



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES



DEPARTMENT OF FOREST RESOURCES AND WILDLIFE MANAGEMENT



The Population ecology of Impala *Aepyceros melampus* on a Game Ranch in Eastern Botswana

Presented by: LUCIAN PAIDASHE RUBAYA

Student #: N011 4220N

Supervisor: DR A. SEBATA

Date of Submission: 29 May 2015

LIBRARY NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY P.O. BOX 346 BULAWAYO ZIMBABWE		
DATE	ACCESSION	CL
11/05/16 15/846	SC 15/846	

Submitted in Partial Fulfilment of the Requirements for the Degree of Bachelor of Applied Science Honours in Forest Resources and Wildlife Management



NUST Library

ABSTRACT

Game ranching, which involves the management of wildlife on private land towards specific economic objectives, has largely contributed to conservation of wildlife, and impala as the most widespread and abundant species of wild ungulate in Africa with its high rate of reproduction is a preferred species for venison production on wildlife ranches. Hunting operations are usually carried out according to quotas based on game counts and the records of cropping amounts kept, but there is a need to analyze these records over time for trends in population responses to human offtake within the fluctuating climatic setting. This study investigated the effect of rainfall and cropping on impala population trends on Lasegolame Game Ranch in Botswana. Population estimates obtain from game counts between 2004 and 2013 were regressed against annual rainfall and cropping levels, to test for 1) the effect of rainfall, 2) the overall effect of cropping, 3) the effect of sex preferential cropping on the population, and 4) the effect of cropping on sex ratios. The results showed that rainfall and impala population were negatively correlated, with higher populations observed in the low to intermediate rainfall years and suppressed populations observed in high rainfall years. Cropping was shown to have a negative effect on impala population overall, with the cropping of males having an insignificant effect on the subsequent populations despite their preferred proportions but showing a constant downward trend, and cropping of females having a significant negative effect on subsequent populations with the fluctuations in their population being responsible for fluctuations in the total population. The population trends on game ranches are therefore a combination of rainfall and cropping, with rainfall probably acting through juvenile mortality due to disease and on adult females through density dependent factors. It is therefore recommended for quotas to be adjusted in consideration of sex ratios as well as previous wet season rainfall amounts to ensure sustainability.