

FIRST MEETING OF THE UNIVERSITY OF ZAMBIA:  
VETERINARY EDUCATION PROJECT'S JOINT  
COMMITTEE ON 22ND JANUARY, 1986

1. Progress in the development of the School of Veterinary Medicine to 31st December, 1985.
  - (a) Recruitment
    - (i) Academic staff Paper 1
    - (ii) Technical staff Paper 2
    - (iii) Administrative and Secretarial staff Paper 3
  - (b) Curriculum development Paper 4
  - (c) Equipment supplies
    - (i) JICA Paper 5
    - (ii) Other agencies Paper 6
  - (d) Financial and other resources supplied by UNZA Paper 7
  - (e) The Veterinary Paddock Project Paper 8
  - (f) Co-operation with other institutions Paper 9
  - (g) Training of Zambian counterparts.
  - (h) Matters relating specifically to Japanese personnel.
    - (i) Housing for Experts and Volunteers Paper 10
    - (ii) Employment permits
  - (i) Japanese Volunteers.
2. Exchange of views on major issues connected with the JICA Technical Co-operation Programme.
3. Formulation of the Work Plan for 1986.
4. Any other business.

RECRUITMENT OF ACADEMIC STAFF. POSITIONON 31ST DECEMBER, 1985INTRODUCTION

The failure of FAO to finance the establishment of 8 senior academic posts (and 3 Chief Technicians) created serious difficulties for the School. However, the School's success in recruiting from within Africa has alleviated what would otherwise have been a serious situation. The present position is as follows:-

DEPARTMENT OF BIOMEDICAL SCIENCE

<u>Approved establishment</u> .....		8
Head of Department.	Professor Lovelace	
Biochemistry.	Professor Lovelace Lecturer. VACANT.	
Physiology.	Dr. Kisauzi (Expected early 1986). Mr. Mizinga (Dr. Shandomo is presently substituting for Dr. Kisauzi)	
Anatomy, Histology and Embryology.	Professor Houska Professor Marcanik Dr. Persson	
Pharmacology.	Vacant. Miss Lewanika and Mr. Chirwa from the School of Medicine are currently teaching, and Dr. O'Shaughnessy from the Royal Veterinary College, London is expected to arrive in April to teach the last term of the course.	
<u>Number of posts still vacant</u> .....		2

## Remarks.

The post in pharmacology was advertised in September 1985 by the British Council without success. The continuing vacancy is serious and enquiries are still being made for a suitable person in Great Britain and Ireland and more recently in the Netherlands. A candidate who was offered

the lectureship in biochemistry in December 1984 failed to respond. In November HEDCO was asked to readvertise the post and an approach has also been made recently to the Dutch Government. Dr. & Mrs. Akester of Cambridge University (funded by the British Council) assisted with the teaching of anatomy and histology for 3 months during 1985 two months prior to Professor Houska's arrival.

Recommendations.

DEPARTMENT OF PARACLINICAL STUDIES

<u>Approved establishment</u> .....	7
Head of Department.	Professor Ishitani
Pathology.	Professor Ishitani Dr. Musonda Dr. Chihaya (Expected August 1986) (Present substitute Dr. Sharma)
Microbiology.	Professor Shimizu (Temporary) Dr. Gabbar (Expected early 1986) Dr. Mlangwa (Expected March/ April 1986)
Parasitology.	Professor Kitaoka Dr. Tada
Number of posts still vacant .....	NIL

Remarks.

Dr. McCracken (HEDCO) assisted with the teaching of pathology from October to December during Dr. Musonda's absence in Japan. Dr. Thomas (British Council) developed the course in helminthology with Dr. Tada during the same period. Dr. Ishimo and Dr. Morita are expected to arrive from Japan in March to teach immunology and virology respectively during the Third Term. Professor Sseyonga is due to arrive from Uganda in March to teach protozoology during the Third Term.

It will be necessary to recruit another pathologist if Dr. Musonda is accepted for Ph.D. studies in Canada in March 1986.

There is an urgent need to appoint a protozoologist as neither of the two parasitologists now in post are as yet in a position to teach all of this subject.

Recommendations.

DEPARTMENTS OF CLINICAL STUDIES AND DISEASE CONTROL

The following courses are scheduled to be taught during the 1986/87 academic session:-

Veterinary Medicine Part 1 (general, special and preventive)	1 Full Course
Veterinary Therapeutics and Toxicology.	½ Course
Veterinary Public Health (If necessary, this course could be taught in 1987/88)	½ Course
Veterinary Surgery (and anaesthesia). Part 1	1 Full Course
Veterinary Radiology	½ Course
Veterinary Reproduction and Obstetrics Part 1	½ Course
Vacational Clinical Practicals. (during long vacation)	

The views of the JICA Mutual Consultation Team as to how the teaching of the above courses might best be allocated between the two Departments would be appreciated.

In the meantime the present situation relating to recruitment of staff for the teaching of these courses is as follows:-

<u>Approved establishment</u> .....		16
Veterinary Medicine Part 1. (general, special and preventive)		
Communicable diseases and aspects of epidemiology.	Professor Shimizu	
Clinical medicine and farm animal medicine	Dr. Koomsom	
Clinical medicine and farm animal medicine	Advertisement sent to HEDCO (Nov. 1985)	
Clinical pathology (haematology, cytology, autopsies).	Dr. Sharma	
Clinical pathology (chemical). Veterinary public health Surgery, anaesthesia and radiology.	JICA to advertise. " " " Professor Yoshida	
Obstetrics and some surgery.	Dr. Bafi Yeboa	
Reproduction Reproduction	Dr. Shandomo Offered to Dr. Pathiraja	
Companion animal medicine.	Advertisement sent to British Council December, 1985.	
Professor of Veterinary medicine (To co-ordinate the activities of the clinical and preventive medicine.	Advertisement sent to British Council, December, 1985.	
Number of posts filled.		6
Number offered		1
Number of posts applied for from JICA, British Council and HEDCO		<u>5</u> 12
<u>Suggested list of subjects still to be covered.</u>		
Lecturer/Senior Lecturer in Surgery		1
Lecturer/Senior Lecturer in Therapeutics and Toxicology.		1
Lecturer/Senior Lecturer in Virology to man the virology diagnostic laboratory in Department of Disease Control and to teach appropriate course components.		1

Lecturer/Senior Lecturer in Parasitic Diseases, with specialisation in protozoology, to man the parasitology diagnostic laboratory in the Department of Disease Control and to teach appropriate course components.

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SCHOOL OF VETERINARY MEDICINERECRUITMENT OF TECHNICAL STAFF  
POSITION AS OF 31ST DECEMBER 1985DEPARTMENT OF BIOMEDICAL SCIENCES

<u>POST</u>	<u>APPROVED ESTABLISHMENT</u>	<u>IN POST</u>	<u>ACCEPTED</u>	<u>OFFERED</u>
Chief Technician	1	-	-	-
Senior Technician	2	1	-	-
Technician I	2	-	1	-
Technician II	1	2	-	-
Assistant Technician	2	-	-	-
Laboratory Assistant	2	2	-	2
Totals	10	5	1	2

NOTES

- (i) Application was made to HEDCO in July 1985 to recruit a Chief Technician on a 2 year contract, so far without success.
- (ii) A temporary Chief Technician was provided by HEDCO for the period October-December 1985.
- (iii) The two in post Laboratory Assistants have been put up for promotion to Assistant Technician, if successful expected promotion February/March 1986.
- (iv) Application recently made to HEDCO for a further temporary Chief Technician for the period April-June 1986.

DEPARTMENT OF PARACLINICAL SCIENCES

POST	APPROVED ESTABLISHMENT	IN POST	ACCEPTED	OFFERED
Chief Technician	1	-	-	1
Senior Technician	2	-	-	-
Technician I	1	3	-	-
Technician II	1	1	-	-
Assistant Technician	2	-	-	-
Laboratory Assistant	2	-	-	2
Totals	9	4	-	3

NOTES

- (i) Chief Technician is expected to start January-February 1986 according to last information.

DEPARTMENT OF CLINICAL STUDIES

POST	APPROVED ESTABLISHMENT	IN POST	ACCEPTED	OFFERED
Chief Technician	1	-	-	-
Senior Technician	2	-	-	-
Technician I	1	-	-	-
Technician II	1	-	-	-
Assistant Technician	2	-	-	-
Laboratory Assistant	3	-	-	1
<u>Radiologist</u>	1	-	-	-
Pharmacist	1	-	-	-
Totals	12	-	-	1



DEPARTMENT OF DISEASE CONTROL

POST	APPROVED ESTABLISHMENT	IN POST	ACCEPTED	OFFERED
Chief Technician	1	-	-	-
Senior Technician	2	-	-	-
Technician I	2	-	-	-
Technician II	1	-	-	-
Assistant Technician	2	-	-	-
Laboratory Assistants	3	-	-	-
Totals	11	-	-	-

CENTRAL SERVICES

POST	APPROVED ESTABLISHMENT	IN POST	ACCEPTED	OFFERED
Chief Technician	1	1	-	-
Senior Technician	1	-	1	-
Technician I	3	-	-	-
Technician II	2	-	-	-
Assistant Technician	2	-	-	-
Laboratory Assistants	2	-	-	1
Totals	11	1	1	1

NOTES

- (i) Senior Technician is a JICA position and has been accepted by Mr. Hiruta who is expected to arrive February 1986.

SUMMARY

POST	APPROVED ESTABLISHMENT	IN POST	ACCEPTED	OFFERED
Chief Technician	5	1	-	1
Senior Technician	9	1	1	-
Technician I	9	3	1	-
Technician II	6	3	-	-
Assistant Technician	10	-	-	-
Laboratory Assistants	12	2	-	6
Radiographer	1	-	-	-
Pharmacist	1	-	-	-
Totals	53	10	2	7

RECRUITMENT OF ADMINISTRATIVE AND SECRETARIAL  
STAFF. POSITION ON 31ST DECEMBER, 1985.

Administrative Officers.	Approved establishment .....	2
In-post.	Administrative Assistant.	<u>1</u>
Vacant.		1
Secretarial Staff.	Approved establishment .....	9
In-post.	Secretaries	2
	Stenographers	1
	Typists	<u>3</u>
Vacant.		3

CURRICULUM DEVELOPMENT

The present curriculum which is largely unchanged from that agreed by the Interim Board of Studies on 5th October, 1983 is summarised below. A course consists of 7 hours of subdivided as 3 hours of lecture, 1 hour tutorial and 3 hours practical. A half course may be given as the first or second halves of the academic year or distributed evenly throughout the year.

<u>Year</u>	<u>Course No.</u>	<u>Subject Matter</u>	<u>Unit</u>
1	BZ 110	Introductory Biology	1
	C 110	Introductory Chemistry	1
	M 110	Introduction to Mathematics	1
	P 110	Introductory Physics	1
2	VMB 210	Animal Physiology and Anatomy	1
	VMB 211	Veterinary Embryology	$\frac{1}{2}$
	VMN 220	Organic Chemistry and Biochemistry	1
	VMA 221	Probability and Statistical Analysis	$\frac{1}{2}$
	VMA 222	Animal Genetics and Breeding	$\frac{1}{2}$
	VMA 232	Forage crops, Pasture and Range Management	$\frac{1}{2}$
3	VMB 310	Veterinary Anatomy	1
	VMB 315	Veterinary Histology	$\frac{1}{2}$
	VMB 320	Veterinary Physiology	1
	VMB 325	Veterinary Biochemistry	$\frac{1}{2}$
	VMA 330	Basic and Applied Animal Nutrition	1
	VMB 303	Farm Practicals	$\frac{1}{2}$
4	VMP 410	Veterinary Pathology	1
	VMB 425	Veterinary Pharmacology	$\frac{1}{2}$
	VMP 430	Veterinary Microbiology and Immunology	1

<u>Year</u>	<u>Course No.</u>	<u>Subject Matter</u>	<u>Unit</u>
	VMP 440	Veterinary Parasitology	1
	VMP 403	Veterinary Laboratory Practicals	$\frac{1}{2}$
	VMA 450	Animal Production.	1
5	VMD 510	Veterinary Medicine I	1
	VMC 511	Veterinary Therapeutics and Toxicology	$\frac{1}{2}$
	VMC 515	Veterinary Clinical Pathology I	$\frac{1}{2}$
	VMD 512	Role of the Veterinarian in Public Health	$\frac{1}{2}$
	VMC 520	Veterinary Surgery I	1
	BMC 521	Veterinary Radiology	$\frac{1}{2}$
	VMC 532	Veterinary Reproduction and Obstetrics I	$\frac{1}{2}$
	VMC 503	Veterinary Clinical Practicals	$\frac{1}{2}$
6	VMD 610	Veterinary Medicine II	1
	VMD 611	Veterinary Epidemiology and Economics	$\frac{1}{2}$
	VMC 615	<i>Clinical</i> <del>Veterinary</del> Pathology II	$\frac{1}{2}$
	VMC 620	Veterinary Surgery II	1
	VMC 631	Veterinary Reproduction and Obstetrics II	$\frac{1}{2}$
	VMD 612	Veterinary Extension	$\frac{1}{2}$
	VMC 642	Veterinary Jurisprudence	$\frac{1}{2}$

It has not been possible to undertake a major review of the curriculum to date because new staff, who need to be consulted about such matters, generally arrive just in time to present the courses of the present curriculum.

However, the course loads in the 2nd, 4th and 5th years were reduced by one half course partly in response to the recommendation of the FAO Expert Consultation on Veterinary Education which met in Nairobi in December 1984. The consultation recommended that the programme of study in veterinary education should not exceed 800 hours per year. This was achieved by removing Course VMN 242 Ecology and Evolution from the Second Year.

Course VMB 425 Veterinary Pharmacology was reduced from a full course to a half course in the Fourth Year. This will necessitate the chemotherapy component of the full course being given in the Fifth Year as part of Course VMC 511 Veterinary Therapeutics and Toxicology. This change also made it possible for the School to respond to the wishes of the Head of the Department of Paraclinical Studies to increase the time allocated to the teaching of practical histopathology in the Fourth Year. Course VMA 531 Rural Sociology was removed from the curriculum of the Fifth Year. However, the subject matter will be dealt with as part of Course No. VMD 612 Veterinary Extension in the Sixth Year.

Provided adequate staff is available by October 1986 Course VMB 210 Anatomy and Physiology (combined) will be discontinued and the time will be used to extend the teaching of Course VMB 310 Veterinary Anatomy and Course VMB 320 Veterinary Physiology over the Second and Third Years. During the reorganisation the academic staff responsible for the courses in veterinary anatomy, physiology and biochemistry will be asked to integrate the teaching of these three subjects as closely as possible.

A task for the future in curriculum development will be to integrate the teaching of the subjects of parasitology and microbiology as closely as possible with the teaching of pathology in the Fourth Year and to integrate the teaching of related subjects in the general area of clinical studies and disease control in the last two years of the curriculum.

While this is being done every effort should be made by the staff of the various departments to keep themselves informed on the teaching of closely related subjects in sister departments and to encourage as much vertical integration as possible. Such an approach should tend to avoid unnecessary duplication and thereby effect economies in the use of staff and material resources. It should also stimulate the development of inter disciplinary team work thereby improving the quality of the School's teaching and its research.

Equipment supplies from JICA

(1) 1984/85 FY Budget

During 1985, the Project received the equipment from JICA with nine different shipments and the total amount of cost for both purchasing and transportation have reached ¥75,763,072.- in spite of the less original allocation which was ¥60 million.

..... see attached table

This means the difference between actual expenditure and original budget compensated by 85/86 budget.

Summary table for 85/86 equipment supplies

Shipments means	NO.	Purchase price	Transportation fee	total
sea	2	¥36,028,003.-	¥9,770,918.-	¥45,798,921.-
air	7	¥21,261,457.-	¥8,702,694.-	¥29,964,151.-
Total	9	¥57,289,460.- (75.6%)	¥18,473,612.- (24.4%)	¥75,763,072.- (100%)

- i) Number of days needed for custom and import clearance were 16 days in average in case of air cargos.
- ii) In case of a ship's cargo about 2 months' time was required for custom and import clearance excluding the inland transportation.

(2) 1985/86 FY Budget

Originally the budget for 85/86 equipment supplies scheme was ¥80 million, but it was already spent for 84/85 equipment supplies as mentioned in (1) above.

Application list is now under preparation because the draft application list which was sent to JICA on last October was over estimated than budget allocation.

(attached table) Equipment Supplies from JICA (84/85 FY)

Type of cargo	Main Equipment	Quantity	Arrival Date		F.O.B. Value (¥)	Transportation (¥)	Total cost (¥)
			Lusaka	UNZA			
air	Copy machine, Type writer (4), Word processor, OHP etc.	34pcs 14sets 4boxes	9/7/'85	19/7/'85 (10 days)	4,463,955	1,351,676	5,815,631
sea	Minibus, Station wagon, 4 wheel drive car, spare parts	3units 3lots	mid./8/'85	7/10/'85 (2 months)	7,369,820	5,340,011	12,709,831
air	Microscope (10), Microtome knife, Copy machine (2), 16mm projector, 35mm camera set, Turning mimeograph (2), Discussion microscope etc.	115pcs 57sets 210boxes 3cans 3bottles	22/8/'85	9/9/'85 (18 days)	13,060,590	5,837,525	18,898,115
air	Chemicals, Paraffins	74pcs 7cans	26/8/'85	9/9/'85 (14 days)	230,030	127,380	357,410
air	Formaline (500ml)	10pcs	3/9/'85	30/9/'85 (27 days)	23,226	59,505	82,731
air	Rabies Vaccine, etc.	18pcs	11/9/'85	24/9/'85 (13 days)	172,750	44,853	217,603
air	Collagenase	50g	15/10/'85	4/11/'85 (20 days)	2,283,461	77,428	2,360,889
air	Flasks, Test tubes, Measuring Cylinders, Pipettes, Chemicals, etc.	2boxes 2903pcs 367sets 10cans	16/10/'85	14/11/'85 (30 days)	1,027,445	1,204,327	2,231,772
sea	Auto clave, Deep freezer, Laboratory Equipment, Chemicals, Video sets, Audio visuals, etc.	39cases	(arrived at Dar es Salaam on 10/12/85)		28,658,183	4,430,907	33,089,090
	TOTAL				57,289,460 (75.6%)	18,473,612 (24.4%)	75,763,072 (100%)



EQUIPMENT AND OTHER SUPPLIES RECEIVED  
FROM HEDCO (IRELAND) AND BRITISH COUNCIL

A. HEDCO

1. FOREIGN CURRENCY PURCHASES MADE IN EUROPE AND DELIVERED TO SCHOOL DURING FINANCIAL YEAR 1/1/85 to 31/12/85.

Office equipment, textbooks, photographic materials, microscopes, refrigerators, general laboratory equipment, drugs, reagents and other supplies.

All invoices are not yet to hand.

Estimated value (at I£1.00 = US \$1.25) \$40,000.

2. LOCAL PURCHASES DURING FINANCIAL YEAR 1/1/85 to 31/12/85 from Dean's local HEDCO fund.

K13,879.57

B. BRITISH COUNCIL

Microscope and accessories, minor items of equipment and reagents were either delivered or ordered during 1985 to a value of

£3,250.00

ESTIMATES FOR 1986

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PAPER 7

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE

DEPARTMENT	1985				1986			
	POSTS	EMOLUMENTS K	EXPENDITURE K	TOTAL K	POSTS	EMOLUMENTS K	EXPENDITURE K	TOTAL K
Central Services	50	505630	49000	554680	52	645471	161200	806671
Biomedical Sciences	-	-	-	-	18	256820	21500	278320
TOTAL	50	505630	49000	554680	70	902291	182700	1084991

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
(GENERAL SERVICES, DEPT. OF PATHOLOGY, PARASITOLOGY,  
MICROBIOLOGY & CLINICAL STUDIES)

EXPENDITURE CODE	ESTABLISHMENT DETAILS	1985		1986	
		POSTS	ESTIMATES K	POSTS	ESTIMATES K
E08-16-010	<u>EMPLOYEES (Academic)</u>				
	Dean	1	16008	1	16008
	Professor	5	56028	2	32016
	Associate Professor	5	41760	5	70500
	Senior Lecturer/Lecturer	11	97410	8	84105
	Chief Technician	2	12762	3	25116
	Co-Ordinator	1	6960	1	13320
	<b>SUB TOTAL</b>	<b>25</b>	<b>230928</b>	<b>20</b>	<b>241665</b>
E08-16-020	<u>EMPLOYEES (Non-academic)</u>				
	Pharmacist	-	-	1	8100
	Radiographer	-	-	1	8100
	Senior Admin. Officer	1	-	-	-
	Admin. Assistant	-	-	1	7188
	Senior Technician	5	13000	4	26760
	Technician	5	12000	4	24372
	Laboratory Attendant	5	5256	-	-
	Lab./Animal Assistant	4	7884	4	11112
	Secretary	2	11312	3	15717
	Typist/Stenographer	2	4000	2	8964
	Messenger	1	1500	2	3428
	Senior Driver/Driver	-	-	4	13242
	Asst. Technician	-	-	3	12312
	Storekeeper	-	-	1	5388
	Duplicator	-	-	1	2812
	Storeclerk	-	-	1	4140
	<b>SUB TOTAL</b>	<b>25</b>	<b>54952</b>	<b>32</b>	<b>151635</b>

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
CENTRAL SERVICES, DEPT. OF PATHOLOGY, PARASITOLOGY,  
MICROBIOLOGY & CLINICAL STUDIES

EXPENDITURE CODE	ESTABLISHMENT DETAILS	1985		1986	
		POSTS	ESTIMATES K	POSTS	ESTIMATES K
E05-16-120	Gratuity		35,500		35,500
E08-16-130	Superannuation/ZNPF		7,000		8,000
170/180	Fares/Baggage		110,000		110,000
150	Housing		11,100		40,351
	Car Allowance		1,200		6,120
	Academic Allowance		55,000		52,200
	Overtime		-		-
	SUB TOTAL		219,800		252,171
	TOTAL EMOLUMENTS	50	505,680	52	645,471
<u>GENERAL EXPENDITURE</u>					
E08-16-570	Staff Research		1,000		18,000
560	Printing/Stationery		3,000		10,000
300	Postage		500		2,000
550	Consumables		20,000		30,000
760	Motor Vehicle Expenses		2,000		6,000
450	Traveling in Zambia		1,000		5,000
360	Uniform		1,000		5,000
570	Fuel		5,000		12,000
660	Entertainment		-		500
671	Miscellaneous		1,000		5,200
	Repairs/Maintenance of Equipment		2,000		3,000
	Special Expenditure		10,000		20,000
	Cleaning		1,500		32,000
	Field Work		-		500
	Animal House/Laboratory		1,000		2,000
	Feeding & Car of Animal		-		10,000
	SUB TOTAL		49,000		161,200
	GRAND TOTAL	50	554,680	52	806,671

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF BIOMEDICAL SCIENCES

<u>EXPENDITURE CODE</u>	<u>ESTABLISHMENT DETAILS</u>	1985		1986	
		<u>POSTS</u>	<u>ESTIMATES</u> K	<u>POSTS</u>	<u>ESTIMATES</u> K
	<u>EMOLUMENTS (Academic)</u>				
	Professor	-	-	2	31116
	Associate Professor	-	-	2	27840
	Senior Lecturer	-	-	2	24840
	Lecturer	-	-	2	19656
	Chief Technician	-	-	1	8544
	SUB TOTAL	-	-	9	111996
	<u>EMOLUMENTS (Non-Academic)</u>				
	Senior Technician	-	-	2	14168
	Technician/Asst. Technician	-	-	4	22368
	Lab. Asst.	-	-	2	7656
	Secretary	-	-	1	5952
	SUB TOTAL	-	-	9	50144

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF BIOMEDICAL SCIENCES

<u>EXPENDITURE CODE</u>	<u>ESTABLISHMENT DETAILS</u>	<u>1985</u>		<u>1986</u>	
		<u>POSTS</u>	<u>ESTIMATES</u> K	<u>POSTS</u>	<u>ESTIMATES</u> K
	Gratuity		-		25863
	Superannuation/ZNPF		-		2000
	Fares/Baggage		-		25000
	Housing Allowance		-		13257
	Car Allowance		-		6960
	Academic Allowance:		-		21600
	<u>SUB TOTAL</u>		<u>-</u>		<u>94680</u>
	<u>TOTAL EMOLUMENTS</u>		<u>-</u>	<u>18</u>	<u>256820</u>
	Consumables		-		20000
	Misc. Expenses		-		1500
	<u>SUB TOTAL</u>		<u>-</u>		<u>21500</u>
	<u>GRAND TOTAL</u>		<u>-</u>	<u>18</u>	<u>278320</u>

(e) VETERINARY PADDOCK PROJECT

(1) Name of the Project.

Infrastructure Improvement Work on the Construction of Veterinary Paddock for the University of Zambia : Veterinary Education Project

(2) Purposes

- i) To keep large and medium size animals for teaching purpose especially for students' practices
- ii) To observe sequential development of treated animals
- iii) To provide animal handling areas for the educational purpose

(3) Location and Area

The open land at the Campus between the new buildings of the School of Veterinary Medicine and the public road (Kalingalinga road) was proposed to be the construction site of the Veterinary Paddock.

Total area was estimated about 8.2 ha.

(4) Dispatch of the Detailed Design Survey Team and Agreement on the Supplement Note on the R/D

In order to discuss and investigate on Veterinary Paddock of the School, the Detailed Design Survey Team led by Mr. K. Komamura was dispatched from JICA on 20th October, 1985. After the series of discussions between the Team, UNZA and Ministry concerned, the Supplement Note on the Record of Discussions on the University of Zambia : Veterinary Education Project was agreed and signed between Mr. K. Komamura, Leader of the Japanese Detailed Design Survey Team and Mr. E.S.S.Nebwe Permanent Secretary of Ministry of Finance and NCDP on November 1, 1985.

The Detailed Design Survey was continued up to 2nd of December, 1985 by the members of the Team and Summary Report and Field Report were submitted as the result of the survey.

On November 20, 1985, Note Verbale for this Project was exchanged between the Republic of Zambia and the Embassy of Japan at Lusaka.

- (5) Proposed Work items and facilities by the Team
- a) Land clearing, plowing, harrowing and sowing
  - b) Access road
  - c) Burglar-proof concrete block wall fence
  - d) Barbed wire fence
  - e) Wooden fence
  - f) Drain canal
  - g) Bore hole
  - h) Installation of irrigation facilities
  - i) Handling area
    - \* Corral
    - \* Spray race
    - \* Crush
    - \* Hay stock
    - \* Handling sheds
    - \* Loading ramp
    - \* Store shed
    - \* Water through
    - \* Reservoir and pump station
- (6) Proposed Procedure for the Implementation of the Project
- a) Submission of official request letter for the implementation of the Project to the Government of Japan through diplomatic channel.
  - b) Application for the equipment and materials supply through the Equipment Supply Scheme of JICA (FORM A4).  
Necessary items are recommended by the Team as following;
    - \* One submersible pump (11KVA) and its fittings
    - \* Two centrifugal pumps (7.5KVA) for irrigation and their fittings
    - \* PVC pipes ( $\phi$ 125,  $\phi$ 100mm) and all necessary fittings
    - \* Four sets of movable sprinklers (50mm): diameter of sprinkling water is 60m.
  - c) Application for the dispatch of the short term expert on Construction Supervisor for 5 months (FORM A1).
- (7) Others
- a) Time of submission of the Final Report of the Survey
  - b) Final time schedule and any other necessary arrangements taken by both sides



Jan. 14, 1986

Brief Summary of Veterinary Paddocks Project

Early June 1985, on the staff meeting of veterinary Medicine, it was pointed out that animal holding capacity of new building was much too small, compared with equivalent facilities of university of Zimbabwe and that it might give some sort of inconvenience for future clinical operations. However, it was recalled that the university had offered 13.53 hectares of land site for this project in R/D note which was exchanged between two governments and that there would not be any reason to keep aside from making use of this given site behind the new building. This plan was immediately developed among the staffs of veterinary medicine, under the direction of Prof. Lee. Tentative drawings were prepared by Mr. Griffin, and the plan was transferred to JICA headquarter for further submission to their project supporting committee in early July. Simultaneously, in June 24th, Mr. Griffin, Mr. Hashimoto and myself, visited Mr. Baxi, university's chief architect and requested him to make the estimate for this project. Further in June 26th, same member visited Japanese embassy in order to explain the detail of the plan to the officials concerned, including Mr. Miyakawa, Mr. Kotake and Mr. Ishida. One month later, in July 29th, telex was received from JICA headquarter, which informed us their approval to implement the plan. They also informed us that survey team would be sent to Zambia either in September or in January. In return, the detail of the plan was sent to JICA headquarter for their study and also for the submission to the project supporting committee.

Whole procedure had been reported to deputy vice chancellor through dean, although the university was still in summer vacation. Total budget which was allocated to this project, was around 120,000 U.S.Dollars, excluding machineries to be brought in from Japan.

In September 20th, Mr. Griffin had prepared the estimate for the plan which amounted to 517,425.00 Kwacha. Right after deputy vice chancellor came back from his official trip in Europe, writer called him in his office and requested him to obtain the approval from university's development committee. He kindly promised me to take immediate action in this regard. Official approval to proceed the plan, was transferred to the dean of school of veterinary medicine in Sept. 26th. The other hand, Japanese government had officially approved to proceed the plan at their inter-ministerial meeting in Sept. 12th, and decided to send survey team to Lusaka in October.

In Oct. 18th, school of veterinary medicine, had a meeting chaired by Prof. Lee, in order to discuss the detail of the plan and to establish consensus among the staffs concerned. Mr. Ishida of Japanese Embassy, also attended the meeting. First time in this meeting, it was unanimously agreed to name this project, as " Veterinary Paddocks ", and the purpose of this project to include the observation of clinical cases as well as holding of non-infectious diseased animals to check the consecutive development of the diseases. The initial estimate prepared by Mr. Griffin, was also discussed. However, due to the devaluation policy taken by government since then, the estimate was no longer available in present circumstance. The estimate had to be amended.

In Oct. 22nd, the survey team arrived to Lusaka, and had first meeting with members of veterinary medicine, chaired by Prof. Lee in the afternoon of Oct. 23rd at the conference room of school of mine. The purpose of this meeting was mainly the introduction of team members and the explanation of their schedule. However, Prof. Lee revealed university's view in respect to this project.

Survey team proceeded their survey and final meeting was arranged with chairmanship of Prof. Mweene, deputy vice chancellor, in Oct. 29th at the committee room B. The team members explained the result of their study and requested Prof. Mweene, his assistance to complete the purpose of this mission with exchange of supplemental R/D signed by Mr. Nebwe, permanent secretary of ministry of finance, and team leader, Mr. Komamura, in Nov. 1st. Deputy vice chancellor, kindly agreed to take action immediately, called Mr. Siame, assistant secretary, by telephone, for arrangement. In Nov. 1st, at the office in ministry of finance, supplemental R/D was signed and exchanged between Mr. Nebwe and Mr. Komamura. The party of celebration was opened in the evening of same day. Mr. Komamura, team leader, and Mr. Yamagata of JICA headquarter, left Lusaka in Nov. 2nd, but two consultant members stayed in Lusaka until Dec. 4th, in order to continue detailed surveys. Before his leaving from Lusaka Mr. Komamura submitted his summary report addressed to Mr. Nebwe, permanent secretary, ministry of finance, to his office and copies to university and embassy.

In Nov. 28th, two consultants, Mr. Yamada and Mr. Yoshida, presented their final report to the meeting, chaired by Prof. Lee, at conference room of school of mine. They left Lusaka in Dec. 4th. but before their leaving, they submitted their field report to ministry of finance, embassy and university.

( Masae Teramura )

COOPERATION WITH OTHER INSTITUTIONSZAMBIA

There has been very close co-operation with the Veterinary Research Institute of the Department of Veterinary Services at Balmoral which is now visited once a week by staff and students of the Fourth Year for instruction in gross pathology. There has also been close co-operation with Dr. R. Pegram and Dr. P. Moorhouse of the FAO Animals Diseases Control Project in the fields of tick ecology and epidemiology respectively. Dr. Geysen of the Belgian Animal Disease Control Project centred at Chipata was entertained at the School in connection with his interest in co-operation. The Assistant Director of Veterinary services has undertaken to assist the school with the placing of students for vacation practicals.

ZIMBABWE

Professor Lovelace visited the Veterinary School of the University of Zimbabwe at Harare as did Professor Shimizu and Mr. Teramura to discuss mutual interests and future co-operation. A member of the staff at Harare served as external examiner in biochemistry in June.

KENYA

Mr. Mizinga spent 4 weeks in the Department of Veterinary Physiology of the University of Nairobi with the support of HEDCO studying the content and organisation of the instruction in practical physiology.

JAPAN

Dr. Musonda spent 3 months in Japan, mainly at Hokkaido University studying veterinary education in general, and veterinary histopathology in particular. Ms Jean Calder spent 3 weeks in Japan studying the organisation of and the facilities for veterinary education in relation to the implementation of the UNZA: Veterinary Education Project. Both visits were funded by JICA.

GREAT BRITAIN

Dr. Shandomo spent 4 weeks in England, at Cambridge University and at the Royal Veterinary College London, studying the content and organisation of the courses in animal reproduction. The visits were funded by the British Council.

Dr. Koomson spent 4 weeks studying the organisation and management of farm animal teaching practices at the Universities of Bristol, Edinburgh and London. The visits were funded by the British Council.

Dr. R. Thomas of the University of Newcastle-upon-Tyne spent three months in Lusaka (September to December) with Dr. Tada developing and teaching the first course in veterinary helminthology. The visit was funded by the British Council. The School of Veterinary Medicine of the University of Bristol and the Department of Animal Health of the Royal Veterinary College, London have expressed interest in developing a link with the Lusaka School for post graduate training of our students, co-operative research and staff exchanges.

#### IRELAND

Dr. R. McCracken of Queen's University Belfast and the Veterinary Research Laboratories Stormont, spent 3 months (September to December) assisting Professor Ishitani in developing and teaching the first course in veterinary pathology.

Miss T. Buckley of the Veterinary Faculty of University College Dublin spent 3 months (October to December) in Lusaka as Chief Technician of the Department of Biomedical Sciences. Both of these visits were financed by HEDCO. Various departments of the above institutions provided valuable sets of prepared slides for histology, embryology and histopathology and projection slides for parasitology.

#### SWEDEN

Materials (microscopes and projectors) have been donated by the School of Veterinary Medicine at Upsala, Sweden and histological slides were prepared there for our School by Dr. Persson before she joined our staff. Professor Settergren, Director of the Swedish International Programme on Animal Production is scheduled to visit the School between 21st and 25th January.

#### NETHERLANDS

Negotiations are in progress for the funding by the Government of the Netherlands of a lecturer.

#### DENMARK

An offer has been made by the Development Cooperation Bureau of the Royal Veterinary and Agricultural University, Copenhagen, on behalf of Danida, to assist the School in training of teachers and students and possibly to second teachers to Lusaka for periods of about 2 months.

#### POLAND

The Scientific Consulting Group of the Warsaw Agricultural University has recently offered to assist the School in recruiting academic staff from Poland.

## (g) Matters relating specifically to Japanese Experts

## (i) Housing for Experts and Volunteers

## 1) Present Experts and their housing situation

Prof. Ishitani	renting private house
Prof. Shimizu	UNZA flat at Sable Rd.
Prof. Kitaoka	UNZA flat at Sable Rd.
Dr. Tada	renting private house
Mr. Teramura	UNZA flat at Nyimba Rd.
Mr. Hashimoto	renting private house

## 2) Future Experts and their housing plan

Mr. Hiruta	UNZA flat at Sable Rd. (Expected to arrive on February, 1986)
Prof. Fujimoto	may follow to rent Prof. Ishitani's house
Prof. Yoshida	UNZA flat at Sable Rd.
Dr. Chihaya	UNZA flat (Expected to arrive on July-August, 1986)
Assoc. Professor / Senior Lecturer of Chemical Pathology	UNZA flat
Assoc. Professor / Senior Lecturer of Public Health	UNZA flat (Expected to arrive August- October, 1986)

## 3) Teaching Assistants (JOCV) and their housing plan

Three candidates were nominated and are planned to come on July-August, 1986.

All of them are single and suitably furnished accomodation units are required for them.

Accomodation units for Teaching Assistants are desired to be made up of bed room, living room, dining room, kitchen and bath room as minimum requirement.

## 4) Total number of houses required by Experts and Teaching Assistants

	allocated	occupied	occupying	required	total
Experts	5	3	2	3	8
Teaching Assistants (JOCV)	0	0	0	3*	3*

NOTE; Number of Teaching Assitants may increase up to 5 according to the Record of Discussions.

THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE  
DEPARTMENT OF BIOMEDICAL SCIENCES

MINUTES OF A SPECIAL STAFF MEETING HELD ON 10TH JANUARY 1986  
IN THE NINES CONFERENCE ROOM AT 10.00 HOURS.

THEME: RESEARCH IN THE DEPARTMENT

PRESENT:

PROF. LOVELACE

DR. SHANDOMO

PROF. HOUSKA

PROF. MARCANIK

DR. MUSONDA

MR. MIZINGA

DR. SHARMA

APOLOGIES:

DR. PERSSON

I. INTRODUCTORY REMARKS

The Chairman introduced the meeting reminding members that it was a follow up to the suggestion made in the Departmental Meeting of 2nd December. It had been agreed that a possible project for collaborative research would be decided upon and Dr. Shandomo would be asked to suggest a project for discussion.

Dr. Shandomo explained that, after consultations with colleagues, it was felt that the goat would be a suitable animal for study.

- (1) F.A.O. had prepared a report on goat production in Zambia but had not yet started a follow-up project.
- (2) The Department of Agriculture had introduced non-Zambian goats to Luapula and Feira but the project is not going well. The research section are interested in looking at goat production in Gwembe in the future.
- (3) University of Zambia School of Agriculture has done some work on nutrition and its relation to reproduction in the goat. Dr. Mwenya worked on goat breeding.

It was therefore felt that although some initial work has been done, a lot of basic research on the goat remains to be completed which would be of use to Zambia.

Prof. Lovelace said that she had discussed goat research with Prof. Lee who had noted that the goat has been studied at Veterinary Schools at Morogoro and Nairobi. The advantages of studying the goat include:

- (a) It is easy to maintain in large enough numbers for experimental purposes.
- (b) It is resistant to several diseases.
- (c) A lot of work remains to be done e.g. in reproduction, metabolic profiles etc.

The possibility of carrying out basic research on the goat was then discussed by the meeting, and the following were noted.

- (1) If the goat are maintained under good management they should not effect the environment adversely.
- (2) Although sheep are economically more productive they need more management and therefore are less important in Zambia i.e. there are only 30,000 sheep in commercial farms in Central and Southern provinces and there are 300,000 goats spread throughout Zambia.
- (3) The School has only limited data on the goat at present. Therefore it would be necessary to collect data from various sources e.g. F.A.O., Department of Agriculture, ILCA, University of Morogoro; University of Nairobi and University of Khartoum. Staff members volunteered to do this.
- (4) Three aspects of the goat would be concentrated on initially:
  - (a) Haematology
  - (b) Reproductive system
  - (c) Digestive system

It was reported that the School of Agriculture had over 10 goats at the field station on the Campus. These would be ideal for preliminary studies. However the animals at present had anaemia and possibly other problems so would need veterinary treatment. It was agreed that Mr. Mizinga would discuss with the School of Agriculture the possibility of using these goats, and Dr. Sharma and Dr. Musonda agreed to go with Dr. Keomson and Mr. Mizinga to treat the animals.

It was noted that there are four types of goats in Zambia in the following area:

- (1) Gwembe Valley
- (2) Luapula Province
- (3) Eastern Province
- (4) North Western Province

It was to be hoped that during the long vacation, staff members should travel to these provinces to bring samples of goats to be kept in the veterinary paddocks for study.

Anatomy and Histology would require carcasses of healthy goats. These could be obtained from abattoirs or else could be purchased from Gwembe. The animals could also be used for Anatomy teaching.

It was agreed that the areas of study would be distributed as follows: Prof. Marcanik: histology, Prof. Houska: anatomy and haematology, Mr. Mizinga: Female reproduction, Dr. Shandemo: male reproduction, Prof. Lovelace: Biochemistry. Dr. Sharma and Dr. Musonda were requested to consult with Paraclinical Sciences on whether they would be interested in also working on aspects of the goat as this would produce an integrated study.

The Chairman had noted that all this information could be put into a booklet which could be distributed within Zambia or neighbouring countries, so she requested colleagues to obtain photographs etc during their studies which might be useful for this booklet. It was agreed that next meeting would be held in four weeks to review progress on:

- (1) Treatment of university goats.
- (2) Collection of data.
- (3) Discussions with Paraclinical Studies.

Signed:

Chairman.....

Date:.....



THE UNIVERSITY OF ZAMBIA

PRESS RELEASE

JAPANESE INTERNATIONAL COOPERATION AGENCY (JICA) MUTUAL CONSULTATION  
TEAM END VISIT TO THE UNIVERSITY OF ZAMBIA

A JICA Team comprising of Professor M. Ogata, (Team Leader), Professor H. Kanagawa and Mr. M. Yamagata have been visiting the University from January 17-24, 1986 to have consultations with the University of Zambia authorities and to review the progress on the UNZA: Veterinary Education Project.

The JICA Team were satisfied with the progress made so far in implementing the Veterinary Education Project. The mutual discussions resulted in the signing of a Work Plan detailing activities related to the Veterinary Education Project up to January 1990.

Under the accepted Work Plan Japan, through the Japanese International Cooperation Agency (JICA) and the Japanese Overseas Cooperation Volunteers (JOCV) will continue to provide Experts and Teaching Assistants in Veterinary Medicine as well as equipment and other supplies for the Project.

The physical plant for the School of Veterinary Medicine is being constructed by a grant from the Japanese Government to the extent of ¥3.88 billion and it was hoped that this would be completed by the end of next month.

January 24, 1986

## J O C V 獣医隊員について

### 1. 現 状

1986年1月現在、ザンビア国に派遣されている獣医師隊員は5名であり、他に1名の臨床検査技師が獣医師隊員と共同で業務に従事している。彼らの氏名、派遣期間、勤務先については、次表のとおりである。

氏 名	派 遣 期 間	勤 務 先	関係省庁
福 田 明 男	84年8月～86年8月	Zambia Institute of Animal Health (ZIAH), Mazabuka	農業水資源省 獣医ツェツェ局
星 野 稔	84年12月～86年12月	同 上	"
小 林 純 子	84年8月～86年8月	District Veterinary Office, Lusaka	"
松 下 福 代	85年3月～87年3月	District Veterinary Office, Mazabuka	"
北 田 律 代	85年7月～87年7月	Regional Diagnostic Laboratory, Mazabuka	"
(臨床検査技師) 宮 崎 敏 次	85年3月～87年3月	同 上	"

(参考：畜産隊員)

川 村 直 人	85年3月～87年3月	Kitwe District Council (Farm Section)	Provincial & Local Government
福 永 謙 二	84年4月～86年4月	District Agricultural Office, Kaoma	農業水資源省 農 業 局

獣医師隊員は、年1～2回獣医隊員会議を開催、相互の情報交換を図るとともに、1983年以降、獣医ツェツェ局の承認を得て、牛結核病の調査等、独自の調査活動等を展開している。

ザンビアに派遣されている畜産分野の隊員は、上表のように現在2名で、彼らは、農業隊員会議に属している。

### 2. プロジェクト獣医隊員との関係

プロジェクト開始以来、獣医隊員との関係は、徐々に拡大しつつある。1985年次におい

ては、獣医隊員との合同会議を開催（9月20日）、また、UNZA獣医学部の校舎建設現場を彼らが訪れた。

一方、マザブカのZIAH, RDLには専門家が訪問し彼らの実際の活動情况等を視察した。

この他にも、実習資料の収集、病気の診断依頼といった関係が拡大されつつある。

獣医隊員が、プロジェクトに対して期待している点は、資機材の補給、専門分野での指導、助言である。一方、プロジェクトが、獣医隊員との協力関係を構築していくうえで重要な点は、彼らがザンビアの家畜衛生の現場に接している点であり、今後プロジェクトの主要な目標である獣医学研究、獣医学普及へ移行する段階での、野外調査、共同研究等を検討していく必要がある。

86年8月には、3名の獣医隊員がプロジェクトの傘下、Teaching Assistantとして派遣されることが内定しており、彼らの派遣を契機として他の獣医隊員との関係がより一層深まることが期待される。

### 3. 今後の計画

#### (1) 資機材の補給

85/86年（昭和60年度）機材供与費（8,000万円）のうちから、獣医隊員の俸として、200万円（US\$10,000.-）分の機材を与えることが認められた。

今後、プロジェクトの進捗に伴ない、彼らとの関係が深まるに従い、彼らが最も必要としている車輛の提供、臨床、実験資機材の補給等積極的に推進する必要がある。

#### (2) Teaching AssistantとしてのT/R

ザンビア大学に派遣される獣医隊員は、Teaching Assistantのポストに配置されることになる。

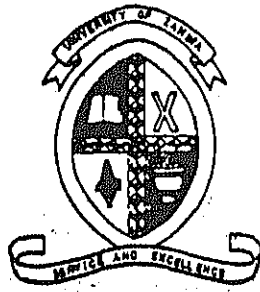
Academic StaffとTechnical Staffの機能、役割が明確に分割されている関係上、Teaching Assistantの立場は微妙な存在になることが懸念されるがAcademic Staffの一員として、主として日本人専門家と共同して、以下の任務にあたることになる。

- ① 講義の準備、補助
- ② 実習・実験指導
- ③ 野外実習
- ④ 研究補助
- ⑤ 機材補守 等

(3) 1984年11月の長期調査員及び1985年1月の実施協議調査団とザンビア大学との間の了承事項として、Teaching Assistantとして一定の経験を経た協力隊員のうち、適格者を専門家(Lecturer)として派遣する可能性のあることが了解された。

但し、Lecturerとして派遣する場合、UNZAのAppointment Committeeを通過することが必要であり、この委員会での人選に当っては、学術論文等、過去の業績が重要視される。従って、上記(2)との関係もあるが、派遣される隊員が、独自のテーマを持ち、派遣期間中、日本人専門家の指導の下に学位論文をとりまとめることが出来るような途を開くことも検討すべきであると思われる。

ザンビアを知り、協力活動に従事し、かつ、上位学位を取得した後、日本での経験を積み重ねることにより、熱帯獣医学に精通した適性の高い獣医学教官が確保されることになる。この点に関しては、リー獣医学部長も、同様の意見を持っている。



THE UNIVERSITY OF ZAMBIA

SCHOOL  
OF  
VETERINARY MEDICINE

HANDBOOK 1985 - 86

SCHOOL OF VETERINARY  
MEDICINE

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;

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Chairman of  
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Fort Hare, DTA M.I.

Vice-Chancellor: Dr. J.M. Mwanza, MA Muenster, PhD C'nell.

Deputy  
Vice-Chancellor: Professor B.F. Mweene, MSc PhD Birm.,  
BSc.

University Secretary: Dr. V.G. Nyirenda, MSW Yeshiva, DSM Calif.,  
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Chief Librarian: Dr. H. Mwachimba, MSLS Syr., DLIS Calif.,  
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THE UNIVERSITY AT LUSAKA

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PhD Cant.

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Registrar: Mr. M. Kashewe, LLB

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Librarian: Dr. H. Mwachimba, MSLS Syr., DLIS Calif.,  
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Dean of Students: Mr. R.O. Kapopo, DipUrbSocDevel Inst.  
Soc. Stud. (The Hague), BSW

Medical Officer: Dr. A.D. Patel, MB BS Bda.



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Mines:	Dr. E.H. Jere, BSc Rutgers, MSc PhD Lehigh
Natural Sciences:	Professor: A.A. Siwela, MSc Lond., PhD W. Ont. BSc
Veterinary Medicine:	Professor R.P. Lee, MA Dub. PhD N.U.I., MRCVS

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AND INSTITUTES

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Centre for Continuing Education (Acting):	Dr. J.E. Nyirenda, MSc PhD Syr., BSc
Computer Centre:	Mr. J. Muonga, MSc Aston, BSc
Educational Research Bureau:	Professor A.K. Datta, MA Calif. MSocSc Inst. Soc. Studies (The Hague) PhD Leiden Dr. d'etat 'es Lettres Paris

Institute for African Studies: Dr. S.P.C. Moyo, MA Calif. PhD Wis., BA

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SCHOOL OF VETERINARY MEDICINE

Dean: Professor R.P. Lee MA Dub. PhD N.U.I. MRCVS

Dean's Secretary: Mrs. E.K. Nkhazi

Assistant Dean: Dr. M.M. Musonda, BVM Nairobi Dip. Vet. Path Uppsala

Administrative Assistant to the Dean: Mr. J. Mwanza, BA

ACADEMIC STAFF

DEPARTMENT OF BIOMEDICAL SCIENCES

Professor C.E.A. Lovelace, BSc Birm, PhD Lond. Head of Dept.,

Professor J. Houska, DVM, PhD Brno

Professor J. Marcanik, MVDR CSc Kosice

Dr. M.N. Shandomo BVSc E. Afr., Dr. Vet. Med. Vienna, MSc EDIN.

Mr. K.M. Mizinga MSc Tuskegee, BSc Agr.

Dr. E. Persson MSc. Uppsala

DEPARTMENT OF PARACLINICAL STUDIES

Professor R. Ishitani, DVM, PhD (Hokkaido) Head of Department

Professor K. Simizu, DVM, PhD Hokkaido

Professor S. Kitaoka MSc, PhD Hokkaido

Dr. R.N. Sarma BVSc, MVSc, PhD.

Dr. M.M. Musonda BVM Nairobi Dip. Vet. Path (On Study Leave)

Dr. Y. Tada, MSc. Hokkaido

Dr. R.M. McCracken BVMSc, PhD., MRCVS (Visiting  
September and December 1985)

Dr. R. Thomas BVSc, MSc, PhD, MRCVS (Visiting between  
September and December 1985)

## DEPARTMENT OF CLINICAL STUDIES

Dr. T.O.M. Koomson DVM, MSc, (Amadu Bello) GRAD. DIP. AGR  
South Wales

Dr. M. Bafi-Yeboa Tierarzt, Dr. Med. Vet. (Giessen)  
Dip. Soc. St. (Leeds)

## STAFF DEVELOPMENT FELLOWS

Mr. H. Chitambo BSc. Agr. (On Study leave)

Mr. R. Muimo BSc. Agri. (On Study leave)

## TECHNICAL STAFF

Mr. R.V.J. Griffin HNC, MIAT, AIST Chief Technician Centra  
Services

Ms. T. Buckley, FIMLS Chief Technician (Visiting Sept. - Dec.  
1985) Department of Biomedical Services

Mr. B.K.T. Francis AIST, FIMLS, Chief Technician, Dept.  
of Paraclinical Studies.

Mr. J. Daka CGL Part I II & III, SCI. LAB. TECH.  
SIMA CERT. (SCIENTIFIC INSTRUMENTATION)  
Senior Technician. Biomedical Sciences

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Technician I. Paraclinical Studies

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Paraclinical Studies

Mr. J. Phiri Lab. Assistant Biomedical Sciences

Mr. L. Sakala Lab. Assistant Biomedical Sciences

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THE UNIVERSITY OF ZAMBIA  
SCHOOL OF VETERINARY MEDICINE

INTRODUCTION

In July 1975, it was announced that the University of Zambia was to establish its own School of Veterinary Medicine to cater for the critical shortage of qualified veterinary personnel. Initially it was considered that the School should be part of the constituent Institution of the University which was to be established at Solwezi in the North-Western Province, but it was later decided that it would be established at the Great East Road Campus in Lusaka where it could share the well-developed facilities that already existed there in close proximity to important centres of livestock production and the Government's Central Veterinary Research Institute. The construction of a large and well-equipped school began in February 1984 and is scheduled to be ready for occupation by February 1986. Due to the pressing need of the country for veterinarians, it was decided that the commencement of the veterinary programme should not be delayed until 1986. Accordingly, temporary premises were provided and the first class of 14 students were admitted to the veterinary courses in October 1983.

The intake is being increased annually in order to graduate a maximum of 30 veterinarians each year. The programme of study extends over 6 years and will lead to the award of the degree of Bachelor of Veterinary Medicine of the University of Zambia. The first year is spent studying basic science in the School of Natural Sciences. Preclinical studies including biochemistry, biomathematics, agronomy, genetics and animal breeding, anatomy and physiology are taught collectively by the Schools of Natural Sciences, Agriculture and Veterinary Medicine during the second and third years. The remaining 3 years are devoted to paraclinical and clinical studies.

The Departments of Biomedical Sciences and Paraclinical studies are now operational and the Departments of Clinical Studies and Disease Control are currently being developed in preparation for October, 1986.

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### THE BOARD OF STUDIES

The Board of Studies is responsible for organising the structure and content of the courses of instruction and study. Its composition is as follows:

- The Dean, School of Veterinary Medicine, Chairman.
- The Dean, School of Agricultural Sciences, or his representative.
- The Dean, School of Natural Sciences, or his representative.
- The Dean, School of Medicine, or his representative.
- The Head, Department of Animal Sciences, School of Agricultural Sciences, or his representative.
- The Chief Librarian, Lusaka Campus, or his representative.
- The Dean of Students, or his representative.
- The Director of Veterinary and Tsetse Control Services, Ministry of Agriculture and Water Development, or his representative.
- The Team Leader FAO/UNDP Animal Disease Control Project, or his representative.
- Dr. C.O. Oparaocha, Veterinary Surgeon in private practice.
- All members of the academic staff of the School of Veterinary Medicine appointed on a full-time basis for teaching and research.
- A student representative of the preclinical and paraclinical years.
- A student representative of the clinical years.

### OBJECTIVES

To produce veterinarians who will be recognised internationally and who will be competent to engage in:

- (a) the promotion of animal production development in Zambia and elsewhere through improved animal health control, surgical intervention, breeding and nutritional programmes,
- (b) the promotion of public health through the control of zoonotic diseases, and other infections and intoxications transmissible to man through animal products.
- (c) basic and applied research in the field of veterinary medicine and surgery,
- (d) teaching and academic curriculae development in veterinary education,
- (e) appropriate livestock and poultry products industries.

### REQUIREMENTS AND REGULATIONS

#### 1. Entrance Requirements to the School of Veterinary Medicine.

- (i) A clear pass with normally a minimum of C+ obtained after first attempt in all courses of the first year School of Natural Sciences, University of Zambia or equivalent qualifications from other Universities or Schools. The student will have opted to study Veterinary Medicine.
- (ii) For non-School leavers the following requirements apply:-
  - (a) Natural Resources Development College (NRDC) or equivalent Colleges; Diploma in Agriculture or Animal Science with a Distinction. These will be admitted into the first year under the School of Natural Sciences.
  - (b) B.Sc. University of Zambia or equivalent University with a credit will be admitted to the second year, School of Veterinary Medicine.
  - (c) B.Sc. (Agic.), University of Zambia or equivalent University with a credit, will be admitted into the third year School of Veterinary Medicine.
- (iii) There are limited places for both categories of candidates, and thus there may be considerable competition for admission. This may demand therefore, that selection for a place will depend on the attainment of higher levels of performance.

2. Entrance requirements into first year School of Natural Sciences:

- (1) Applicants offering qualifications of the General Certificate of Education (GCE) or the Cambridge Overseas School Certificate.
  - (i) Every applicant must hold passes in at least five approved subjects.
  - (ii) The passes must include
    - (a) English language
    - (b) Mathematics which must be at grade B or better
    - (c) One further approved Science subject, preferably Biology.
    - (e) One other approved subject.
  - (iii) Attainment of A, B and C in an examination at ordinary level of the GCE or the Cambridge School Certificate will be regarded as a pass for the satisfaction of these entrance requirements.
2. Applicants offering qualifications of other examining boards may be recognised in complete satisfaction of the requirements listed in paragraph (1) above, if, in the opinion of the University Senate, the standard of examination is sufficiently high to warrant recognition for this purpose.
3. Mature Applicants. The University may modify the general entrance requirements in the case of applicants who are twenty-three (23) years of age or over by 1st October of the year in which they begin their degree courses.
4. Exceptionally, the University may admit an applicant whose qualifications do not conform to the general entrance requirements but who presents other evidence which, in the opinion of the Senate, indicates that he or she has the capacity and attainment to pursue the course of study proposed.

REGULATIONS FOR THE BACHELOR OF VETERINARY MEDICINES DEGREE

1. The degree of Bachelor of Veterinary Medicine will be awarded by the University Senate to a student who has completed to the satisfaction of the Examiners the required course of study, including Preclinical and Clinical Studies.
2. The normal length of undergraduate studies is six years subject to modifications arising from application of regulations concerning courses credited from other programmes and progression from one year of study to the next. The programme consists of two preveterinary, two preclinical and two clinical years, and concludes three periods of practical vocational training.

University Examinations

3. Written, oral and, where appropriate, practical examinations will be held at the end of each academic year for those courses taught in the School of Veterinary Medicine. Examinations for the courses taught by other Schools will be held as to the requirements of the Schools.
4. The Examiners for all courses shall be Professors and Lecturers in the School and such additional Examiners as may be appointed by the University Senate on the recommendation of the Board of Studies of the School of Veterinary Medicine.
5. External Examiners may participate in the University Examinations held during 3rd, 4th, 5th and 6th years of the programme.
6. No candidate shall, without permission of the Senate granted on the recommendation of the Board of Studies, present him/herself for examination in any course unless he has attended and duly performed the work prescribed for the course.



7. A student will be deemed to have passed a course if she/he obtains 50% of the total available mark and satisfies the examiners. The percentages allocated to theory, practical and oral examinations, and continuous assessment carried out during the year, is shown in the attached appendix.

8. The following grades shall be used in assessing the performance of a candidate in a course. There shall be seven pass grades and four fail grades as follows:

- A+ Distinction
- A Distinction
- B+ Merit
- B Merit
- C+ Pass
- C Borderline Pass
- P Pass in Supplementary Examination
- D Fail
- NE No Examination Taken
- LT Left without Permission
- F Fail in Supplementary Examination.

These shall be approved by the University Senate.

#### Supplementary Examinations

9. A candidate who registers a failure in a course but obtains an average grade of C+ or better in at least two appropriate courses may, at the discretion of the Academic Board, upon recommendation of the Board of Examiners of the School, be granted supplementary examinations in the failed course. The grade awarded will be P (Pass) or F (Fail).

Supplementary examinations will be allowed to a maximum of two courses in each of the 2nd and 3rd years and to a maximum of two and a half courses in each of the 4th, 5th and 6th years.

10. Repeat Year

The University Senate may, on recommendation of the Board of Examiners, allow a candidate who fails more than two courses in the 2nd and 3rd years, or more than two and a half courses in the 4th, 5th and 6th years to repeat all courses in the following academic year. If a student fails a supplementary examination, she/he will be required to repeat the year.

11. The University Senate may, on the recommendation of the Board of studies, allow a student who has been prevented from participating satisfactorily in classes due to illness or other unavoidable cause to Repeat the year. This must be supported by suitable documentation.

Exclusion

12. The University Senate may, on the recommendation of the Board of Examiners, exclude from study in the School of Veterinary Medicine:
- (a) any candidate who fails the equivalent of two thirds the course programme for that year.
  - (b) any candidate who fails a course in a repeat year.

Deferred Examination

12. The University Senate may, on recommendation of the Board of Studies, grant deferred examinations to a candidate who has been prevented from presenting him/herself for examination due to illness or other unavoidable cause. An application for deferred examinations must be supported by a medical certificate obtained at the time of illness, or other documentation to show cause for absence.

Withdrawals

14. A student may request withdrawal from a course from the Dean of the School, and if allowed, a grade of WP, withdrawn with permission, will be given. If the student withdraws within three weeks of the commencement of the course, no grade will be recorded. If a student withdraws without permission, a grade of LT will be recorded.

Course Assessment:

Course	Continuous Assessment %	University Examinations	
		Theory %	Practical/Oral %
VMB 210	40	60	
VMB 211	20	50	30
VMN 220	40	60	
VMA 221	40	60	
VMA 222	40	60	
VMA 232	40	60	
VMB 310	20	50	30
VMB 315	30	40	30
VMB 320	30	50	20
VMB 325	30	50	20
VMA 330	40	60	
VMB 303			100
VMP 410	30	40	30
VMB 425	30	50	20
VMP 430	30	40	30
VMP 440	30	40	30
VMA 450	40	60	
VMP 403			100

Summary of the Course Progression Requirements.

Year	No. of Taught courses	Regulations applied after following no. of courses failed:		
		Supplementary Examinations	Repeat year	Exclude School
2nd	4	2	2½	3
3rd	4½	2	2½	3
4th	5	2½	3	3½
5th	5	2½	3	3½
6th	4½	2½	3	3½

Vacation Practicals

Before a student is allowed to qualify at the end of the sixth year he/she will have satisfactorily undertaken vacation practicals as stipulated below:-

- (a) VMB 300      Farm Practicals involving staying on a selected farm within Zambia for 7 weeks during the vacation after the 3rd year.
- (b) VMP 400      Laboratory practicals at either the Government Central Veterinary Research Institute or the School of Veterinary Medicine for 10 weeks during the vacation after the 4th year.
- (c) VMC 500      Veterinary Clinical practicals in Government or private veterinary practice and abattoirs within Zambia for 10 weeks during the vacation after 5th year.

Qualifications

The degree of Bachelor of Veterinary Medicine (B.Vet.Med.) will be conferred on those that have fulfilled the requirements of the sixth year examinations after approval by the Senate of the University of Zambia.

## THE CURRICULUM

In the curriculum the letters used to indicate course numbers should be interpreted as follows:

- VM - Veterinary Medicine
- VMA - Courses taught by the School of Agricultural Sciences to Veterinary students.
- VMB - Courses taught by the Department of Biomedical Sciences in the School of Veterinary Medicine.
- VMC - Courses taught by the Department of Clinical Studies in the School of Veterinary Medicine.
- VMD - Courses taught by the Department of Disease Control in the School of Veterinary Medicine.
- VMN - Courses taught by the School of Natural Sciences to Veterinary students,
- VMP - Course taught by the Department of Paraclinical Studies, (Pathology, Microbiology and Parasitology), in the School of Veterinary Medicine.

The digits used to number the courses should be interpreted as follows:-

The 1st digit indicates the year the course is normally taken.

The 2nd digit indicates the subject area.

The 3rd digit indicates the time the course is taken

- (0) - full course taught over one academic year
- (1) - half course taught in the first half year
- (2) - half course taught in the second half year
- (3) - half course taken during the vacation
- (5) - half course taught ~~throughout~~ throughout the academic year.

The courses are as follows:-

<u>Year</u>	<u>Course No.</u>	<u>Subject Matter</u>	<u>Unit</u>
1	BZ 110	Introductory Biology	1
	C 110	Introductory Chemistry	1
	M 110	Introduction to Mathematics	1
	P 110	Introductory Physics	
2	VMB210	Animal Physiology and Anatomy	1
	VMB211	Veterinary Embryology	$\frac{1}{2}$
	VMN220	Organic Chemistry and Biochemistry	1
	VMA221	Probability and Statistical Analysis	$\frac{1}{2}$
	VMA222	Animal Genetics and Breeding	$\frac{1}{2}$
	VMA232	Forage crops, Pasture and Range Management	$\frac{1}{2}$
3	VMB310	Veterinary Anatomy	1
	VMB315	Veterinary Histology	$\frac{1}{2}$
	VMB320	Veterinary Physiology	1
	VMB325	Veterinary Biochemistry	$\frac{1}{2}$
	VMA330	Basic and Applied Animal Nutrition	1
	VMB303	Farm Practicals	$\frac{1}{2}$

<u>Year</u>	<u>Course No.</u>	<u>Subject Matter</u>	<u>Unit</u>
4	VMP410	Veterinary Pathology	1
	VMB425	Veterinary Pharmacology	$\frac{1}{2}$
	VMP430	Veterinary Microbiology and Immunology	1
	VMP440	Veterinary Parasitology	1
	VMA450	Animal Production	1
	VMP403	Veterinary Laboratory Practicals	$\frac{1}{2}$
5	VMD510	Veterinary Medicine I	1
	VMC511	Veterinary Therapeutics and Toxicology	$\frac{1}{2}$
	VMC515	Veterinary Clinical Pathology I	$\frac{1}{2}$
	VMD512	Role of the Veterinarian in Public Health	$\frac{1}{2}$
	VMC520	Veterinary Surgery I	1
	VMC521	Veterinary Radiology	$\frac{1}{2}$
	VMC532	Veterinary Reproduction and Obstetrics I	$\frac{1}{2}$
	VMC503	Veterinary Clinical Practicals	$\frac{1}{2}$
6	VMD610	Veterinary Medicine II	1
	VMD611	Veterinary Epidemiology and Economics	$\frac{1}{2}$
	VMC615	Veterinary Pathology II	$\frac{1}{2}$
	VMC620	Veterinary Surgery II	1
	VMC631	Veterinary Reproduction and Obstetrics II	$\frac{1}{2}$
	VMD612	Veterinary Extension	$\frac{1}{2}$
	VMC642	Veterinary Jurisprudence	$\frac{1}{2}$

COURSE DESCRIPTIONS

FIRST YEAR

Course No.      Description

BZ 100      INTRODUCTORY BIOLOGY

An introduction to the most important areas of biology.

Basic cell biology, animal structure, function and physiology.

Plant structure, functions and physiology.

Genetics, ecology, evolution and diversity of animals and plants.

C 110      INTRODUCTORY CHEMISTRY

An introductory course in chemistry covering such topics as stoichiometry, atomic and molecular structure, the periodic table, chemical reactions, equilibrium and simple organic compounds.

M 110      INTRODUCTION TO MATHEMATICS

Preliminary algebra, introductory set theory, elementary functions, analytical geometry and vector analysis, matrices and determinants, calculus.

P 110      INTRODUCTORY PHYSICS

Basic principles of matter structure, density and mechanical properties. Geometrical optics reflection, refraction, mirrors, lenses and simple instruments. Mechanics - kinematics, dynamics, circular, statics and dynamics of motion, the rigid body, simple harmonic motion, vibrations and waves.

Heat - thermometry, simple kinetic theory, specific heat and elements of thermodynamics.

Electricity and magnetism - electrostatics, D.C. circuits, the magnetic fields, A.C. circuits.

Modern physics - the atom and radio activity.

Associated laboratory course.

SECOND YEAR

VMB210      ANIMAL PHYSIOLOGY AND ANATOMY

Domestic animals of agricultural importance in Zambia, comparative study of topographic and functional anatomy, cell structure, types of body tissues and general animal body plan.

Skeletal, muscular, cutaneous, circulatory, nervous, respiratory, urinary, digestive and reproductive (including lactation) systems.

Endocrinology, temperature regulation, adaptation, growth and development.



VMB211 VETERINARY EMBRYOLOGY

Introduction, primary organs of reproduction and gametogenesis, fertilisation, cleavage and formation of morula and blastula, gastrulation and formation of the germ layers.

Establishment of the embryonic membranes and body structures, development of organ systems in avian and mammalian embryos.

VMN220 ORGANIC CHEMISTRY AND BIOCHEMISTRY

Broad coverage of organic chemistry whose treatment is factual in nature.

Bonding in organic compounds, isomerism, reaction of organic functional groups and their derivatives, synthetic transformations and compounds of biological importance. Analytical chemistry, precipitation, acid-base, redox equilibria. The major constituents of the cell, their chemical structure, function and analysis including carbohydrates, lipids, proteins and nucleic acids.

Biochemical energetics and properties of enzymes.

VMA221 PROBABILITY AND STATISTICAL ANALYSIS

Summation and product operations. Random variable, sample space and sampling techniques. Summary of the data. Normal probability distribution and related distributions. Statistical inference.

Normal population:- inference about population mean and population variance, comparison of two population means, comparison of two population variances. Regression analysis. Analysis of variance. Chi-squared Analysis. Experimental designs. Procedures in scientific experimentation.

VMA222 ANIMAL GENETICS AND BREEDING

Introduction of basic process of inheritance, basic Mendelian genetics - segregation, linkage, mutation and independent assortment; Multiple alleles, sex linkage, sex determination, elements of population genetics.

Quantitative genetics - variation, normal distribution, correlation, regression, heritability, repeatability.

Selection - response to selection, types of selection, selection methods.

Breeding systems - in breeding, out-breeding, crossbreeding, coefficient of breeding, relationship, heterosis, species - hybridization.

Artificial Insemination in livestock genetic improvements.

VMA232 FORAGE CROPS, PASTURE AND RANGE MANAGEMENT

Introduction to forage crops, historical review of evolution of grass and legumes.

Physiology of grasses and legumes, establishment of pasture and legumes; pasture management and carbohydrate reserves, antiquality factors, forage conservation and wet storage systems, seed production.

Forage quality and utilisation, grazing behaviour.

THIRD YEAR

VMB310 VETERINARY ANATOMY

Introduction, terminology, body regions; osteology, syndesmology, myology; digestive, respiratory, uro-genital, blood circulatory, lymphatic and nervous systems; endocrinology, sense organs, and common intergument; fowl anatomy.

VMB315 VETERINARY HISTOLOGY

General introduction, cytology, the epithelium, connective and supportive tissues, blood and bone marrow, muscular and nervous tissues; cardio-vascular, lymphatic, respiratory, digestive, urogenital, endocrine and nervous systems; eye, ear and the intergument.

VMB320 VETERINARY PHYSIOLOGY

Cell physiology; physiologic principles; descriptive and quantitative functional analysis of the nervous, musculo-skeletal, cardiovascular, respiratory, digestive, renal and endocrine systems of poultry, livestock and companion animals. Throughout the course "normal" bodily function will be emphasized as a foundation for pathology, surgery, clinical veterinary medicine, and diagnosis of disease.

VMB325 VETERINARY BIOCHEMISTRY

Protein structure and functions, plasma proteins, haemaglobin. Energy metabolism, enzymes and coenzymes. Carbohydrates, digestion and metabolism. Lipids, digestion, transport and metabolism, prostaglandins, steroids. Rumen biochemistry and ruminant energy metabolism. Lactation. Nitrogen balance and amino acid metabolism. Excretion and detoxication. Vitamins. Nucleotides, porphyrins, bile pigments. Nucleic acid structure, function, replication. Genetic code and protein synthesis. Mineral metabolism. Metabolic Regulation. Biochemistry of individual tissues. Biochemical Veterinary investigations.

VMA330 BASIC AND APPLIED ANIMAL NUTRITION

Chemical constituents of plants and animal body, properties and role of water in nutrition. digestion; absorption and metabolism of protein, carbohydrates, fat and minerals in ruminants and non-ruminants; methods of estimating feed value chemical analysis, gross energy, digestion coefficients,

total digestible nutrients, digestible energy, net energy, starch equivalent. Nutrient sources - protein, energy, minerals and vitamins for farm animals.

Principles and practical computation of rations for livestock and poultry. Specific aspects of the nutrition of livestock, poultry and fish, feed-lot nutrition.

Nutritional diseases, emphasis on metabolic pathway disorders and food toxins.

Nutrition of pet animals. (for Veterinary students).

#### FOURTH YEAR

##### VMP 410 VETERINARY PATHOLOGY

Introduction, history and scope of pathology, its relation with other disciplines; extrinsic, and intrinsic causes of disease. Retrogressive changes including various types of degenerations and infiltrations; pigmentation, calcification and necrosis. Disturbances of growth, disturbances of circulation. Defence of body against injury. Gross and microscopic studies of neoplasms of domestic animals including poultry.

Studies of gross and microscopic lesions in cardiovascular, haemopoietic, respiratory, uro-genital, nervous, endocrine, locomotor and digestive systems, and sensory organs, skin and appendages.

Pathology and pathogenesis of infectious diseases of domestic animals and poultry.

##### VMB 425 VETERINARY PHARMACOLOGY

Introduction: Drug action, absorption, administrations, transport and distribution, excretion. Pharmacokinetics. Principles of pharmacotherapeutics.

Drugs acting on the digestive tract, central and autonomic nervous systems, respiratory and circulatory systems. Sedatives, anaesthetics and control of peripheral nerves. Drugs affecting tissue metabolism, the endocrine and reproductive systems.

##### VMP 430 VETERINARY MICROBIOLOGY AND IMMUNOLOGY

Historical background, classification, morphology, characteristics and physiology of pathogenic organisms including bacteria, mycoplasma, rickettsia and fungi.

Microbiological techniques and methods, sterilization and disinfection.

Infection, resistance and immunity, toxin and antitoxin agglutination and precipitation, cytolysis and complement fixation, phagocytosis, anaphylaxis and allergy, modern developments in immunology.

The viruses: general characteristics and methods used in their study, classification and characteristics of each of the important virus groups.

VMP440 VETERINARY PARASITOLOGY

The biology and morphology of helminths, arthropods and protozoa in relation to the pathogenesis, epidemiology, diagnosis, treatment, control and prevention of diseases (including the zoonoses) caused by metazoan and protozoan parasites of domesticated and wild animals.

VMA450 ANIMAL PRODUCTION

The husbandry of meat animals with special coverage of beef, sheep, goats, pigs, rabbits and poultry production in Zambia. Different animal management systems. The husbandry of dairy animals with emphasis on systems of dairying, growth and development of dairy animals, breeding plans for dairy cattle, milk production, milking and milk quality. Diseases of each class of ruminant livestock.

FIFTH YEAR

VMD510 VETERINARY MEDICINE 1

General Medicine:

Clinical examinations, general systemic states, diseases of the new born, diseases of the liver, cardio-vascular system, the blood and blood forming organs, the respiratory, urinary, endocrine, nervous and musculo-skeletal systems; the skin, metabolic, nutrition and stress induced disorders.

Special Medicine:

Bacterial, fungal, and viral diseases; diseases caused by rickettsiae, protozoa, helminths and arthropod parasites; miscellaneous diseases of importance; diseases of fish and wildlife.

Preventive Medicine

Livestock movements, quarantine procedures, vaccinations and disease prophylaxis, management systems and general methods of disease control.

VMC511 VETERINARY THERAPEUTICS AND TOXICOLOGY

The principles of chemotherapy. Antiseptics and disinfectants, antibiotics and antibacterials, antifungal, and antiviral agents. Internal and external antiparasitic drugs.

Drug compatibility. Drug administration. Vaccines.

Introduction to Toxicology. Mineral or inorganic substances, organic compounds, drugs, pesticides, poisonous plants, mycotoxins, venoms and stings, radio-active materials, plant teratogenic effects, infertility and abortions, carcinogenesis.

VMD515 VETERINARY CLINICAL PATHOLOGY I

Cytology

General cytology, transudates and exudates, vaginal smears.

Haematology

Definition of descriptive terms, collection and examination of blood and bone marrow, blood smears, normal blood values, blood cell counting, haemoglobin, erythrocyte, sedimentation rate and packed cell volume, protein, fibrinogen, erythrocyte and its disorders, leucocyte and its disorders, thrombocytopenia and haemostatic disorders, interpretation of haematological findings in relation to disease.

Clinical chemistry:

Kidney function test, urine analysis clinical enzymology, liver function tests, pancreatic function tests, cardio-vascular disease tests, calcium, phosphorus and metabolic bone disorders, cerebro-spinal fluid examination, serum biochemistry abnormalities, thyroid function.

Dermatology:

Mycotic and parasitic skin lesions.

Autopsies

Attendance at Post-Mortem examinations in the Clinic.

VMD512

VETERINARY PUBLIC HEALTH

Role of the Veterinarian in Public Health. Zoonoses. Food uses of organs and tissues. General pathology of animals in relation to food hygiene. The construction, layout and sanitation of abattoirs; management of animals before slaughter, ante-mortem inspection, methods of slaughter, factors affecting meat quality and spoilage. Preparation of carcasses and offal. Post-mortem veterinary inspection. Bacteriology of meat. Treatment and use or disposal of by-products and condemned meat. Inspection and control of poultry, meat and fish. The processing and preservation of food and the administration of the Public Health Act (Cap 535) of the Laws of Zambia. The hazards of milk-borne diseases, milk hygiene and processing..

VMC520 VETERINARY SURGERY AND ANAESTHESIA I

General principles of surgery, sterile techniques, fluid therapy, and shock. Burns, wounds and other skin lesions.

The principles of veterinary anaesthesia. Local, regional, spinal, epidural and lumbar analgesia; premedication and general anaesthesia.

Surgery of the digestive system, organs of the head and neck, abdominal incisions, hernia, thorax, heart and great vessels, urogenital system, liver, spleen, pancreas, tendons, muscles and fascia, fractures and joints, neoplasms, amputations, vertebral column and spinal cord.

VMC521 VETERINARY RADIOLOGY

History, radiation safety, the X-ray machine and accessory equipment, density and contrast, radiographic positioning, development, and interpretation, radio-therapy.

VMC532 VETERINARY REPRODUCTION AND OBSTETRICS I

Revision of the anatomy of the reproductive system and associated structures, the physiology of reproduction, embryo development, foetal membranes and the gestation period, development anomalies and teratology, physiological parturition and the postpartum period, care of the new born, the pathology of the gestation period and infertility in male and female animals.

The types, causes, diagnosis and treatment of dystocia, procedures before handling dystocia and obstetrical operations. Surgery of the female and male genital organs. The physiology and pathology of lactation, surgical operations of the mammary glands.

SIXTH YEAR

VMD610 VETERINARY MEDICINE II

Continuation of Veterinary Medicine I with more practical orientation and ambulatory services.

VMD611 VETERINARY EPIDEMIOLOGY AND ECONOMICS

Introduction to epidemiology, interactions between the animal host, infective agents and the environment, accessory factors, endogenous and exogenous infections, animal infection.

Transmission, survival and spread of animal pathogens, routes of infection; sporadic, endemic and epidemic diseases; opportunist pathogens, vector species, reservoirs and carriers in animal disease; interspecies transmission. Data collection and interpretations. Herd health. Economics of disease control and animal production.

VMD612 VETERINARY ECONOMICS

Application of economic principles to schemes for livestock development, including animal health.

VMD615 VETERINARY CLINICAL PATHOLOGY II

Continuation of Clinical Pathology I.

VMC620 VETERINARY SURGERY II

Continuation of the Veterinary Surgery I with more practical orientation and ambulatory services.

VMC631 VETERINARY REPRODUCTION AND OBSTETRICS

Continuation of Veterinary Reproduction and Obstetrics I with more practical orientation and ambulatory services.

Artificial insemination

Historical background, advantages and disadvantages, revision of genital organs; semen production, composition, characteristics, collection, evaluation, processing and conservation; the art of artificial insemination, conception rates, no-return rates and factors affecting the reproductive efficiency; records, oestrous synchronisation and embryo transfer in livestock improvement programmes management and selection of artificial insemination animals, application of artificial insemination in livestock improvement programmes, the organisation of national artificial insemination services.

VMC642 VETERINARY JURISPRUDENCE

Introduction, relationship of veterinarian to the public, organisation of veterinary services in tropical countries.

The administration of legal Acts involving animal health and production, veterinary clinical services and livestock and wildlife control.

THE UNIVERSITY OF ZAMBIA

LUSAKA CAMPUS

SESSIONAL DATES - 1985/86 ACADEMIC YEAR

FIRST TERM:

SUNDAY	6TH OCTOBER	Arrival & Registration for first year students.
MONDAY	7TH OCTOBER	Orientation begins
THURSDAY	10TH OCTOBER	Arrival & Registration of Returning Students
MONDAY	14TH OCTOBER	Classes Begin
MONDAY	4TH NOVEMBER	Late Registration
FRIDAY	20TH DECEMBER	Last Classes of Term
SATURDAY	21ST DECEMBER	Holidays Begin
MONDAY	30TH DECEMBER	Residential School Begins
FRIDAY	10TH JANUARY	Residential School Ends.

SECOND TERM:

SUNDAY	12TH JANUARY	Students Return
MONDAY	13TH JANUARY	Classes Resume
FRIDAY	21ST MARCH	Last Classes of Term
SATURDAY	22ND MARCH	Holiday Begin

THIRD TERM:

SUNDAY	6TH APRIL	Students Return
MONDAY	7TH APRIL	Classes Resume
FRIDAY	6TH JUNE	Last Classes of Term
MONDAY	23RD JUNE	Examinations Begin
WEDNESDAY	9TH JULY	End of Examinations
THURSDAY	10TH JULY	Holidays Begin
FRIDAY	20TH AUGUST	Publication of Results

FIRST TERM - 1986/87 ACADEMIC YEAR:

MONDAY	29TH SEPTEMBER	Registration of First Year Students
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REPUBLIC OF ZAMBIA

MINISTRY OF LANDS AND NATURAL RESOURCES

NATIONAL PARKS AND WILDLIFE  
SERVICE

ANNUAL REPORT

1983

Price: K1.50n

1985 • PRINTED BY THE GOVERNMENT PRINTER • LUSAKA

1.2m P575 7105

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National Parks and Wildlife  
Service

PART I

INTRODUCTION

Review of the Year

1.1 Lower Zambezi International Game Park was declared a National Park through a National Park Declaration Order. This brings the number of Zambia's national parks to 19 covering a total land estate of 63,542 Km<sup>2</sup> hence approximately 8% of the country's land estate.

1.2 The Wildlife Conservation Revolving Fund was established. The Fund is meant to improve mobility in the department for effective law enforcement and maximizing revenue collection.

1.3 Stability and peace were restored in the North-Western Province following the removal of notorious Mushala by Security forces. This activated the Department's efforts in wildlife conservation in the province.

1.4 The Minister of Lands and Natural Resources, Hon. F. Chula's appeal to the hunting safari companies to donate vehicles to the Department for anti-poaching paid dividends. Zambia Safaris Limited donated two new Toyota diesel land cruiser pick-ups and three new Toyota Hilux 4 x 4 pick-ups while Big Game Safaris Limited donated one second-hand landrover pick-up.

1.5 The Director, Mr. S.M. Yamba, attended a technical consultative sub-committee on Fisheries and Wildlife at a Southern African Development Coordination Committee (SADCC) meeting held in Gaborone-Botswana in July.

1.6 The Deputy Director Dr. H.N. Chabwela attended another SADCC subcommittee meeting on Fisheries and wildlife held at Victoria Falls in Zimbabwe.

1.7 The Chief Wildlife Warden, Mr. A.N. Mwenya and the Senior Wildlife Research Officer, Mr. G. Mubanga, accompanied Hon. F. Chula, the Minister of Lands and Natural Resources on a familiarization tour of wildlife oriented industries in Botswana and Zimbabwe. In Botswana the team toured a tanning and taxidermy factory in Francis Town, and a crocodile farm on Lake Kariba in Zimbabwe.

1.8 The Chief Wildlife Research Officer attended a meeting of the survival specialist group - CITES, which was held in Botswana.

1.9 The Senior Pilot Ranger, Mr. W.M. Sabi, went to Denmark for a course leading to Air Transport Pilot's Licence (ATPL). He was sponsored through Danish aid which came through the Department of Civil Aviation.

1.10 The Zambia Army cleared land mines in Lower Zambezi. Roads could not however be graded due to shortage of funds and lack of serviceable equipment.

1.11 Bangweulu command headquarters moved from Mansa-Luapula Province, to Mpika-Northern Province. The Command was enlarged to include Isoka, Chinsali, Mpika and Chama district west of Luangwa River.

1.12 A new command, southern command, was created. This command with its headquarters at Livingstone, encompasses Sesheke district in Western Province and Southern Province excluding Kafue National Park, Bilili, Sichifulo, Nkala and Mulobezi game management areas.

1.13 The Minister of Lands and Natural Resources by Gazette notice designated some classified daily paid employees as wildlife officers with full powers to enforce the National Parks and Wildlife Act, Cap. 316 of the Laws of Zambia.

1.14 The Wildlife Memorial Parade was revived and held at Mfuwe, the last such event having been held in 1976. Eight wildlife officers from various commands were honoured for their outstanding and courageous performance of duty in the field of wildlife conservation. Among the dignitaries who attended the ceremony were Mr. R.K. Sambundu, Permanent Secretary, Eastern Province who officiated at the ceremony, the Regional Commander, Eastern Province, Senior Chieftainess Nsefu, former Malambo M.P., Mr. W. Banda, and Ministry and Departmental staff.

#### STAFF MATTERS

##### General

1.15 The Department continued to be understaffed during the year. A number of Wildlife camps and sectors in commands were inadequately supervised. Details of the Departmental staff strength are reflected in Appendices A, B and C. Two senior posts of Senior Wildlife Research Officer and Departmental Development Officer were filled by Mr. G. Mubanga and Mr. F.B. Lungu respectively.

##### Deceased

1.16 It is with deep regret that we have to record deaths of the following wildlife officers:

- (i) Clerical Officer Mr. N. Mwaekwa died of Tuberculosis Bacillus (TB).
- (ii) Wildlife Scout Mr. T. Sindoni died after a short illness.
- (iii) Wildlife Scout Mr. N. Kashimika died of epilepsy.
- (iv) Wildlife Scout Mr. W. Silavwe died from food poisoning.
- (v) Wildlife Scout Mr. D. Selenge drowned in the course of duty.
- (vi) Wildlife Scout Mr. L. Daka drowned in course of duty.
- (vii) Driver Mr. J.K. Banda died after a long illness.
- (viii) Permanent Carrier Mr. S. Chaiwa was killed by a poacher.
- (ix) Permanent Carrier Mr. F. Fubisha drowned in the course of duty.

#### Retirements

1.17 The following officers retired during the year under review:-

- (i) Wildlife Scout Mr. A. Lukonde retired after serving 27 years.
- (ii) Wildlife Scout Mr. L. Chansa retired after serving for 25 years.
- (iii) Wildlife Scout Mr. D. Walawala retired after serving for 25 years.

#### Appointments

1.18 45 graduates from Chunga Wildlife College joined the Department as Wildlife Scouts. Mr. Lackson Mwenya was appointed as Assistant Wildlife Ranger.

#### Training

1.19 Senior Pilot Ranger Mr. W.M. Sabi went to Denmark on advanced training for five months. Mr. G. Mubanga, Wildlife Warden came back from the United States of America after obtaining a masters degree. Wildlife Biologists Messrs. P.W. Sichone and P.C. Moonga came back after obtaining their masters degree Programs in Australia and United States of America respectively. Assistant Wildlife Ranger Mr. C. Samanana obtained his Bachelor of Science degree from

United States of America. Assistant Wildlife Rangers Miss S. Chimuka and Mr. R. Banda obtained their diploma certificates in African Wildlife Management from the College of African Wildlife Management, Mweka, Tanzania. Trainee Pilot ranger Mr. K. Mulenga returned from the United States of America after obtaining an American commercial Pilot's Licence. One Wildlife Warden, one Senior Wildlife Ranger, one Wildlife Ranger and three Assistant Wildlife Rangers continued with their studies abroad. On the local training, eight Wildlife Wardens drawn from the eight commands underwent a middle management course for one month at the National Institute for Public Administration (NIPA). Three Wildlife Scouts graduated from NIPA as Public Prosecutors. An eight month orientation course was conducted for twelve Form V School Leavers at Chunga Wildlife College. 45 Form III School Leavers completed their one year training course as wildlife scouts.

#### FINANCIAL MATTERS

##### Recurrent Funds

1.20 The department's recurrent funds were K3,842,150. This was K541,550.00 over the previous year. However, this change was not significant due to the revised salary increases affecting the Daily Paid workers, Division three and Division two officers. Other factors which made the increase non-significant were the rises in material prices, fuel and devaluation. Most of our field operations continued to suffer seriously.

##### Capital Funds

1.21 The department's capital funds allocation was drastically cut by K47,000 from the previous year's allocation of K465,000. The allocation therefore was K418,000. With this situation not much progress was achieved. A few carryover projects and the annual fire-break system were done.

##### Revenue

1.22 The department recorded the highest revenue collection of K2,311,813 from the sale of ivory, licences, permits etc. It should be noted that last year's figure of revenue collection at K1,942,624.36 was the highest on record then. This year's increase was attributed to the unprecedented increase in the number of safari clients which reached a record high of 638. Details of revenue collection of 1983 and the previous three years are shown under Appendix E, Table I.

## PLANT AND TRANSPORT

### Plant

1.23 The department continued to face problems in the maintenance of its fleet of heavy machinery used in the opening and maintaining of national parks roads, airfields and firebreaks. Only one second hand grader was purchased during the year. In addition to the inadequacy of funds, there was a critical scarcity of spare parts available in the country.

### Motor Transport

1.24 The position of road transport improved considerably compared to the previous year. Nine new landrover pick-ups were purchased. Donations were received of two Toyota diesel land cruiser pick-ups, three 4 x 4 Toyota Hilux pick-ups and one second hand landrover pick-up. Out of funds raised by the Wildlife Conservation Revolving Fund a new Leyland 7 ton lorry was purchased. An extract of plant and vehicle condition is given in Appendix D table 1.

### Water Transport

1.25 Water transport position did not improve. There was no serviceable out board engine which resulted in the small number of boats being immobile. In turn patrols by boat were not made. This situation continued to pose a weak-spot in the Department's Anti-poaching activities. Details of the available boats and unserviceable outboard engines can be seen under Appendix D, table II.

### Flight Section

1.26 The total number of hours flown continued to be comparatively lower than the previous year this fell to almost half. This was attributed to the fact that the Senior Pilot Ranger spent the first half of the year away on training, there was a shortage of funds to purchase spare parts and fuel and even when the little money became available, supplies of aviation fuel were not available in the country. The aircraft status was as follows:

Cessna 206	9J-AEH	Serviceable for the first six months. Engine was sent for overhauling after then.
Piper Cherokee	9J-AAL	Serviceable.
Cessna 182	9J-RHR	Unserviceable.
Piper Cherokee	9J-REH	Unserviceable.



Piper Supercub	9J-RFA	Unserviceable.
Piper Supercub	9J-AAD	Handed over to Wildlife Conservation Society of Zambia, and

the number of hours flown are accounted for as follows:

Director's Officer	22.30
Pay and Communication	20.00
Anti-poaching	119.30
Research, survey and fire control	30.00
Flight/training/Administration	15.30
Total	<u>207.30</u>

SAVE THE RHINO TRUST, HONORARY WILDLIFE RANGERS AND NATIONAL PARKS BOARD

Save the Rhino Trust

1.27 The Save the Rhino Trust continued to vigorously carry out anti-poaching activities in both the Luangwa Valley and Lower Zambezi areas. A third anti-poaching unit was formed. This unit separated from Chinyunyu is to be based at Chanuzi to focus its anti-poaching efforts on the South Luangwa National Park. The Department continued to provide personnel, firearms, ammunition, uniforms, a lorry, air support and accommodation while the Trust provided the means to carry out anti-poaching operations. The number of arrests by the units (combined) was as follows:

Number	Arrest	Conviction	Pending	Acquittals	Imprisonment	Withdrawal
Number	179	121	32	10	5	11

Honorary Wildlife Rangers

1.28 Honorary Wildlife rangers continued to be organized under a unit system while maintaining the National Committee. During the year under review, there were six active units. The midlands unit provided logistical support to the Chilanga Headquarters anti-poaching unit and jointly manned road-blocks. The Kitwe unit was active in Lunga-Luswishi game management area while the Ndola unit was active

on the Muchinga Escarpment. The Kalomo unit provided services and logistical support in the Southern sector of Kafue National Park while the Choma unit was active in Lochninyar National Park and Chete Bird Sanctuary.

#### National Parks Board

1.29 New members of the Board were appointed by the Minister towards the end of the year. Most of the members were old members except for Dr. G.W. Howard of the University of Zambia who replaced Mr. D. Litana.

## PART II

### WILDLIFE CONSERVATION

#### General

2.30 Poaching continued to pose a serious problem in many parts of the country. This problem however was relatively under control in the Southern part of Kafue National Park, Lower Zambezi and Bangweulu Swamps.

2.31 There was a marked improvement in Departmental operations mainly due to the improvement in motor transport position. This situation contributed to the increase in the number of arrests which rose from 1,296 in 1982 to 1,565 during the year under review. A large number of ivory and rhino horns were recovered. 133 firearms and 4 vehicles were forfeited to the State. Details of law enforcement, recovered ivory and rhino horns and forfeited items are shown in the statistics as reflected in Appendices F, Tables I to IV.

2.32 The Education Information Unit at Chipata handled 508 conservation related letters, visited five schools, helped in the formation of 3 conservation clubs, renewed membership of 5 chongololo clubs and organized 51 conservation tours to the South Luangwa Park.

2.33 Tree-Tops school in Kafue National Park remained relatively inactive during the year. Limited renovations were carried out. Towards the end of the year the running of the school was taken over by an Assistant Wildlife Ranger.

### NATIONAL PARKS

#### South Luangwa National Park No. 1

2.34 There was a continued poaching threat to wildlife especially of elephant and rhino. The threat was mainly on the escarpment, southern and northern parts of the park. The park however, continued to enjoy a leading attraction among overseas and local tourists. Most tourist roads were

graded. However maintenance of these roads continued to suffer due to lack of funds for spare parts and fuel. In an effort to improve law enforcement on the escarpment construction of a camp at the old Julius camp site was initiated. Early burning to protect the park from bush fires was carried out.

#### North Luangwa National Park No. 2

2.35 Poaching continued to adversely affect the park. Elephant and rhino populations are believed to have considerably declined during the year. Shiwa Ngandu Safaris were authorized to conduct walking safaris in the park, however, the company did not start operations. It is hoped that with the introduction of walking safaris in this area, and the establishment of Save the Rhino Trust anti-poaching unit at Chanjuzi, poaching may come under control. Early burning was not carried out. However, the vegetation in the park remained in good condition.

#### Lukusuzi National Park No. 3

2.36 The anti-poaching unit based at Chipata patrolled the park regularly. The posting of an active wildlife ranger at Chikomeni considerably improved conservation in the park. During the year however, a lot of people engaged in precious mineral prospecting visited the park and concern was aroused on the integrity of the park. Some of the prospectors engaged themselves in poaching.

#### Luambe National Park No. 4

2.37 There was an improved effort in the patrolling of the parks as both the regular departmental staff and the Save the Rhino Trust conducted regular patrols. As a result of this, poaching was considerably brought under control. However very few tourists visited the park.

#### Mweru-Wantipa National Park No. 5

2.38 Anti-poaching work was not carried out fully due to continued poor state of water transport which was virtually non-existent. However, there were more patrols than previously.

#### Nsumbu National Park No. 6

2.39 Poaching continued to be rife in this park especially that of elephant. Again water transport was lacking for effective patrol work. The tourist roads

were not properly graded due to lack of spare parts and fuel.

Lusenga Plain National Park No. 7

2.40 Poaching continued to be rife in the park. The vegetation of the park however, remained good.

Isangano National Park No. 8

2.41 This park continued to maintain very little change in its integrity. The park continued to be understaffed.

Lavushi Manda National Park No.9

2.42 Poaching in the park came under relative control as compared to previous year. Elephant herds were spotted on a number of occasions by the wildlife scouts. Early burning was completed on time.

Kasanka National Park No. 10

2.43 Heavy poaching was experienced in the park during the year. Erection of gates on the Serenje/Samfya road was not accomplished.

Kafue National Park No. 11

2.44 Poaching was prevalent in the Central and Northern parts of the Park. The Southern sector adequately controlled poaching. 34 elephants tusks were confiscated by the Scouts at the two gates on the Lusaka/Mongu road.

2.45 Tourist roads were partially graded belatedly due to spare parts. Early burning was completed on time in most areas except in the northern and western boundary areas. Ngoma Lodge was poorly patronized due to management problems. Most tourists stayed in the Musungwa Lodge which is located in a Game Management Area.

Nyika National Park No. 12

2.46 Two Wildlife Scouts were posted to the area to re-inforce the one permanent carrier who has been there before poaching continued to be rife.

Lochinvar National Park No. 13

2.47 Cattle grazing continued to be a problem. Seasonal camps were set up for scouts in an effort to control poaching. A new vehicle was posted there which helped a bit

but its operations were limited due to a shortage of fuel. Tourist roads were in poor condition.

West Lunga National Park No. 14

2.48 Security was restored in the park. However, the department could not immediately open up the abandoned camps due to lack of transport and fuel. The park was periodically serviced by a vehicle from Solwezi in the commands' headquarters. However, it should be noted that patrols were carried out in the area and poaching was brought under relative control.

Liuwa National Park No. 15

2.49 The Park continued to enjoy healthy stocks of animals. Red lechwe, blue wildebeest, zebra and tsessebe remained abundant. Poaching was reported to be moderate.

Sioma Ngwezi National Park No. 16

2.50 Unfortunately it was not possible to rehabilitate the abandoned camps due to shortage of staff and lack of transport. However such species as elephant, buffalo and warthog were fairly common.

Mosi-oa-Tunya National Park No. 17

2.51 Rehabilitation of the park continued though at a slow pace mainly due to financial limitations. Poaching was moderate. Tourist roads were graded.

2.52 A pump was installed to pump water from the Zambezi into the park as a means of aborting drought.

Blue Lagoon National Park No. 18

2.53 The park continued being closed to the public. Fire breaks were not maintained. Poaching was rife. The fence surrounding the park on the settlement's areas was in disarray as most wire was pulled down by local people.

Lower Zambezi National Park No. 19

2.54 During the year under review, the former lower Zambezi International Game Park was declared Lower Zambezi National Park No. 19. The park has a healthy variety and population of animals. With its proximity to the densely populated urban area it should in a short time prove a good tourist attraction. The animals commonly seen are: elephant, buffalo, waterbuck, impala, kudu, bushback, warthog, and hippo. Poaching was relatively under control due to regular patrols by both the regular departmental staff and Save the rhino trust based at Chinyuny. However, fishermen were a problem in that a good number of them were apprehended for fishing inside the park.

2.55 The Army cleared the area of land mines. However, the roads were not graded while the left accessibility to the park is mainly by water.

### GAME MANAGEMENT AREAS

2.56 Poaching was relatively low in game management areas (GMA's) where legal hunting took place. The presence of legal hunters seems to play a major role as a deterrent.

2.57 Drought was still experienced in most parts of the country. However, no mortality of animals was recorded unlike the previous year when a good number of animals died in Sichifulo game management area.

### HUNTING

#### General

2.58 There were more people who hunted during the year. More than 9,723 animals were sold to various categories of hunters. Details of species and numbers of animals sold and special licences issued are shown in Appendix D, Tables I to III. The ban on elephant hunting which was imposed in 1982 was continued while there was no hunting of any animal in the North Western Province.

#### Hunting in Open Areas

2.59 The department sold 1,770 game animals to non-safari hunters in open areas during the year (Appendix C, Table III). This was a drop of 369 animals compared to the previous year. The quota was so cut in order to accommodate the loss incurred through poaching.

2.60 During the year under review, District Councils sold more than 337 district game licences, 66 bird licences (Appendix D, Table IV) while the game animals sold were more than 614. There was therefore a drop of 34 game animals sold as compared to the previous year.

2.61 The Councils realised more than K23,680.00 from the sale of licences and permits (Appendix E, Table III).

#### Hunting in Game Management Areas (GMA)

2.62 District Councils sold more than 93 GMA permits during the year under review (Appendix E, Table IV).

2.63 The number of non-resident GMA permits sold during the year was 527 (Appendix D, Table IV). There was a drop of 105 permits sold as compared to the previous year.

2.64 Non-safari hunters or non-resident hunters purchased 1,562 game animals in Game Management Areas during the year (Appendix D, Table III). This represented an increase of 186 over the previous year.

2.65 Hunting safari brought in a record number of 646 overseas clients who hunted during the year under review. They purchased 3,452 animals and harvested 3,314. The revenue collected from these clients was 2,037,618.00 US dollars (Appendix E, Tables II, V). The success rate was high for this category of hunters as has been previously.

2.66 Most overseas hunting safari clients came from North America followed by Western Europe (Appendix F, Table 1).

#### CONTROL

2.67 During the year under review, the department destroyed 388 game animals which threatened human life or destroyed crops and human property. The species involved were crocodiles and elephants.

2.68 In order to supplement the protein requirements for departmental personnel stationed in very remote areas, the Minister issues a special licence for some game animals to be taken off in various GMA's see Appendix F, Table IV.

#### LEGISLATION

1. Lower Zambezi National Park Declaration Order - 1983.
2. Declaration of Wildlife Officers to include Daily Paid Employees.
3. National Park Board member's appointments.

#### PART III

#### WILDLIFE RESEARCH

##### General

3.69 During the year under review, the division's functions continued to suffer adversely from lack of professional manpower, insufficient funding and inadequate transport and equipment. However later in the year the division was re-inforced by two biologists, Mr. P.W. Sichone and Mr. P.C. Moonga, who completed their Masters programs abroad. Two Japanese volunteer biologists joined the department, some work was carried through in areas of routine environmental monitoring. Independent researchers carried out their work. These researchers were funded by different organisations and supported administratively by the Ministry through the department and their major

activities were largely confined to the Luangwa valley.

3.70 In the later part of the year, the division organized the Lupande Development Workshop which was attended by a large group of multidisciplinary team. The main theme of the workshop was to identify resources potentials, land use capabilities, socio-economics of village societies, and cost effective design of resource protection and management programs. The recommendations from the workshop were passed on to the Government for consideration in the form of "Luangwa Development Project proposal for development and resource conservation in Luangwa valley"

#### Lupande Workshop

3.72 The Research and Management Division organized the Lupande Workshop held at Nyamaluma in the Luangwa Valley between 19 - 22 September, 1983 to discuss the future management of natural resources of the Luangwa Valley. The Workshop had two major aims. The first one was to try to develop a management strategy for Lupande GMA which could act as a model for all GMAs. The second aim was to examine the requirements for the continued coexistence between man, animal and environment.

### OTHER MATTERS

#### Field Observations

3.73 A baby elephant without a trunk was observed between Chichele and Mfuwe Lodge in December, 1983. It is believed that the elephant was born with this deformity. There was an increase in giraffe predation by lions during the year. Three young bulls were killed by lions near Mfuwe bridge and Chinzombo Lagoon. This is the first lion predation on giraffe that has been recorded in the area. Three horned black rhino were observed. One in the Nseru area and two males in South Luangwa National Park between Mfuwe and Chichele Lodge. Two horns is normal in rhino but three horns as a rare genetic trait.

#### Publications

3.74 Disturbance effects on the dry season ecology of the Luangwa Valley elephants; submitted to the Journal of Applied Ecology by Dr. Dale Lewis. Habitat manipulation by fire and its influence on elephant foraging in mopane woodland; submitted to the Journal of Applied Ecology by Dr. Dale Lewis. Hippo Census on the Luangwa river, June, 1983; submitted to Black Lechwe by Mr. Ackim Tembo. Dry season diet of buffalo in Luangwa Valley, Zambia to be submitted to the Journal of Wildlife Management by Mr. Ackim Tembo. Disturbance of black rhinoceros in Zambia's South Luangwa National Park; submitted to oryx by Dr. N. Leader Williams.



PART IV  
CAPITAL PROJECTS

General

4.75 Very little progress was made on capital development projects. There was a shortfall of K47,000 in the allocation of capital funds as compared to the previous year's allocation of K465,000.00. In spite of the shortfall releases of funds to most commands were not made. Funds to purchase vehicles from Rover Zambia Limited were withdrawn with a view of purchasing the vehicles from other sources.

Research Development

4.76 K25,000 was allocated for the continued development of the new research centre. Little progress was achieved. The bore hole was sunk on the site, water reticulation work started and the connecting of electricity power line to the main ZESCO electric supply line was done.

4.77 One new landrover was purchased while scientific equipment could not be obtained.

Luangwa Valley Development

4.78 K50,000 was allocated to Luangwa valley development for the maintenance of firebreaks, tourist roads, buildings, overhauling of grader engine and electrification of Kakumbi (Mfuwe) station. Electrification of Kakumbi was not done due to failure of ZESCO to produce a quotation in time. Building materials were bought for the renovation of a house at Chinzombo. Firebreaks were maintained and tourist roads were graded.

4.79 One landrover was purchased for the command.

Central Command Development

4.80 K20,000 was allocated to the command for maintenance of tourist roads, construction of buildings and purchase of a landrover. Construction of a 1 x 3 office block was carried forward up to wall plate level. Funds were not released.

4.81 One landrover was purchased for the command.

Western Command Development

4.82 K23,000 was allocated to the command for the purchase of water boat and demarcation of Liuwa National Park boundary. Funds were not released which resulted in not achieving any progress in capital development.

4.83 One landrover was purchased for the command.

#### Northern Command Development

4.84 K20,000 was allocated to the command for the improvement of firebreaks and tourist roads. Funds were not released as a result very little work was done.

4.85 One new landrover was purchased for the command.

#### Bangweulu Command Development

4.86 K25,000 was allocated to this command for carry-over project of Mansa office block including electrification. However, with the change of the command headquarters to Mpika from Mansa which was necessitated by lack of staff accommodation at Mansa, the funds for the office block were rerouted to Mpika for the same purpose. Construction of the office block was up to slab-level. Materials for the building were bought. Funds were released very late in the year.

4.87 One landrover was purchased for the command

#### Mosi-Oa-Tunya National Park Development

4.88 K30,000 was allocated to the command for the improvement of tourist facilities, maintenance of game fences, a supply of water into the zoological park. Not all funds were released. However, a pump to supply water to the zoological park was purchased and installed. Roads were not properly maintained due to lack of spare parts for the grader. Some limited work was undertaken on the maintenance of staff houses.

4.89 One new landrover was purchased for the command.

#### North-Western Command Development

4.90 K25,000 was allocated to the command for the making of firebreaks and maintenance of tourist roads. In general the command remained undeveloped. Funds were not released.

4.91 One new landrover was purchased for the command.

#### Kafue National Park Development

4.92 K40,000 was allocated to this command for maintenance of tourist roads, firebreaks, Chunga wildlife training college carry-over project of completing the buildings, grader over-hauling, renovation of camps and paying for the borehole at Tatayoyo camp. Funds were not released in full. However, firebreaks and tourist roads were maintained. Some limited work was carried out on the

construction of the Chunga school and renovation of camps and a few spare parts were purchased for the graders.

4.93 One new landrover was purchased.

#### Headquarters, Chilanga Development

4.94 K30,000 was allocated towards the purchase of a vehicle and improvements to government buildings. The projects were carried out.

#### Anti-poaching Unit

4.95 K50,000 was allocated for the purchase of a vehicle, ammunition and camping equipment. Camping equipment was not purchased as this was not available locally.

#### Flight Section

4.96 K40,000 was allocated for overhauling the aircraft engines and instruments. No progress was achieved as the funds were not released.

#### Wildlife Training School Development

4.97 K40,000 was allocated to the school at Chunga's Kafue Hook site for construction of classrooms, and dormitories and purchase of equipment. The projects were carried out.

S.M. YAMBA,  
DIRECTOR,

National Parks and Wildlife Service

APPENDIX A

SENIOR STAFF LIST AS AT 31ST DECEMBER, 1983

Headquarters, Chilanga

S.M. Yamba	..	..	..	Director
Dr. H. N. Chabwela	..	..	..	Deputy Director
A.N. Mwenya	..	..	..	Chief Wildlife Warden
G.B. Kaweche	..	..	..	Chief Wildlife Research Officer
W.M. Sabi	..	..	..	Senior Pilot Ranger
G. Mubanga	..	..	..	Senior Wildlife Research Officer
P.W. Sichone	..	..	..	Wildlife Biologist
F.B. Lungu	..	..	..	Departmental Develop- ment Officer
I.Y. Mbindawina	..	..	..	Senior Executive Officer
D.E. Chomba	..	..	..	Chief Wildlife Ranger

Central Command

L. S. Mwachitete	..	..	..	Wildlife Warden (Kabwe)
------------------	----	----	----	----------------------------

Luangwa Command

C.S. Mukelabai	..	..	..	Wildlife Warden (Chipata)
A. Tembo	..	..	..	Wildlife Biologist (Mfuwe)
P. Chilukole	..	..	..	Senior Wildlife (Mfuwe)

Kafue National Park

L.M. Saiwana	..	..	..	Wildlife Warden (Ngoma)
J.H. Mwima	..	..	..	Wildlife Biologist (Ngoma)
F. Konoshita	..	..	..	Volunteer Biologist (Ngoma)
F.C. Mumpanshya	..	..	..	Senior Wildlife Ranger (Ngoma)

Northern Command

P.K. Sichivula	..	..	..	Wildlife Warden (Kasama)
G. Simwanda	..	..	..	Senior Wildlife Ranger (Kasama)

Bangweulu Command

K.C.M. Malama .. .. Wildlife Warden  
(Mpika)

Western Command

A.N. Aongola .. .. Wildlife Warden  
(Mongu)

North-Western Command

S.K. Simasiku .. .. Wildlife Warden  
(Solwezi)

Mosi-Oa-Tunya National Park

C. Samanana .. .. Wildlife Biologist  
(Livingstone)

P.C. Moonga .. .. Wildlife Biologist  
(Lochinvar)

Officers on Study Leave Abroad

F.E.C. Munyenembe .. .. Biologist, Australia

E.C. Moonga .. .. Biologist, U.S.A.

C. Nkonga .. .. Wildlife Ranger,  
U.S.A.

D. Chimbali .. .. Assistant Wild-  
life Ranger, U.S.A.

B. Chipeta .. .. Assistant Wild-  
life Ranger, U.S.A.

D. Liseli .. .. Assistant Wild-  
life Ranger, U.S.A.

T.R.C. Msimuko .. .. Assistant Wild-  
life Ranger, U.K.

APPENDIX B

STAFF ESTABLISHMENT AND STRENGTH AS AT 31ST DECEMBER, 1983

<u>SALARY SCALE</u>	<u>ESTABLISHMENT</u>	<u>STRENGTH</u>	<u>POST</u>
			<u>6 Super Scale Staff</u>
GPS/5 .. ..	1	1	Director
GPS/6 .. ..	1	1	Deputy Director
GPS/7 .. ..	1	1	Chief Wildlife Warden
GPS/7 .. ..	1	1	Chief Wildlife Research Officer
GPS/7 .. ..	1	1	Senior Pilot Ranger
GPS/8 .. ..	1	1	Senior Wildlife Research Officer
			<u>16 Professional Staff</u>
GPS/9 .. ..	1	1	Departmental Develop- ment Officer
GPS/9 .. ..	4	4	Biologists
GPS/9 .. ..	3	1	Pilot Ranger
GPS/9 .. ..	1	1	Aircraft Engineer
GPS/9 .. ..	7	7	Wildlife Warden
			<u>9 Administrative &amp; Executive Staff</u>
S/11/10 .. ..	1	1	Senior Executive Officer
S/13/12 .. ..	3	3	Executive Officer
S/13/12 .. ..	1	1	Senior Stores Officer
S/13/12 .. ..	1	1	Station Manager
S/14 .. ..	3	3	Junior Executive Officer
			<u>667 Technical, Works and Field Staff</u>
TS/10/9 .. ..	2	2	Warden (Training)
TS/10 .. ..	1	1	Chief Wildlife Ranger
TS/11 .. ..	4	4	Senior Wildlife Ranger
TS/13/11 .. ..	8	14	Wildlife Rangers
TS/13/11 .. ..	1	1	Trainee Pilot Ranger

<u>SALARY SCALE</u>	<u>ESTABLISHMENT</u>	<u>STRENGTH</u>	<u>POST</u>
TS/15/14 ..	18	18	Assistant Ranger
TS/15/14 ..	1	1	Transport Assistant
IS/20/16 ..	591	532	Wildlife Scout
			<u>31 Clerical &amp;</u>
			<u>Secretarial Staff</u>
S/15 .. ..	10	10	Clerical Officer
S/19/17 ..	15	15	Junior Clerical Officer
SS/5 .. ..	2	2	Stenographer
SS/7 .. ..	3	3	Typist
S/15 (SPG)	1	1	Telephone Operator
	<u>698</u>	<u>632</u>	

Appendix C

TABLE I: REVENUE FROM THE SALE OF LICENCES, PERMITS ETC 1980-1983

Type of Licences	1980		1981		1982		1983	
	K		K		K		K	
Elephant .. .. .	153,686.00		79,741.00		-		-	
Supplementary Game Licences	329,829.00		70,333.00		562,258.00		1,020,919.50	
National Game Licence .. .	78,829.00		7,350.00		101,455.00		143,532.50	
Bird Licence .. .. .	4,861.00		9,585.00		9,588.00		13,791.00	
G.M.A. Permits .. .. .	232,004.00		363,390.00		200,565.00		327,250.00	
Entry Permits .. .. .	2,445.00		11,318.00		5,861.00		48,087.30	
Angling Permits .. .. .	121.00		3,161.00		266.00		13,749.30	
Safari Licences .. .. .	42,975.00		100,640.00		109,255.00		162,820.00	
Professional Hunters' Licences	7,201.00		9,400.00		7,800.00		11,400.00	
Sales of Ivory .. .. .	231,233.00		2,350.00		799,617.70		458,456.94	
Sale of Government Trophies	24,109.00		5,926.00		8,006.65		3,124.79	
Export Permits fees .. .. .	75,439.00		120,304.96		108,640.76		86,427.75	
Import Permit fees .. .. .	561.00		214.00		110.00		16.00	
Photography fees .. .. .	292.00		270.00		200.00		1,000.00	
Special Licences .. .. .	9,813.00		37,210.00		12,019.00		12,816.00	
Trophy Dealer's Permits .. .	10,316.00		11,800.00		6,901.50		3,400.00	
Animals in Captivity Permits	-		-		-		-	
Miscellaneous .. .. .	1,803.00		59,811.11		10,050.00		4,523.00	
<b>TOTAL .. .</b>	<b>1,205,541.00</b>		<b>809,804.07</b>		<b>1,942,624.36</b>		<b>2,311,813.20</b>	



TABLE II: ANIMALS SOLD TO NON SAFARI HUNTERS IN OPEN AREAS,  
1983

Animal Species	(1)	(2)	(3)	(4)	(5)	(6)	(7)	Total
Buffalo .. .. .	27	17	40	23	20	138	25	290
Bushbuck . . . . .	3	-	15	-	2	65	-	85
Bushpig .. .. .	1	-	28	-	1	30	2	82
Crocodile .. .. .	-	-	1	-	-	18	1	20
Duiker, Common .. .. .	2	1	15	15	4	98	5	125
Eland .. .. .	2	7	10	-	1	44	-	64
Grysbok .. .. .	-	-	1	-	-	1	-	2
Hartebeest .. .. .	7	5	15	1	2	152	15	197
Hippopotamus . . . . .	5	24	15	2	25	119	20	210
Impala .. .. .	10	-	15	8	-	83	-	116
Kudu .. .. .	2	-	9	-	-	31	-	42
Leopard .. .. .	-	-	1	-	-	14	-	15
Lion .. .. .	-	-	1	-	-	14	-	15
Oribi . . . . .	-	-	4	3	-	10	-	17
Puku .. .. .	-	-	10	-	-	23	-	33
Reedbuck .. .. .	-	2	20	6	1	118	2	149
Roan .. .. .	-	-	-	-	-	14	-	14
Sable . . . . .	-	-	-	-	-	25	-	25
Warthog .. .. .	9	4	20	7	3	141	4	188
Waterbuck . . . . .	3	-	10	-	-	1	-	14
Wildbeest, Blue .. .. .	-	-	-	-	-	22	-	22
Wildebeest, Cookson's .. .. .	6	-	-	-	-	-	-	6
Zebra .. .. .	7	-	6	1	-	45	-	59
<b>TOTAL</b>	<b>84</b>	<b>60</b>	<b>236</b>	<b>51</b>	<b>59</b>	<b>1206</b>	<b>74</b>	<b>1,770</b>

NOTES:

1 Key to Province Numbers

No. 1 Chipata

No. 2 Mongu

No. 3 Kabwe

No. 4 Livingstone

No. 5 Mpika/Mansa

No. 6 Chilanga

No. 7 Kasama

TABLE III: ANIMALS SOLD BY DISTRICT COUNCIL

District Council	ANIMAL SPECIE NUMBERS									Totals
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Chipata	1	3	-	2	-	-	-	-	-	6
Mongu	5	-	2	-	-	-	-	1	1	9
Luwingu	-	-	4	-	-	-	-	-	-	4
Senanga	11	-	4	-	-	-	1	1	-	17
Gwembe	5	5	4	1	3	-	-	3	-	21
Lukulu	-	-	2	7	-	-	12	-	2	23
Luangwa	18	6	2	-	4	-	-	4	-	34
Namwala	6	-	-	1	-	-	1	1	-	9
Serenje	4	-	2	1	1	2	2	-	-	12
Kalabo	-	-	-	1	-	-	1	-	-	2
Isoka	6	1	1	1	1	-	6	1	-	17
Samfya	6	1	-	-	-	-	3	-	3	10
Mwense	-	-	1	-	-	-	-	-	-	1
Mpika	43	2	2	16	-	-	-	10	-	73
Sesheke	14	-	4	5	2	-	5	2	-	32
Mumbwa	43	12	17	17	4	7	27	26	-	153
Kaoma	25	3	19	28	-	1	18	50	8	132
Chinsali	4	2	11	9	-	-	4	4	-	34
Nchelenge	4	-	1	5	-	2	-	1	-	13
Kawambwa	4	-	3	1	-	1	2	1	-	12
<b>TOTALS</b>	<b>199</b>	<b>35</b>	<b>79</b>	<b>79</b>	<b>15</b>	<b>13</b>	<b>82</b>	<b>85</b>	<b>11</b>	<b>614</b>

## NOTES:

1 Key to Animal Specie Numbers

No. 1 Buffalo

No. 2 Bushbuck

No. 3 Duiker, Common

No. 4 Hartebeest

No. 5 Impala

No. 6 Puku

No. 7 Reedbuck

No. 8 Warthog

No. 9 Oribi

TABLE IV: LICENCES AND PERMITS SOLD BY DISTRICT COUNCILS,  
1983

<u>District Council</u>	<u>District Licences</u>	<u>Bird Licences</u>	<u>Resident Permits</u>
Luangwa .. .. .	24	-	-
Serenje .. .. .	7	-	-
Chipata .. .. .	6	-	7
Gwembe . . . . .	7	-	-
Luwingu .. .. .	3	-	-
Mumbwa . . . . .	64	-	18
Kabwe Rural .. ..	14	2	-
Sesheke .. .. .	21	-	-
Namwala .. .. .	7	-	-
Mwense .. . . .	1	-	-
Isoka .. .. .	1	-	-
Samfya . . . . .	5	-	-
Chama .. .. .	45	-	45
Kaoma .. .. .	47	-	-
Mpika .. .. .	57	-	16
Chinsali .. .. .	22	-	-
Chingola .. .. .	-	.1	-
Ndola .. .. .	-	33	-
Lusaka . . . . .	-	30	-
Chipata .. .. .	6	-	-
Kaputa . . . . .	-	-	6
Luwingu .. .. .	-	-	1
<b>TOTAL</b>	<b>337</b>	<b>66</b>	<b>93</b>

TABLE V: REVENUE FROM SALE OF LICENCES AND PERMITS BY DISTRICT COUNCILS, 1983

<u>District Council</u>	<u>Revenue</u> K
Luangwa .. .. .	930.00
Serenje .. .. .	305.00
Chipata .. .. .	200.00
Kalabo .. .. .	320.00
Gwembe .. .. .	425.00
Lukulu .. .. .	340.00
Luwingu .. .. .	75.00
Mumbwa .. .. .	3,795.00
Kabwe Rural .. .. .	160.00
Sesheke .. .. .	1,210.00
Namwala .. .. .	480.00
Mwense .. .. .	25.00
Mongu .. .. .	330.00
Isoka .. .. .	540.00
Samfya .. .. .	500.00
Chama .. .. .	2,690.00
Kaoma .. .. .	3,345.00
Mpika .. .. .	3,120.00
Chinsali .. .. .	935.00
Kawambwa .. .. .	260.00
Chingola .. .. .	30.00
Senanga .. .. .	575.00
Ndola .. .. .	1,380.00
Lusaka .. .. .	1,710.00
<b>TOTAL</b>	<b>23,680.00</b>

TABLE VI: NUMBER OF GMA PERMITS SOLD, 1983

GMA	1982	1983	GMA	1982	1983
West Zambezi No. 1	5	-	West Petauke No. 17	..	..
Kasonso Busanga No. 2	54	86	Chisomo No. 18	..	..
Chizera No. 3	-	-	Sandwe No. 19	..	..
Musele-Matebo No. 4	-	-	Lupande No. 20	..	..
Lukwakwa No. 5	-	-	Lumimba No. 21	..	..
Chibwika-Ntambu No. 6	-	-	Musalangu No. 22	..	..
Lunga-Luswishi No. 7	39	36	Machiya-Fungulwe No. 23	..	..
Sichifulo No. 8	41	34	Mumyamadzi No. 24	..	..
Mulobezi No. 9	8	38	Kafinda No. 25	..	..
Bilili Springs No. 10	21	27	Bangweulu No. 26	..	..
Kafue Flats No. 11	13	29	Chambeshi No. 27	..	..
Namwala No. 13	44	19	Luwingu No. 28	..	..
Mumbwa No. 14	124	68	Tondwa No. 29	..	..
Juano No. 15	35	14	Kaputa No. 30	..	..
			TOTAL	632	527

TABLE VII: ANIMALS SOLD TO NON-SAFARI HUNTERS IN GMA'S 1983

GMA'S NUMBERS

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	1982	1983
Baboon ..	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	4
Buffalo ..	-	15	-	-	-	5	20	11	5	1	-	18	36	9	-	-	-	-	-	10	35	12	-	23	4	-	-	1	3	-	-	-	229	208
Bushbuck ..	-	10	-	-	-	7	1	1	-	-	-	7	8	3	-	-	-	-	-	4	12	2	-	-	-	-	-	-	2	-	-	-	50	63
Bushpig ..	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	11	5	
Crocodile ..	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	1	
Duiker, Common	-	2	-	-	-	6	1	2	-	-	-	-	-	-	-	-	-	-	-	3	1	-	3	1	-	3	1	-	3	-	-	47	39	
Eland ..	-	5	-	-	-	5	10	5	3	-	-	6	12	2	-	-	-	-	-	5	16	6	10	-	-	-	-	-	-	-	-	88	85	
Hippopotamus	-	5	-	-	-	6	-	-	-	-	3	2	5	5	-	-	-	-	-	20	11	6	10	-	1	-	-	-	-	-	-	37	74	
Hartebeest ..	-	15	-	-	-	15	15	14	3	18	-	-	36	2	-	-	-	-	-	-	-	-	-	2	-	-	-	2	4	-	-	115	126	
Impala ..	-	2	-	-	-	7	9	-	-	-	-	5	11	7	-	-	-	-	-	7	28	8	20	-	-	-	-	-	-	-	-	116	104	
Lyna ..	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	6	10	-	-	-	-	-	-	-	-	-	18	
Grysbok ..	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Kudu ..	-	-	-	-	-	2	5	3	1	-	-	2	6	5	-	-	-	-	-	3	10	4	8	-	-	-	-	-	-	-	-	51	49	
Leopard ..	-	3	-	-	-	1	3	1	-	-	-	2	4	-	-	-	-	-	-	5	2	3	-	-	-	-	-	-	-	-	-	18	24	
Lion ..	-	3	-	-	-	5	4	4	-	-	-	2	7	-	-	-	-	-	-	3	10	3	6	-	-	-	-	-	-	-	-	40	47	
Oribi ..	-	4	-	-	-	1	-	-	1	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	10	
Puku ..	-	7	-	-	-	9	-	-	-	-	-	8	9	2	-	-	-	-	-	7	25	5	19	-	-	-	-	2	-	-	91	94		
Reedbuck ..	-	10	-	-	-	10	9	5	3	-	-	12	24	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	71	76		
Roan ..	-	6	-	-	-	4	6	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	25		
Sable ..	-	10	-	-	-	8	10	2	4	-	-	4	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	54		
Sitatunga ..	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	

TABLE VII - CONTINUED

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	1982	1983	
Warthog	-	15	-	-	-	-	5	14	7	5	-	-	18	36	8	-	-	-	-	6	17	6	-	12	2	-	-	-	-	-	-	-	-	147	150
Wildebeest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	40
Cookson's	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wildebeest	-	-	-	-	-	-	-	10	6	1	2	-	-	-	-	-	-	-	-	5	19	7	-	14	-	-	-	-	-	-	-	-	-	23	74
Blue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waterbuck	-	10	-	-	-	-	-	-	1	-	-	-	6	10	2	-	-	-	-	6	17	2	-	15	-	-	-	-	-	-	-	-	-	59	69
Lechwe, Kafue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5
Zebra	-	8	-	-	-	-	5	4	4	4	2	-	5	17	2	-	-	-	-	5	14	8	-	15	-	-	-	-	-	-	-	-	55	89	
Bird Licences	-	-	-	-	-	-	-	2	4	-	-	-	1	-	-	-	-	-	-	-	-	-	6	-	10	-	-	-	-	-	-	-	-	-	24
TOTAL	144	-	-	-	-	-	-104	126	73	29	13	-128	252	47	-	-	-	-	-	81	222	86	-	184	11	1	-	-	5	16	-	-	-1,3/61	1,562	

NOTES:

- 1. Key to GMA numbers
- No. 2 Kasonso Busanga
- No. 7 Lunga-Luswishi
- No. 8 Sichiifulo
- No. 9 Mulobezi
- No. 10 Bilili Springs
- No. 11 Kafue Flats
- No. 13 Namwala
- No. 14 Mumbwa
- No. 15 Luano
- No. 20 Lupande
- No. 21 Lumimba
- No. 22 Musalangu
- No. 24 Munyamadzi
- No. 25 Kafinda
- No. 26 Bangweulu
- No. 29 Tondwa
- No. 30 Kaputa

Appendix D

LAW ENFORCEMENT, 1983

<u>Command</u>	<u>Arrests</u>	<u>Convictions</u>	<u>Acquittals</u>	<u>Pending</u>	<u>Imprisonment</u>	<u>Withdrawals</u>	<u>Fines (K)</u>
Chilanga	102	-	-	-	-	-	-
Luangwa	164	1583	15	30	35	1	12,260.00
Kafue National Park	100	50	14	38	13	3	7,905.00
Bangweulu	319	203	16	53	40	-	17,332.00
Northern	85	41	5	5	23	-	1,350.00
Central	164	115	14	20	11	14	12,405.00
North-Western	148	113	5	34	1	7	6,770.00
Southern	144	90	1	49	4	-	14,880.00
Western	72	51	20	1	9	-	7,630.00
Ndola Hor Rangers	27	21	-	2	3	1	3,500.00
Kitwe Hon. Rangers	61	-	-	-	-	-	-
Save the Rhino Trust (APU 1)	52	30	-	20	-	2	-
Save the Rhino Trust (APU 2)	112	81	8	9	5	9	-
Save the Rhino Trust (APU 3)	15	10	2	3	-	9	-
GRAND TOTAL 1982	1,296	767	68	345	122	15	69,877.00
GRAND TOTAL 1983	1,565	888	100	264	144	37	84,032.00



Appendix E

TABLE I: HARVEST RETURNS FOR THE YEAR 1983, ZAMBIA SAFARIS

	2a		9		10		11		32		14a		15		Sub-Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Baboon	-	-	-	-	3	3	-	-	-	-	-	-	2	2	5	5
Buffalo	30	30	18	18	25	25	-	-	10	10	30	30	15	15	128	128
Bushbuck	13	13	-	-	4	4	-	-	1	1	12	12	9	9	39	39
Bushpig	1	1	1	1	2	2	-	-	1	1	1	1	2	2	8	8
Duiker, Common	4	4	-	-	1	1	-	-	-	-	9	9	1	1	15	15
Duiker, Blue	2	2	-	-	-	-	-	-	-	-	2	2	-	-	4	4
Duiker, Y.B.	2	2	-	-	-	-	-	-	-	-	1	1	-	-	3	3
Eland	4	4	2	2	3	3	-	-	5	5	2	2	-	-	16	16
Grysbok	1	1	1	1	-	-	-	-	-	-	1	1	3	3	6	6
Hartebeest	20	20	16	16	9	9	-	-	8	8	20	20	9	9	82	82
Hippopotamus	4	4	-	-	-	-	-	-	-	-	4	4	5	5	13	13
Hyena	3	3	-	-	-	-	-	-	-	-	-	-	1	1	4	4
Impala	-	-	6	6	8	8	-	-	1	1	15	15	19	19	49	49
Klipspringer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kudu	4	4	5	5	2	2	-	-	2	2	7	7	11	11	31	31
Lechwe, B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lechwe, K	-	-	-	-	-	-	35	35	-	-	-	-	-	-	35	35
Leopard	10	10	2	2	3	3	-	-	1	1	5	5	3	3	24	24
Lion	8	8	1	1	-	-	-	-	1	1	10	10	3	3	23	23
Oribi	14	14	6	6	5	5	-	-	5	5	7	7	2	2	39	39
Puku	19	19	-	-	-	-	-	-	-	-	20	20	1	1	40	40
Reedbuck	16	16	15	15	12	12	-	-	10	10	14	14	7	7	74	74

TABLE I: CONTINUED

	2a		9		10		11		32		14a		1515		Sub-Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Roan	8	8	3	3	-	-	-	-	-	-	3	3	2	2	16	16
Sable	15	15	13	13	9	9	-	-	6	6	19	19	10	10	72	72
Tsessebe	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warthog	9	9	5	5	11	11	-	-	6	6	15	15	11	11	57	57
Waterbuck	10	10	9	9	3	3	-	-	6	6	18	18	7	7	43	43
Wildebeest, B	15	15	8	8	5	5	-	-	16	16	-	-	-	-	44	44
Wildebeest, C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zebra	10	10	7	7	8	8	-	-	9	9	19	19	11	11	64	64
Sitatunga	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Crocodile	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1
	223	223	118	118	113	113	35	35	88	88	224	224	135	135	936	936

TABLE I: CONTINUED

Species	20b		21a		21b		24b		26		Kaoma Open		Chief Chiyawa		Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Baboon	3	3	3	3	4	4	6	6	-	-	-	-	4	4	25	25
Buffalo	24	24	49	49	16	16	59	39	18	18	14	14	14	14	302	302
Bushbuck	5	5	14	14	5	5	1	1	1	1	6	6	9	9	80	80
Rushpig	-	-	2	2	3	3	-	-	-	-	3	3	3	3	17	17
Duiker, C	-	-	2	2	-	-	-	-	-	-	4	4	-	-	21	21
Duiker, B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4
Duiker, Y.B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3
Eland	-	-	1	1	6	6	3	3	-	-	9	9	-	-	35	35
Grysbok	1	1	-	-	3	3	-	-	-	-	1	1	-	-	11	11
Hartebeest	1	1	8	8	8	8	7	7	8	8	12	12	-	-	126	126
Hippopotamus	5	5	9	9	7	7	6	6	-	-	-	-	3	3	43	43
Hyena	1	1	5	5	6	6	2	2	-	-	-	-	1	1	19	19
Impala	17	17	40	40	25	25	29	29	-	-	9	9	12	12	181	181
Klipspringer	2	2	-	-	2	2	3	3	-	-	-	-	-	-	4	4
Kudu	7	7	2	2	6	6	3	3	-	-	2	2	-	-	51	51
Lechewe, B	-	-	-	-	-	-	-	-	31	31	-	-	-	-	31	31
Leopard	5	5	7	7	13	13	4	4	-	-	-	-	3	3	56	56
Lion	5	5	7	7	6	6	1	1	-	-	-	-	-	-	42	42
Oribi	-	-	2	2	3	3	-	-	-	-	9	9	-	-	60	60
Puku	15	15	39	39	18	18	3	3	-	-	-	-	-	-	146	146
Reedbuck	-	-	-	-	-	-	-	-	11	11	10	10	-	-	95	95
Roan	2	2	2	2	2	2	1	1	-	-	6	6	-	-	29	29
Sable	-	-	-	-	-	-	-	-	1	1	20	20	-	-	93	93

TABLE I: CONTINUED

Species	20b		21a		21b		24b		26		Kaoma Open		Chief Chiyawa		Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Tsessebe	-	-	-	-	-	-	-	-	21	21	-	-	-	-	21	21
Warthog	9	9	16	16	12	12	15	15	-	-	6	6	5	5	120	120
Waterbuck	10	10	20	20	8	8	17	17	-	-	1	1	4	4	103	103
Wildebeest, B	-	-	-	-	-	-	-	-	-	-	5	5	-	-	49	49
Wildebeest, C	3	3	15	15	13	13	14	14	-	-	-	-	-	-	45	45
Zebra	14	14	28	28	18	18	17	17	-	-	3	3	3	3	147	147
Sitatunga	-	-	-	-	-	-	-	-	12	12	-	-	-	-	13	13
Crocodile	6	6	12	12	3	3	7	7	-	-	-	-	4	4	33	33
	135	135	283	283	187	187	206	206	110	110	121	121	62	62	2,040	2,040

NOTES:

- 2a: Kasonso
- 9: Mulobezi
- 10: Bilili
- 11: Kafue Flats
- 32: Nkala
- 14a: Mumbwa West
- 15: Luano
- 20b: Lower Lupande
- 21a: Mwanya
- 21b: Chanjuzi
- 24b: Luawata
- 26: Bangweulu

Column a: Number of animals purchased  
 Column b: Number of animals killed

APPENDIX E

TABLE II: HARVEST RETURNS FOR THE YEAR 1983, HUNTERS LIMITED

Species	26		24c		29		24a		11		2b		Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Baboon	-	-	-	-	-	-	2	2	-	-	5	5	7	7
Buffalo	-	-	9	9	1	1	15	15	-	-	8	8	33	33
Bushbuck	-	-	4	4	2	2	4	4	-	-	13	13	23	23
Bushpig	-	-	1	1	2	2	-	-	-	-	4	4	7	7
Duiker, C	-	-	1	1	2	2	-	-	-	-	6	6	9	9
Duiker, Y. Backed	-	-	-	-	2	-	-	-	-	-	5	1	7	1
Duiker, B	-	-	-	-	1	1	-	-	-	-	-	-	1	1
Roan	-	-	1	1	5	5	-	-	-	-	6	6	12	12
Grysbok	-	-	-	-	-	-	-	-	-	-	14	14	14	14
Hartebeest	-	-	6	6	5	5	10	10	-	-	-	-	11	11
Hyena	-	-	1	1	-	-	15	15	-	-	-	-	13	13
Impala	-	-	7	7	-	-	-	-	-	-	2	-	8	6
Klipspringer	-	-	-	-	-	-	5	5	-	-	5	5	27	24
Kudu	-	-	5	2	-	-	5	5	-	-	3	1	3	1
Eland	-	-	4	4	-	-	-	-	-	-	-	-	10	7
Lechwe, B	7	4	-	-	-	-	-	-	-	-	5	3	14	12
Lechwe, K	-	-	-	-	-	-	7	7	-	-	-	-	7	4
Leopard	-	-	2	2	4	1	5	4	8	8	-	-	8	8
Lion	-	-	4	3	3	2	-	-	-	-	7	4	20	14
Oribi	-	-	-	-	-	-	15	14	-	-	6	2	18	11
Puku	-	-	9	9	5	5	-	-	-	-	6	4	6	4
Reedbuck	-	-	-	-	5	5	-	-	-	-	11	11	40	39

TABLE II: CONTINUED

Species	26		24c		29		24a		11		2b		Total	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Tsessebe ..	1	1	-	-	-	-	-	-	-	-	10	10	15	15
Sitatunga ..	1	1	-	-	5	3	-	-	-	-	-	-	1	1
Warthog ..	-	-	7	7	3	3	11	11	-	-	2	-	8	4
Waterbuck ..	-	-	5	5	2	2	9	9	-	-	8	8	29	29
Sable ..	-	-	-	-	2	2	-	-	-	-	11	11	27	27
Wildebeest, B ..	-	-	-	-	-	-	-	-	-	-	10	9	12	11
Wildebeest, C ..	-	-	8	8	-	-	10	10	-	-	2	1	2	1
Zebra ..	-	-	9	9	2	2	14	14	-	-	-	-	18	18
Crocodile ..	-	-	2	2	-	-	10	9	-	-	12	12	37	37
Jackal ..	-	-	-	-	-	-	-	-	-	-	3	2	15	13
	9	6	88	84	51	43	142	136	8	8	168	144	466	421

NOTES:

- 26: Bangweulu
- 29: Tondwa/Kaputa
- 24a: Nyampala
- 11: Kafue Flats
- 24c: Mutinondo
- 2b: Lunga-Busanga

Column a: Animals purchased  
 Column b: Animals killed.

TABLE III: HARVEST RETURNS FOR THE YEAR 1985, BIG GAME SAFARIS

Species	11		13		14b		20a		22a,b,c,			26		Total	
	a	b	a	b	a	b	a	b	a	b	c	a	b	a	b
Baboon ..	-	-	1	1	-	-	-	-	2	1	-	-	-	3	3
Buffalo ..	-	-	10	10	10	10	9	9	30	30	-	-	-	59	59
Bushbuck ..	-	-	6	6	6	6	5	5	15	15	-	-	-	32	32
Bushpig ..	-	-	1	1	-	-	-	-	4	4	-	-	-	5	4
Duiker, C ..	-	-	3	3	2	2	-	-	3	2	-	-	-	8	7
Grysbok ..	-	-	1	1	-	-	1	1	4	4	-	-	-	6	6
Hartebeest ..	-	-	17	17	17	17	-	-	5	5	-	-	-	39	39
Hippopotamus	-	-	1	1	-	-	3	3	11	11	-	-	-	15	15
Hyena ..	-	-	-	-	-	-	1	1	5	5	-	-	-	6	4
Impala ..	-	-	4	4	-	-	10	10	17	17	-	-	-	31	31
Kudu ..	-	-	3	3	-	3	4	4	12	12	-	-	-	19	19
Eland ..	-	-	1	1	2	2	2	2	2	2	-	-	-	7	7
Lechwe ..	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Lechwe ..	5	5	-	-	-	-	-	-	-	-	-	-	-	5	5
Leopard ..	-	-	6	6	4	4	6	6	14	14	-	-	-	30	30
Lion ..	-	-	2	2	4	4	3	3	12	12	-	-	-	21	21
Oribi ..	-	-	5	5	5	5	-	-	-	-	-	-	-	10	10
Puku ..	-	-	1	1	-	-	12	12	21	21	-	-	-	34	34
Reedbuck ..	-	-	12	12	12	12	-	-	-	-	-	-	-	29	29
Roan ..	-	-	-	-	-	-	2	2	6	6	-	-	-	8	8
Sable ..	-	-	12	12	12	12	-	-	-	-	-	-	-	24	24

TABLE III: CONTINUED

Species	11		13		14b		20a		22a,b,c			26		Total	
	a	b	a	b	a	b	a	b	a	b	c	a	b	a	b
Tsessebe . . . . .	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2
Warthog . . . . .	-	-	10	10	8	8	7	7	14	14	-	-	-	39	39
Waterbuck . . . . .	-	-	2	2	1	1	6	6	13	13	-	-	-	22	22
Wildebeest, C . . . . .	-	-	-	-	-	-	10	10	19	19	-	-	-	29	29
Zebra . . . . .	-	-	10	10	6	6	10	10	-	-	-	-	-	26	26
Crocodile . . . . .	-	-	-	-	-	-	1	1	8	6	-	-	-	9	7
Sitatunga . . . . .	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2
	5	5	108	108	92	92	217	211	11	11	522	516			

NOTES:

- 11: Kafue Flats
- 13: Namwala
- 14b: Mumbwa East Hunting Block
- 20a. Upper Lupande Hunting Block
- 22a, b, c: Luelo, Chikwa, and Fulaza Hunting Blocks
- 26: Bangweulu Swamps

Column a: Number of animals purchased  
 Column b: Number of animals killed



TABLE IV. HARVEST RETURNS FOR THE YEAR 1983, UNITED SAFARIS LIMITED

Species	7		8		Total	
	a	b	a	b	a	b
Baboon	3	3	6	6	9	6
Buffalo	5	3	31	26	36	29
Bushbuck	8	7	10	9	18	16
Bushpig	-	-	4	3	4	3
Duiker, C	7	7	10	10	17	17
Duiker, B	-	-	-	-	-	-
Duiker, Y.B.	4	4	-	-	4	4
Elephant	-	-	-	-	-	-
Eland	-	-	9	8	9	8
Grysbok	3	-	7	7	10	7
Hartebeest	15	10	20	16	35	26
Hippopotamus	3	3	-	-	3	3
Hyena	-	-	3	2	3	3
Impala	12	8	19	18	31	26
Klipspringer	-	-	4	2	4	2
Kudu	4	2	10	10	14	12
Lechwe, B	-	-	-	-	-	-
Lechwe, K	-	-	-	-	-	-
Leopard	8	4	10	7	18	11
Lion	6	4	10	9	16	13
Oribi	6	4	14	13	20	17
Puku	12	12	-	-	12	12
Reedbuck	10	6	16	14	26	20
Rhino	-	-	-	-	-	-
Roan	5	3	10	7	15	10
Sable	12	10	14	13	26	23
Steinbok	-	-	-	-	-	-

TABLE V: ANIMALS KILLED FOR STAFF RATION, 1983

Command	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	Total
Chilanga .. .. .	3	12	1	-	5	-	-	-	3	12	29	16	4	85
Luangwa .. .. .		49						4			49	23		125
Kafue N. Park .. .		57		22	11					8	9	7	3	95
Bangweulu .. .. .	6	29					8			8	9	5	6	71
Northern .. .. .	4	7	2							5		7		25
Southern .. .. .		6		6					27	6	4			6
North-Western .. .														
Central .....														
	15	129	3	28	16		8	4	30	53	96	58	16	401

NOTES:

- (1): Puku
- (2): Buffalo
- (3): Common Duiker
- (4): Wildebeest
- (5): Reedbuck
- (6): Oribi
- (7): Black Lechwe
- (8): Waterbuck
- (9): Kafue Lechwe
- (10): Hartebeest
- (11): Impala
- (12): Warthog
- (13): Hippopotamus

TABLE VI: ANIMALS KILLED ON CONTROL BY DEPARTMENTAL STAFF, 1983

Command	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Total
Chilanga .. .. .	16	5	-	-	-	-	-	-	4	25
Luangwa .. .. .	67	6	9	1	-	-	-	-	-	83
Kafue N. Park .. .	4	-	-	-	-	-	-	-	1	5
Bangweulu .. .. .	9	15	1	1	-	-	-	-	10	36
Northern .. .. .	1	4	-	-	130	-	-	3	-	138
Central .. .. .	8	8	-	-	-	-	-	5	-	21
Western .. .. .	26	19	4	2	17	1	1	2	-	72
North-western .. .	-	-	-	-	-	-	-	-	-	-
Southern .. .. .	8	-	-	-	-	-	-	-	-	8
	139	57	14	4	147	1	1	10	15	388

NOTES:

- (1): Elephant
- (2): Hippopotamus
- (3): Lion
- (4): Leopard
- (5): Crocodile
- (6): Python
- (7): Hyena
- (8): Buffalo
- (9): Bushpig

TABLE VI: CONTINUED

TABLE VI: CONTINUED

Species	7		8		Total	
	a	b	a	b	a	b
Tsessebe .. .. .	-	-	-	-	-	-
Warthog .. .. .	14	11	22	15	36	36
Waterbuck .. .. .	11	8	-	-	11	8
Wildebeest, B .. .. .	-	-	16	11	16	11
Wildebeest, C .. .. .	-	-	-	-	-	-
Zebra .. .. .	12	7	15	14	27	21
Crocodile .. .. .	4	4	-	-	4	4
Sitatunga .. .. .	-	-	-	-	-	-
Jackal .. .. .	-	-	-	-	-	-
TOTAL .. .. .	164	119	260	218	424	337

NOTES:

7: Lunga-Luswishi

8: Sichifulo

Column a: Number of animals purchased

Column b: Number of animals killed

SAFARI COMPANY	NORTH AMERICA	WESTERN EUROPE	LATIN AMERICA	ASIA	AFRICA	UNCLASSIFIED	TOTAL
Zambia Safaris	-	-	-	-	-	512	512
Big Game Safaris	43	7	-	2	17	-	69
Hunters Limited	17	14	-	2	7	-	40
United Safaris	12	16	-	-	7	-	35
	52	37	-	4	31	512	656

TABLE VIII: FORFEITED ITEMS, 1983

<u>COMMAND</u>	<u>FIREARMS</u>	<u>BICYCLES</u>	<u>FISHING NETS</u>	<u>VEHICLES</u>	<u>CANOEES</u>
Chilanga .. .. .	-	-	-	-	-
Luangwa .. .. .	9	-	-	4	-
Kafue National Park ..	-	-	-	-	1
Bangweulu . . . . .	30 (4 ) Machine guns	2	-	-	-
Northern .. .. .	3	-	21	-	-
Central .. .. .	3	-	-	2	2
Western .. .. .	-	-	-	-	-
North-Western . . . . .	12	20	-	-	-
Southern .. .. .	-	-	-	-	-
Police Station .. .. .	-	-	-	-	-
Kitwe/Hon./Rangers ..	-	-	-	-	-
Ndola/Hon./Rangers ..	-	-	-	-	-
SRT (APU 1) .. .. .	15 (5)	-	-	-	-
SRT (APU 2) .. .. .	15	-	-	-	-
SRT (APU 5) .. .. .	-	-	-	-	-
<b>TOTALS</b>	<b>155</b>	<b>22</b>	<b>21</b>	<b>7</b>	<b>4</b>









JICA

