ENVIRONMENTAL EDUCATION ACTIVITIES ARISING FROM LOZI PEOPLE'S IMPLEMENTATION OF THE WATERROWL CROPPING SYSTEM IN THE UPPER ZAMBEZI WETLANDS OF WESTERN ZAMBIA

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By
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A dissertation submitted to the University of Zambia in partial fulfillment for the award of the degree of Master of Education (Environmental Education)

The UNIVERSITY OF ZAMBIA
LUSAKA
2009

DECLARATION

I, Pumulo Walubita Sumbwa, do hereby declare that this work is my original work and that it has not been submitted to either the University of Zambia (UNZA) or any other University for the award of a degree before. All sources of information and literature on related works used in the production of this dissertation have been duly acknowledged by the author.

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DEDICATION

This piece of work is dedicated to my late parents, Mr. Francis Walubita Asheka and Mrs. Grace Mundia Imutowana Asheka for their continued counsel towards my education. My husband Mr. Nyambe Sumbwa and our children for their tremendous support and understanding.

God Bless you all.

APPROVAL

The University of Zambia approves this dissertation of Pumulo Walubita Sumbwa as fulfilling part of the requirements for the award of the Master of Education degree in Environmental Education.

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ABSTRACT

This study was prompted by the desire to determine the extent to which the waterfowl cropping practice of the Lozi speaking people of western Zambia conserved waterfowl of the Upper Zambezi wetlands popularly called the Barotse plains. The study focused on investigating reasons for the practice of waterfowl cropping locally called *ku-loba sitaka* as well as to determine what needed to be done educationally in order to sustain the practice. The latter point at first involved getting and harnessing local people's suggestions and views. This was by way of getting them to respond to research questions which were (a) how does the Lozi practice of breaking the reed cluster *ku-loba sitaka* (waterfowl cropping) operate? (b) is the practice sustainable in view of the growing population? (c) what Environmental Education (EE) activities should be designed to ensure the sustainability of waterfowl, wetlands and local people's lifestyles and (d) to what extent are the local people involved in managing waterfowl and wetlands in the study area. All these questions hinged on the set objectives of the study which were: to investigate how the practice of *ku-loba sitaka* (waterfowl cropping) operated, to assess how sustainable the practice was in view of the growing population in the study area, to propose Environmental Education activities that would ensure the sustainability of the practice and waterfowl as well as to determine the level of participation of local communities in the sustainable conservation of waterfowl and wetlands of the study area.

The research design was both qualitative and quantitative. A total of 50 people responded to either the questionnaire or interview. The questionnaire was answered by men who physically got involved in the practice while the interview sought the opinion of both men and women concerning the practice. Those who were interviewed never had the opportunity of getting to the site when cropping waterfowl.

Among the main findings were that the sustainability of waterfowl in the study area was not attainable due to the indiscriminate poaching, reed cutting and even fires on the research sites (wetlands) This was coupled with the growing population around the study area. The study showed that before Zambia Wildlife Authority (ZAWA) took over the responsibility of overseeing the wetland areas called bird sanctuaries from the Barotse Royal Establishment (BRE), it was every indigenous person's concern to preserve both the waterfowl and the wetlands. But at the time of this research in the year 2007, ZAWA had no effective ability to monitor illegal activities taking place against the bird sanctuaries of the study. This inability ranged from lack of sufficient workforce to transport.

As a result of the findings of this study, the following recommendations are made. The Barotse Royal Establishment and Zambia Wildlife Authority should work closely together in matters of conserving the local natural resources in general and the bird sanctuaries in particular. It is important for the stakeholders to ensure that when giving land to investors for development, sensitive places like wetlands should by all means be spared.

This is in view of the research finding that the growing population contributed to the waterfowl decline. It is also important to have sustained Environmental Educational campaigns and sensitization programmes for the local people on the need for them to conserve and use the wetland and waterfowl of the study area in a sustainable manner. The study has made specific proposals for such environmental education activities in chapter six.

In conclusion, the study highlights the great need for everyone to get actively involved in the conservation of waterfowl and wetlands of the study area. This may help to improve the highly diminished lifestyles of the local Lozi people.

ACRONYMS

BRE	-	Barotse Royal Establishment
D.C.	-	District Commissioner
ECZ	-	Environmental Council of Zambia
EE	-	Environmental Education
FGD	-	Focused Group Discussion
GMAs	-	Game Management Areas
IBAs	-	Important Bird Areas
IBW	-	India Board of Wildlife
IUCN	-	International Union for the Conservation of Nature
MLS	-	Migrant Labour System
NBSAP	-	National Biodiversity Strategy and Action Plan
PPJV	-	Prairie Pothole Joint Venture
RNLS	-	Rhodesia Native Labour System
SPSS	-	Statistical Package for Social Scientist
UN	-	United Nations
UNDP	-	United Nations Development Plan
UNEP	-	United Nations Environmental Programme
UNESCO	-	United Nations Education Scientific and Cultural Organization
UNZA	-	University of Zambia
UZW	-	Upper Zambezi Wetlands
WCED	-	World Conference on Environment and Development
WNLA	-	Witwatersland Native Labour Association

WWF	-	World Wide Fund for Nature
ZAWA	-	Zambia Wildlife Authority
ZOS	-	Zambian Ornithological Society

LIST OF PLATES

Plate		Page
1:	Very few waterfowl is left	2
2:	Some uses of reeds	13
3:	Young African open billed stork on the nest	15
4:	Bird sanctuary along river base	19
5:	Another view of Nangulwe bird sanctuary	20
6 & 7	Young African open billed stork	47
8:	Waterfowl hovering above the nests	48
9:	Few waterfowl than before found on the site	65

LIST OF TABLES

Table		Page
1:	Number of Species Recorded, Identified & Unidentified	38
2:	Respondents by Gender	51
3:	Purpose of Cropping Waterfowl	52
4:	Sustainability of the Waterfowl	53
5:	Types of Punishments given to Defaulters	54
6:	Responses Regarding Waterfowl Decline in the 1950s	55
7:	Suggestions on How to Avoid Waterfowl Decline	56
8:	Resuscitation of *Sitaka*	57
9:	Reasons for Resuscitating *Sitaka*	57

LIST OF APPENDICES

Appendix i Letter to respondents of Questionnaire 87

Appendix ii: Questionnaire 88

Appendix iii: Interview Questions 91

Appendix iv: List of villages visited 92

Appendix v: Village analysis (Questionnaires) 93

Appendix vi Request to use the Speed Boat.....

TABLE OF CONTENT

	Page
Declaration	(i)
Copy Right Declaration	(ii)
Dedication.....	(iii)
Approval	(iv)
Acknowledgement.....	(v)
Abstract	(vii)
Acronyms	(x)
List of plates	(xii)
List of Tables	(xiii)
List of Appendices.....	(xiv)
Chapter 1 : Introduction	
1.1. Introduction to the study	1
1.2 Statement of the Problem	3
1.3 Purpose of the study.....	4
1.4 Objectives	4
1.5 Research questions	5
1.6 Significance of the study	5
1.7 Limitations of the study.....	6
1.8 Operational Definitions of Terms.....	7

Chapter 2: The Context of sitaka in Barotseland`

2.1 Definition of wetland 9

2.2 Types of wetlands 9

2.3 Roles of wetlands 10

2.4 Wetland loss in Europe (1995) 11

2.5 Background of wetlands in Zambia 12

2.6 The Importance of Waterfowl 14

2.7 Profile of Western Province 15

2.8 Description of *sitaka* 17

2.9 Location of the study area 19

2.10 Definition of *sitaka*..... 22

2.11 Functions of *sitaka* 22

2.12 Management of *sitaka*..... 24

2.13 Key ingredients necessary to maintain *sitaka* 27

2.14 Environmental challenges posed by *sitaka* 28

2.15 Future prospects of *sitaka* 30

Chapter 3: Literature Review

3.1 International Sources. 32

3.2 Literature on International Wetlands and Waterfowl ... 34

3.3 Literature on Zambian Waterfowl 36

3.4 Co-operating Partners and Government Bodies involved in Conservation 39

3.4.1 Co-operating Partners..... 39

3.4.2 The Government Bodies involved in Conservation 41

Chapter 4: Research Methodology

4.1 Background 42

4.2 Research Design 42

4.3 Target Population 43

4.4 Study sample and sampling Technique 43

4.5 Ethical issues..... 44

4.6.1 Data Collection 46

4.6.2 Primary Data 46

4.6.3 Secondary Data 48

4.7 Data Analysis 49

4.8 My interest in the research topic..... 50

Chapter 5: Research Findings

5.1. Introduction..... 51

5.2 Purpose of cropping waterfowl 52

5.2.2 Kinds of Punishment metted on Defaulters..... 54

5.2.3 Response Actions for Waterfowl Decline 55

5.2.4 Measures to avoid waterfowl Decline 55

Chapter 6: Discussion of Research Findings

6.1 Introduction 58

6.2 General Discussion..... 60

6.3 Proposed Environmental Education Activities .... through *sitaka*..... 69

6.3.1 Proposed Environmental Education Activities to to conserve waterfowl 71

6.4 Proposed Environmental Education Activities to Address Special Research Findings 74

Chapter 7: Conclusion & Recommendations

7.1. Conclusion 79

7.2 Recommendations..... 80

7.2.1 Recommendations for further Research 82

References 85

Appendices 88

CHAPTER 1

INTRODUCTION

1.1 Background to the Study

The provincial records written by early Europeans who visited Barotseland, now known as the Western Province of Zambia, show that waterfowl, fish and animals were abundant during the pre-colonial and early colonial periods. The Nyengo area in Kalabo District was described by Clay (1968:10) as follows:

> The Nyengo swamps were filled with birds, animals and fish, while on the landward side, there were great open plains in between areas of bushland were aggregations of game animals only seen today in national parks and game reserves.

The use of the term 'filled' and 'aggregation' attest to the abundance of waterfowl, fish and animals. With regard to waterfowl, they were not only plentiful in terms of number, but were also of many different species.

Winkworth (1984:120) quotes Bottom (1942) as having recorded the prevalence of the 'black-headed heron' (ardea melanocephala) on the Barotse plain in 1942 and that these were not found elsewhere in the Northern Rhodesia (now Zambia). Palmer (1960) points to the then proliferation of waterfowl in the Barotse Plain in the past as well when he writes:

> "Twenty-five years ago, the Zambezi teemed with bird life, now, there is but little. The whistling geese in those days were in such myriads that when raised by a shot they did, on occasion, quite literally hide the sun"

Plate 1: Very few waterfowl is left

source: Field Data, 2007

Acreman and Hollis (1996:16) quote Mwenya (1973) "stating that the abundance of the waterfowl was not only found on the upper Zambezi but also in the Bangweulu Basin". They also quoted Duothwaite (1982) who agrees with the fact that bird life was common.

In view of the above, Palmer's reference to bird decline by the 1960s which incidentally is applicable to animals too, raises the question as to why this was so. The environment or ecological disruption of conservation activities used by Lozi people to conserve wildlife could be a possible reason. To this end, it has become necessary to study one of these activities *'ku-loba sitaka'* which literally means breaking the reed cluster. It was possibly practiced with regard to waterfowl conservation which is today threatened by extinction if not conserved. The United Nations Environmental Programme (UNEP) (1993) states that there are 1, 029 threatened bird species world wide. In view of this

threatened extinction, wetlands, which are the habitat for waterfowl should be conserved too because they can make a major contribution to socio-economic development. Further to this www.inch.org point to the fact that ecosystems provides an estimated US$33 trillion per year to societies, of which an estimated 26% comes from fresh water ecosystems.

The same website cited above goes on to indicate that whilst there are tangible benefits from wetlands, they (wetlands) suffer from over extraction of fresh water, over use of their resources, drainage and pollution. Already 50% of the world's wetlands have been lost in the past century.

The management of wetlands has a direct bearing on the sustainability of the biodiversity of that particular wetland. In this regard, the proliferation or demise of the waterfowl, for example, on the Upper Zambezi depends, to a greater extent, on the type and nature of conservation activities that the locals espouse.

The study, therefore, focuses on environmental education activities arising from Lozi people's implementation of the waterfowl cropping system called *kuloba sitaka* in the Upper Zambezi wetland of Western Zambia.

1.2 Statement of the Problem

Ku-loba sitaka literally means **'breaking the reed cluster'** although symbolically, this translates to "the killing of waterfowl in a reed cluster". Previously, the reed cluster was a no go area during the time waterfowl were laying eggs. Cropping only lasted one day and it was the young fowl that

was targeted. The practice seemed to have been effective until the 1960s when the waterfowl population started to dwindle. This depopulation of waterfowl that met various environmental; and social elements which were integral to the practice of *sitaka* posed a threat to the existence of the birds with extinction. The focus of the study therefore, was to find out reasons for, as well as determine what should be done to remedy the situation by getting and harnessing local people's suggestions.

1.3 Purpose of the Study

The purpose of the study was to determine the extent to which the cropping of waterfowl in the Upper Zambezi wetlands of the Barotse Plains sustainably conserved the waterfowl of the study area. It also had to determine if the changes to the wetlands in the study area had any impact on birds in the Barotse plains. The ultimate aim after exploring the above issues was to propose environmental education activities which would assist to sustain the studied waterfowl and their wetlands.

1.4 Objectives

In order to address the above aims, the following specific objectives guided the study:

1. To investigate how the Lozi practice of breaking the reed cluster operated
2. To assess how sustainable the practice was in view of the growing population of the study area.
3. To propose curriculum which would ensure the sustainability of the waterfowl and their wetland environment and people's lifestyle in the study area.
4. To determine the level of participation of the local people in the conservation of wetlands in general and waterfowl in particular.

1.5 Research Questions

This study tackled the following specific research questions:

1. How did the practice of breaking the reed cluster operate?
2. Is the practice sustainable in view of the growing population?
3. To what extent are the local people involved in the management of wetlands in general and conservation of the waterfowl in particular?
4. What environmental activities could be designed to ensure the sustainability of the waterfowl, the wetland environment and the people's lifestyle in the study area?

1.6 Significance of the Study

The study is expected to highlight the conservation rationale that was hidden in the simple activities of a rural people which helped to promote the abundant existence of the waterfowl in the Upper Zambezi Wetlands (UZW) for generations. The information so derived should assist in exploring alternatives in the sustenance of waterfowl, wetland and the local people's lifestyle. Furthermore, the investigation results should impart upon the theory issue of the *Sitaka* practice expectations between the local traditional rulers and the Zambia Wildlife Authority (ZAWA) conservation regulations. To this end, this study should make significant contributions to biodiversity promotion of the UZW in line with global expectations.

1.7 Limitations of the Study

Limitation may be defined as restrictive conditions of successful data collection. Lomke et all (1993) defines it as conditions or restrictive weakness. The study had several limitations particularly during the data collection and these are highlighted as follows:

- The researcher went for data collection a week prio to the 2007 Kuomboka ceremony. This is an annual event when the Litunga of the Western Province moves to his winter palace. It was difficult to meet with the Indunas as they were highly involved in the preparations for the ceremony.
- It was discovered in the field that most people who had been involved in the practice of ku-*loba sitaka* had either died or were not able to read and answer the questionnaire. The challenge therefore, for the researcher was that she had to spend more time with the respondents by filling the questionnaires for them as they responded to the questions.
- The research "spilt over" to more villages than the six proposed. This came about because it became difficult to find the elderly men who took part in the activity within the six proposed villages. Because of this, the villages were visited in search of either those who took part or had ideas about the practice so that questionnaires and interview questions could be answered.
- It became difficult for the researcher to see more than one bird sanctuary *sitaka*. This was partly because most of them are no longer viable and also because it became too costly to have to hire a speed boat as they were far apart from each other. For instance the Marana

bird sanctuary in Nalolo area that is between Mongu and Senanga Districts.

- Focused Group Discussion (FGD) could not be conducted because most people found in villages were either too young to share their experiences or if they had at all, their opinions over the practice were scanty. This resulted in the researcher having to interview the eligible respondents. Again it meant covering many more villages than was proposed. This resulted in the researcher spending more time than the proposed sixteen (16) days.

1.8 Operational Definitions of Terms

According to Ramakrishnam (2005:5), Environmental Education (EE) is the education process dealing with man's relationship with his natural and man-made surrounding. This includes among other things conservation. When this is understood, the quality of life world wide including the study area will improve because quality environment produces quality awareness and is thus non negotiable but critical from all angles of life be it human or otherwise.

The formal definition of Environmental Education is difficult as it is best defined by the aspects it takes into account. For this study, it will be defined in accordance to nurture, protection, conservation and non wasteful attitudes towards nature. The classic definitions by the International Union for the Conservation of Nature, (IUCN) would be the best to suit this description. It states that EE is the process of recognizing values and classifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among men.

The definition emphasizes EE as a process and practice, as a result of this, countries like South Africa have consistently referred to EE as a 'process' thereby it emphasizes people's attitudes, values and skills, towards their environment. When this message is well articulated (even in the study area,) the results should be those that would promote the conservation of both the reeds and the waterfowl, which will increase the population of waterfowl which in turn will improve the livelihood of the local people in the study area.

According to Ziaka (2000:16), the purpose of EE is to take action in favour of the environment as well as the search or solutions to environmental problems. In line with Ziaka the research conducted in this particular study teases out some solutions which will be found in chapter six of this study. It is also hoped that the relevant authorities would have interest to read and study the recommendations brought out in this study.

It is therefore, important to study EE because it helps people to appreciate nature and society. This assumption is further supported by Ziaka (2006:14) when he states some objectives of EE as defined by UNESCO in the final report of the conference of Tbilisi as follows:

- To raise awareness about the environment in general
- To develop attitudes that favour environment protection and defining values.
- To develop capabilities for solving environmental problems.

CHAPTER 2

THE CONTEXT OF *'SITAKA'* IN BAROTSELAND

2.1 Definition of Wetland

Barbier, Acreman and Knowler (1971:1) state that it is difficult to define wetlands because of their enormous variety. However, they mention that wetlands certainly occupy the traditional zones between the permanently wet and generally dry environments. Article 1 of the Ramsar Convention of 1971 also defines wetlands as areas of marsh, fen, peatland or marine water, the depth of which at low tide does not exceed six metres. They share the characteristics of other environments and yet are neither aquatic nor terrestrial.

2.2 Types of Wetlands

There are five broad types of wetlands.

- **Estuaries:** this is where rivers meet the sea and salinity is intermediate between salt and fresh water.
- **Marine:** these are not influenced by river flows such as shorelines and coral reefs.
- **River line:** here the land is periodically inundated by river overtopping such as water meadows, flooded forest and ox bow lakes.
- **Lacustrine:** these are areas of permanent water with little flow for example ponds and volcanic crater lakes.
- **Palustrine:** where there is more or less permanent water for instance papyrus swamps, fen and marshes. This is the type that is found in the study area.

2.3 The Roles of Wetlands

Wetlands play very significant roles everywhere. They offer a habitat for natural resources such as waterfowl and reptiles. They generally support substantial numbers of different species of waterfowl with the exception of king fishers and birds of prey that do not ecologically depend upon wetlands. They are also needed for tourism purposes, thereby giving sufficient entertainment to tourists. Purseglove Jeremy (1988:136) also allude to the fact that wetlands may offer a major attraction in themselves as part of our expanding tourist industry such as bird watching and sailing thereby providing visitors with hours of entertainment. Therefore, if well managed, their wildlife could definitely be enjoyed without undue disturbances by the tourists who are willing to pay for the pleasure of admiring them. This would be a very good source of the so much needed financial resources to any developing country like Zambia.

Acreman and Hollis (1996:1) state that wetlands posess many important attributes such as their intrinsic beauty and close cultural, social and spiritual association with the local people. As such, they are highly used by the local people for their livelihood. It is in view of this that among the World Conservation Union Programmes is that of co-ordinating and reinforcing the Union activities on the conservation and management of ecosystems.

They further state that wetlands are of an enormous economic importance because they are attractive to so many users. They also provide a range of goods like foliage, fish and pasture. However, they are sensitive to ecological change such as caused by dam constructions, intensive agriculture and other industrialization activities. It is because of the role of Ramsar in the wetland

conservation, whose mission according to Barbier et al (1997) is the conservation and wise use of wetlands national action and international cooperation as a means to achieve sustainable development throughout the world.

Barbier et al, (1997:2) further state that 350 million years ago, wetlands produced and preserved many of fossil fuels (coal and oil). As such, they were described as the kidney of the landscape because of their enormous functions in hydrological chemical cycles. They were also described as biological supermarkets because of their extensive food webs and the rich biodiversity they support.

The value of the wetlands is also noted in that the soil is rich and because of this, is used in agriculture, while the fish and waterfowl are food for humanity and other animals.

Despite this very important role wetlands play, they are in danger world wide although it may be difficult to quantify the loss because the total world area of wetlands is uncertain. An example of the wetlands loss is thus stated here.

2.4 Wetland loss in Europe (1995)

Country	period	% loss
France	1900-1993	63
Netherlands	1950-1985	55
Germany	1950-1985	57
Spain	1948-1990	60
Italy	1938-1984	66

Like Europe, Gambia is also losing a lot of her original wetlands. Singhatey (2006:23) states that this loss is causing many species to be under severe threat. Although there are no up to date figures to substantiate this fact, it is however; believed that there has been a marked decrease of over 600 bird species.

2.5 Background of Wetlands in Zambia

Zambia has some of the world's largest and most important wetlands with numerous other small ones. The Bangweulu swamp for instance is 10th largest in Africa as stated by Environmental Council of Zambia (2000:42). They also have abundant waterfowl though the shoebill stock is highly threatened.

According to information on http//www.ramsar.org/profile-zambia.htm, Zambia has two sites that have been designed as wetlands of international importance with a surface area of 333,000 hectors. These sites are Bangweulu and Kafue flood plains. These wetlands are famous worldwide for their numerous bird species and other wildlife particularly the lechwes. According to http://www.times.co.zm/review newslorgi, Zambia has the world's largest breeding population of wattled cranes.

The view of Hollis (1996:1) that wetlands are of great value to local people's livelihood is very true of the people of the study area in Mongu District. Apart from wetlands providing tourist attraction elsewhere, the local people of Mongu district also use the reeds that grow on wetlands for various activities. These include mat making, construction of court yards, thatching houses and for

cooking purposes particularly by people who live on the Barotse plains where firewood is very scarce.

Plate 2: Some uses of reeds: (courtyard)

Source: Field Data, 2007

Zambia has a rich array of wetlands most of which are famous for numbers of waterfowl. An example of these would be wattled cranes. According to information on http://www.fatbirder.com/links-geo/africa/zambia.html about 750 species have been recorded in Zambia. Many of these are difficult to see anywhere else. Over 600 of these are residents or afro tropical migrants or vagrants from pale arctic region. This abundance of waterfowl also extends to Liuwa plain wetland which is part of the Upper Zambezi flood plain, the area of this study. The waterfowl become particularly spectacular in the flood season. However, it is sad to note that most species are highly threatened; this might lead to total extinction if they are not protected. In line with this, http"/earthreads.wri.org post information that Zambezi plains had between 1992 and 2002, 252 known species of breeding birds and that by 2002, 11 of these species were threatened. Some of these are indeed waterfowl. Wildlife is Zambia's identity, as such it must be protected and managed carefully.

2.6 The Importance of Waterfowl

The Ramsar Convention of 1971 defines waterfowl as species of birds that ecologically depend upon wetlands. These are numerous. In the study area were: cattle egret, white – breasted cormorant and African open billed stork.

Plate 2: Young African open billed stork on the nest

Source : Field Data, 2007

Waterfowl like wetlands are important in that they too, contribute to the economic development of a nation. This is because people travel world wide to view waterfowl which occur in a spectacular manner. In view of this, there is need to maintain the diversity of waterfowl particularly by protecting the endangered species. For instance, Mexico and United States joined forces to create an innovative conservation whose aim was to conserve the continent's water birds.

2.7 Profile of Western Province

Zambia is divided into nine (9) provinces among these is the Western Province. Western Province was known as Bulozi and later Barotseland during the time of colonial rule. It lies about 1, 050 metres above sea level and boarders with Angola and Namibia. Locally, it boarders with Southern, Central, Lusaka and North-Western provinces.

The province's common language is Silozi. Others are Mbunda, Nkoya, Luvale and numerous Luyana dialects. The people of the province have various activities for their livelihood. They are involved in agriculture (maize, millet, cassava and rice). They are pastoralists and also are involved in fishing. Other than these activities which seem to be their major ones, they also get involved in several others such as curving, basketry and mat making.

All these activities help them get a living and both men and women get involved in them except curving which is solely for the men folk. In the colonial days, the province was actively involved in the Migrant Labour System (MLS) as an economic activity. Men left their families to go and work on the mines in Southern Rhodesia, (now Zimbabwe) and South Africa. According to Wood (1989:4), the Rhodesia Native Labour System (RNLS) also recruited through the Witwaters Land Native Labour Association (WINELA) labourers to work in these various mines.

The province has in general a good climate particularly for agricultural purposes. The climate pattern is thus divided into four seasons.

December to March: low pressure and this is the time the area receives a lot of rainfall. The rains usually begin in November with January recording the highest. It is during this time that Ku-omboka ceremony takes place. It is also during this time that the waterfowl prepare their nests for breeding purposes.

April to June: pressure builds up and it is the time the weather is cool. It is also the time for cropping the waterfowl.

July to September: high pressure has built up with the dry weather and cold nights being experienced. During this time the migrant waterfowl would have gone back to their places of origin awaiting the next breeding season.

October to November: this is the transitional period of the dry and the hot weather which can go up to 38.4°C in Mongu during the day.

Mongu, where the study area is, is the provincial headquarters of the province. It is 611 kilometers away from Lusaka, the capital city of the Republic of Zambia. The administrative boma of the province lies on the edge of the Bulozi plain (Zambezi Flood Plains). According to Naidoo (1995:142), the area is characterized by a flood plain running along the great Zambezi river between the latitudes of 14°S and 16°S. This plain extends up to 15 miles on either side of the Zambezi River.

The plain is one of the important bird area sites. However, it has relatively poorly documented avifauna. Daela and Stjernstedy (2001:91-2) state that although the area is poorly known, it is undoubtedly important for its wide variety of waterfowl.

2.8 Description of *Sitaka*

The Lozi people had many practices. Among these were *'sitindi'* (cropping of fish), *'lisulo'* (cropping of game) and *'ku-loba sitaka'* (cropping of waterfowl). The last is what the study is about.

'Sitaka' is a thicket of water-(based) reeds interwoven together in such a manner that men could actually walk on them during the cropping exercise. *'Sitaka'* was previously only accessible with permission from the chief (Silalo Induna) and

now from Zambia Wildlife Authority. Although these thickets are still available today, they are no longer as thick as they used to be in the past. This could be greatly attributed to so much uncontrolled reed cutting and fires.

The Silalo Induna (chief) had the responsibility of taking care of the natural resources in his area. As such, *lindaleti* (guards) were appointed to particularly watch over the *sitaka*.

Among many of their duties was to ensure that the reed cluster was a no go area for anybody particularly during the breeding season. These guards were the ones who informed the chief when cropping was ready and so they accompanied him to the bird sanctuary to have a thorough inspection of the waterfowl's readiness for cropping. If the chief was satisfied, a day was set to visit the Litunga with samples of the waterfowl to inform him about the matter. This resulted in a day being determined for cropping if the Litunga was satisfied with the samples taken to him. When the chief had been given approval by the Litunga, he went back with the *ndaleti* (guard) to their village. Word was then sent to all the villages surrounding the reed cluster. Men would gather their pots and mealie meal in readiness to go for cropping a day before the agreed upon date. The Litunga did not attend but was represented by his indunas led by the induna in charge of natural resources.

After the men had gathered at the site, a few would get on to the reed cluster to pick some waterfowl for their supper. This was usually done according to their groupings or villages. They would then be given welcoming remarks and caution by the chief of that area. Among the issues he covered was to present a message from the Litunga particularly wishing them well during the cropping exercise.

Plate 3 : Bird Sanctuary along River Base

Source: Field Data, 2007

The *sitaka* is normally situated above the deep waters of the Zambezi River. In view of this, the elderly people among the group were obliged to pay homage to Nyambe. Nyambe is believed to be the god of the Lozi people. They sought his protection during the time of cropping due to various possible accidents that may occur such as snake bites, dropping into the deep waters or sustaining a wound from someone's spear which was used to bring down the waterfowl that were high up on the reeds. It was often those men that were up on the reeds who could experience stabbing by spears from those below them.

Having finished cropping, all men gathered up according to their villages. There was a dual purpose for this.

- It was meant to be a checking moment to see how many have been injured or indeed missing completely because they fell into deep waters.
- It was also meant to be the time when the Indunas would go round to pick some waterfowl for the Litunga and the Indunas who remained at the palace. This was locally known as *mubingu* or *kubinguta*. After *mubingu* was done, men then dressed their catch. Those that came from far off places partly boiled their waterfowl to avoid them getting rotten.

It was a joyful exercise especially if there were no loss of lives or serious injuries. Joyful in that it brought together men from far and near who might not have met over a long time. Secondly, they went back with sufficient relish for their families. No one slept hungry because each family had a representative. The old and unmarried women *bo namukuka* were equally taken care of by their sons and brothers. Indeed joyful experience because the children sang songs and danced in the evenings as there was plenty to eat for a number of days following the cropping exercise.

2.9 Location of the study Area

The Nangulwe bird sanctuary in the picture below that was visited is found along the Zambezi River some 20 kilometres away from Mongu harbour in *Siwito* area. It is situated after Lealui, the summer capital of the Litunga of Western Province and also by – passes Nanikelako the burial place of king Lewanika locally known as *Sitino sa Lewanika.* The bird sanctuary *sitaka* is found

on the way to Libonda, the capital of Mulena Mukwae Mbwanjikana of Kalabo District.

Plate 4: Nangulwe Bird Sanctuary

Source: field Data, 2007

It was discovered that due to wild fires and severe reed cutting, the birds had changed camps from the original reed cluster to one that seemed to be ideal in terms of their security. However, it is still within the same catchment area and this is the reason why it has maintained its name. The bird sanctuary was found to have several bird species when visited, such as cattle egret, white-breasted cormorant and the African open billed stork. This bird sanctuary is also well known by the local people for habiting a vicious hippopotamus and because of this even those who go poaching do so with a lot of caution and, of course, at their own risk.

2.10 Definition of *Sitaka*

Sitaka is an area which *has* been declared as a bird sanctuary under section 144 of the laws of Zambia. As already stated in this document, often times *sitaka* has water running for it to become a good habitat for waterfowl.

Leonard (2005:62) refers to *sitaka* as a traditional bird hunting area where nestlings are harvested from breeding colonies. This implies quite a lot in terms of the need to maintain *sitaka*. When these areas become less conducive for waterfowl, they move away to other sights as was the case with Nangulwe bed sanctuary.

2.11 Functions of *sitaka*

Reeds are generally regarded as a typical wetland weed, and can actually become a nuisance to the river by covering part of it thereby reducing its size. It is these reeds when they have formed a thicket that is then referred to as *sitaka*.

Sitaka have varied uses by all living things and among these are:

- They provide habitat for birds and snakes. Water monitors, crocodiles and hippopotamis also spend time on them when they wish to have some sunshine. It is also their hiding place when looking for their food.
- They are also used for grazing purposes and the ticks that may be found on the cows become food for cattle egrets.

- They habit waterfowl that becomes food for reptiles.
- They provide tourist attractions therefore, adding economic value to the local people in the areas they are situated in.

All these functions cut across nations.

Birds are excellent indicators of biodiversity; as such,they provide a unique mechanism for conservation, education and advocacy. This could only be possible if the stakeholders particularly in the areas where the *sitaka* is located take it upon themselves and strictly so, to be part of the team willing to be educated. This education would include the conservation and sustainable use of the local natural resources that include *'sitaka'* and its waterfowl and all other natural resources found there.

Following the sustainable use and conservation of the *sitaka,* is the economic benefit that the country would gain when the bird sanctuaries are viable. People all over the world would come to watch nature as well as listen to the sweet music produced by the waterfowl in their sanctuaries. Bird tourism is also on the increase worldwide and Zambia is no exception. It is quite unfortunate that though the Zambezi plains have a number of viable bird sanctuaries, ZAWA and the co-operating partners have not taken a keen interest to develop them

It suffices therefore, to state that it is critical to ensure that the *sitaka* habitat is well developed for Zambia to continue being recognized as a bird tourist attraction country. *Sitaka* is not only for waterfowl, but also other living creatures as already stated. Therefore, those that would come to catch or watch birds would also have an opportunity to watch other living creatures.

2.12 Management of *Sitaka'*

The management of *sitaka* in Western Province was before independence a sole responsibility of the Barotse Royal Establishment. According to Gills (1988:35), the customary law played a dominant role in the use of the natural resources of Western Province.

As has already been mentioned in the introduction, the Litunga owns everything in Barotseland but that he discharges his duties through the village headmen that are appointed by their people and ratified by him. Each village that had a *sitaka* had a guard or two. These were to ensure that no unauthorized person or persons went to catch waterfowl, cut the reeds or set fire anyhow.

Severe charges which included working on the Litunga's fields or paying a cow were some of the penalties given to those found wanting. It was because of this kind of structure put in place that sitaka were rich with waterfowl because no one tampered with them at any other time except on the cropping day. The waterfowl was abundant then because the habitat was well protected and guarded by the *ndaleti* to the point that if the local people needed to cut reeds, they were only allowed to cut the very old ones leaving the small ones to grow.

At independence, Zambia adopted among many other things the slogan of One Zambia, One Nation. This means that although mother Zambia is divided into nine provinces, it was merely for administrative purposes only, it is one nation. It was at this point that ministries and departments were to take care of the activities within their jurisdiction. Therefore, the department of Zambia Wildlife Authority as it is known today has the responsibility of wildlife conservation,

which includes the conservation of waterfowl while the department of forestry has the responsibility of taking care of the reeds on these *sitaka*. However, the researcher during data collection discovered that the two organs BRE and ZAWA seem to be working together, although ZAWA being a government organ seems to have an upper hand.

When ZAWA discovers that cropping on any of the *sitaka* is ready, they inform the Barotse Royal Establishment about it. This is not to say BRE will in turn inform the villages to go for cropping as they used to do before independence but rather to say those wishing to go hunting would be advised to get licenses from ZAWA offices for them to go hunting. It is to a larger extent the reason why waterfowl is no longer abundant in Barotseland. The local people are expected to get lisences if they have to eat waterfowl. They feel the detachment from what used to be under their custody. As a result, they do not care to report any one found poaching, cutting reeds or indeed put up fire on the *sitaka*, because they feel that they are no longer beneficiaries.

The forestry department comes in to ensure that forests are well managed. The reeds on the *sitaka* fall under this category too. As such, it is the forestry department that has the prerogative of issuing licences to any one wishing to cut reeds, and it is a very well known factor that government ministries and departments have neither sufficient staff nor transport to manage these areas as expected. As a result of this, local people cut reeds indiscriminately for their various needs. The local people are no longer keen to protect these areas because they feel power is no longer in the hands of the community but government, and so they pay a blind eye to any person cutting pre-mature reeds or setting the reed on fire. What seems to be coming up here is that the management of *sitaka* is a government prerogative through the departments of

ZAWA and forestry. However, these would have been much viable today if the powers of managing them were under the BRE as was the case before. It would have made things simpler because villages seem to have sufficient work force to carry out operations for any suspected poachers and those cutting reeds.

It is also difficult for ZAWA to control poaching in these areas because departments are in critical shortage of transport. ZAWA has also contributed to the decline of the waterfowl because they issue licenses for a period of one year for people to catch up to 5 waterfowl per day and yet are not on the ground to see that only 5 birds are caught or to see that only those with licenses go to catch the birds.

In the pre-colonial days, only those who had a license for their rifle were allowed to hunt in the game management areas. It is thus encouraging to note that Zambia Ornithological Society (ZOS) are monitoring bird life in Western Province.

Before this, each silalo induna had the responsibility of taking care of the natural resources in his area. As such 'lindaleti' (guards) were appointed to particularly watch over the *sitaka*. These are the people who together with their chiefs informed the Litunga that cropping of waterfowl was ready. After independence, the responsibility of looking after the *sitaka* shifted to the department of wildlife now known as ZAWA. This department has assumed the total responsibility of the *sitaka* as available in the areas where *it is* they absolutely have no powers to apprehend anyone found trespassing on the *sitaka*. Because ZAWA does not have sufficient work force, to watch over the *sitaka*, poachers are so much at liberty to go and catch as many birds as they can afford, mostly for sale. This has greatly led to the decline of waterfowl.

2.13 Key Ingredients Necessary to Maintain *Sitaka*

For *sitaka* to be sustained and viable, there are some key aspects that have to be available at all times. Waterfowl need abundant food especially to raise their young ones. Therefore, food is a key ingredient necessary to maintain *sitaka.* In the event that the *sitaka* area has insufficient food, the birds move away to where they can find food for them to survive.

Sufficient rainfall is another key ingredient for *sitaka.* When there is insufficient rainfall, the water levels become low. This means that even the *sitaka* habitat becomes unproductive due to the drought. When this continues overtime, the *sitaka* would lose its waterfowl because of insufficient rainfall. They are likely to move to where they can find enough water. Water is as critical to waterfowl as oxygen is to man. Zambezi flood plains have a lot of very important birds recognized world wide, as such plenty water is a critical ingredient in the sustainability of *sitaka.* Urfi (1998:34) in his research on the link between painted storks and the Indian monsoon also discovered that birds could abandon nesting when the rains fail. This is a clear indication that when there is less rainfall, the ultimate is the decline of several species of waterfowl.

Reeds and twigs are also key ingredients for *sitaka.* Waterfowl require thickets of reeds together with twigs for them to lay their eggs, hatch them and keep their nestlings until they become self-reliant. For this to happen, the reeds must not be cut anyhow or catch fire to burn them. This means that when people wish to get some reeds for various activities, they need to obtain a license from the department of forestry. It is also important to note that as they cut the reeds, they create a sense of insecurity on the waterfowl which in turn would lead to

the birds shifting camps. When reeds are plentiful, the waterfowl can make their nests in readiness for the breeding season, therefore, the thicker the reed clusters, the more conducive the place would become for breeding and the more other species would be attracted to the sites. This means that more and more organizations would be interested in the conservation activities on *sitaka* areas as they would have a lot of waterfowl species to watch and study in the case of the scientists and any other people interested in learning about birds particularly after independence.

2.14 Environmental Challenges Posed by *Sitaka*

The *sitaka* areas are under serious threat of extinction if nothing is done to preserve them or to use them sustainabably. In the study area, the major environmental challenge is the decline of the habitats. For instance the bird sanctuary that was visited by the researcher during data collection is relatively new. The birds relocated to this sight about 3 to 4 years ago because of severe disturbances from the community at the old site. These disturbances include severe and indiscriminate reed cutting, poaching and fires. When the habitats decline, the breeding of birds declines too and this affects the economy of the country. This implies that not many people would go out into the Important Bird Areas (IBAs) to watch the beautiful birds of Zambia.

One of the key areas coming out very clearly in the ZOA mission statement is the society's involvement in educational programmes such as the Chongololo Club which brings out information to the learners about the importance of conservation of nature. They are also working closely with schools within the IBAs by ensuring that the learners in these schools are given sufficient

information about the need to preserve nature. This knowledge will also help the learners to understand what their role is in their environment even to the extent as to why they have to be actively involved in conservation.

Other than these educational school programmes, ZOS also endeavours to carry out rich programmes that are meant to educate and sensitize the local people in areas where IBAs are found. The purpose is to indicate among the local people the spirit of desiring to preserve their local natural resources. To help them realize too, that when these places are well managed and preserved, they (people) in turn will benefit through the national economy that will improve but much more because as locals they may be recruited to become tour guides in their areas. This definitely is a much more direct benefit for them as local people.

In order to sustain these natural resources, the environmental challenges that have been cited here need to be well taken care of for these areas to become tourist attractions.

The growing population is another environmental challenge probably not posed by *sitaka* but on *sitaka*. The implications are that when the population increases, more and more people want to have jobs. For those that fail to get any jobs to sustain themselves, they often resort to poaching for food or monetary gain. They also get involved in the indiscriminate reed cutting for sale or to build their houses and court yards.

Purseglove (1988:151) states that indiscriminate tree and shrub clearance along rivers has had a damaging effect on all forms of wildlife. When all these things happen, *sitaka* areas seem to be under severe threats of extinction. Probably this

could be one of the assumptions why there is bird decline now in the study area as compared to the pre-colonial days when they were so plentiful. The loss of reeds on these areas either by cutting or fires sends away the waterfowl to other places of safety, which may be near or far. For migratory waterfowl they follow the conducive habitat but when this habitat is destroyed, they have no reason to stay on.

There is therefore, need to actually extend these natural habitats for birds as they in turn will provide them with shelter and food. When conservation is done, the ecologists' cry for bio-diversity preservation would be minimized. Several species seem to be getting into the danger zone of being enlisted on the endangered list.

2.15 Future Prospects of *Sitaka*

Sitaka could have positive prospects for the future with good management. This means that the concerned government departments must ensure that *sitaka* is a no go area for anyone at any time particularly during the breeding season. The exceptions to this would perhaps be with the concerned departments who have to ensure that breeding is going on with very minimum disturbances.

It must be mentioned here that the Zambian Ornithological Society which is one of the co-operating partners in bird conservations is currently running programmes on the Kafue floods and Lukanga Swamps. A three year programme is soon beginning in other Important Bird Areas. ZOS has no immediate plans for the future prospects in Western Province which includes the study area. ZAWA however, seems to have some future prospects for the *sitaka*. The management hopes to reduce encroachment of these areas by people

because it reduces the habitat, creates insecurity for the birds as such, they move away to new sites. ZAWA is also keen to bring poaching under control. It is hoped that once the patrols into these areas are intensified, more people employed as game scouts and transport system improves, the department will work hard to curb poaching. When this is brought under control, the department is almost certain that the *sitaka* will be revived, more bird species would be recorded and so the tourism value of Zambia will certainly improve as more and more people from far and near would like to watch and even study birds. There would also be more birds for consumption. With this, the probability of Zambia recording over the 750 species already recorded is very high.

CHAPTER 3

LITERATURE REVIEW

3.1 International Sources

This chapter brings out international and local literature regarding the topic under study. However, it is important to mention here that there is very little literature regarding the topic particularly that dealing with the practice of ku-*loba sitaka* which occurred in the study area. Nothing tangeable has been done in terms of research. Most organizations doing research in Zambia have not yet done anything regarding the birds of Western Province in particular but of Zambia as a whole. For instance, the Zambian Ornithological Societies have no immediate plans for Western Province, while the World Conservation Unity (IUCN) though they have carried out projects on wetlands, have looked at the fish industry and not birds. ZAWA, which is the government department responsible for the protection and conservation of natural resources, had almost closed the Mongu office while members of staff were sent elsewhere except for one or two. At the time of research, the office had only one senior officer. However, there were sufficient reports written showing how important wetlands, waterfowl and water are world wide. This includes Zambia although it may not directly include the study area.

Existing literature indicated the existence of birds in Africa including present day Zambia and the study area – Western Province from pre-historic times. They also showed that some of the birds are indigeneous while others are migratory. The latter species are said to have originated

from Asia and Europe as is written in the **Northern Rhodesia Journal,** vol. 5, P. 510.

One sad thing which emanated from the literature was that of the great decline in bird life in Western Province during the last decade or so of the colonial period.

It is because of such, that proper agriculture and conservation of wetlands is critical if it has to contribute positively to the world's social-economic development in general and to the study area in particular.This was in line with the role of Ramsar in the wetland conservation whose mission was the "conservation and wise use of wetland's national action and international co-operation as a means to achieve sustainable development throughout the world" as stated by Barbier et al (1997:7). Pannerselvam and Ramakrishna (2005:50) have alluded to the fact that a conservation oriented society depend upon the values, priorities and attitudes they have adopted towards conservation. This ultimately had some change in their behaviour even though they were daily faced with their environment.

Like wetlands, waterfowl are important. They too contribute to the economic development of a nation by way of people watching them at a fee as well as for consumption. In view of this, there was great need to maintain the diversity of waterfowl particularly by protecting the endangered species.

3.2 Literature on International Wetlands and Waterfowl

The importance of protecting both the wetlands and waterfowl is a concern for many nations. For instance, Canada, Mexico and the United States of America joined forces to create an innovative conservation scheme whose aim was to conserve the continents' waterfowl. However, such a scheme could only work when people appreciate the values of natural resources in fulfilling their different human needs. True as this could be, Purseglove (1988:151) argues that the bird census carried out in 1982 by the Royal Society for the Protection of birds concluded that there was no evidence that reed cutting had an adverse effect on the presence of the scarce birds of the reed-beds.

Johnson, Douglas and Till (2001:1) state that the North American waterfowl management plan known as the Prairie Pothole Joint Venture (PPJV) had also joined the rest of the world in trying to protect declining wildlife species. They have adopted a new goal of stabilizing or increasing populations of declining grassland and wetland associated wildlife species in the Prairie Pothole region. The trio state that it was critical for the Prairie Pothole region to conserve these declining waterfowl species particularly because the region was the home of up to (50%) percent of North America's waterfowl. The people world over are concerned about this kind of conservation. As such, different nations have put in place policies and legislature concerning conservation. Penneerselvam and Ramakrishna (2005:102) state that India in 1972 enacted a Wildlife Protection Act to ensure wildlife conservation. This means that the biodiversity preservation is of paramount importance if the endangered species were to be preserved.

India also emphasizes the need to protect and use natural resources sustainably as was seen in article 48(A) of their constitution which stated that "the state shall endevour to protect and improve the environment to safeguard the forest and wildlife in the country". The country set up the India Board of wildlife (IBW) in 1952 and enacted a Wildlife Protection Act in 1972 Penneerselvam and Ramakrishna (20005:102). It is perhaps due to these measures that the late Prime Minister Indira Gandhi was quoted at the United Nations Conference on Human Environment held in Stockholm in June 1972 as having said that "one cannot be truly human and civilized unless they looked upon all life with an eye of a friend". These were meant to ensure wildlife conservation. Designed to preserve wildlife too, was the establishment of National Zoological Parks including the Dehli Zoo, which Urfi (1998:34) says is among the largest and important breeding areas for colonies of water birds in North-Western India.

Literature further indicates the existence and importance of birds in Africa. According to Sinclair and Ryan (2003:11), Africa ranks the second position in terms of numbers of bird species. Africa is the home to endemic water birds, 10 endemic families, 2, 100 species in sub Sahara and almost 1, 400 of these are restricted only to the region. Singhatey (2006:23) stated that the loss of the original wetlands in Gambia was putting many bird species under severe threat. In trying to mitigate this, the Gambian state like many other states concerned with conservation has made varied strategies to protect certain threatened bird species. These include the setting up of the National Biodiversity Strategy and

Action Plan (NBSAP), creation of protected areas and the encouragement of co-operative efforts in conservation.

According to Panneerselavam and Ramakrishna (2005:4), a deliberate policy was initiated in Kenya as a way of helping the children to understand and appreciate their environment. It entailed the planting of a tree by each child on their birth day.

The United Nations (UN) in December, 1989 also organized a world conference to discuss ways to protect the environment for sustainable development as well as arresting its further degradation. Among the factors regarding this protection identified were:

- Protection of land resources such as combating deforestation.
- Conservation of biological diversity such as protection of fresh water and development of the living resources.
- Improvement in the living and working conditions of the poor by eradicating poverty thereby stopping environmental degradation.

All these efforts are indicative of the fact that the world over is concerned about the depletion of natural resources by use of various devises.

3.3 Literature on Zambian Waterfowl

Zambia is rich in natural resources and among these resources is the abundant waterfowl which unfortunately is being threatened by extinction. However, it is good to note that various organizations are keen to partner with ZAWA in the fight for the conservation of these resources.

A report by Leornard (2002:6) on the birds of Mwanachingwala Conservation Area (MCA) states that 360 species are found in the area. This is a clear indication that the habitat supports a broad diversity of species. It is sad to mention that despite these species being found in this habitat, most of them do not breed there or do so only in small numbers if at all they do. The wattled cranes are some of those on the threatened list of Birdlife International. The Lochinvar national park in Monze district has some of the well known wetland birds in the world. Some of these are slaty – egret, wattled cranes, white pelican and saddle – billed stork.

Other than the study area, Zambia has many other areas that are rich in waterfowl. The table below shows these areas and how many species were recorded by ZOS in 2005 and whether the area is known or not.

Table 1: Number of Species Recorded, Identified and Unidentified in Some Parts of Zambian Wetlands

S/N	NAME OF AREA	NUMBER OF SPECIES RECORDED (2005)	KNOWN/ UNKNOWN
1	KAFUE NATIONAL PARK	492	Known
2	TONDWA GAME MANAGEMENT AREA	217	fairly known
3	LOCHINVAR	463	Known
4	BLUE LAGOON	447	Known
5	LOWER ZAMBEZI NATIONAL PARK	378	Known
6	UNINGI PANS	215	fairly known
7	LUKANGA SWAMPS Open wattled cranes - 6, 000 in November 2001	338	Known
8	BANGWEULU SWAMPS reed cormorants – 10, 000 in 1960s Open wattled cranes 30, 000, wattled cranes – 1, 030 (both in July 2002)	275	Known
9	SHIWA NG'ANDU	373	Known
10	MWERU WANTIPA NATIONAL PARK	283	not well explored

Source: Leonard (2005)

3.4 Co-operating Partners and Government Bodies involved in Conservation

There are several cooperating partners and government bodies that are involved in conservation:

3.4.1 Co-operating Partners

World Wide Fund for Nature (WWF) which is the largest and most experienced private international conservation organ gives and raises funds for the protection of the threatened species and environments world wide.

WWF was established in 1961 and was introduced to Zambia in 1962. Its global mission is to stop the degradation of the planets natural environment and to build a future in which human beings can live in harmony with nature. Its roles include:

- Conserving the world's biological diversity and
- Ensuring that the use of renewable natural resources is sustainable.

In Zambia, the programme gives among other priorities an integrated conservation and developmental programme.

Among WWFs conservation achievements are:

- Development of an Environmental Education programme towards implementation of EE in the national school curriculum, production of associate materials, community education and EE training for

teachers, teacher trainers, education inspectors and extension workers.

- Development of a wetland policy and conservation programme for Zambia.

The other organizations involved in biodiversity conservation in Zambia are:

A. Zambian Ornithological Society (ZOS) (an affiliate of Birdlife International in Zambia). The objective of ZOS is to stimulate interest in and to further the study and conservation of birds in Zambia.

B. Wildlife and Environmental Conservation Society of Zambia (WECSZ) whose objectives include contributing to the long term EE targets for the young people of Zambia as the Chongololo clubs.

C. Inter-Union for the Conservation of Nature (IUCN)

D. Wildi Ze Foundation whose interest is to support the grass roots projects among the local communities in finding joint solutions to the complex problems of sustainable conservation.

E. Environmental Council of Zambia (ECZ), which are charged with the responsibility of implementing the Environmental Protection and Pollution Act (EPPA) provisions.

This means that the environment which according to Johnstone (1997:5) is a public assert, should be well preserved as all its members benefit from it

3.4.2 The government bodies involved in conservation:

- Ministry of Tourism Environment and Natural Resources is most concerned with the biodiversity conservation in Zambia.
- ZAWA, which according to the Zambia Wildlife Act number 12 of 1998, replaced National Parks and Wildlife department. The major functions of ZAWA, being the mother body of wildlife conservation in Zambia include control, management, conservation, protection and administration of national parks, GMAs, *sitaka* as well as issuing licences to capture, hunt, sell, import and export birds.

Generally, the decreases of waterfowl in Zambia is also associated to the loss of some parks of the flood plains, creation of permanent lagoons like Chunga in Lonchivar national park. The artificial flooding as is often the case in Itezhi tezhi dam causes change to the natural pattern thereby changing the ecosystem is another possible reason for the waterfowl decreases.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Background

Research methodology is about the researcher stating clearly the methods used in carrying out investigations about the research topic. It involves the kind of data collected, the type of instruments that were employed in the collection, analysis and interpretation of the data. It further requires the researcher to state where and from whom the investigations were carried out. This chapter, therefore, focuses on the research design, target population, study sample and sampling technique, ethical issues, research instruments, data collection and analysis.

4.2 Research Design

Sim and Wright (2007:7) state that a research design is the overall plan and structure of a piece of research. As such, it is critical that any research work must have a research design because particular study methods are fitted into this design. It is therefore, incumbent upon each researcher to frame the research design carefully because the quality of the research outcome is greatly dependant upon the design of the research.

The study is a narrative type and as such has used the open ended structured interviews. Narratives were particularly used on the men and women who did not take part in the practice but had their own opinion regarding the cropping of waterfowl in *sitaka* in their respective communities. The questionnaires too,

were administered to only those men who physically had an experience of the practice. ZAWA officials were another group where questionnaires were used to gather data. This is because they are the government department in charge of this particular natural resource.

Information was also collected by use of a questionnaire from Induna Nawa Silundu. This is the Induna in the Barotse Royal Establishment in charge of the natural resources. It was imperative to collect data from these two organizations as they both are law enforcement organs in regard to natural resources.

4.3 Target Population

This can be defined as the population in which the researcher carried out the research at the end of which it may be generalized as a representation of a particular area in which the study was conducted. The target population in this study included men and women from several villages surrounding Mongu district. For the men, they may or may not have participated in the practice. As for the women, they were never part of the cropping exercise except they have their own opinion regarding the practice of *ku-loba sitaka*. They were in fact the end users in terms of feeding the families. To this end, their opinion was of great importance to the study.

4.4 Study Sample and Sampling Technique.

In this study, the study sample is the representative of the men and women of Mongu district who were either interviewed or answered the questionnaire. This enabled the researcher to come up with the information regarding the

study. The sampling technique explains how the men and women were selected to become the study respondents. The study sample therefore, comprised of 10 women and 40 men from several villages. The respondents were purposively chosen. Most women encountered had heard about the practice but were not able to give their opinion as they seemed to have scanty information most of which was not relevant to the study. The researcher ended up moving from one village to another because it became difficult to find respondents in villages which were randomly chosen. Purposive sampling is the selection of cases that satisfy an important criterion. It is often utilized in qualitative studies and was used in selecting the men and women. In this case the researcher only interviewed the respondents who indicated that they had information regarding the practice.

4.5 Ethical Issues

Sim (2000:39) states that all research that is associated with human beings gives rise to ethical issues. It is very important for researchers to consider issues whenever they are carrying out researches. As such, they have a challenge of having to recognize, appreciate and safe guard the rights of their respondents. People are aware of the fact that there are many researchers on the ground and they are equally highly conscious of what information they give to who and for what purpose.

To this end, the researcher first and foremost got an introductory letter from the assistant Dean – Postgraduate Studies, which indicated that the researcher was a genuine post graduate student from the University of Zambia (UNZA) – Great East Road campus. On arrival in Mongu, the researcher reported to the office of the District Commissioner (D.C) who endorsed the letter thus granting

permission to the researcher to go round the district. This made it very easy for the researcher to go round. Where resistance was experienced, the production of the introductory letter served the situation. This letter is attached as appendix v.

Although the researcher had limited time to do the research, it became imperative to respect the opinion of the respondents at the time they were visited. As such, the researcher made several trips to interview certain people who seemed to have been busy each time they were visited.

It was equally critical on the part of the researcher to convince the respondents that the information they gave was to be treated with confidence and of great value to the study as it was purely for academic purposes. This built in the respondents trust and confidence in the researcher. As a result, they gave the information required by the researcher willingly and have been acknowledged for making the study a success.

4.6 Research Instruments

In order to come up with the required data, the research instruments used included:

- Two methods for data collection. One was the questionnaire meant for the men who took part in the practice of *ku-loba sitaka* while the other was an interview meant for people both men and women who did not take part in the practice but had their own opinion concerning the activity. It was from the people interviewed that the researcher got the narratives.

For details, these are attached as appendices i and ii.

4.6.1 Data Collection

Data for this study was collected from the respondents by use of questionnaires, narratives and open ended structured interviews. Questionnaires were answered only by the men who got involved in the practice although they were very difficult to find because most of them were no more.

Narratives came up during the interviews. They also came up particularly from the people who could not answer the questionnaires by filling them in for various reasons such as busy schedules or illiteracy.

Data was collected from two aspects: primary and secondary.

4.6.2 Primary Data

Structural interviews were conducted by picking one respondent at a time at their convenience. The information was also gathered through the narratives of the respondent's personal experience in the practice of 'ku-loba sitaka'. Further to this a trip to one bird sanctuary, *'sitaka sa Nangulwe'* – Nangulwe bird sanctuary on the Zambezi river towards Libonda area was conducted. Unfortunately, it was difficult for the researcher to go at the time of breeding (February – May) because of very high levels of water that cover the Barotse plains every year. The researcher went towards the end of June when it became

less dangerous because the water levels were by then low. It was during this visitation that the pictorial information was collected.

Plates 5 and 6: Young African open- billed stork

Source: Field Data, 2007

It was discovered that most waterfowl had left the *sitaka*. Only very few young ones were found on their nests while their mothers were hovering above the nests in the air.

Plate 7: Waterfowl Hovering Above the Nests

Source Field Data, 2007

Sitaka is never quite a safe place to visit since below the reeds and weeds are the deep waters in this case of the mighty Zambezi river.

4.6.3 Secondary Data

This is a way of collecting information that may not be captured by interview questions as well as information from elsewhere related to the study. This category of data was collected mainly through literature review. A number of visits were made to various libraries such as UNZA main library, Environmental Council of Zambia (ECZ) library, Chilanga library, and other

information centres such as National Archives, provincial reports and files (Western province) the internet and Zambian Ornithological Society.

4.7 Data Analysis

In the light of the fact that the study is both qualitative and quantitative, in nature, various techniques were used to analyse the data that was collected.

Being qualitative, analysis was based on the responses given by the respondents. It was also dependant on the researcher's experience during the collection of the data which included those from the trip to Nangulwe bird sanctuary.

Though the study is largely qualitative in nature, the researcher also used the quantitative method at the point of analysing the data collected in the field. To this end, the Statistical Package for Social Sciences (SPSS) technique of analysis was employed. The results of the respondents were thus coded and grouped according to the themes that emerged from the findings. It is these emerging themes that were considered in the data interpretation particularly of the questionnaires and interviews. The common opinions of the respondents represent the most significant issues of the study. Therefore, they have been represented by tables and percentage.

4.8 Position of the Researcher

The researcher's interest in the research topic arose from her keen interest in matters related to nature and its resources. This included the study area, its waterfowl and the wetland environment. This interest has been with the stories of the old people of Mongu District which brought out the fact that waterfowl was abundant in the Barotse flood plain where the study area is situated. This was confirmed by the writings of the early Europeans who visited the place as was already indicated in chapter one of this document. It is with this kind of background that the researcher begun to have interest by trying to establish to what extent the activity of cropping the waterfowl on the Upper Zambezi wetlands conserved both the waterfowl and its environment on the study area.

Other issues like how sustainable the activity was in view of the growing population and the willingness of the local people's interest to conserve their natural resources are part of the researchers interest in the study. This means that the local people's lifestyles would be enhanced by way of tourists visiting the area to watch the birds.

Having carried out the study, the researcher was able to come up with alternatives that could be followed by the local people to ensure the sustainability of waterfowl, their wetlands environment as well as seeing to it that the lifestyles of the people in the study area was not affected by the diminishing of these natural resources.

In short, the researcher is highly interested in matters related to conservation of nature and its environment.

CHAPTER 5

RESEARCH FINDINGS

5.1 Introduction

This chapter brings out the findings of the study carried out according to the responses given by the participants of both the questionnaire and the interview. These methods were used to collect the desired data. Some people feel free to respond to a questionnaire while others are able to express their views in an interview. The latter also triggers the right answer as they have an opportunity to get all issues cleared by the interviewer.

The findings came from 50 participants who were men and women who either participated in the practice or not. Tables and figures have been used to indicate both the frequency and percentage of the participants' responses.

Table2: Respondents by gender

The respondents were both men and women as is shown in the table below.

Gender	Frequency	Percentage
Men	40	80
Women	10	20
Total	50	100

5.2 Purpose of Cropping Waterfowl

The study was interested in finding out what the purpose of cropping waterfowl served among the respondents of the researched area.

Table 3: Purpose of Cropping Waterfowl.

Responses	Frequency	Percentage %
• For consumption as relish	14	47
• For monetary gain	01	03
• As a way of looking after the Litunga.	01	03
• Cropping to regulate the environment.	07	23
• As a way of life among the Lozi people.	05	17
• As a way of bringing men together	02	07
Total	30	100

The table above shows that the majority of the respondents (47%) thought that the purpose of waterfowl cropping was to use the waterfowl for consumption as relish. Very few of them (3%) felt that the cropped waterfowl could be used for monetary gain or as a way of looking after the Litunga. In view of this, they only targeted the following named waterfowl that was edible for example:

SPECIES

Local Name	English Name
'Nongolo'	African Open – billed stork
'Mulindeti'	Darter
''Tung'umbi'	White – breasted cormorant
'Mbuyanda'	Goliath Heron
'Sitolo'	Green – backed Heron
'Ngiwi'	Black Egret
'Mbambakatuwa'	African Spoon bill

'Siwa'	Black crowned Night Heron
'Nasikambo '	Saddle – billed stork

Although the white egret is edible, it was rare that it was targeted. This was because it did not have sufficient flesh and also because it was preserved so that it eats ticks on their cows.

Table4: Sustainability for the Waterfowl

The study was also interested to find out if the practice sustained waterfowl or not. The findings are in the table below.

Response	Frequency	Percentage
Yes	27	90
No	03	10
Total	30	100

The table indicates that most respondents (90%) agree that the practice was sustainable for waterfowl species it targeted. This could be attributed to the fact that 100% of the respondents agreed that the practice of waterfowl cropping was regulated by the Lozi authorities. However, 10% of the respondents believed that the practice did not sustain the targeted species. All respondents agreed to the fact that the practice of cropping was regulated by the kind of regulations attached to the system such as;

- No cropping until the Litunga sanctioned
- Cropping was done in one day only.

5.3 Kinds of Punishment Meted on Defaulters

All the respondents (100%) agreed to the fact that different types of punishment was given to those who went against the governing regulations of *sitaka* some of the punishment given were those indicated below in table 4:

Table 5: Types of punishments given to defaulters

Response	Frequency	Percentage
• Payment of a cow	17	57
• Working in Litunga's field	10	33
• Whipped	03	10
Total	30	100

The table shows that most respondents (57%) stated that the common way of punishment given to defaulters of the laid down regulations was to pay a cow. However, quite a good number of respondents (33%) stated that those who were found guilty were assigned to work in the Litunga's fields while (10%) of them said that the defaulters were severely whipped to deter them from the act in future.

This was a clear indication therefore, that the regulations regarding sitaka were not only regulated but also in force. This was evidenced by a 100% response of the respondent's agreement to the fact that these regulations were very much in force during the time the Lozi authorities were in charge of *sitaka*. As a result of this response, no suggestions were given regarding how the practice could be sustainable.

Table 6: Responses Regarding Waterfowl Decline in the 1950s.

Response	Frequency	%
• Increased population and high levels of poverty.	10	33
• Handing over of power to government departments.	08	27
• Increased number of people with firearms	05	17
• lawlessness by the community	07	23
Total	30	100

5.4 Response actions for waterfowl decline

The majority of the respondents (33%) attributed the decline of waterfowl in the researched area to the increase of population and high levels of poverty among the people. However, (27%) and (23%) stated that the decline was due to handing over of the power to government departments and lawlessness by the community respectively. While (17%) of the respondents attributed the waterfowl decline to the increased number of people with firearms.

5.5 Measures to Avoid Waterfowl Decline

This study was interested in finding out measures needed in order to reduce the decline of waterfowl. Respondents made some suggestions and these appear in table 7 below.

Table7: Suggestion on How to Avoid Waterfowl Decline

When 30 respondents were asked to state how the declining numbers of waterfowl can be stopped, the responses were as follows:

Response	Frequency	%
• Allow waterfowl to grow and multiply	04	13
• Protect the bird sanctuaries from poachers, reed cutters and fires.	06	20
• ZAWA to employ more game scouts and improve on monitoring of sites.	05	17
• ZAWA to work with BRE	08	27
• ZAWA to ensure that license holders kill only the authorized number of birds per day (s).	07	23
Total	30	100

Coming clearly from this table is the fact that (27%) of the respondents felt that BRE and ZAWA should work together while (23%) of the respondents felt that ZAWA should at all costs endevour to control the issuance of licences to hunters. Very few respondents (13%) indicated that waterfowl should be left to grow and multiply while (17%) felt that ZAWA needed to employ more game scouts as well as improve on monitoring of the bird Sanctuaries.

It was also discovered from the responses given by research participants that several activities threatened the sustenance of *sitaka* at the moment. These are:

- Cutting of reeds for monetary gain
- Fire arms and fires
- Population growth
- Droughts which affect wetlands
- Over – cropping
- Lack of strict rules and regulations
- Lawlessness among people

In view of the above, the table below gives views of respondents on whether *sitaka* should be resuscitated or not.

Table 8: Resuscitation of *Sitaka*

The study was interested in finding out what value resuscitation of *sitaka* would bring to the environment and local people's lifestyles.

Response	Frequency	Percentage
Yes	30	100
No	0	10
Total	30	100

The table indicates that all the respondents (100%) agreed to the fact that *sitaka* should be resuscitated. When this happens, the birds would increase thereby making the *sitaka* tourist attractions. This would also improve the lifestyle of local people in study area.

Table9: Reasons for Resuscitating *Sitaka*

The respondents brought out various reasons for resuscitation of *sitaka*. Some of these are indicated in the table below.

Response	Frequency	%
• Will add value to the local communities as people come to watch waterfowl.	08	27
• Will add to the nations list of tourists' attractions.	13	43
• Will create employment for people	06	20
• Will improve people's lifestyles in the areas concerned.	03	10
Total	30	100

According to this table, most respondents (43%) felt that resuscitation of bird sanctuaries in researched area would add to the nation's list of tourist attractions, while (27%) felt that it would add value to the local communities as people come to watch the waterfowl. Others (20%) felt that it would create employment for people while very few (10%) felt it would improve people's lifestyle in the areas concerned.

CHAPTER 6

DISCUSSION OF RESEARCH FINDINGS

This chapter discusses the research findings. The study revealed several issues regarding the practice of *ku-loba sitaka* and these have been discussed according to the themes emanating from the objectives of the study which were:

- To investigate how the Lozi practice of breaking the reed cluster operated

- To asses how sustainable the practice was in view of the growing population

- To propose Environmental Education curriculum which would ensure the sustainability of the waterfowl, their environment and people's lifestyle in the study area (this is the subject mater of subsections 6.2 and 6.3 of this study

- To determine the level of participation among the local people in conversation of wetlands and waterfowl in particular.

6.1 General Discussion

The first theme discusses how the practice of *ku-loba sitaka* (waterfowl cropping) operated. At the time the authority of managing the natural resources was in the hands of BRE, the practice seemed to operate effectively. There are various possible reasons to this. Firstly, the practice was highly regulated by BRE. No one except the guard went on to the bird sanctuary particularly when the birds were laying eggs. Secondly, no indiscriminate cutting of reeds or fires was allowed. However, severe damage was done to the reeds as hundreds of men went for cropping, but because the activity lasted only one day, the reeds had a great opportunity to recover and be of service to the birds for another breeding season.

The two reasons depict the kind of people the Lozi were. They exhibited high levels of discipline at all times and as such followed directives strictly. The situation might not be quite the same now with the slogan of One Zambia, One Nation. As people move from one place to the other, most of them do not mind using the resources sustainably. This may be more attributed to those who may be going to the province in search of what they can get to make a living. While the locals will use the resources sustainably because that is what their livelihood depends upon, the others may not because after all they could still survive on what was available back in their districts of origin.

The regulations were all followed to the latter then. The communities were well aware of the fact that if found guilty, they would be expected to pay a cow or do some work for the Litunga. These regulations gave the waterfowl conducive environment to lay and hatch their eggs.

The practice also operated in such a way that members of the communities took it upon themselves to protect the *sitaka*. It did not have to be the guard all the time to watch over, but that any community member who found the other breaking any of the governing regulations reported the culprit to the Induna. Punishment meted on such depended on the gravity of the offence. It was thus every member's responsibility to preserve and protect the habitat and the waterfowl. After all, they were the beneficiaries because at the time of cropping, even the widows, unmarried women and elderly people received their shares through the village headmen or their sons or brothers who went cropping. Those who received shares through the village headmen were usually the ones that had no children or brothers, but because of communal living, they were never left out of the joyous event. Other than that, the cropping was a way of regulating numbers of waterfowl in respect to the habitat.

The study also revealed that the activity was also done in such a way that when cropping was ready and the Litunga had been informed and had sanctioned, a word was sent round to all villages and communities surrounding the particular bird sanctuary. People treated one another with brotherly love and also because they acknowledged that the resources were theirs as such all were beneficiaries. To this effect, it brought all men together. Although they had little time to chart over various issues, at least they were able to re-unite each year the activity took place.

The study further revealed that the practice also strengthened the bonds of co-operation, understanding and sharing among the local communities. The issue of co-operation in this matter may be related to the time after the exercise when the Indunas gathered some of the cropping for the Litunga and the Indunas who remained back home. No one resisted this action. Again bringing out the

aspect of recognizing the fact that the Litunga owned everything and that as his children, all men were expected to care for his well being. He did not have to go for the exercise, this could have been much more an issue of his security out there as the place is highly dangerous for instance there are a lot of poisonous snakes and also the possibility of drowning since most bird sanctuaries are above deep waters. However, he received his portion from all the Indunas of the areas within a particular bird sanctuary where cropping was done.

Although hundreds of men went to crop the waterfowl, it was able to multiply. This was indicated by (90%) of the respondents who attributed this to the fact that when they went for cropping they did not crop the very small ones or pick eggs because they knew that it would be their following season's cropping. As a result of this, they were able to protect them as much as it was possible taking into account how many men went for the exercise. The respondents also stated that the waterfowl was able to multiply because the practice did not target every water bird but only those which were edible and so it was possible for those that were not targeted to multiply.

The second theme revealed the evaluative aspect of whether or not the practice was sustainable in view of the growing population.

Conservation of *sitaka* has proved to be quite difficult. The findings of the study brought out various issues that could be attributed to this. The growing population of the people in the study area is one reason. Thirty three percent (33%) of the respondents attributed the decline of waterfowl in the study area to this factor.

Our understanding of population is that the natural habitats of animals and birds are often invaded or encroached upon.

Generally where there are too many people, there is bound to be problems. Indiscipline is one such problem. The respondents (17%) felt that more people have firearms which they use for poaching. They went in to poach the waterfowl or to cut the reeds. There is also a possibility of most of them not being employed and would therefore, do everything at all costs to get a living. This means that the people would prefer to meet or fulfill their numerous needs even if it meant destroying the natural resources. The high levels of poverty contributed to waterfowl decline. WCED (1987:28) states that those who are poor and hungry will often destroy their immediate environment in order to survive. The people in the study area also cut down reeds for sale so as to make a living. The waterfowl is then left with no conducive habitat for them to multiply let alone to be secured. They are also being poached indiscriminately for the same reason of monetary gain generally by people and some of those without jobs. According to UNDP (1990:7), human development report of 1990, poverty is described as one of the greatest threats to the environment.

For the-well-to do people, they do it out of their selfish desires of wanting to own anything that can add value to their wealth, anything that can be of good use to them thereby adding to their enjoyment.

This entails that serious environmental awareness campaigns should be encouraged to both groups regarding the importance of preserving the natural resources and its environment. The awareness should by all means be targeted to develop keen personal and positive social attitudes towards the protection and wise use of these natural resources. This chapter presents a proposed environmental education in subsections 6.2 and 6.3 in this regard. Issues that come out from this are such as burning of *sitaka* and cutting of reeds. The reeds are essential because they have various uses to those who live near them, for

thatching in the country side. It is equally important to ensure that they are given an opportunity to grow. They were also used to make attractive screens and fence panels; therefore, indiscriminate cutting of these reeds will not only deny the waterfowl a paradise but also a source of comfort for humanity in the sense of shelter and attraction. The excessive cutting of these reeds or fire simply accelerate species extinction which would later affect people's lifestyles particularly the poor who are dependant upon them.

Although Gills (1988:11) wrote that there were no threats to the waterfowl on the Liuwa plain national park and that birdlife seemed stable both in numbers and species, the informants during the research testified that the waterfowl had dwindled in number. The milliards of waterfowl that covered the sun when

Plate 8: Uses of Reeds: (fence panels)

Source: Field Data, 2007

they got disturbed is no longer the situation. Certain species are completely extinct due to poaching and unsuitable environments.

Plate 9: Few waterfowl than before found on the site.

Source: field Data, 2007

Further to this, is the uncontrolled cropping resulting from ZAWA's issuance of licences to people with firearms. Many people today have fire arms. This includes those that own them illegally. Even though ZAWA gives authority to hunt up to 5 birds at a time, it is very difficult for them to ensure that those who cropped only got the 5. It was expected that in the event of multi-killing, the excess were to be taken to ZAWA officials who may reposes the extra or not. This too contributed to the decline of waterfowl in respect to the growing population.

Over-grazing and subsistence farming in these areas have also been associated with the waterfowl decline in the study area. Lozis are traditionally pastoral farmers who keep a lot of cattle. With the growing population, the number of heads of cattle increases resulting in reduced grazing areas as such , people have no option but to take their animals on *sitaka* to graze. Subsistence farming

too, disturbs the natural habitat for waterfowl. With growing population, it is also expected that these people will certainly need food and so may decide to farm on the *sitaka*. Both aspects emphasize the fact that the growing population has adverse effects on the waterfowl and bird sanctuaries situated along the river banks.

Although the practice of *sitaka* seemed to sustain the waterfowl species it targeted in the past, it is not the case today. It is therefore, critical and very urgent too, for the government to put in place stern measures for those found guilty of going against any of the regulations governing the restricted areas and natural resources in general.

The other aspect coming out was that although the cropping was meant for consumption, the waterfowl that was not edible have changed camps for fear of the firearms and other devices that have made the habitat not fit for their survival. They, therefore, go to places conducive for breeding. This means that in the past, the practice was sustainable for the waterfowl species it targeted. This was because very few owned fire arms and even when they did, they went for cropping at the right time, while ensuring that the young waterfowl were not collected during the cropping time. Today sustainability of waterfowl and wetlands in the study area is rather difficult because of low funding to government departments. It was up to the government to see to it that ZAWA was well funded so that the department could sustain its activities particularly in conservation. The co-operating partners too like ZOS and Birdlife International could also come in to help sustain or revive the depleted natural resources, wetlands and waterfowl in particular.

While the revelations are that increased population has contributed to waterfowl decline, it is also true to say that lawlessness is another source of decline. (23%) of the respondents agreed to this fact. Those with firearms were free to kill as much as their ammunition could allow them to. Coupled with this is the fact that ZAWA does not have enough work force to be able to patrol the bird sanctuaries as often as they needed to. This issue brings us to the fourth theme tackled by this study, that is, the level of participation of local Lozis in conserving wetlands and their waterfowl. It is in view of this that (17%) of the respondents strongly believed that if the powers to manage *sitaka* were left in the hands of the local people, probably the decline would not have been so much. The waterfowl too, may not wish to be where it is not safe for them. As such, the more the sounds of gun shots, the more they relocated to places of safety. The change of sites, for instance, the Nangulwe bird sanctuary as earlier stated, waterfowl could also be attributed to the decline. It is therefore, important for ZAWA to incooperate local people in the management of bird sanctuaries. This would help them because the locals live around the sanctuaries and would therefore; guard them from all forms of mismanagement and interference of the water birds' breeding.

There are programmes called Local Game Management in other parts of the country such as in Luangwa game management area in Lusaka province, where the locals are incooperated in the management of wildlife in the area. This involvement of the locals makes them be aware of the importance of preserving and conserving nature.

Various responses have been given in view of the things that threaten the *sitaka*. These include natural disasters such as droughts. There is very little that could be done concerning the droughts which affect wetlands because it is beyond what man could control, he could certainly find ways of conserving what was available. This was by way of people's attitudes being positive towards natural

resources conservation, with each person taking it upon themselves to conserve natural resources. With this positive attitude, *sitaka* should definitely be resuscitated. One element that comes out very clearly in the definition for sustainable development is that people must use the resources having in mind that the future generations shall also depend on the same resources. So if *sitaka* is resuscitated, the future generations too, would have an opportunity to know the different waterfowl species that once existed. As the *sitaka* get resuscitated, they would attract the bird species that might have migrated due to various threats. The resuscitation would also benefit the nation at large and the local communities specifically. This would be by way of visitors coming to watch the waterfowl. This kind of thing would definitely add value to the way of life of the local communities in the study area.

The involvement of the locals was very important in the whole process of conservation. First and foremost, they must be made to understand and appreciate the fact that they depend on natural resources for their living just as the natural resources depend on humanity for their sustainability. They should be empowered not only with the skills but also the means to truck down the wrong doers. This empowerment of acquiring skills could be done by way of conducting seminar presentations and workshops for the local people.

It was discovered during data collection that most people lacked conservation information. It is thus vital to have policies and programmes that are meant to sensitize the community on the importance of wetlands and waterfowl if the birds are to be protected. This point addresses the third theme to this study, namely; proposing appropriate environmental education activities to be conducted in the study area. This could be done through local radio programmes, introduce environmental education clubs in schools as well as

incorporating it in the school curriculum. In this way, the learner and the community would be helped to appreciate and enjoy nature and life. It would also help to promote self fulfillment and social development in man as he tries to maintain and preserve life in general. To this effect, many positive conservational aspects would be achieved despite the fact that the customary law hampered some of the resource development to some extent.

The policy makers must also ensure that while development was taking place, sensitive places like wetlands should be spared. As such, ecology and economics could co-exist. This means that the policy makers must as much as possible adhere to recommendations given by environmentalists like the, ecologists, zoologists and all other stake holders when deciding to give away some of our valuable sites to the developers. The Victoria Falls game park in Livingstone will soon be history due to the allocation of parts of the game reserve to the investors for development. This action would not only send away the animals to places of safety, but it would also deprive the nation of the incoming financial resources through foreigners coming to see the Victoria Falls and the game in that reserved area.

The stakeholders in charge of environmental issues should also have deliberate policies by organizing workshops, seminars and making declarations in meetings on environmental awareness activities such as in clubs and schools.

6.2. Proposed Environmental Education Activities Through *sitaka*

This subsection dwells slightly in detail on what specific EE activities could be conducted through the agency of *sitaka* .In this study, the targeted learners are the young adults living around the study areas which are *sitaka,* areas. This is

for the very definite reason that they do not have sufficient knowledge their parents had as far as preservation of *sitaka* is concerned. It is therefore, critical for these young adults around the study areas to have this knowledge if the waterfowl are to be sustained. In view of this very important responsibility, the ZAWA, BRE and environmental specialists should endevour to sensitize the young adults on the reason for sustainable use of natural resources in general and waterfowl/wetlands in particular. Therefore, the three categories of people mentioned above become the teachers of this curriculum.

The research findings of this study were to be used as the content of this curriculum. The teaching methods to be employed would include a general discussion with a specialist in the matters of conservation being the moderator. Question and answer method would be used too in order to find out how much the young adults in study area appreciate and understand the importance of natural resources preservation.

6.2.1 Proposed Environmental Education Activities to Conserve Waterfowl

In view of the threatened and almost extinction of some waterfowl species, the following three environmental activities are being proposed. This was with a hope of sustaining the livelihood of waterfowl, people's life styles as well as conservation of wetlands.

They are:

- Radio Discussion Programmes
- Drama activities and poems by communities and school children
- Introduction of Environmental Education in the school curriculum

A. Radio Discussion Programme in Community Clubs

A community could be defined as a group of people living and working together for their own well being. Today, communities are recommended at all levels in the country. To this effect they have clubs country wide. These have various activities that they are involved in and some of these are basket making, curving, mat making, sewing, crocheting, pottery and knitting. These activities are a source of income for the clubs, as such the clubs have become instrumental in the development of their local communities. A good example of such a club is Mbuywana club in Limulunga (the winter palace of the Litunga). It is therefore, being proposed that several sensitizations could be carried out during the times the club members are meeting..

Among such sensitizations would be dialogue with an official from ZAWA who in this case, would take advantage of such organized groupings to disseminate to the communities the information about why every person is expected to be involved in the conservation of the natural resources which include wetlands and waterfowl.

The discussion would be led by the ZAWA official while trying to encourage the participants (club members) to say or bring out any information they know regarding the practice of *ku-loba sitaka* and whether this information was helpful or not in the

conservation. It would be at this point that the ZAWA officer would expand on the views brought out by the communities whether positive or negative. The idea was to let the people see which aspects of the practice were conservative and so would be encouraged and the negative ones would thus be discouraged or done away with. The talks would vary and an example of these would be 'Mataka a nuka' – (reed cluster) the questions that would then come after presentation would be as follows.

- What is a reed cluster?
- Is it of any importance to humanity?
- Mention any uses of these reeds.
- Other than humanity, which other living things attach great value to reed clusters?
- What communities threaten the viability of reed clusters to day?
- What would happen when the reed clusters are destroyed?
- Is it important then to conserve reed cluster?

After these questions were answered by way of discussion among club members, the moderator (ZAWA) official would conclude the discussion by summarizing the answers given towards the need for reed cluster conservation, with emphasis that without a viable reed cluster, waterfowl, would migrate to other places that would be conducive for breeding purposes. Club members would further be encouraged to compose songs that have the message for reed cluster and waterfowl conservation.

B. Radio Discussion Programme in General

The radio discussion programme would be broadcasted on both the local and national radio stations.

This discussion programme would be a general one to benefit all listeners. It would therefore, involve the following participants:

- The moderator
- Participants: ZAWA official, Induna and a villager.

Topic: Conservation of Waterfowl in *Sitaka*

The moderator would begin by welcoming the participants and listeners and then would introduce the topic for discussion to the listeners. The participants would already have known the topic for purposes of research before coming to present. The emphasis in the introduction would be urging the participants to bring out as many reasons as they could for natural resources conservation. At this point, the moderator would ask the participants in turns to say something in response to the following question:

Is it important to conserve natural resources like waterfowl and wetlands?

The ZAWA officer would begin to talk and bring out the advantages and disadvantages of conserving natural resources, in particular wetlands and waterfowl. He or she would further discuss the consequences of poaching particularly in protected areas like *sitaka.*

The Induna would join in the discussion to give the BRE's stance on such areas. He would also bring out the penalty that is given to the culprits when caught poaching or setting the reeds on fire. He would further mention the person who is involved in the practice of conservation and cropping as well as the customary law that governed the resources. He will further bring out the element that due to handovers of authority (from BRE to ZAWA) as well as increasing population, waterfowl decline is on the increase.

The villager would come in to agree with the Induna and raising the fact of poverty and lack of jobs as reasons for poaching. He would also appreciate government's effort of the fish ban from November to March of each year as this helped the fish to breed without excessive disturbances from fish mongers. He would further encourage the listeners to be particular with conservation of waterfowl and all other natural resources as it would be to their advantage. One way of benefiting from these resources would be in form of receiving both local and foreign visitors who may wish to go and watch or study the Barotseland waterfowl.

At the end of this discussion, each one of the speakers would be given time to sum up their presentation. The moderator then sums up the entire discussion with emphasis on community involvement in the sustainable use of natural resources.

6.3 Proposed E.E Activities to Address Special Research Findings

This section picks out specific research findings presented in chapter 5 and then uses them to devise suggested specific teaching/learning activities.

FINDINGS	PROPOSED ENVIRONMENTAL EDUCATION ACTIVITIES THROUGH *'SITAKA'*
1. Purpose of cropping waterfowl • Consumption as relish • For monetary gain • As a way of looking after the Litunga	• Risk of contracting diseases such as bird flu • There is a danger of eating research birds (migratory birds) • Let the learner discuss the disadvantages of cropping waterfowl for profit making. • Ask the learners to debate on the motion: Is it still necessary to present such gifts to the Litunga?
2. Regulations that governed bird sanctuaries	

• No cropping was done before the Litunga sanctioned	• Learners should brainstorm on what specific measures the Litunga needs to do in order for him to assert his authority within the modern era of politics.
• *Sitaka* guarded by 'Lindaleti' (guards)	• Village panel to discuss on the motion: Was the role of the guards important in the conservation of waterfowl?
• No excessive cutting of reeds or fires on *sitaka.*	• Learners to do sketches on the disadvantages of fires on the *sitaka* • Learners to recite poems on the discomfort caused on birds by reed cutting and fires
• Payment of cows	• Club members to discuss the availability of cows in the researched area • Learners to debate the motion: Should cows still be used as a form of punishment?

• Working in the Litunga's field	• Village panel discussion the topic; Should free labour continue to be practiced in the area of human rights?
• Cropping was done in one day only	• Learners to conduct brief research on the activities the people in the study area involved themselves in as a way of providing food for their families
• Lawlessness and lack of employment in the community	• Young adults to be empowered by ways of life enhancing skills such as basket making , farming, carving, sewing etc. this would create jobs for them, and consequently will not involve themselves in poaching
• Increased population and high levels of poverty	• Learners to discuss the topic: should village headmen receive everybody coming to live in their villages without the available resources?

3. **Participation of local people in conservation of wetlands and waterfowl**	
• ZAWA and BRE to work together	• Village panel discussion to bring out advantages of the two working together in conservation. • Learners to make suggestions on how ZAWA and BRE could be linked.
• Protect wetlands and waterfowl from fires and poachers	• Sensitization programmes by learners in form of poems and drama that bring out advantages of conserving natural resources from poachers and wild fires.
• Will add value to local communities as well as add to the nation's list of tourist attractions	• Communities to organize fund-raising walks meant to raise funds for the development of bird sanctuaries
• Resuscitation *sitaka*	

	• Learners to present advantages of bird sanctuaries being enlisted on tourist attractions during open days • Village radio panel to discus how their lifestyles would improve by resuscitating the *sitaka*. • Learners to debate on the motion: "Resuscitation of *sitaka* will add value to local communities".

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

The purpose of this chapter is to bring out the conclusion drawn from the study as well as the recommendations.

7.1 Conclusion

The conclusion of the study was basically centred on various issues that arose during the time of data collection and analysis. They are therefore, being discussed in this chapter.

It was discovered through the data collected that when the population of the people in the study area was small, the waterfowl was plentiful. But with the increase in population, lawlessness among the people of the study area, poverty and lack of employment particularly among the young adults, there has been a great decrease in the number of waterfowl in the study area. Even though the practice was done only in one day, and hundreds of waterfowl was cropped, it was still able to multiply because there was law and order. As already mentioned in chapter 1, no one was allowed to enter any bird sanctuary except the guard who ensured that the waterfowl had a conducive environment for laying their eggs. It was possible to conserve waterfowl as the entire activity was strictly regulated by the lozi authorities.

Today, most of our Zambian natural resources (waterfowl and wetlands inclusive) are mismanaged by either those who have the authority to do with the sustainable usage by the local people in the study area or those that go to poach.

The other aspect which came out clearly from the respondents was the fact that even though the culprits were punished by the current law, the growing population was far too large to be contained by the very few and limited ZAWA officers. The limited ZAWA staff and lack of transport also seemed to have contributed to the waterfowl decline in the study area. It was therefore, discovered through the responses of the research respondents that the practice was not at all sustainable due to this increase in population. Along side this discovery too, was the fact that people were free to conduct business in any part of Zambia. In view of this, the increase in population was not only associated to the local people, but to all who had the means to travel. The number of people became too big for the number of waterfowl thereby accelerating the decrease both in the numbers and species of waterfowl in the study area.

It was further discovered during data collection that the degree of participation in the conservation of wetlands and waterfowl by the local people was not good. They no longer have attachment to the waterfowl as they had when the authority of managing the natural resources was totally in the hands of BRE. In view of this, the local people were no longer interested in ensuring that both the wetland environment and the waterfowl were conserved. After all they were able to go poaching even though they risked being apprehended if found with waterfowl.

7.2 Recommendations

The recommendations coming out of the findings of this study are as follows:

- ZAWA and BRE should work closely together in matters of sustaining the natural resources in the study area. The union would bring out an aspect of the 1964 Barotse agreement which stated that it recognized the

Litunga as the principal local authority for the government and administration of the Barotseland with powers to make laws on matters of land, natural resources and taxation. Namafe (2006:119) also quotes the 2005 draft constitutional review commission's reports on the same aspects of the need to recognize the Litunga as such. The union of these two bodies is critical in the sense that BRE would revert to the use of the local people (guards) in ensuring that the *sitaka* is out of bounds to everybody. However, it would still be important to enlighten the local people the *sitaka* was under the department of wild life.

- Arising from the findings also was the fact that most respondents were ignorant about the need to conserve nature. In regards to this, awareness programmes should be introduced either on the radio or through the school community activities such as poems and drama recited at school general meetings and open days. This would help the local people particularly the young adults to be empowered with knowledge regarding environment conservation. Once this happens, we could almost be certain that in due course the depleted waterfowl and wetland environment would be resuscitated.
- It was discovered too that most respondents (33%) associated the decrease of waterfowl to high levels of poverty and increase in population, while (23%) of them attributed the decrease to lawlessness by the community. In view of the above observation, the recommendation would be to encourage young adults to form co-operatives so that through such organizations, they would be self reliant, thereby reducing on the number of poachers. This in turn would improve the situation of waterfowl decline.

7.2.1 Recommendations for further Research

The researcher recommends further research on the bird sanctuaries of Western Province. The discoveries have been that although the province has a lot of potential in as far as the natural resources are concerned, very few of these areas are known. For instance, according to the research carried out by ZOS in 2005 on Zambian areas rich in waterfowl, many of these are not known at all, for instance: According to Leonard (2005:162), the "Luena areas in Mongu district appeared to have a rich variety of species and the African skimmers were known to breed there." Despite being poorly known, the areas had a total number of 333 recorded species. This is relatively high and with keen interest from ZAWA and other co-operating partners, the area was a source of interest for further research and development.

- Sioma Ngwezi National Park between Shangombo and Sesheke Districts is not quite well known and yet has to date (2005) a total of 324 recorded species. There could be more species by now.

- Simungoma National Forest is unprotected even though it was the only Zambian site where several Burchell's sand grouse and Kori bustard were recorded.

In view of this, there is urgent need to have more research done in these important bird areas as most of them are not known and are not protected. This is much more required too because the areas have substantial waterfowl breeding colonies during the flooding periods.

In view of the fact that the Barotse flood plain is one of the Important Bird Areas of Zambia, it goes without saying therefore, that these areas must be researched

into so that they can be known both locally and internationally. This will not only add value to the locals of those areas, but also to the entire Zambian development and economy.

- It was discovered during data collection that most people lacked conservation information. It is thus vital to have policies and programmes to sensitize the community on the importance of wetlands and waterfowl if the birds are to be protected. This could be done through local radio programmes, introduction of environmental education clubs in schools as well as incorporating environmental education in the school curriculum. In this way, the learner and the community would be helped to appreciate and enjoy nature and life. It will also help to promote self fulfillment and social development in man as he tries to maintain and preserve life in general.

- The policy makers must ensure that while development is taking place, sensitive places like wetlands should be spared. As such, ecology and economics can co-exist. This means that the policy makers must as much as possible adhere to recommendations given by environmentalists like the Environmental Impact Assessment (EIA) stake holders when deciding to give away some of our valuable sites to the developers. The Victoria Falls game park in Livingstone will soon be history due to the allocation of parts of the game reserve to the investors. This deprives nature of its habitat.

- The stakeholders regarding environmental issues should have deliberate policies by organizing workshops, seminars and making

declarations in meetings on environmental awareness activities such as in clubs and school.

There is urgent need to have more research done in the Important Bird Areas (IBAs) as most of it is poorly known and unprotected even though they have substantial waterfowl breeding colonies during the flooding periods, like the Barotse flood plains

The conservation of waterfowl should be emphasized at the district and village levels whenever possible. The co-ordination and extension of conservation however, should be undertaken by relevant departments.

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APPENDIX I

LETTER TO RESPONDENTS OF QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA
DIRECTORATE OF POST GRADUATE STUDIES

TITLE: ENVIROMENTAL EDUCATION ACTIVITIES ARISING FROM LOZI PEOPLE'S IMPLEMENTATION OF THE WATERFOWL CROPPING SYSTEM IN THE UPPER ZAMBEZI WETLANDS OF WESTERN ZAMBIA.

Dear Respondent,

My name is Pumulo Walubita Sumbwa, a Post Graduate Student at the University of Zambia carrying out a research on the above matter.

You have been randomly chosen to take part in this study, as such you are kindly requested to respond to the questions in the querionnaire as honestly as you can. The findings of the study will not only resuscitate the lost sanctuaries 'sitaka' but also add to the mother Zambia's tourist attraction centres.

The success of this study therefore, depends on your respondent and I thank you for that.

May God richly bless you.

APPENDIX II

QUESTIONNAIRE

Questionnaire: To be answered by the men who took part in the practice of *kuloba sitaka*.

Answer all questions.

1. **What purpose did people have for carrying out the practice of *kuloba sitaka*?**

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2. **What bird species were targeted and why?**

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3. **Was the practice sustainable for the waterfowl species it targeted? Yes/No (Tick your answer √).**

4. **Was the *kuloba sitaka* system regulated by the Lozi authorities? Yes/No (Tick your answer √).**

5. **What kind of regulations were attached to the system?**

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.....

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.....

6. **Were punishments meeted on those who broke the regulations? Yes/No**

(Tick your answer √))

7 If your answer to question 4 is Yes, state the find of punishment (s) that was/were given.

.....

.....

.....

.....

8. Were *sitaka* regulations in force? Yes/No. (Tick your answer √).

9. If your answer to question 8 is No, what do you think should be done to make the practice sustainable?

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10. If your answer to question 8 is Yes, what do you think was responsible for the decline of waterfowl from the 1950s to the present time?

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11. What should be done to stop the decline of the waterfowl?

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12. At the moment, what things threaten the sustenance of bird sanctuaries?

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13. Do you think *sitaka* should be resuscitated?
Yes/No (Tick your answer √).

14. Give reasons for your answer.

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Thank you for your participation.

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APPENDIX III

Interview Questions

1. What purpose did people have for carrying out the practice of *kuloba sitaka*?

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2. What bird species were targeted and why?

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3. Was the practice sustainable for the waterfowl it targeted?
Yes/No (Tick your answer)

4. What should be done to stop the decline of waterfowl?

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5. At the moment what things threaten the sustenance of bird sanctuaries?

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6. In your opinion should *sitaka* be resustated?
Yes/No (Tick your answer √).

I thank you for according me an opportunity to conduct this interview.

God bless you

APPENDIX IV

LIST OF VILLAGES VISITED
Village analysis: (Interviews)

NAME OF VILLAGE	CHIEF	NO. OF RESPONDENTS
LIYUNDELO	IMAMUNA	1
KABELE	LIBUMBU	1
NAMUSA	LIBUMBU	1
NAMBOMA	KANDALA	1
NOMAI	LIBUMBU	2
LINYANDELO	LIBUMBU	1
NAKAPUNGU	CHENGELE	3
NJEKE SIPAWA	KANDALA	1
SITONGOLA	IMBWAE	1
LITONGO	NALUBUTU	1
MALENGWA	LIBUMBU	2
LINU	SINAWAMBULU	1
NAMAOMA	SINAWAMBULU	1
MUNGULO	KAYOMBO	1
NJEMENWA	CHIENGELE	1
NASITOKO	LIBUMBU	1
TOTAL		**20**

APPENDIX V

Villages analysis: (Questionnaires)

NAME OF VILLAGE	CHIEF	NO. OF RESPONDENTS
NGULU	NAMILUKO	1
NASIYONGO	NAWA SILUNDU	1
NAKAPUNGU	CHENGELE	1
SIKULI	NALUBUTI	1
LUMBAE	NAMUTWI	1
NJEKE SIPAWA	KANDALA	2
NOMAI	LIBUMBU	3
KANDIANA	LIBUMBU	1
LUSHESHE	LIYOKO	1
NAMBOMA	KANDALA	1
SIFUKU	MWANAKONYA	1
NASITOKO	LIBUMBU	2
NAENDE	LIBUMBU	2
SALONDO	NAWA SILUNDU	1
MALENGWA	LIBUMBU	3
SILUMBA	MUYENDEKWA	1
NASANGE	NAWA SILUNDU	1
SANUMWA	NAWA SILUNDU	1
NANIKELAKO	NALUBUTU	2
KOBYA	NAWA SILUNDU	1
TOTAL		**30**

F/ Assistant
25/06/07.

C/o Mr G.N. Sumbu
School of Educatio
UNZA
Box 32379
LUSAKA
25/06/07.

The District Fisheries Officer
Mongu District

Dear Sir,

RE: REQUEST TO USE THE BOAT TO IKATULAMWA.

Reference is made to the above matter.

I wish to use one of your boats to take me to Ikatulamwa.

I am a post-graduate student from the University of Zambia carrying out a research on bird sanctuaries in Mong along the Zambezi river.

I shall appreciate your assistance in this matter.

Yours faithfully,

P.W. Sumbwa (Mrs

- Mr. Njamba attend to her. (coxswain

F/ Assistant

Fisheries