

Social and Reproductive Behaviours in the Cheetah (*Acinonyx jubatus*) in A Captive Population

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A THESIS SUBMITTED FOR THE DEGREE DOCTOR OF PHILOSOPHY

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February 2013

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Thesis Summary

The aims of this study are to examine the social and reproductive behaviours of the cheetah in captivity, with an emphasis on whether husbandry practices may enforce unnatural social situations and interfering with reproduction. This study also investigated behavioural cues in male and female cheetahs that may assist with breeding programs in the captive environment.

Chapter 1 provides background information on the cheetah and examines the breeding problems for cheetahs in captivity. It covers the history of the cheetah in the captive environment and summarises research on cheetahs both in the wild and captivity. The general methods used for data collection are described in chapter 2 as well the study site, animals, identification methods and statistical analyses.

The research undertaken is presented across four chapters (Chapters 3-6). Each chapter is written in stand-alone format, with its own relevant introduction, methods, results, discussion and references. Chapter 3 provides an analysis of the captive cheetah's behavioural repertoire and discusses the observational effort needed to estimate the size of their entire behavioural suite. I describe the observed behaviours in an ethogram, with accompanying diagrams and figures to illustrate these behaviours, where possible.

In chapter 4 I investigate female cheetahs' behaviours in captivity. I provide background information on female cheetah's behaviour, including their reproductive behaviours in captivity. I then examine the behavioural repertoires of the female cheetah and discuss viable cues for wildlife managers to determine receptivity. Principal Components Analysis is used to explore the behavioural data and two key behaviours, Tail Rolling and Tail Swishing, are revealed as major elements in female behaviour. Strong patterns of cyclicity were observed for these behaviours and correlation analyses were performed to determine if these behaviours might provide a cue to oestrus. Analysis of outside factors such as husbandry effects and the luminescence of the moon were performed to eliminate other factors that could be driving cyclic Tail Rolling.

Chapter 5 examines the behaviours of male cheetahs in captivity. I begin by reviewing male cheetah behaviour, described from extensive research on wild populations, and discuss how this research relates to the captive cheetah. I then examine behavioural repertoires, as well as the development and maintenance of coalitions, in captive male cheetah populations. Again, Principal Components Analysis is used to

analyse behavioural data. Males showed considerably more behavioural complexity than females. Males formed coalitions in captivity, and behaviours such as Fighting, Grooming and Lying helped to define roles within these groups. Husbandry events caused distinct changes in male behaviour and appeared to influence coalition formation. Events relating to female cheetahs, such as mating and births, also appeared to impact on male behaviour.

In chapter six, I investigate the responses of male cheetahs to females when males were allowed to investigate female olfactory signals. I examine the variation in behavioural patterns as well as the stable and changing relationships between males throughout the study. I also explore how coalition membership may influence a male's response to female cues. Six key behaviours were identified as important measures of a male's response to female signals. Large variations in the frequency of these behaviours were noted between males. Males in stable coalitions displayed interest in investigating females, with cyclic changes in their behaviour. Correlations were found between several male behaviours and female Tail Rolling. Mating between individuals was recorded at the highest peaks of these behavioural fluctuations. One male which was largely excluded from the male coalition failed to show interest in investigating females and displayed no signs of cyclicality in his behaviour. Changes in coalition status appeared to be linked to changes in interest in investigating females.

Finally, in chapter 7, I review the major findings from earlier chapters and address the issues of poor breeding success for the captive cheetah. I argue that longitudinal studies have not been well utilised, particularly in captivity, due to the time and effort they require. Due to the longitudinal nature of this study, I was able to observe trends in behaviour that otherwise would not be evident. My results suggest that oestrus is a major factor explaining variations in female behaviour and that Tail Rolling and Tail Swishing are good indicators of oestrus. In contrast, aggression explains the majority of variation in male behaviour, which relates to the formation of male coalitions. My research suggests that these aspects of female and male behaviour may be important for increasing breeding success in captive cheetah populations.

Declaration

I declare that this thesis does not contain any material previously submitted for any diploma or degree in any university without acknowledgement, and that to the best of my knowledge it does not contain any material previously published by any other person except where due reference is given.

Rebecca Ruth Bradford-Wright

February, 2013.

Acknowledgements

Firstly I wish to thank the late Frank Dalziel, who guided me down the path to the investigation of animal behaviour. His passion for all things was as inspiring as his love of rabbits was infectious!

I would like to thank the Royal Zoological Society of South Australia and in particular all of the staff at Monarto Zoological Park. I was given an amazing opportunity to work with an enigmatic, enthralling and sometimes hilarious animal and have many memories from the experience that I will cherish for my lifetime.

To my supervisor Mike Schwarz, I would not have this thesis completed without you. Thank you for your advice, you helped turn years of data and so many ideas into something I am very proud of.

Without the help and support of Flinders University, this research and thesis would never have been completed. Thank you to all of the staff and colleagues over the years for your guidance and assistance.

Thank you to my family and friends, but specifically my mum for reading endless drafts and all of her support, my dad for his enthusiasm and for watching endless hours of cheetah video, and my sister, for her support and suggestions and for always knowing when I needed retail therapy and a cuppa! Your belief in me has been the driving force getting me through these last years.

Finally to Jason, thank you for your love, support and patience. I would not have made it through the seemingly endless pile of data or the copious statistics if I didn't have you there to make me laugh! Thank you!