



ZAMBIA WILDLIFE AUTHORITY

**RESEARCH AND MONITORING PROGRAMME FOR KAFUE NATIONAL PARK AND
ADJACENT GAME MANAGEMENT AREAS**



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Table Contents

LIST OF ABBREVIATIONS	3
FOREWORD.....	4
1.0 INTRODUCTION.....	5
2.0 REVIEW OF PREVIOUS RESEARCH ACTIVITIES IN KAFUE NATIONAL PARK 5	
3.0 OBJECTIVE OF THE RESEARCH AND MONITORING PROGRAMME 6	
4.0 RELATIONSHIP BETWEEN THE KAFUE NATIONAL PARK RESEARCH AND MONITORING PROGRAMME AND ZAWA’s RESEARCH POLICY 6	
5.0 IMPLEMENTATION STRATEGY	7
5.1 MOBILIZATION OF RESOURCES	7
5.2 RESEARCH PRIORITIES.....	8
5.3 IMPLEMENTATION MODALITIES	8
5.3.1 BUILDING CAPACITY IN ZAWA	8
5.3.2 FORMATION OF LINKAGES.....	9
5.4 COMMUNICATION OF RESULTS OF RESEARCH STUDIES	9
5.5 INFORMATION MANAGEMENT.....	10
6.0 REVIEW OF THE RESEARCH AND MONITORING PROGRAMME... 10	
7.0 REFERENCES.....	10
APPENDIX 1: PRIMARY PRIORITY RESEARCH TOPICS FOR THE KAFUE NATIONAL PARK AND ADJACENT GMAS	12
APPENDIX 2: SECONDARY PRIORITY RESEARCH TOPICS FOR THE KAFUE NATIONAL PARK AND ADJACENT GMAS	18

LIST OF ABBREVIATIONS

AWF	-	AFRICAN WILDLIFE FOUNDATION
BI	-	BIRD LIFE INTERNATIONAL
CBU	-	COPPERBELT UNIVERSITY
CI	-	CONSERVATION INTERNATIONAL
CRBs	-	COMMUNITY RESOURCE BOARDS
DC	-	DISTRICT COUNCILS
Dept. OF MET	-	DEPARTMENT OF METEOROLOGY
Dept. OF VET	-	DEPARTMENT OF VETERINARY SERVICES
DWA	-	DEPARTMENT OF WATER AFFAIRS
FAZ	-	FISHERIES ASSOCIATION OF ZAMBIA
FD	-	FORESTRY DEPARTMENT
GSZ	-	GEOLOGICAL SURVEY OF ZAMBIA
HTTI	-	HOTEL AND TOURISM TRAINING INSTITUTE
MACO	-	MINISTRY OF AGRICULTURE AND COOPERATIVES
MMRI	-	MOUNT MAKULU RESEARCH INSTITUTE
MOH	-	MINISTRY OF HEALTH
NHCC	-	NATIONAL HERITAGE AND CONSERVATION COMMISSION
NISIR	-	NATIONAL INSTITUTE FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
NM	-	NATIONAL MUSEUMS
NGOs	-	NON-GOVERNMENTAL ORGANISATIONS
PHAZ	-	PROFESSIONAL HUNTERS ASSOCIATION OF ZAMBIA
SDZS	-	SAN DIEGO ZOOLOGICAL SOCIETY
TCZ	-	TOURISM COUNCIL OF ZAMBIA
UNZA	-	UNIVERSITY OF ZAMBIA
WPAZ	-	WILDLIFE PRODUCERS ASSOCIATION OF ZAMBIA
WWF	-	WORLD WIDE FUND FOR NATURE
ZRA	-	ZAMBEZI RIVER AUTHORITY
ZNTB	-	ZAMBIA NATIONAL TOURISTS BOARD
ZOS	-	ZAMBIA ORNITHOLOGICAL SOCIETY
ZP	-	ZAMBIA POLICE

FOREWORD

The Zambia Wildlife Authority (ZAWA) has developed the Research and Monitoring Plan for Kafue National Park and its adjacent Game Management Areas (GMA's), which aims at facilitating scientific studies, oriented to providing solutions to wildlife management problems of the park and its adjacent GMA's. The ZAWA Research Policy will guide the implementation of the programme to ensure compliance to institutional vision and mission. The primary objective of the policy is to facilitate implementation of cost-effective and efficient research programmes designed to resolve wildlife management problems affecting Zambia's network of protected areas.

Implementation of the programme will involve formation of linkages and synergies with external research institutions and funding agencies. Research and funding linkages with collaborating partners will be initiated and guided by individual Memorandum of Understanding (MoUs) to be entered into between ZAWA and collaborating agencies. Furthermore, implementation of the programme will be based on the research priorities identified in this programme document.

The preparation of this programme document was made possible with the support of Royal Norwegian Government and World Bank under the Support to Economic Expansion and Diversification (SEED) Programme. The Programme Document will be reviewed every 5 years so as to adapt it to existing challenges.

BOARD CHAIRPERSON

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DATE

1.0 INTRODUCTION

Wildlife management is based on a set of exceptionally complex sciences including ecology, economics and sociology. It is, therefore, necessary to improve our understanding of these sciences in order to improve the ability of wildlife management to achieve its objectives. This being the case, wildlife research is regarded as an integral component of the overall management process. Historically, research and monitoring in Kafue National Park (KNP) and its adjacent Game Management Areas (GMA's) has been fragmented. Furthermore, there was little effort in the past to translate research results into management intervention strategies to improve management of the ecosystem. Consequently, the results have been underutilized in managing Park and adjacent GMAs the park and the adjacent Game Management Areas (GMAs) scientifically. To correct the situation ZAWA has developed this Research and Monitoring Programme, which aims at Park and adjacent GMAs addressing management concerns.

2.0 REVIEW OF PREVIOUS RESEARCH ACTIVITIES IN KAFUE NATIONAL PARK

As observed earlier on, research in Kafue National Park has been scanty to date; most of it being confined to the southern part of the park. This is not surprising, considering that Ngoma, the headquarters of the southern part of the part was also the centre for ecological research. This disparity between the northern and southern part of the park implies that very little is known about the ecology of former. Besides this observation, the majority of the studies are either on fauna or flora (Appendix 1), hence the research has ignored other important ecological factors, e.g., those controlling community structure, which include geology, hydrology, soil structure, landscape, erosion, and climate.

3.0 OBJECTIVE OF THE RESEARCH AND MONITORING PROGRAMME

The overall goal of the programme is to promote research and monitoring studies that shall provide solutions to wildlife management problems affecting the park and GMAs with the purpose of contributing to improved understanding of the ecosystem so that management decisions are made on the basis of the research results. .

4.0 SPECIFIC OBJECTIVES OF THE RESEARCH AND MONITORING PROGRAMME

Specific objectives of the Programme include *inter alia*:

- (i) Provide ecological information and advice to ZAWA on all aspects of biodiversity conservation on the park and adjacent GMAs;
- (ii) Facilitate multidisciplinary biodiversity research projects in park and adjacent GMAs by internal and external researchers;
- (iii) Facilitate collection, compilation and interpretation of various research baseline data in the context of the purpose and objectives of the ecosystem;
- (iv) Provide a framework and guidance on the storage and accessing of research and monitoring information; and
- (v) Provide a framework and basis for the formulation and conducting of monitoring programmes to evaluate the effectiveness of management interventions.

4.0 RELATIONSHIP BETWEEN THE KAFUE NATIONAL PARK RESEARCH AND MONITORING PROGRAMME AND ZAWA's RESEARCH POLICY

The ZAWA Research Policy will guide all the research and monitoring studies to be conducted in KNP based on the park's research priorities (Appendices I and II). This will

assist the Park Management Team to continuously adapt the programme to the mission and vision of ZAWA. The overall goal of the policy is to facilitate implementation of cost-effective and efficient research programmes oriented to providing solutions to wildlife management problems affecting Zambia's network of protected areas. Specific objectives of the policy are as follows:

- i. To establish and maintain partnerships with local and international research institutions;
- ii. To establish and maintain a comprehensive information management system for research;
- iii. To provide adequate financial resources for wildlife research;
- iv. To provide trained staff to carry out wildlife research activities; and
- v. To disseminate wildlife research results.

5.0 IMPLEMENTATION STRATEGY

To attain the objectives and purpose of the programme, ZAWA shall coordinate implementation of the programme based on the principle of adaptive and innovative approaches. The implementation strategy will entail mobilization of adequate resources, setting of research priorities, building capacity, formation of linkages, information management, and communication of research results.

5.1 MOBILIZATION OF RESOURCES

Critical in the implementation of the programme is mobilization of resources (equipment and facilities, human resources, motor vehicles, and funds). In the past, negligible resources were allocated to research and monitoring programmes both at institutional and park level. The net result is that there is inadequate scientific data and information on the protected area network, including the Kafue National Park and adjacent GMAs.

As the agency implementing the programme, while at the same time it is the primary beneficiary of the research outputs, ZAWA shall mobilize research funds internally by increasing budgetary allocation to research both at institutional and park level by a minimum of 10% of its annual budget. Mobilization of resources will also be sought externally through formation of linkages.

5.2 **RESEARCH PRIORITIES**

To encourage optimal utilization of research resources efforts will be directed to research studies based on priorities (Appendices 1 and 2). These priorities are related to management requirements in order to allow for testing the theories on which the research is based. The studies will focus on scientific research of the park's biological resources and the socio-economic and socio-political dimensions of the resource thereof. While these priorities have been set the basis of what is believed to be the mechanism of the ecosystem, they are, nonetheless, not rigid in order to avoid missing some important factors. The history of science is full of examples of major discoveries being made by chance, or outside of an established priority system (Clarke, 1983).

5.3 **IMPLEMENTATION MODALITIES**

ZAWA undertakes to implement the programme through:

- (i) Its own personnel;
- (ii) Partnerships with external collaborators including the use of under- and post-graduate students; and
- (iii) where feasible and necessary outsourcing on consultancy basis.

5.3.1 *BUILDING CAPACITY IN ZAWA*

To attain the objectives and purpose of the programme, skilled research personnel will be critical at all times. Availability of skilled personnel will be achieved by the following means:

- (i) Recruiting and retaining skilled personnel or human resources through appropriate remuneration in relation to their professional qualifications and contribution to the attainment of the goals of biodiversity research;

- (ii) Developing a two-tier Capacity Building Programme comprising short-and-long term training of research personnel, attachment of research personnel to consultants to be engaged for specific short-and long-term assignments, and attachment of personnel to external research teams; and
- (iii) Attaching ZAWA staff to other research institutions.

5.3.2 FORMATION OF LINKAGES

Mobilization of resources will be pivotal in ensuring effective and efficient implementation of the program. . As such, ZAWA shall establish linkages with other research organizations carrying out similar work. This includes literature review, conference attendance, and personal contacts. In addition, ZAWA will interact with external researchers, besides funding agencies. Establishment of linkages will be initiated and guided by a Memorandum of Understanding (MoU) to be entered into between ZAWA and various collaborating partners. The MoU will provide guidance on the following key issues:

- (i) Responsibilities and obligations of the parties to the MoU;
- (ii) Duration and termination of the MoU;
- (iii) Intellectual Property Rights; and
- (iv) Utilization of, and accountability for, research resources.

5.4 COMMUNICATION OF RESULTS OF RESEARCH STUDIES

Results of the research and monitoring studies will be communicated to ZAWA Management and where necessary to each respective directorate in order to enhance implementation of the results into management intervention strategies. To encourage utilization of research results, researchers and the Park Management Team will communicate and interface with a wide range of stakeholders (ZAWA Management, scientists and the public) in order to disseminate the research findings through workshops and publishing articles in various outlets (scientific journals and print media)

5.5 INFORMATION MANAGEMENT

To ensure timely availability of information from research studies, an appropriate and effective information archiving system will be maintained at the park, regional and national level in both manual and electronic form. Achieving this will require use of personnel with requisite skills and knowledge, besides provision of facilities, e.g., a library, and computing equipment.

6.0 REVIEW OF THE RESEARCH AND MONITORING PROGRAMME

The Research and Monitoring Programme document will be reviewed every 5 years from the date of ratification in order to adapt it to existing challenges. To ensure that the programme meets its needs and challenges an in-house Monitoring and Evaluation program will be put in place to review the document annually.

7.0 REFERENCES

Clarke, J.E. 1983. Principal Master Plan for Protected Areas. Department of National Parks and Wildlife, Lilongwe, Malawi.

ZAWA (2005). Policy guidelines for conducting Research on Wildlife and Protected Areas in Zambia. 2005. Chilanga, Zambia.

NPWS (1996). KNP General Management Plan 1996. Department of National Parks and Wildlife Services. Chilanga, Zambia.

Appendix 1. Past research activities that have been conducted in the Kafue National Park

Category	Theme	Title of Publication	Author
Fauna	Mammalian carnivores	Predation of large mammals in KNP.	J.Uys, J.shenton, B.Mitchell (1965).
		Elephant ageing in KNP-south.	H.Simwanza (1997a).
	Large mammals	Aerial census of large mammals in KNP	H.Simwanza, P.Zyambo, F.Miyauchi (1997).
		Elephant monitoring around Ngoma.	F.Miyauchi (1992).
		Population structure and abundance of large mammals in Ngoma	K.Nitta (1989).
		Preliminary aerial census of Hippopotamus on the Kafue, Lunga and Lufupa.	K.Nitta (1997a).
		Preliminary aerial census of Hippopotamus in Kafue river in Northern part of KNP.	K.Nitta (1997b).
		Population structure and abundance of large mammals in Ngoma area.	K.Nitta (1989).
		Social organization and home range of Bushbuck, <i>Tragelaphus scriptus</i> .	A.Naeshero (1987a).
		Wet season game population and biomass in the Ngoma area.	A.Naeshero (1987b).
		Population structure and relative abundance of large mammals in Ngoma area ,KNP in dry season	K.Nitta (1989).
		Population structure and relative abundance of large mammals in Nanzhila areas, KNP in dry season.	K.Nitta (1989).

Past research activities that have been conducted in the Kafue National Park

Category	Theme	Title of Publication	Author
Fauna	Avi-fauna	Comparison of avi-fauna in Ngoma forests and its surrounding area.	F.kinoshita (1984).
		Preliminary list of birds of KNP.	RK.Brooke (1996).
		Bird records in KNP	Dr.Aspinwall (1994).
	Ichtyo-fauna	Fisheries research management and sharing for conflict resolution.	M.Mbewe (1994).
		Traditional fishing in KNP South.	H.Simwanza (1996a).
		Fishing as a source of revenue in the KNP	H.Simwanza (1996b).
Habitat Management	Forests and Woodlands	Digital vegetation map of KNP.	M.Kohira (1984).
		Analysis of Ngoma forest in KNP south.	H.K.Mwima (1986).
		The vegetation survey in KNP during the months of July-September.	H.Mwima, K.Naritta, (1998).
		The vegetation survey in KNP during the months of July-October.	H.Mwima, K.Naritta, (1998).
		The vegetation survey for site selection for the special conservation zone in KNP during the months July –October.	K.Naritta, (1997b).
	Fire	Notes of fire use and control in KNP.	P..Moss (1973).
		Fire incidence and management in KNP.	P.Zyambo (1997d).

		Fire in vegetation and its use in pasture management with special reference to tropical and sub tropical Africa.	O.West(1965)
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Past research activities that have been conducted in the Kafue National Park

Category	Theme	Title of Publication	Author
Physical Factors	Climatology	Rainfall variations in Ngoma.	H.Simwanza (1995).
		Temperature range in Ngoma by	H.Simwanza (1995).
		Rainfall of KNP.	H.Simwanza (1998).
		Soils of KNP.	H.Simwanza (1999).
		Temperature range in KNP.	H.Simwanza (1998b).
		Humidity and number of sunshine hours in KNP.	H.Simwanza (1998c)
Socioeconomics	Public attitudes	Local people's perception of tourism and wildlife in KNP.	H.Imae (1998).
	Law enforcement	Anti-poaching activities in KNP.	H.Simwanza(1990-1995).
		Sighting and poaching frequencies of some animals in KNP.	P.Zyambo (1997c).
	History	A Brief History of Kafue national Park, Zambia	H Mwima (2001)

Appendix 2: Primary Priority Research Topics for the Kafue National Park and Adjacent GMAs

Category	Objectives	Theme	Research topics	Collaborating partners
Habitat Management	To understand the spatial and temporal changes and associated ecological processes	Woodlands	<ul style="list-style-type: none"> Types and spatial distribution Species composition Biomass assessment 	FD, AWF, WWF, UNZA, CBU, Local Authorities
		Forests	<ul style="list-style-type: none"> Types and spatial distribution Species composition Biomass assessment 	FD, AWF, WWF, UNZA, CBU, Local Authorities
		Fire	<ul style="list-style-type: none"> Causes of fire Spatial and temporal distribution Impact of fire on different habitat types 	UNZA, FD, AWF.
Fauna	Understand the animal population dynamics, Predator-prey interaction and their social economic implication.	Large Mammalian Carnivores	<ul style="list-style-type: none"> Population dynamics Predator-prey relationships including inter and intra-species competition Impacts of carnivores on consumptive tourism(trophy hunting) 	UNZA, PHAZ, CI, WWF, SDZS, AWF
		Browsers, Grazers and Mixed Feeders	<ul style="list-style-type: none"> Population dynamics Species inter and intra specific interaction and competition Genetic mapping of species populations 	UNZA, PHAZ, CI, WWF, SDZS, AWF
Physical factors	To understand physical factors and their influence on natural resource management	Pollution	<ul style="list-style-type: none"> Water quality Waste management strategies 	UNZA, NGOs, NISIR,
		Hydrology	<ul style="list-style-type: none"> Watershed analysis 	ZRA, Dept. MET, UNZA, DWA.
		Landscape classification	<ul style="list-style-type: none"> Categorization of different management units according to various landscape components such as geology, soils, climate, vegetation, mammal distribution, etc. 	AWF, UNZA, MMRI.

		Climate	<ul style="list-style-type: none"> • Collection of meteorological data • Monitoring the impact of climatic change on the entire landscape 	Dept MET, UNZA.
Social economic factors	To understand the social economic drivers in effective natural resource management	Public attitudes towards KNP	<ul style="list-style-type: none"> • Perceptions of the surrounding communities towards KNP (including GMAs and Open areas) • Perception of tourists towards KNP 	UNZA, NGOs, ZNTB
		Law enforcement	<ul style="list-style-type: none"> • Monitor patrol performance • Monitor illegal activities • Socioeconomics of illegal activities • Assess effectiveness of prosecution 	Zambia Police, DC, CRBs, Judiciary
		Tourism	<ul style="list-style-type: none"> • Tourist facilities • Tourism carrying capacity and acceptable limits of use • Marketing strategies • Concession agreements 	ZNTB, TCZ, UNZA, HTTI

Appendix 3: Secondary Priority Research Topics for the Kafue National Park and Adjacent GMAs

Category	Objectives	Theme	Research topics	Collaborating partners
Law enforcement	To effectively protect the Wildlife resources (terrestrial and aquatic species) of flora and fauna.	Wildlife forensics	<ul style="list-style-type: none"> DNA protocol development. 	UNZA, MACO (Dept of Vet), US Fish and Wildlife Services.
Geomorphology	To determine processes (types, causes, effects etc) in the landscape.	Erosion	<ul style="list-style-type: none"> Types, determinants and effects of erosion 	UNZA, NISIR, AWF, MACO (MMRI).
		Soils	<ul style="list-style-type: none"> Types of soils and their spatial distribution Soil physical and chemical properties 	
		Geology	<ul style="list-style-type: none"> Impact of mining on the environment and wildlife 	UNZA, Dept of Mines, Geological Society of Zambia (GSZ)
Wildlife health, production and utilization.	To enhance sustainability of wildlife resources	Wildlife health	<ul style="list-style-type: none"> Diseases of bimodal transmission Situational analysis of wildlife diseases A survey of zoonotic diseases and emerging and re-emerging diseases Spatial and temporal distribution of zoonoses and their prevalence and incidence rates 	UNZA, MACO (Dept of Vet), NISIR, MOH.
		Wildlife Production and Utilization	<ul style="list-style-type: none"> Ranking of species according to levels of utilization Animal utilization, trends and trophy quality. Hunting success rate 	UNZA, NISIR, PHAZ, WPAZ.
		Public health	<ul style="list-style-type: none"> Public health challenges in KNP and surrounding GMAs Impact of HIV/AIDS on resource protection 	MOH, UNZA, MACO (dept of Vet)
Social economic factors	To understand the social economic drivers in effective natural resource management	Human Wildlife conflict	<ul style="list-style-type: none"> Monitoring of human-wildlife conflicts Identification of the causes of human-wildlife conflicts Development of a system to mitigate and adapt human wildlife conflicts 	NGOS.CRBS, UNZA.

		Public relations	<ul style="list-style-type: none"> • Effectiveness of current extension services • The role of the media in tourism promotion and wildlife conservation 	
Fauna	Understand the animal population dynamics, Predator-prey interaction and their social economic implication.	Small mammals	<ul style="list-style-type: none"> • Species inventory, and population dynamics 	UNZA, NM.
		Invertebrates	Species inventory, and population dynamic	UNZA, MACO (MMRI)
		Birds	<ul style="list-style-type: none"> • Inventory of birds • Monitoring of migratory birds • Identification of risks to bird health 	ZOS, BI, UNZA, WWF.
		Fish	<ul style="list-style-type: none"> • Spatial and temporal distribution • Fishery potential • Socioeconomic value 	MACO (Dept of fisheries), UNZA, FAZ
		Herpetology	<ul style="list-style-type: none"> • Systematics and taxonomy • Population dynamics 	NHCC, NM, CFAZ.
Habitat Management	To understand the spatial and temporal changes and associated ecological processes	Grasslands	<ul style="list-style-type: none"> • Types, composition and distribution of grasslands • Productivity (biomass assessment) and off take (grazing, termite) 	AWF, UNZA, MACO (Animal husbandry)
		Aquatic plants	<ul style="list-style-type: none"> • Monitoring of invasive aquatic plants 	UNZA, MACO (MMRI), WWF.

NB: Not limited only to these institutions.

