

**Nutritional status and growth of Impala (*Aepyceros melampus*)
in the Limpopo Province**

by

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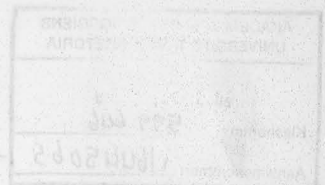
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**Department of Animal and Wildlife Sciences
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DECLARATION

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ABSTRACT

**Nutritional status and growth of Impala (*Aepyceros Melampus*) in the
Limpopo Province**

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Man has used game meat obtained from the cropping of wild populations for many years. The impala (*Aepyceros melampus*) is numerically the most important single species (Fairall, 1983) available for game farming in the Lowveld and the bushveld areas of the Limpopo Province, Mpumalanga and KwaZulu - Natal. Wildlife nutrition has an important effect on the growth and successful production of offspring in animal populations. Knowledge of wildlife nutrition is, therefore, an important facet of game ranch management. A number of studies were conducted over the past two decades to determine the forage intake and nutritional status of herbivores.

The aim of this research project was to study the nutritional status and growth of impala in three areas in the Limpopo Province. The following areas were investigated namely Gravelotte, Bandolierskop and Louis Trichardt. The study was conducted between January 2000 and December 2002.

ABSTRACT

Samples of the vegetation, soil, liver and blood from impalas as well as water samples were collected from each of the farms. The blood and liver samples were taken from culled impala every two months. Linear measurements were taken on all the culled animals. Mineral and pathological analyses were done on the liver samples. The vegetation and soil samples were collected from each farm during the wet season and mineral analyses were done on the samples. The blood samples were used for DNA analysis to determine genetic variation within impala populations at each of the farms.

The graze present at the respective game farms showed no difference in nutrient quality. The phosphorus (P) concentration of browse was significantly lower at Ndzalama and Selati (Lukhele & Van Ryssen, 2000.). Soil samples collected at Ndzalama showed lower P levels than Selati and Mara. This lower concentration of P in the soil as well as the browse could play a role in the reduced growth of the impala at the game farms in the Gravelotte area. Multivariate analysis on the liver samples showed significant differences between the animals at Mara and those on the two Lowveld farms. The copper (Cu) concentrations were significantly lower at Ndzalama than Mara ($P=0.03$), while the selenium (Se) concentrations at both Ndzalama and Selati were significantly lower than those concentrations at Mara ($P=0.001$). The liver concentration of Se suggests a Se deficiency at the Lowveld farms.

ABSTRACT

The faecal P concentrations at Mara, Selati and Ndzalama were 2.22, 1.39 and 2.12 g P/kg organic matter (OM) respectively. The faecal nitrogen (N) for Mara, Selati and Ndzalama were 18.53, 18.19 and 17.97 g N/kg OM respectively.

Pathology results from the Onderstepoort pathology laboratory showed severe infection with *Paracooperioides peleae* (Nematoda: *Trichostrongylidae*), bankrupt worm, which is a fairly common parasite in antelope. Liver fluke, *Cooperia hepatica*, was also present in moderate to severe infestations in the liver samples from Ndzalama. Samples from Mara showed little or no parasitic infection. It was suggested that due to the severe parasitic infection, the live mass and empty body mass of the impala were lower at Ndzalama and Selati compared with those samples at Mara. Linear measurements did not differ between the areas.

Initial DNA analyses suggest very little genetic variation among impala on all three farms sampled and, therefore, it is advisable to introduce impala from Mara or another farm in the Louis Trichardt area to increase the genetic variation at Ndzalama and Selati.

Supplementation in the form of a mineral lick can be provided to the impala. An effort should be made to move the cattle at the BVB Ranch at Selati, which roam freely with the impala, to alleviate the severe parasitic infection present. This aspect requires further research.

TABLE OF CONTENTS

TABLE OF CONTENTS	
CHAPTER 1: INTRODUCTION AND MOTIVATION	1
CHAPTER 2: LITERATURE OVERVIEW	3
2.1 Nutritional Status.....	3
2.2 Growth Physiology	12
2.3 Parasitology	13
2.4 Motivation.....	15
CHAPTER 3: MATERIALS AND METHODS.....	16
3.1 Description of study areas	16
3.1.1 Savanna	17
3.1.2 Mixed Lowveld Bushveld	17
3.1.3 Mopane Bushveld.....	18
3.2 Study Areas.....	19
3.2.1 Ndzalama	19
3.2.1.1 Climate	19
3.2.1.2 Animal species present	24
3.2.1.3 Vegetation	25
3.2.2 Selati Game Reserve.....	25
3.2.2.1 Climate.....	26
3.2.2.2 Animal species present	26
3.2.2.3 Vegetation	30

TABLE OF CONTENTS

3.2.3 Mara Research Station	31
3.2.3.1 Climate	31
3.2.3.2 Animal species present	31
3.2.3.3 Vegetation	35
3.2.4 Messina Game Reserve	35
3.2.4.1 Climate.....	35
3.2.4.2 Animal species present	35
3.2.4.3 Vegetation	39
3.3 Experimental animals.....	39
3.4 Blood and Liver Samples.....	40
3.5 Faecal Samples.....	41
3.6 Vegetation, soil and water Samples.....	42
3.7 Laboratory Analyses	43
3.7.1 Dry Matter Determination	43
3.7.2 Ash Determination.....	44
3.7.3 Determination of Crude Protein.....	45
3.7.4 Determination of Minerals.....	45
3.7.5 Determination of Neutral Detergent fibre.....	46
3.7.6 Determination of Acid Detergent fibre	47
3.8 Linear measurements	48
3.9 Genetic Analysis.....	49

TABLE OF CONTENT

3.10 Histopathological analysis	51
3.11 Statistical analysis	52
CHAPTER 4: RESULTS AND DISCUSSION	53
4.1 Linear measurements	53
4.2 Liver Analysis	59
4.3 Faecal Analysis.....	63
4.4 Genetic Analysis.....	66
4.5 Vegetation	66
4.5.1 Grazing	66
4.5.2 Browsing.....	69
4.6 Soil.....	73
4.6.1 Selati Game Reserve	73
4.6.2 Ndzalama Game Reserve	74
4.6.3 Mara Research Station.....	75
4.7 Water Analysis.....	77
CHAPTER 5: CONCLUSIONS.....	79
REFERENCES.....	81
APPENDICES	85

LIST OF FIGURES

LIST OF FIGURES

Figure 3.1: Ndzalama average monthly rainfall.....	20
Figure 3.2: Thiergarten average monthly rainfall.....	21
Figure 3.3: Ndzalama average monthly minimum temperature.....	22
Figure 3.4: Ndzalama average monthly maximum temperature	23
Figure 3.5: Selati average monthly rainfall.....	27
Figure 3.6: Selati average monthly minimum temperature	28
Figure 3.7: Selati average monthly maximum temperature	29
Figure 3.8: Mara average monthly rainfall.....	32
Figure 3.9: Mara average monthly minimum temperature	33
Figure 3.10: Mara average monthly maximum temperature	34
Figure 3.11: Messina average monthly rainfall	36
Figure 3.12: Messina average monthly minimum temperature	37
Figure 3.13: Messina average monthly maximum temperature.....	38
Figure 3.14: Schematic representation of metatarsus and metacarpus measurements	50
Figure 3.15: Linear measurements for female impala sampled at Mara, Selati and Ndzalama	55
Figure 3.16: Linear measurements for male impala sampled at Mara, Selati and Ndzalama	56
Figure 3.17: Mass of female impala sampled at Mara, Selati and Ndzalama.....	57
Figure 3.18: Mass of male impala sampled at Mara, Selati and Ndzalama	58

LIST OF TABLES

LIST OF TABLES

Table 4.1: Descriptive analyses of linear measurements and mass of samples collected at Mara, Selati and Ndzalama.....	54
Table 4.2: Importance of minerals for growth and health	60
Table 4.3: Multivariate analysis of variance for liver samples of impala collected at Mara, Selati and Ndzalama	61
Table 4.4: Mean chemical analyses of faecal samples (\pm standard deviation) collected during the wet season at Mara, Ndzalama and Selati on a DM Basis.....	64
Table 4.5: Mean chemical analyses of grass species (\pm standard deviation) collected during the wet season at Mara, Ndzalama and Selati on a DM Basis	70
Table 4.6: Mean chemical analyses of foliage species (\pm standard deviation) collected during the wet season at Mara, Ndzalama and Selati on a DM Basis	71
Table 4.7: Mean chemical analyses of soil species (\pm standard deviation) collected during the wet season at Mara, Ndzalama and Selati on a DM Basis	76

LIST OF APPENDICES

LIST OF APPENDICES

Appendix 1: The Impala <i>Aepyceros melampus</i> (Lichtenstein, 1812).....	85
3.2.1 Description	85
3.2.2 Distribution	86
3.2.3 Habitat	87
3.2.4 Habits	87
3.2.4.1 Breeding herds	87
3.2.4.2 Bachelor herds	88
3.2.4.3 Nursery herds	88
3.2.5 Reproduction.....	89
3.2.6 Diet	90
Appendix 2: Map of Ndzalama Game Reserve.....	91
Appendix 3: Map of Selati Game Reserve	92
Appendix 4: Map of Mara Research Centre.....	93