*zvingunde*) as well as ritual and traditional dance wrist and ankle bands (*machoba*). In essence, the increasing demand for forest products as a result of

population growth over time and socio- economic livelihoods demands has over time contributed immensely to forest mismanagement such as deforestation and subsequent degradation of the land. This has in some instances happened against traditional beliefs attached to sacredness, and has especially been common in landscapes not attached to sacredness across Nyagadza hence their clear degradation. These represent zones of human survival, and of cause the struggle with the natural environment.

4.3. Impact of colonial rule on traditional indigenous knowledge systems

The colonial and the ethnocentrism theories have highly helped in unveiling and understanding how colonialism was used to portray western knowledge as superior at the expense of African traditional knowledge and belief systems. The glorification of European knowledge, language, science and religion has even continued in the post colonial period. Colonial governments are believed to have thwarted the application and use of indigenous knowledge. Many of what are now protected areas (national parks) were in fact established without consulting the local people (DeGeoges and Reilly, 2009).

Indigenous knowledge systems are indeed a part of Africa's heritage, which dates back to the pre-colonial era societies, as they were developed in order to address various survival challenges (Mapira and Mazambara 2013). They are unique in that they are home-grown and they have survived the test of time. However, European settlers who colonized the continent in the late 19th century destroyed, denigrated and even marginalized these cultural knowledge systems, and this was in line with European imperialism (Ibid, 2013). Traditional worldviews and values were however not all destroyed, some were resilient and these have remained important despite colonial hegemony and close interaction with the dominant cultures (Hand, 2012).

Notwithstanding the dominance African indigenous knowledge systems suffered at the hands of European colonialism the post-colonial era in Africa has seen a growing interest in the restoration of traditional indigenous knowledge. In addition, modern research has demonstrated that indigenous knowledge systems and indigenous belief systems were neither inferior nor backward as they were derived from centuries of accurate observation and experimentation (Cadgil et al, 1993). For example, the Great Zimbabwe Monuments, a product of the country's ancient culture, is a traditional monument which demonstrates the ingenuity of the local Shona people who built it (Mapira, 2009).

Yet historians like Mporu et al (2009), confirmed that 'early European accounts erroneously attributed the construction of Great Zimbabwe to non Africans arguing that Africans had not developed the technological capacity to build such a magnificent structure which was on its own denigration of traditional knowledge of Africans. Colonial masters could not just subscribe to the work done by indigenous people since they undermined and looked at Africans as primitive and therefore inferior to Europeans.

In her published article Emeagwali (www.africahistory.net) further argued that Western pharmaceutical companies often send their agents to tap the medical knowledge of Africa's traditional pharmacologists. Out of Africa the world has benefited from many traditional plants which have been used in the treatment of ailments like cancer, obesity, drug addiction among others (Mapara, 2009). The World Health Organisation (WHO) has acknowledged these contributions. The United Nations Conference on Environment and Development (UNCED) in Johannesburg Summit in 2002 also acknowledged the contribution of IKS to the medical field.

When the white colonialists entered Africa and Zimbabwe in particular, they saw the indigenous populations as a bunch of ignorant and illiterate masses that failed to tame 'nature' for their own benefit (Mapara, 2009). According to Ranger, (1999) the white travelers, painters and other treasure hunters who passed through the country's hills ignored the millennia of occupation, centuries of cultivation, the paintings in the caves, the graves and the shrines of worship and all sacred sites which were maintained by the local indigenous people in Zimbabwe and how it depicted their traditional knowledge and beliefs. The white settlers went on to desecrate the cultural shrines and stole some cultural artifacts symbols in those sacred places (Mapara, 2009). Some of them went on to even interpret their existence as pseudo cultural evidence.

The colonial economy led to the creation of a new social structure and fabric as Africans were dispossessed of their traditional land and relocated to some new areas to pave way for the European economy which was manifested through mining and agricultural activities. This led to the destruction of traditionally set African lifestyles marking the beginning of intense acculturation with some indigenous languages, knowledge and practices disappearing in the process. In simple terms it chronicled the demise of the indigenous ways of life. On a similar note, the missionaries also brought with them the Bible with its Christian values and beliefs which condemned most African belief practices as barbaric (Achebe, 1985; Ngugi, 1986). This was also followed by taught western values, education and science, religion, language and even the way of dressing (Mapara, 2009).

Some critics of colonialism like (Mapara, 2009; Mapira and Mazambara, 2013) observed that it was the white man who came to destroy cultural beliefs and values so as to oppress and plunder the natural resources that these indigenes had conserved since time immemorial. The advent of

colonialism also destroyed the customary authority that existed in traditional communities. Under colonialism all means of production were controlled by the colonial government, thus the custodial rights which ensured closer supervision of land and resources in traditional communities was altered and indigenes were only seen as savages without land and hunting rights (DeGeorges and Reilly, 2009).

The foregoing is evidenced by the Forest Act of 1954 and the Parks and Wildlife Act of 1975 in Zimbabwe which enforced the criminalization of hunting in game reserves (Tanyanyiwa and Chikwanha, 2011). What the colonial government policy makers failed to realize was that hunting was an indigenous livelihood which was practiced sustainably for centuries before the settlers came, and that the indigenous people were conscious of sustainable hunting mechanisms through their indigenous knowledge and traditional belief systems. If only the settlers had taken time to observe and how the natural environment was endowed with numerous plant and animal life they could have realised that the local inhabitants were at peace with their environment and intimately respected every living organism as a social being. Ideally, from an African perspective there was no need for national parks and other protected areas the colonial regime then decided to set up.

Colonialism and western science therefore tried to foster some hegemony over African knowledge systems. Colonialism did not only subject the Africans to inhuman treatment but took their land and stripped them of their identity by renaming African places in honour of western figures and knowledge. A good example is how the falls *Mosi-oa-Tunya* (meaning the smoke that thunders) in local Tonga vernacular was named Victoria Falls in honour of the British Queen and claims were made that David Livingstone discovered the Falls, thus dismissing the relevance

of the Tonga people including their knowledge and belief systems that had for a very long time known and named the Falls, and associated the Zambezi river with the sacred Nyami-Nyami spirit. (Byers et al, 2001). All this alienated most of the African communities from their cultures, to the extent that many African traditional cultural practices, identities and beliefs were lost.

It is not surprisingly therefore that many decades after the collapse of colonialism colonial sentiments still linger in the minds of many Africans. Even the policy makers, the heads of states and the intellectuals have continued to demonstrate western values and identities than truly African reality and practice. The reality is that very few former colonized people exhibit pride in African heritage. Essentially, colonialism robbed African communities of their indigenous knowledge systems, belief practices and their identity in the process. Breaking the challenges indigenous people are facing especially in the age of environmental degradation cannot be done without considering the rights of those people, and this evidently requires efforts from the local to the international level.

4.4. Indigenous knowledge systems and the recognition at international level

The adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UDRIP) on 13 September 2007 by the United Nations General Assembly (UNGA) stand out as the greatest success for indigenous knowledge at international level (Crawhall, 2011). Though it is a non-binding document it has won recognition within the United Nations (UN) human rights system thus reflecting a gradual process at international level to uphold and recognize the rights of indigenous people. This represents a major achievement which has shown faith and value of cultural diversity and the non-discrimination of communities that were usually regarded as minority. This has served to challenge the marginalizing effects of economic globalization on

such groups of people. The Declaration was also a key moment because it was the first time that the UN allowed the civil society sector (non state actors) who are directly affected by policy making to be at the same negotiating table (Crawhall, 2011). Indigenous people therefore received a unique opportunity to author and act on their destiny (Ibid, 2011).

The recognition nonetheless was not smooth as Africa had two outstanding features against the United Nations Declaration on the Rights of Indigenous People (UNDRIP) process. The first was the role of the African Commission on Human and Peoples' Rights (ACHPR) and the emergence of a new transnational civil society movement of indigenous peoples in Africa which was represented by the Indigenous Peoples of Africa Coordinating Committee (IPACC). ACHPR acted as the main forum for debate in Africa and emerged as the voice of reason, ethics and justice (<http://www.ipacc.org.za/uploads/docs/Africanaidememoire.pdf>). The ACHPR which had interestingly often been ignored by African leaders became the main proponent of the legal grounds for recognizing the vulnerability of indigenous peoples in Africa and calling for a coordination of the UN Declaration and the ACHPR (Crawhall, 2011).

IPACC is a regional indigenous peoples' network with over 155 member organizations in 22 African countries (<http://www.ipacc.org.za/uploads/docs/Africanaidememoire.pdf>). This was established with the aim of representing issues of indigenous people in Africa at international level. Thus it represents the majority of indigenous peoples' organisations engaged in regional and international diplomacy. In addition, most of the sub regional and national forums are members of IPACC or are represented by their members. This mirrors a successive step towards engaging representatives of indigenous people in Africa since it was established by African

activists attending the UN Working Group on Indigenous Populations (UNWGIP) (Crawhall, 2011).

Addressing traditional knowledge and beliefs at international level however is still trapped in challenges because IPACC coordination is failing to mobilise for the full participation of North and East Africa. These countries especially the pastoral and some hunter gatherer communities in Ethiopia, Eritrea, Somalia and Sudan and the oasis dwellers in Egypt are not active at indigenous rights forums at the United Nations or the African indigenous caucus meetings at the United Nations (Ibid, 2011). Crawhall further observed that, despite IPACC having its strong constituency base in Kenya, not all Kenyan indigenous peoples are involved in international advocacy due to uneven representation, particularly from pastoralist communities in northern Kenya. This also includes hunter gatherers from Central African Republic, Senegal, Mauritania and parts of northwest Democratic Republic of Congo who also are not members due to weak or the absence civil society organisations.

The weakness is mainly due to the fact that the rationale, strategies and actions of IPACC are not truly African, but a product of the UN, Geneva and New York thinking hence it remains an instrument which is alien to traditional indigenous communities. (<http://www.ipacc.org.za/uploads/docs/Africanaidememoire.pdf>; Crawhall, 2011). The foregoing represents a top down approach which has made its implementation difficult especially at community levels where it lacks representation. However there are propositions that IPACC's leadership should set up internal alliances and solidarity so as to craft a common strategy which by all means tries to contextualize the debate, rationale and the principles contained in global documents like the UNDRIP (Crawhall, 2011). Unless this is done, the representation of

indigenous peoples' rights and indigenous civil society remains half-hearted. There is therefore little support for IPACC from national human rights agencies, human rights nongovernmental organisations (NGOs) including faith based organisations (<http://www.ipacc.org.za/uploads/docs/Africanaidememoire.pdf>).

This actually shows that the committee is largely driven and controlled by elites who come from backgrounds that are divorced from the realities of indigenous people themselves. Though public opinion and the media were stakeholders in the UNDRIP process, in practice, advocacy was primarily aimed at the African diplomats in Geneva working with the UN Human Rights Council (UNHRC) and in New York among those engaged with the UN Permanent Forum on Indigenous Issues (UNPFII) and the UN General Assembly (Crawhall 2011). Some lobbying took place in Africa; however it was limited to state ministries dealing with human rights, constitutional rights and justice themes.

There was also frequent breakdown of policy communication between Africans and overseas diplomats, as well as inter-ministerial cooperation and information sharing (Ibid, 2011). This meant that any given African state often had unspecified views on UNDRIP and individual diplomats played an important decision making role which left the whole process a competing and confusing platform. This has led to lack of political will and commitment among African countries to implement the provisions set by the UNDRIP. There was also controversy surrounding indigenous and national identities. In line with the calls from their movements there were calls that the grassroots people should represent themselves at international forums rather than the states and elites (Twarog and Kapoor, 2004). This is because these people have inherent

practical knowledge and experience of challenges confronting them than elites who dominated discussions at the policy making level.

In addition to the controversy surrounding indigenous peoples claiming their rights in Africa, there are other unrelated dynamics influencing Africa's relationship with UNDRIP. The issue of global power politics, as expressed through the UN General Assembly (UNGA) played a central role in the complex struggle to get Africa behind UNDRIP. Crawhall (2011) saw the UNDRIP coming up to existence at a moment when the UN was restructuring and Africa was trying to increase its presence and power base thus making UNDRIP an experimental baby of power dynamics alien to the African context.

The UNDRIP has also been criticized for lacking the participation of African states at key forums dealing with the details of the UNDRIP. Some critics further noted that the UNDRIP provisions were a mere replica of what was contained in the African Charter about human rights (Ibid, 2011). Other than the UN politics and overt ethnic prejudices, there were legal and constitutional issues concerning UNDRIP and divergent views between the actors about Africa's legal norms and priorities. There was confusion about whether the term *indigenous peoples* applied to Africa's situation. There were also reactions by some states that any move to affirm self determination of collectivities was a threat to state sovereignty. All these identified loopholes have made the adherence to the declaration by most African states and its subsequent implementation inconsistent.

On another interesting note, the African group and some critics argued that almost every African was indigenous in some way hence there was no need for these international instruments and specifications on the rights of indigenous people (Saugestad, 2001). Though it is true that all

Africans are indigenous to the continent, over time, basing on inequalities on the ground new norms and standards should emerge to recognise the specific rights of these marginalised and excluded traditional communities.

Needless to say, the concept of indigenous knowledge is deeply rooted in Africa, but the massive migrations that took place across the continent diluted the same concept. Migration brought with it new identities that included language and socio-political organisation to different parts of Africa. A good example is how the migrating people of the Bantu languages encountered other people already occupying the territories that they were moving in (Huffman 2006). This resulted in complex cultural- economic ecosystems and relationships that are rooted in specific ecological niches and natural resource availability and utilization (Banard, 1992, Nettle and Romaine 2000).

At the end of the day the claim that most African communities and their knowledge systems are indigenous does not significantly hold because the truth is, it is all a mixture of knowledge systems that originated from different parts of the continent, and this has made the packaging of knowledge and practice on indigenous knowledge systems difficult. Clearly, with the new threats posed by industrial economic activities like logging, mining as well as other new forms of industrial agriculture the depletion of biodiversity and undermining of indigenous conservation knowledge remains unprecedented (Cox and Elmqvist 1992; Crawhall 2011).

Africa's delays in endorsing the UNDRIP showed both the predictable interests embedded in the structure of Africa's political economy. The scenario is one of idealism versus entrenched interests; of bloc politics versus the efforts of activists within a transnational civil society movement to bring legal changes into a complex and reluctant political context. Most of the

advocacy was conducted in at the United Nations level or diplomatic offices which are far from the reality of indigenous communities.

UNDRIP nonetheless created a platform for a continental review of the rights of mobile (nomadic, transhuman) peoples who experience discrimination due to legalized colonial and post colonial European doctrines of land tenure based on agricultural usage which place millions of Africans in situations of insecurity. Though such challenges of international politics and relations remain a reality, at least advocacy for UNDRIP created new alliances within Africa, across languages, borders and ethnic identities, and it forged new types of North–South–South partnerships and dialogue focused on international law, rights and good governance. The interaction of indigenous activists and diplomats during the UNDRIP debate further deepened and enriched some serious discussions about the nature of the State, governance, indigenous institutions, natural resources and their management, and the recognition of cultural diversity within post-colonial democracies on the African continent.

Sadly, indigenes are being robbed of their traditional habitat in many parts of Africa where multinational companies are coming with legal blue prints to claim rainforests that have been in traditional custodianship for generations. Commercial interests like lumbering, and mining of other extractive resources is taking centre stage. This reflects how the Eurocentric concepts have managed to rob and even destroy habitats that have been conserved for generations by the indigenous traditional communities.

4.5. Possible recommendations for community and national efforts

Conserving biodiversity is a critical and fundamental issue, since people, companies and factories depend on it for their daily survival. In recognition of that this study recommends that traditional / indigenous belief systems, rules, practices and regulations regarding sustainable management of environmental, forest resources and all biological diversified resources should be well documented, taught and communicated to all age groups especially the youth who represent the future of any given society. Governments should also employ an integrated approach that takes consideration of technical and indigenous knowledge systems in natural resources management. It should also formulate policies that promote protection of indigenous people's identity, language, and culture which are paramount aspects in sustaining the broad base of indigenous knowledge (Cadgil et al, 1993; Langton and Ma Rhea, 2005).

However this should start with the practical implementation and incorporation of all ethnic languages within a nation state into school curricular. This is because language is very crucial in communicating indigenous knowledge, thus distortion of language can destroy most aspects of traditional/indigenous knowledge (Cadgil et al, 1993). In line with this, some elderly respondents called for the setting up of a Ndaou cultural revival centre and compulsory cultural dance festivals in the community so that the young generations would emulate and follow in the steps of preserving Ndaou cultural beliefs and practices.

At local level particularly in Nyagadza traditional knowledge systems have to be recorded systematically in written form and this paper has made a bold step towards that. This is important so that agricultural researchers, extension workers, development practitioners, the academia and the wider national audience is able to understand and appreciate these Ndaou belief systems and

practice. It is imperative that policy makers and agricultural development recognize the need to understand existing knowledge systems and their decision making processes so that they can be integrated into mainstream development processes. This is important because already a range of health, agricultural and conservation innovations based on indigenous knowledge have been practically tested and proven to be invaluable.

This study notes that indigenous knowledge is a traditional science that is user derived and its utilization in development efforts has provided long term advantages that have complemented the contributions of conventional top down western science and technology (<http://www.ciesin.org/docs/004-171/004-171.html>). This also implies that whether at local, national and international level the custodians of this knowledge should realize tangible benefits from their knowledge application. Since indigenous traditional knowledge systems form the basis for local indigenous groups decision-making this knowledge must provide the foundation for local innovation and experimentation which must be protected and benefit the communities.

There should be the establishment of national indigenous knowledge systems resource centers which should provide a national data management function where published and unpublished information on traditional knowledge are systematically documented for use by development practitioners. These centers should also design training materials on the methodologies for recording traditional knowledge systems for use in national training institutes and universities. A link between the citizens of a country who are the originators of IK and the development community should be established. Warren and Rajasekaran (in Twarog and Kampour, 2014) noted that if traditional knowledge systems were systematically recorded, then it would be easier to compare and contrast them with other global knowledge systems. Thus such a process can

strengthen the capacities of regional and national natural resource management, and agricultural organizations by generating sustainable environmental technological options rather than standard technical packages of practices.

The incorporation of traditional knowledge systems into natural resource, biodiversity management and agricultural development should also consider conducting participatory community research which can assist in validating traditional knowledge experiments. This can help to come up with interactive technology development process which must incorporate the traditional interventions. The research process should be participatory and should include both scientist and local people so as to include both their knowledge in evaluating their interventions based on practical performance of various community aspects. This can encourage indigenous people to identify technological options that would fit into their individual problems and resource constraints as a bottom up approach mechanism. For example, farmers with soil alkalinity problems might select a soil reclamation trial rather than continuing to degrade the land through deforestation of steep slopes (*matema*) for farming purposes to sustain a living. This can be a sustainable measure to combat land degradation in Nyagadza.

In Nyagadza well-trained and research minded extension personnel should come in to validate farmer's agricultural activities and put controls where necessary so that for example steep slope cultivation is avoided. Since most elderly disclosed that steep slopes cultivation was due to lack of flat arable land and the loss of soil fertility in their traditional arable land, agricultural activity and research should be tailored to come up with seed varieties that do well in such fields, and through introducing organic farming interventions like the use of liquid manure (ZBC News, 2014). Extensional workers and food security agents can promote awareness on issues of climate

change through promoting the cultivation of small grains and early maturing seed varieties to discourage further deforestation which is caused by opening up of virgin fertile land to boost harvests.

Conclusion

The study managed to unpack the fact that there is much to be learnt from Ndaou traditional belief and knowledge systems in their relation to biodiversity conservation. It is clear that it is an important knowledge system which is feasible, efficient, and cost-effective in terms of biodiversity conservation. The presence of virgin and untainted landscapes with diverse wildlife forms across Nyagadza is evidence to the significant role that Ndaou spiritual belief systems and traditional indigenous knowledge have played. Ndaou sacredness and taboos have created a social existence that captures a people who have respect and care for their surrounding natural environment. Interestingly, out of that care and respect is a unique symbiotic relationship between humans and the biodiversity as well as the spiritual world which live in the same landscapes and sites like trees, cemeteries, water springs, pools and animals. Humans credit their survival to their spirituality which finds home in sacred places, plant and animal life. This creates a lifestyle for the Ndaou which has strong connection to the spirits of the dead and living life forms.

This foregoing pays tribute to the fact that the world over the study of traditional indigenous beliefs and traditional knowledge exhibits the intimate relationship of most indigenous communities with local resources often informed by their belief system and practices. These belief practices are attached to local ecosystems, and their maintenance through traditional beliefs and customary governance institutions that draw on oral traditions, taboos, local and traditional knowledge, as well as connection to their ancestry. A common feature is long-term goal setting and deep historical reference to past resource changes that provide an intergenerational awareness of social-ecological processes and change. Though the small

population size of indigenous communities like Ndau and their isolation in mainstream national environmental planning and resource management may add to their vulnerability, the Ndau traditional spiritual belief systems and practice have managed to hold their own in biodiversity conservation. Indeed, to be indigenous is to be resilient, and the maintenance and evolution of Ndau identity and culture is premised on their cultural resilience. Resilience thinkers and researchers have therefore much to learn from the way locally based communities like the Ndau in Nyagadza manage and respond to their local natural resources.

However, Ndau traditional indigenous knowledge and spiritual belief systems have to fight internal contradiction, acculturation, the threat posed by modern scientific knowledge which had seeds of undermining African traditional knowledge sown during colonialism as well as the struggle and need for socio-economic survival that stands at the heart of any community's survival. These are unquestionable realities that threaten the existence and recognition of Ndau indigenous knowledge and practice in biodiversity conservation. As noted earlier, Ndau knowledge has it that on one end there are life forms like hyenas and owls that are associated with evil hence are supposed to be destroyed, and others that are preserved for their spiritual sacredness. This same consciousness seems to be the one that has determined the existence of open degraded landscapes and pristine isolated landscapes existing in the same community. It is however clear that degradation is taking shape at a much faster rate, whilst the hold put by sacredness is on the decline.

It is a socio-ecological reality which on one level depict a society that still pay a lot of respect to their traditional spirituality, and it has come with benefits on conservation at a scale never realized in any community across Zimbabwe. This is unique in its own right because community

based conservation approaches in many instances have come with government sanctions and policing measures, but the Nyagadza-Ndau case is informed by spiritual connectedness and consciousness that binds a people and their natural environment together. Nevertheless, the connectedness is failing to contain the threat posed by human survival needs which for example call for more land for agriculture and the harvesting of forest resources for Ndau microeconomic survival activities. This is however, not to down play the role that Ndau spirituality continues to play in maintaining landscapes that still retain the life forms diversity with such resilience that has stood the test of time.

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List of interviews

Interview with Mr L. Chikumba, Chipinge, Nyagadza community, 22/03/14.

Interview with Mr A.Guzete, Chipinge, Nyagadza community, 24/03/14.

Interview with Mr D. Magen'a, Chipinge, Nyagadza community, 24/03/14.

Interview with Mr Guruza, Chipinge, Nyagadza community, 23/03/14.

Interview with Mr Garara, Chipinge, Nyagadz a community, 23/03/14.

Interview with Mr L. Mudenga, Chipinge, Nyagadza community, 25/03/14.

Interview with Mr R. Majazo, Chipinge, Nyagadza community, 23/03/14

Interview with Mr T. Musikavanhu, Chipinge, Nyagadza community, 22/03/14.

Interview with Mrs A. Nkomazana, Chipinge, Nyagadza community, 22/03/14

Interview with Mrs C. Moyo, Chipinge, Nyagadza community, 24/03/14.

Interview with Mrs E. Majazo, Chipinge, Nyagadza community, 25/03/14.

Interview with Mrs M. Mashandisana,Chipinge, Nyagadza community, 24/03/14.

Interview with Mrs N. Chikolana, Chipinge, Nyagadza community, 25/03/14.

Interview with Mr F. Tasa,Chipinge, Nyagadza community, 22/03/14.

Interview with Mr W. Gwerure, Chipinge, Nyagadza community, 25/03/14.

Interview Questions Guide

1. What does biodiversity mean?
2. What do you understand by traditional beliefs?
3. Are there any Ndaou traditional beliefs associated with conservation of biodiversity in the community? If yes, explain them.
4. How does the community apply or utilise these traditional beliefs systems in conserving biodiversity in the community.
5. Are there any challenges encountered in the conservation of biodiversity through traditional belief systems in the community? If any, what are they and are there any community strategies to address the challenges.
6. From the community experience and views, what do you think mostly causes biodiversity degradation in the community?
7. From the community perspectives, what do you think is the possible way to reverse biodiversity degradation in the community?