

THE ROLE OF INDEGENOUS KNOWLEDGE SYSTEMS IN THE MANAGEMENT OF FOREST RESOURCES IN MUGABE AREA, MASVINGO, ZIMBABWE

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ABSTRACT

The study aimed at establishing the role of indigenous knowledge systems in the conservation of forest resources. The research was conducted through the qualitative research methodology. The inquiry was done with aim of gathering an in depth understanding of human behavior and the reasons that govern such behavior towards forest resources management. Data collected during the study reflect that the people in Mugabe Communal Area have knowledge on traditional methods in sustainable forest resources management. The study revealed that the youth have no appreciation of these “old fashioned” methods and this valuable knowledge is not documented for them to appreciate. The study recommends that traditional rules and regulations regarding sustainable management of forest resources should be well communicated, especially to the youth and that government should employ an integrated approach that takes into consideration technical and indigenous knowledge systems to natural resources management.

Keywords: Resource Management; Forests; Indigenous Knowledge Systems, Sustainable Management

BACKGROUND TO THE STUDY

In 1980 a study by the United Nations Food and Agriculture Organization estimated that world forests were disappearing at the alarming rate of nearly 114,000 square kilometers a year. A study by Food and Agricultural Organization in 1992 put the rate at a staggering 170,000 square kilometers a year, an increase of nearly 54 percent. The UN conference on Environment and Development in 1992 catalyzed the interest in the contribution of indigenous knowledge to a better understanding of sustainable development (IUCN/UNED/WWF, 1991). UNCED highlighted the urgent need for developing mechanisms to protect the earth's biological diversity through local knowledge. Many of the documents signed at UNCED reflected the need to conserve the knowledge of the environment that is being lost in communities. The traditional systems have been a matter of survival to the local communities who generated these systems. The oral and rural nature of traditional knowledge has been made it largely invisible to the development of communities and modern science. Indigenous knowledge has often been dismissed as unsystematic and hence it has not been captured and stored in a systematic way with the implicit danger it may become extinct. Indigenous knowledge is unique to a given community, culture or society World Bank (1997). It is seen to contrast with the modern learning system. Communities use indigenous knowledge at the local level as basis for decision making pertaining to food security, human and animal health, education and natural resources management. Very little of this knowledge has been recorded, yet it represents an immensely valuable data base that provides humankind with insights on

how numerous communities have interacted with their changing environment including its floral and faunal resources World Bank(1997).

The unprecedented deforestation has rendered the world community vulnerable to dreadful threats of climatic change, global warming, disappearing bio-diversity and desertification. Indigenous management practices have stood the test of time, embodying the knowledge of a particular ecosystem accumulated over several generations World Bank (1997). According to Mukwada (2000) forests provide mankind with a wealth of benefits including wood for construction, fuel and production of wagons, boats and ships. Forests are also an ideal habitat for a wide range of animals including some endangered species. They constitute an integral part of the earth's life support systems (IUCN/UNED/WWF, 1991). Forests are home to various mammalian species-rodents, antelopes, lizards and monkeys, birds and invertebrates. They provide excellent habitat for both livestock and wild animals.

Both forests and woodlands are important for non-consumptive uses such as scientific research and recreation. Some forms of recreation associated with forests are photography, indigenous knowledge, sport hunting and bird and animal viewing. Moreover, through photosynthesis forests exude oxygen, an essential gas in respiration-and indispensable metabolic process.

Forests play a crucial function in regulation of the hydrological cycle. According to Timberlake and Shaw (1994) the Chirinda forest, found in South-East Zimbabwe, extracts moisture from the air and makes the area which it clothes relatively wet, compared to the surrounding areas. Also forests are crucial in environmental protection. Apart from curbing erosion and the siltation of watercourses and reservoirs, forests indirectly protect aquatic habitats, especially spawning grounds for fish and other aquatic organisms. In fact forests are an integral part of the earth's life support systems. However, according to Mukwada (2000) the demand for forest and woodland products has increased over the years. This demand has been matched by a corresponding rise in the consumption of forest products. In developing countries where traditional fuels still constitute the greatest proportion of the total energy consumed, fuel wood supply has already been outstripped by demand. Thus, this rise in forest products demand has contributed immensely to forest mismanagement such as deforestation and subsequent degradation of the land.

The need to conserve forests and woodlands to achieve sustainable development in light of the increasing demand for forest products has prompted many countries including Zimbabwe, to formulate legal and institutional frameworks aimed at natural resources sustainable management. Currently sustainable forest resources management in Zimbabwe is mainly based on legislation developed from those established by the colonial settlers in the 1940s. The pieces of legislation that are currently in force in Zimbabwe are as follows.

Environmental Management Act (2004)

The Zimbabwe Environmental Management Act (2004) provides for the sustainable management of natural resources and protection of the environment; the prevention of pollution and environmental degradation. The Act also provides for the preparation of a National Environmental Plan and other plans for the protection of the environment. The implementing

agency of the Act is the Environmental Management Agency and Ministry of Environment and Natural Resources Management. The primary strategy embodied in the Act is criminalization. The Environmental Management Act is now the supreme environmental Law in Zimbabwe.

The Forest Act (1954)

The management of woodland and forest products is embodied in the Forest Act and the Communal Land Forest Produce Act. The Forest Act (1954) provides for management of wood resources throughout Zimbabwe although its focus is state forests and on private land. The Communal Land Forest Produce Act applies to the Communal Areas like the Mugabe area under study, but may be read with the Forest Act. The main management strategy in both acts is to establish conditions under which forest produce can be used and to determine and regulate the extent of that use. Both Acts rely on the criminalization of activities in order to protect and regenerate forest produce. The Forest Act creates forest officers who have general police powers of seizure and arrest. Designated officers or forest officers under the communal Land Forest Produce Act do not have power of arrest. These arrests may only be made by forest officers in Communal Areas where the charge is for an offense under the Forest Act (Chiwandamira, 2000).

The Parks And Wildlife Act (1975)

The Act is administered by the Parks and Wildlife Management Authority of Zimbabwe. It controls the exploitation of plants, trees and wildlife. Chiwandamira (2000) argues that the Act seeks to protect indigenous plant life and prohibits its sale without a permit. However it allows plants to be harvested by the owner or occupier of land for use in the home of occupier. It further allows harvesting indigenous plants where the area is needed for cultivation and construction. In the Communal Areas such as Mugabe area, this protection is further derogated from the Communal land Forest Produce Act in which the above use rights apply not simply to land held by occupier but to the entire community of which that person is resident. There is no harmonization between the above statutory instruments and indigenous knowledge systems. The legislation was enacted using the top- down approach. The masses were not consulted so as to incorporate their knowledge in the conservation of the resources hence the defilement. If participatory approaches had been used, indigenous knowledge could have been harnessed into the statutory acts. Although Acts mentioned above are vital to the country, they are failing to curb depletion of forest resources. Mismanagement of these forest resources is rife especially in most Communal Areas of Zimbabwe regardless of the existence of the legal frameworks. One of the major causes of the misuse of forest products, especially trees, is arguably the fact that people are generally ignoring traditional beliefs and indigenous knowledge systems in the sustainable management of natural resources.

The Action Magazine of 1997 identifies quite a number of tree species that are regarded, under traditional beliefs as sacred and have several uses. For thousands of years, traditional people have preserved their knowledge about these and other species and encouraged respect for the sustainable management of the environment. This has been done through the use of totems whereby one would not consume one's totem. Knowledge had been passed from generations through story telling by the elderly knowledgeable people.

Mukwada (2000) argues that resource conservation involves the sparing use of a resource in order to perpetuate its use in a sustainable manner. People economize on the natural resources so as to prolong the time over which the resource will be available. Traditional people had learnt to attach certain importance to various natural resources, especially trees so as to conserve them and prolong their existence. Thus people tend to be motivated to conserve and ‘spare’ more of the species (trees) that they believe provide extra benefits than non-beneficial ones. Ancestral habitats like Muchakata trees are preserved while thorn bushes are recklessly destroyed. Various tree species have been linked to sacredness especially in the Shona/Ndebele tradition, (Tsikai, 2006) for example the muchakata tree. It is therefore hoped that these various tree species would be subjected to proper sustainable management if indigenous knowledge system is boosted and incorporated to the existing legislature. Blending the two is believed to be a panacea to existing conservation problems in Zimbabwe especially in Communal Areas still dominated by traditional leadership. Indigenous knowledge systems can therefore go a long way in providing the much-needed ‘moral aspect’ currently lacking in the existing legislation.

STUDY AREA

Mugabe Communal Area is located about 45km south east of the city of Masvingo, Zimbabwe and seven kilometers from Morgenster Mission. Mugabe Area coincides with the political boundaries of Ward 13 of Masvingo North Constituency.

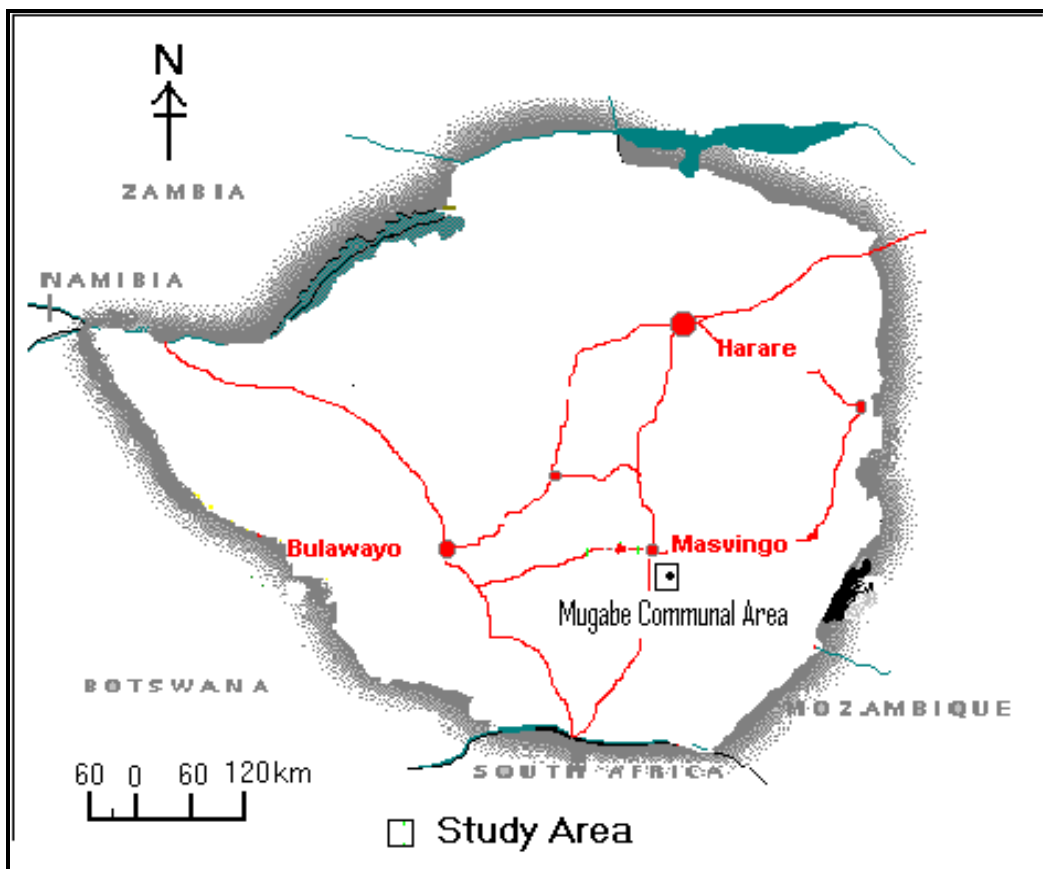


Figure 1.1: Location of Mugabe Communal Area in Zimbabwe

Source: Derude Planning Section (1989) H/O Harare

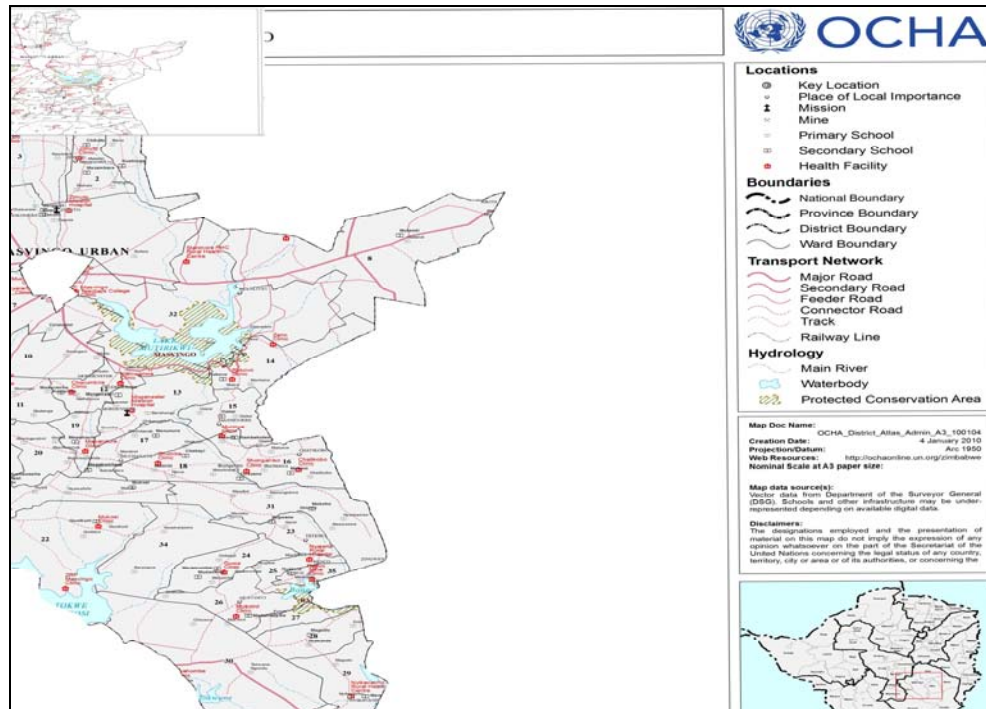


Figure 1.2 Mugabe Communal Areas, Masvingo

Source: Google Maps

Mugabe Communal Area is found in agro-ecological region four, with a tropical savanna climate. The area is characterized by hot summers and cool winters. Kwandayi and Mukwada (2001) argue that the average day temperature in savanna exceeds 30°C in summer and falls below 19°C in winter, giving an annual temperature range of 11°C. Trees and other woody species dominate Mugabe Communal Area, a situation described by Kwandayi and Mukwada (2001) as woodland savanna. In some fairly higher places trees tend to be more common than grasses while in areas of low altitude grasses, more than 2m in height are common, (Chimbambo, 2001). The major human activity area is farming. The demand for land for cultivation has increased owing to the increased human population. Moreover, other activities such as firewood collection, wood carving, fencing, building construction and furniture making among other activities place forest resources at very high risk of destruction.

THEORETICAL ORIENTATION

Indigenous knowledge is the local knowledge – knowledge that is unique to a given culture or society (World Bank, 1997). Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions and private firms. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren, 1991). According to Flavier et al indigenous Knowledge is the information base for a society, which facilitates communication and decision-making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems (Warren, 1991).

IMPORTANCE OF INDIGENOUS KNOWLEDGE SYSTEMS

Incorporating indigenous knowledge into research projects can contribute to local empowerment and development, increasing self-sufficiency and strengthening self-determination (Thrupp, 1998). Utilizing indigenous knowledge in research projects and management plans gives it legitimacy and credibility in the eyes of both local people and outside scientists, increasing cultural pride and thus motivation to solve local problems with local ingenuity and resources (ibid). Local capacity building is a crucial aspect of sustainable development, and researchers and development specialists should design approaches, which support and strengthen appropriate indigenous knowledge and institutions.

Indigenous people can provide valuable input about the local environment and how to effectively manage its natural resources. Outside interest in indigenous knowledge systems has been fueled by the recent worldwide ecological crisis and the realization that its causes lie partly in the overexploitation of natural resources based on inappropriate attitudes and technologies. Scientists now recognize that indigenous people have managed the environments in which they have lived for generations, often without significantly damaging local ecologies (Emery, 1996). Many feel that indigenous knowledge can thus provide a powerful basis from which alternative ways of managing resources can be developed. Indigenous knowledge technologies and know-how have an advantage over Science in that they rely on locally available skills and materials and are thus often more cost-effective than introducing exotic technologies from outside sources. International Institute of Rural Reconstruction (1996a). Local people are familiar with indigenous knowledge system and so do not need any specialized training (ibid). The following are some of the features of indigenous knowledge, which have relevance to conservation and sustainable development:

- Locally appropriate: indigenous knowledge represents a way of life that has evolved with the local environment, so it is specifically adapted to the requirements of local conditions.
- Restraint in resource exploitation: production is for subsistence needs only; only what is needed for immediate survival is taken from the environment.
- Diversified production systems: there is no overexploitation of a single resource; risk is often spread out by utilizing a number of subsistence strategies.
- Respect for nature: a 'conservation ethic' often exists. The land is considered sacred, humans are dependent on nature for survival, and all species are interconnected.
- Flexible: indigenous knowledge is able to adapt to new conditions and incorporate outside knowledge.
- Social responsibility: there are strong family and community ties, and with them feelings of obligation and responsibility to preserve the land for future generations. (Source: Dewalt, 1994)

TYPES OF INDIGENOUS KNOWLEDGE

Indigenous knowledge is considered to be cultural knowledge in its broadest sense, including all of the social, political, economic and spiritual aspects of a local way of life. Sustainable development researchers, have found the following categories of indigenous knowledge to be of particular interest: resource management knowledge and the tools, techniques, practices and rules related to pastoralism, agriculture, agroforestry, water management and the gathering of wild food; classification systems for plants, animals, soils, water and weather; empirical knowledge about flora, fauna and inanimate

resources and their practical uses; and the worldview or way the local group perceives its relationship to the natural world (Emery, 1996). Indigenous knowledge is embedded in a dynamic system in which spirituality; kinship, local politics and other factors are tied together and influence one another. Spiritual beliefs about nature may influence how resources are managed and how willing people are to adopt new resource management strategies (IIRR, 1996a).

Thrupp (1998). asserted that in the Western World forests have usually been viewed A management objects of goods/service outputs for their owners/users in Europe they were initially the property of nobles and, later, of a broader segment of society. Many people today are beginning to view forest ecosystems as the "subject" on which humans depend for utilitarian goods and services, social and spiritual self-identity (such as loggers, hikers, birdwatchers, hunters or foresters) and other social values through diverse and changing forest and human cultural relationships. They feel that the need for economic development and ecosystem management theory and practice to evolve jointly in this direction in the twenty-first century is less open to debate and therefore the Western world must develop and refine these new forest relationships, meanings and management through thinking, learning from other cultures, public debate and on-site forest engagement.

Tiwari *et al.* quoted in Pandey (2002) says that the tribal communities of Meghalaya – Khasis, Garos, and Jaintias in India have a tradition of environmental conservation based on various religious beliefs. As elsewhere in India, particular patches of forests are designated as sacred groves under customary law and are protected from any product extraction by the community. Such forests are very rich in biological diversity and harbor many endangered plant species including rare herbs and medicinal plants. Tiwari *et al.* in Pandey (2002) identified 79 sacred groves and their floristic survey revealed that these sacred groves are home to at least 514 species representing 340 genera and 131 families. The status of sacred groves was ascertained through canopy cover estimate. About 1.3% of total sacred grove area was undisturbed, 42.1% had relatively dense forest, 26.3% had sparse canopy cover, and 30.3% had open forest. Notably, the species diversity indices were higher for the sacred grove than for the disturbed forest (Pandey, 2002).

In Rwanda it was found that farmers "recognize several dozen different potato varieties, which they distinguish according to plant and tuber traits, as well as agronomic and culinary characteristics" (Haugerud & Collinson 1991). East African farmers "recognize in maize, as in potato cultivars, important differences in taste, texture, storability, marketability, disease and pest resistance, and response to moisture stress. At least nine possible end uses, many of them simultaneously relevant on a single farm, help to determine the maize genotypes east African farmers prefer" (Haugerud & Collinson 1991).

"Much of the world's biological diversity is in the custody of farmers who follow age-old farming and land use practices. These ecologically complex agricultural systems associated with centers of crop genetic diversity include not only the traditional cultivars or 'landraces' that constitute an essential part of our world crop genetic heritage, but also wild plant and animal species that serve humanity as biological resources" (Oldfield & Alcorn, 1991b). Chambers, R., A. Pacey, and L.A. Thrupp (eds) (1989) have found that farmers evaluate cultivars using a wide variety of criteria that can be of immense interest and value to crop breeders. In Zambia, the farmers' evaluation of a high-yielding hybrid maize variety and description of the

positive and negative characteristics of locally-adapted open-pollinated varieties led to a more effective national maize breeding program.

The Shona and Ndebele culture have rules and regulations governing the exploitation of some specific forest products (Tsikai, 2006). This emanated from the various traditional beliefs and values that were preserved by the two tribes. Mukwada (2000) argues that a diversity of wildlife and plant species is viewed by most people, worldwide, as part of their cultural heritage. In Zimbabwe for instance, the Shona/Ndebele tribes regard certain plant species for example *Burkea Africana* and *sclerorya* as sacred. As a result such specified species could not be tempered with in any way such as burning or cutting. The belief was that the ancestral spirits use such tree species to reach people. So the cutting or destruction of such trees would detach people from their ancestors, thereby spelling doom to the tribe. Tsikai (2000) argues that although the Shona people believed in God, virtually all of them still believe their ancestral spirits are their protectors. It is this belief that has perpetuated an intriguing culture supported by a set of procedure, protocol and customs.

Matter and Timberlake (1992) argue that some tree species are used by traditional healers as traditional medicine in Zimbabwe. They cited examples of *Psudalachnostylis Maprounifolia* (Mushozhowa) and *Maytenus Senegalensis* (Chizhuzhu) as some of the commonly used traditional herbs among the Shona and Ndebele tribes. Thus, their use as traditional herbs stimulates proper management from the general populace in the community. These specific species have in many cases survived deforestation, among other mismanagement activities, from the hands of the communal people, who are usually in great need of fuel wood. The Action Magazine of (1997:16) identifies other tree species that are also regarded as sacred under the Shona culture. Other wooded species it identified and their believed functions are listed below

Table 1: Some Woody species and their uses

Species	Uses
Corkwood (<i>commiphora molis</i>)	When planted in a new settlement this tree confers a blessing on a new village.
Wild pear (<i>Dombeya rotundifolia</i>)	An infusion made from these roots will drive away goblins
Tree wisteria (<i>Lannea Stuhlmanni</i>)	The trees are used to evoke ancestral spirits
Dog plan (<i>Ekebergia Capansis</i>)	This tree used by hunters to placate the spirit of a lion they have killed.
Wild gardenia (<i>gardenia Imperialis</i>)	Leaves kept under the pillow are used to keep away evil spirits and prevent bad dreams.
Marula (<i>Sclerocarya birrea</i>)	An infusion of powdered bark from male or female tree can be used to influence the desired sex of an unborn child.

Source: Action Magazine 1997

Apart from the identified woody species, Chiwandamira (2000) argues that wild fruits are not spared from the traditional way of resource management. He argues that some rules and regulations on wild fruit management state that one could not shake

off fruit from a tree. Also one could not say anything defamatory about the taste of certain wild fruits. Various traditional rules have also been used to manage wild fruits such as mazhanje, chakata, marula, masawu and nyii. The Action Magazine (1997) argues that the first fruit (of each season) of marula and mazhanje are sacred and therefore permission to harvest them must be sought from the chief first.

LIMITATIONS OF INDIGENOUS KNOWLEDGE SYSTEMS

As with scientific knowledge, however, indigenous knowledge has its limitations. Indigenous knowledge is sometimes accepted uncritically because of naive notions that whatever indigenous people do is naturally in harmony with the environment. There is historical and contemporary evidence that indigenous peoples have also committed environmental 'sins' through over-grazing, over-hunting, or over-cultivation of the land. It is misleading to think of indigenous knowledge as always being 'good', 'right', or 'sustainable'.

For example, a critical assumption of indigenous knowledge approaches 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 etc. However, under conditions where the local people are in fact recent migrants from a quite different ecological zone, they may not have much experience with the new environment. In these circumstances, some indigenous knowledge of the people may be helpful, or it may cause problems (e.g., use of agricultural systems adapted to other ecological zones). Therefore it is important, especially when dealing with recent migrants, to evaluate the relevance of different kinds of indigenous knowledge to local conditions.

Wider economic and social forces can also erode indigenous knowledge. Pressure on indigenous peoples to integrate with larger societies is often great, and as they become more integrated, the social structures, which generate indigenous knowledge and practices, can break down. The growth of national and international markets, the imposition of educational and religious systems and the impact of various development processes are leading more and more to the 'homogenization' of the world's cultures (Grenier, 1998). Consequently, indigenous beliefs, values, customs, know-how and practices may be altered and the resulting knowledge base incomplete.

Sometimes indigenous knowledge that was once well adapted and effective for securing a livelihood in a particular environment becomes inappropriate under conditions of environmental degradation (Thrupp, 1989). Although indigenous knowledge 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).

Finally, an often-overlooked feature of indigenous knowledge, which needs to be taken into account, is that, indigenous knowledge unlike scientific knowledge; sometimes the knowledge, which local people rely on, is wrong or even harmful

(Thrupp, 1989). 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 Thrupp (1989).

CONSERVATION THROUGH THE INDIGENOUS KNOWLEDGE SYSTEMS

Several rules and regulations in the management of natural resources are cited by Chiwandamira (2000). Among them are mountains, which were burial places for chiefs. Mountain places became so sacred that all the natural resources (including forests) found on them were not supposed to be disturbed in any way. Some sacred mountains could not even be climbed, for any purpose, before necessary rituals have not been performed. Performing such rituals was believed to have been a process of appeasing the spirits before they grant person's permission of exploration. Chiwandamira (2000) purports that the idea was to maintain the sacredness of mountains and to foster a culture of request for natural resources.

Moreover, Chiwandamira (2000) identified gravesites as sacred. These are the places where the deceased are buried. Since the people believe that the spirit of the dead would join other ancestral spirits in looking after the living, their burial places were regarded as highly sacred. As a result plants and grass around these sites were not to be cut or burnt. In fact any mismanagement of such sites by any human, local or foreign, constituted a very serious offence. Mukwada (2000) added that even the practice of burning grass in an effort to resuscitate pastures was never allowed near such sites. These and other related cultural practices have been vital in the preservation of our natural resources. The taboos set discouraged unwarranted destruction of resources such as wetlands and other cultural sites.

EFFECTIVENESS OF INDIGENOUS KNOWLEDGE SYSTEMS IN FOREST RESOURCES CONSERVATION

Mukwada (2000) underscore the importance of indigenous knowledge systems in the conservation of natural resources. They argued that indigenous knowledge systems created a mutual co-existence and balance between man and his local environment. They gave an example of Alaska (U.S.A) students who managed to solve local environmental problems and even taught others environmental education using indigenous knowledge. Thus Manjengwa et al (1999) made it clear that indigenous knowledge can be an effective tool in environmental exploitation and resource conservation.

Grenier (1998) stated that the Amazon forest in Brazil had no problems of deforestation until the introduction of settlers and loggers. They argue that before the settlers, the locals respected their traditional and culture, as their guiding principles in the exploitation of the rainforest. However, massive deforestation began, as the settlers did not recognize the culture of the local people in resource exploitation. The (Amazonian) Indians were torn from their land, normal occupations, traditional learning, rituals and recreating and lost virtually all contacts with their past (ibid). This loss of Amazon Indian culture, as a result of development, is a major concern for anthropology, beyond the human concern for the suffering of the individual uprooted tribe people. Even strong clashes and open confrontations between the local Amazonians and the loggers could not help to save further damage of rainforest.

The discussion on the Amazon forest above reflect that the management of the forest had been more effective during the time when the locals used a traditional approach than during the time when the settlers introduced alien rules and regulations.

Moreover, the case study of Chibuwe forest reserve given by Mukwada (2000) is a manifesto of the effectiveness of indigenous knowledge systems in resources conservation. Being a sacred place to the local Ndaou community the forest has been spared from destruction. Traditional leaders prohibit tree cutting and only headmen sanction the collection of wood from the forest. The headmen fine any culprits who are caught defiling the forest. Thus the involvement of local people at this lowest level can go a long way in maximum conservation of resources.

RESEARCH METHODOLOGY

The Qualitative Research Design was used this as one of her research methodologies. This design was quite appropriate as the researcher got manning by also interviewing people and found out what exactly they think and say about the function of indigenous knowledge systems in resource conservation.

The population

The sampled population was made up of villagers from Mugabe Communal Area. Five villages were randomly selected and investigated. The village populations were Chikoto 63, Chikutuva 65, Dhindi 60, Ngesi 68 and Gwanyanya 64. This gave a total population, under investigation of about three hundred and twenty people. The researcher had key informants, which included the chief, the ward councilor, traditional healers and 'masvikiro'. The key informant interview based on a preconceived questionnaire was targeting 15 community leaders (3 from each village), five traditional healers (one from each village) and sixty community members (12 from each village). The choice of community members was based on their indigenous knowledge on the conservation of forest resources. The sample used was comprised of people from the following villages, Chikoto, Chikutuva, Dhindi, Ngesi, and Gwanyanya.

Research Instruments

Berhr (1973) says a questionnaire is a document that asks the same questions to all individuals in a sample. A questionnaire was an appropriate instrument used in this research to collect data as the information comes from a greater number of sources. Visits to the Mugabe Communal Area were mainly on Wednesdays because that is a traditional resting day. The researcher had to take time scrutinizing the questionnaires. Some questionnaires had to be completed without supervision.

Moreover by using questionnaires, the research once again encountered other problems. The language (English) used could not easily be understood by some respondents, so the researcher had the task of translating and interpreting the questions to them. This further worsened the problems because a lot of time was consumed attending to very few respondents. To overcome this problem, help was rendered by some workmates to translate and interpret questions. Some respondents were not interested in answering the questionnaires; they simply did not have time. A lot of patience had to be invested to overcome that challenge especially the fact that this is purely academic.

Interviews

Mudimi and Muchengetwa (2002) state that an interview is a direct method of obtaining information in a face to face situation and is appropriate mostly with those who are illiterate and semi-illiterate in terms of reading and writing English

Language arguably better placed to have a good knowledge of the problem and so their inclusion as key informants was justified. The above informants were interviewed in the initial stages of the study in an effort to get overcome this, the researcher had to source appropriate modes of transport suitable in the area, such as bicycles. Some respondents were reserved, hence were not prepared to disclose the needed information, for example the ‘svikiro’ appeared to have a negative attitude towards the interviewer. Their responses were too skeletal; as a result the researcher took much of the time trying to put them into persuasion until some satisfactory responses were given. Sacred places such as burial places, mountain cites, river sections and some forest reserves, which are believed to be ‘rainforests’ by the locals were observed. However, this method did not provide the detailed information which one could have obtained had people not been asked. Making some observation can only have meanings if some further clarifications are made through explanations. Seeing some places, for example, bare while others are full of vegetation in an area, can only be meaningful if there is someone who will explain and justify the situation.

Data collection

Questionnaires were distributed to 60 respondents in the five villages of Mugabe Communal Area. Distribution of questionnaires was mainly done during Wednesdays (a traditional resting day in the area) and other public holidays like the Heroes Day. Maximum supervision of questionnaires’ completion by the research team enabled 100% questionnaire return. All questionnaires distributed were completed and returned to the researcher. Interviews were carried out during weekends since most of the key informants interviewed were only available with the weekends.

RESULTS AND DISCUSSION

Awareness of Indigenous Knowledge Systems

The respondents admitted the existence of traditional functions and regulations governing the management of forest products in their area. Table 4.3 below shows the respondents’ opinion on whether traditional rules and regulations exist.

Table 2: Existence of traditional rules and regulations in forest products management

Opinion	Number of respondents	Percentage
Yes	58	96,7
No	0	0
Do not know	2	3,3
Total	60	100

Source: Research survey

A glance at the Table 4.3 above indicates that the majority (96,7%) are aware of the indigenous knowledge systems of forest resources management. However, only two people (3,3%) expressed ignorance of the traditional rules and regulations in one’s area. This might have been a result of personal indiscrimination where traditional issues are not given any chances being considered as fundamental. The ere given all the freedom to show the forest products they thought are conserved through the indigenous knowledge system. Figure 4.1 shows the forest products identified by the respondents, which are conserved through the indigenous knowledge system.

The Muchakata (*Parinaria Curatellifolia*) tree species was identified by all the 60 respondents (100%) as one of the trees, which are conserved through the indigenous knowledge system. The key informants interviewed revealed that this tree species was believed to be used by ancestral spirits as their habitat. The key informants also disclosed that most of the important traditional ceremonies were usually held under the *Parinaria Curatellifolia* tree. Key informants said that the Muchakata tree is conserved because of its importance in their traditional beliefs. Destroying this tree means destroying the habitat for their ancestors who guard and provide for their needs. The Mumveva (*Kigelia Africana*), (90%), Muonde (*Ficus Sycomorus*), (80%) and Mutarara (*Gardenia Thunbergia*), (50%) tree species were also identified by the respondents as some species that are conserved through the indigenous knowledge systems. The interview schedule conducted by the researcher revealed that these three trees species are associated with rainfall. The researcher learnt that the local people usually use these trees during traditional ceremonies (mutoro). It was also observed that the areas that naturally grow *Kigelia Africana*, *Ficus Sycomorus* and *Gardenia Thunbergia* trees are believed to be favored by rains. The interview conducted revealed that mismanagement, in any way of such tree species is highly prohibited by the traditional custodians (community leadership). Since the trees are associated with rainmaking their destruction disturbs the rains expected to fall in the rainy season.

Eighty percent of the Respondents of the survey revealed that the first Mashuku (Uacapa Kirkiana) fruit of the season is presented to the chief first before anyone else is allowed to use it. The respondents believe that the chief would take that opportunity to appease the ancestral spirits. The study showed that expressing gratitude to the ancestors is believed to stimulate good management of the fruit. The Respondents also said that the outsiders are not allowed to harvest the mashuku fruit for commercial purposes. They argued that the prohibition would help ensure sustainable utilization of the fruits as they also share with the monkeys and baboons in the area.

Apart from the forest products highlighted, the key informants and personal communication showed other sacred species locally known as 'rambakutemwa'. This is a term that is used to describe old aged indigenous tree species of which cutting or any form of mismanagement is prohibited. The researcher observed that Mugabe Area had pockets of isolated 'rambakutemwa' trees. The study has also revealed that these trees are associated with ancestral spirit habitation and rainmaking. Some old trees were observed in the middle of fields and along the boundaries of some fields. The main reason is that they are used as shade during the agricultural season and traditional ceremonies are performed under these trees.

The local people were made to believe that the spirits of the departed have great things to do in the lives of the living. The ancestral spirits are believed to give punishments and rewards to mismanagement and good management of forest products respectively. This has been believed to be the core method under the indigenous knowledge. The researcher asked the respondents whether they still believe in the supernatural powers of the spirits.

Table 3: Beliefs that punishment befalls on an area where sacred forest products have been mismanaged

Opinion	Number of respondents	Percentage
Yes	54	90
No	6	10
Do not know	0	0
Total	60	100

Source: Research survey

Table 4.4 shows that the majority of the people still believe in the supernatural powers of the ancestral spirits of the living. Ninety percent of the Respondents who believed in ancestral powers might be the host of local people who will always preserve their tradition, despite the introduction of foreign culture in their areas. On the other hand, the 10% who have voiced against might be the people who have been Christianized. The religious background has an influence on the appreciation of indigenous systems. Key informants complained that Modernism and Christianity have caused some people to shift completely from traditional beliefs. Some people, especially the young seek scientific explanation for many things these days.

The people’s opinion on supernatural powers of the ancestral spirits is illustrated on Figure

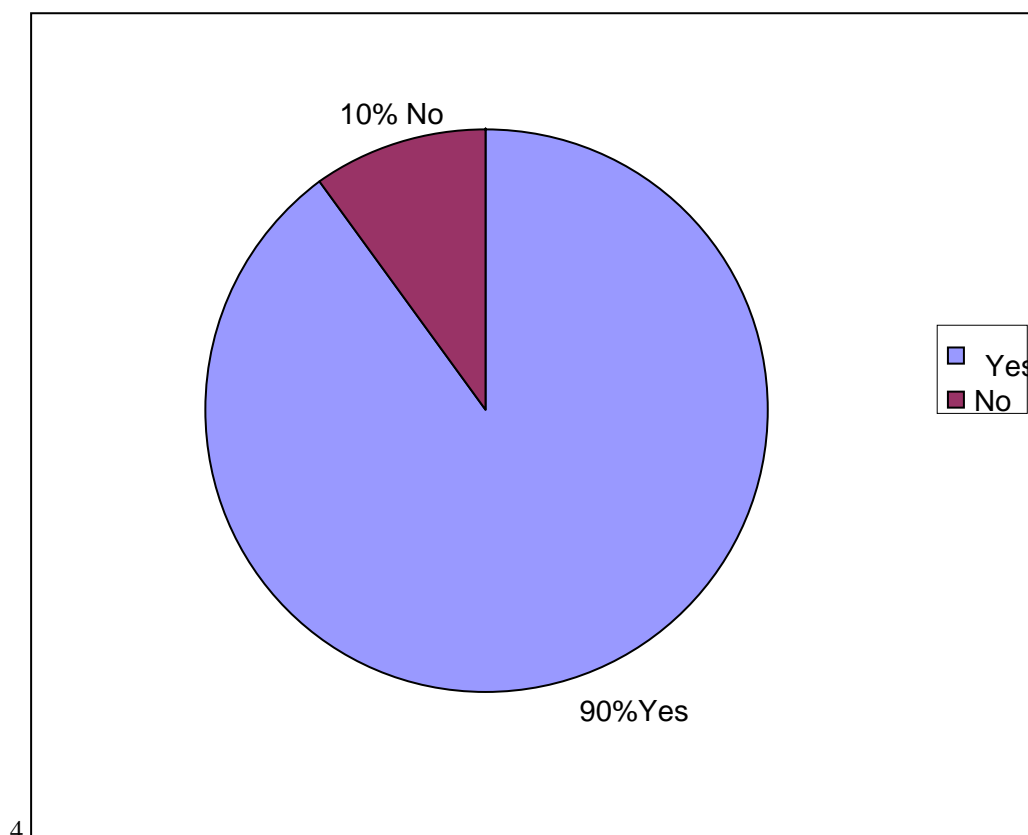


FIGURE 1: Beliefs on supernatural powers of the ancestral spirits (Source: Research Survey)

The effectiveness of indigenous knowledge systems in forest resources management

The indigenous knowledge in forest resources conservation had been tried and tested by the people who lived long ago and before the technocratic approach was introduced. Munowenyu (1999) argues that prior to colonization in Zimbabwe; traditional methods of resource management posed little stress on the environment. However the question is whether this traditional approach is still effective in these decades of modernism where the technocratic approach has established itself. Scientist in terms of its potential applications has undervalued indigenous knowledge.

Table 4: Assistance of the indigenous knowledge in forest resources conservation

Opinion	Number of respondents	Percentage
Yes	46	76,7
No	10	16,7
Do not know	4	6,6
Total	60	100

Source: Research survey

Table 4.5 indicates that 76,6% of the respondents believe that indigenous knowledge can go a long way in helping conservation of natural resources. The key informants interviewed expressed the need for indigenous knowledge systems in natural resource management arguing that the methods are effective if all traditional rules and regulations are explained and well enforced. In light of this, it was observed that there are still some sacred places like village burial places and scared mountains that are still commanding respect from the local populace. Vegetation in these areas is well preserved.

On the contrary the 16, 7% of the respondents saw nothing being offered by the traditional approach in natural resources conservation. It is however, not known how these people deal with the so-called sacred places in their area. The 6,6% did not want to take sides in the opinion test. This might be however caused by the lack of knowledge on indigenous knowledge systems.

Table 5: Age groups and appreciation of traditional issues

Age Group	Number of respondents	Percentage
Youth (Below 40 years)	0	0
Elders (40 years and above)	58	96,7
Both Young and Old	2	3,3
Total	60	100

Source: Research survey

(96,7%) of the (40years and above) as the group that still recognizes traditional issues in forest resources conservation. This might be attributed to a traditional life that was led by this particular group before the establishment of modernism in their

areas. This conservative group might have received other foreign ideas with caution, thereby preserving their own cultural values. Indigenous knowledge systems are not written down therefore it is difficult to pass it on from one generation to the other. The elders are also responsible for upholding cultural and traditional values in society. On the other hand, table 4.5 reveals that the youths who are under the age of 40 have completely no appreciation of the traditional approach. Foreign cultural indoctrination may have caused the youths to shun their own traditional values in preference to the foreign technocratic approach due to globalization and technological advancement.

Lastly, 96.7% of the respondents generally revealed that the local populace recognizes the role played by the traditional approach in conservation although forest resources continue to be mismanaged in the area owing to lack of information. They argued that the youth have not been educated on how the traditional approach operates. Contrary to the technocratic approach that says that ignorance has no defense, the traditional approach spares people who ignorantly mismanage the environment. However the study revealed that indigenous knowledge becomes effective as soon as an individual knows the facts about the sacredness of a particular environment.

CONCLUSION

The majority of people still recognize that there are rules and regulations governing forest resources management in Mugabe Communal Area save for the youth. The Mugabe Community believes that most sacred forest products are associated with ancestral spirit habitation and rainmaking. People perform various traditional ceremonies under such trees. Mismanagement of sacred forest resources in any way is highly prohibited under the indigenous knowledge approach. The people believe that the area would receive a curse from the ancestors, if anyone mismanages the sacred forest resources. The sacredness of products can help in conserving natural resources. However, the survey revealed that the elders (40 years and above) are the only group who generally respect traditional rules and regulations. There is generally lack of knowledge on how the indigenous knowledge has generally caused mismanagement of forest resources in the area and the approach would not punish one who ignorantly mismanages the environment.

RECOMMENDATIONS

Traditional rules and regulations governing conservation of natural resources should be documented out and well communicated to the people, especially the youths. This could be done through a wide consultation with relevant stakeholders in the country and incorporation of indigenous knowledge systems in the school and university curriculum. The chiefs and other traditional leaders should be urged to spearhead the return to the traditional way of forest resources conservation through preservation of sacred places such as burial sites so as to conserve forest resources. There should be an integrated approach in forest resources conservation. The indigenous knowledge system should operate in conjunction with the technocratic approach. The government and the other relevant stakeholders such as the Forestry Commission should therefore be urged to conduct related research aimed at how to integrate the two. The youths should be oriented towards the indigenous knowledge system and made to appreciate the benefits that come with conservation of natural resources by the use of the indigenous knowledge systems through role play, drama and other media.

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