THE BEHAVIOURAL ECOLOGY OF REINTRODUCED LIONS AND CHEETAHS IN THE PHINDA RESOURCE RESERVE, KWAZULU-NATAL, SOUTH AFRICA.

by

Luke T.B. Hunter

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To my parents, Tim and Lois for their unfailing encouragement and love, and to my grandmother Dorothy Arthur, whose gift of a toy lion when I was three set me on an inevitable path to Africa.

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Supervisor: Prof. J. D. Skinner
Mammal Research Institute
University of Pretoria
Pretoria.

ABSTRACT

An effort to re-establish lions and cheetahs into northern KwaZulu-Natal, South Africa, was studied for 40 months to collect information on the behaviour and ecology of reintroduced felids and to assess the success of such restoration attempts. 'Soft-release' methods including a period of captivity prior to release were employed for the release and probably increased project success. All reintroduced lions and cheetahs remained at the release site. Animals generally did not display 'homing' behaviour, though three groups of lions and cheetahs showed some evidence of homing for two months following release. Unfamiliar, unrelated animals socialised during the pre-release captivity period often remained together following release for long periods.

Reintroduced lions and cheetahs at Phinda established home ranges with similar characteristics and patterns to that observed in other ecosystems. All individuals which survived the early post-release period remained at Phinda and settled in ranges within the reserve which were largely stable for the duration of the study. Lions (of both sexes) and male cheetahs were territorial whereas female cheetahs showed no signs of establishing territories and used (in some cases) the entire reserve as their home range. The long-term nature of some individual's ranges suggests that lions and cheetahs are able to establish a home-range following translocation, and therefore, that reintroduction may be a viable method for re-establishing resident felids in areas of their former distribution.

The greatest cause of mortality to reintroduced felids was as a result of human activity, particularly poaching. Inter and intra-specific conflict with other large carnivores was also a

significant factor. Despite mortalities, population characteristics suggested lions and cheetahs are rapid and effective in re-colonising vacant areas. Most lions and cheetahs survived the critical early post-release stage and a minimum of 60% of females of both species survived to reproduce. At least 43 lion cubs and 48 cheetah cubs were born during the study. High rates of cub and sub-adult survival contributed to rapid population growth. Population modelling suggested that low mortality rates for juveniles and sub-adults may be critical for re-establishment.

Re-introduced lions and cheetahs foraged successfully and their post-release survival was not affected by characteristics of food resources. Wildebeest, zebras, nyalas and warthogs made up 86% of biomass killed by lions. Wildebeest were clearly the most important species to lions which were killed at three times their availability. Predation pressure on wildebeest resulted in a population decline during the study period, probably due to the lack of predation-free refuges inherent in small, enclosed reserves.

Cheetahs preyed upon reedbucks at eight times their availability at Phinda and reedbucks underwent a population decline. Nyalas and impalas were the other two most important prey species to cheetahs, the former constituting almost 50% of biomass killed by cheetahs. This is the first study of cheetah feeding ecology in woodland habitat and the first to demonstrate that cheetahs can specialise on an ungulate species almost twice as heavy as 'typical' prey species from other ecosystems. Female cheetahs showed a pattern of hunting larger prey as litters grew, particularly where a high percentage of cubs survived.

Aside from evidence that predation affected some ungulate populations, the study demonstrated significant behavioural changes by herbivores in response to felid reintroduction. Wildebeest and impalas underwent a 200% increase in vigilance behaviour in the first five months following the release of lions and cheetahs. Wildebeest and impalas in exclusion areas free of reintroduced felids did not show any change in vigilance.

The study suggested that, contrary to most other efforts at large African carnivore translocation, reintroduction may be a viable method for re-population, at least in the short-term. Methodological and management issues which may be important for the longer term success of these types of projects are discussed.

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