

FERAL HORSES AND DONKEYS IN THE WET/DRY TROPICS:
THEIR SYMPATRIC ABUNDANCE, DISTRIBUTION AND
HABITAT USE IN GREGORY NATIONAL PARK, NT.

Sally Black 2000

A thesis submitted in fulfilment of a Master of Resource Science Degree. Department
of Ecosystem Management, University of New England.

I certify that the substance of this thesis is my original work, and has not already been and is not being submitted for any other degree or diploma. I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in the thesis.

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Sally Black

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SUMMARY

This study examines spatial and temporal aspects of the resource ecology and the ecological separation of feral horses and feral donkeys in an area of range overlap in the wet-dry tropics. An improved understanding of the adaptive strategy of the Equidae has potential applications for the management of feral populations, and the conservation of threatened native equids in their indigenous ranges.

The 3195 km² study area was located in Gregory National Park in the Victoria River District of the Northern Territory, Australia. The density, distribution and habitat use of the two species was systematically sampled by aerial survey in each of four seasons: May (cool, early dry season), August (cool, mid dry season), November (hot, humid, late dry/pre-wet season) and February (wet season).

Over the four surveys, 510 horse groups and 100 donkey groups were counted within strip transects. Feral horses were more abundant and more sightable than donkeys. The surveys were designed to yield indices of relative population abundance, and the derived ratio of horse to donkey abundance averaged 4 times to 1. However, this ratio is overestimated due to the interspecific differences in sightability within the study area.

Both horses and donkeys were selective for home range within a geographical range (second-order selection), and for use of land unit habitat components within the home range (third-order selection). Distribution patterns, and land unit use and preferences varied between seasons for each species, and varied between species within seasons.

Both species avoided mesa tops and plateau tops. While donkeys occupied both upland and lowland land systems, use was largely restricted to areas where these systems adjoined, that is, mesa and plateau slopes, valleys and adjacent alluvial plains. By contrast, most horses were recorded on lowland plains and hills, and were well dispersed throughout these systems. Patterns of distribution and habitat use in combination with operational factors (associated with maintenance of aircraft speed and height-above-ground in areas of topographic relief) provided an explanation for interspecific difference in sightability during aerial survey.

Degree of selectivity for land unit habitat components appeared to be higher for donkeys than for horses, and while relatively consistent between seasons for horses, increased for donkeys after the onset of the dry season. Niche overlap was high in the wet season when resources were abundant, and decreased after the onset of the dry season.

Donkeys appeared to select their home ranges on the basis of access to a combination of particular land unit types in proximity to particular permanent water sources. At the junction of upland and lowland systems, donkeys could find the maximum diversity of landforms and vegetation available within relatively small areas. Throughout the year, associated food resources should also be diverse, that is, plants of various types and/or in various stages of productivity. On the assumption that donkeys in the study area (or at least the breeding population) were territorial, and occupied somewhat smaller home ranges than horses, this would be adaptive.

Horses were interpreted as more mobile, and able to satisfy their resource requirements by searching for favourable feeding patches over larger areas, presumably exploiting plant production associated with isolated rainfall events and fires, as well as differences in productivity between land units. While the results suggested horses were less selective for land unit habitat components than donkeys, horses were not necessarily less selective for other unmeasured habitat components or characteristics.

In Gregory National Park, donkeys appear to have utilised their relatively restricted home ranges more intensively than horses, while horses utilised larger home ranges, and the study area, more extensively. While past patterns of predation by humans may have influenced the relative abundance of the study species, it is argued that the primary function of habitat selectivity during the study period was to fulfil their respective resource requirements. In this area of range overlap, each species used a different strategy to do so.

CONTENTS	PAGE
ACKNOWLEDGMENTS	iii
SUMMARY	iv
CHAPTER 1: INTRODUCTION	1
<u>1.1 Introduction</u>	
<u>1.2 Aims</u>	9
CHAPTER 2: STUDY AREA, STUDY ANIMALS AND METHODS	
<u>2.1 The study area and animals</u>	10
2.1.1 Location	10
2.1.2 Climate and seasons	12
2.1.3 Geomorphology and land systems	17
2.1.4 Land units and vegetation	20
2.1.5 The study species	30
2.1.5.1 Local populations	30
2.1.5.2 The ecology of the study species	31
2.1.6 Period of study	34
<u>2.2 Data collection</u>	34
CHAPTER 3: DENSITY AND DISTRIBUTION	
<u>3.1 Introduction</u>	38
<u>3.2 Methods</u>	40
3.2.1 Correcting for perception bias in the aerial survey	40
3.2.2 Population density estimates	42
<u>3.3 Results</u>	43
3.3.1 General observations	43
3.3.2 Double count and perception correction factors	44
3.3.3 Group size	51
3.3.4 Population estimates	53
3.3.5 Groups with foals	55

<u>3.4 Discussion</u>	56
3.4.1 Population estimates and precision	56
3.4.2 Visibility Bias and accuracy of population estimates	58
3.4.2.1 The Petersen estimate mark-recapture model and double-count technique	58
3.4.2.2 Factors affecting visibility	60
3.4.2.3 Perception versus availability	63
3.4.2.4 Repeatability (constancy of bias) of surveys between seasons	65
3.4.3 Group size	67
3.4.4 Population parameters	69
CHAPTER 4: DISTRIBUTION AND HABITAT USE	72
<u>4.1 Introduction</u>	72
<u>4.2 Methods</u>	76
4.2.1 Census of habitat type	76
4.2.2 Analysis	76
<u>4.3 Results</u>	79
4.3.1 Spatial distribution, land system use and preference for land systems	79
4.3.2 Land system use	79
4.3.3 Land system preference	85
4.3.4 Land system selectivity and niche overlap	86
4.3.5 Land unit habitat use	86
4.3.6 Land unit habitat preference	86
4.3.6.1 Horses	92
4.3.6.2 Donkeys	94
4.3.7 Comparisons of land unit habitat use and preference between species	96
4.3.8 Land unit habitat selectivity and niche overlap	97
<u>4.4 Discussion</u>	97
4.4.1 Population distributions and habitat use	97
4.4.1.1 Resource requirements	97
4.4.1.2 Predation by humans	101
4.4.2 Patterns of dispersion by land unit	102
4.4.3 Habitat selectivity and niche overlap	109
4.4.4 Scale of habitat selection	110
4.4.5 Assumptions/limitations of the methodology	111

CHAPTER 5: GENERAL DISCUSSION	114
5.1 General discussion and conclusions	114
5.2 Discussion of methods	116
5.3 Management implications	117
5.3.1 Monitoring	117
5.3.2 Control	117
5.4 Evolutionary considerations	118
5.5 Further Research	120
BIBLIOGRAPHY	123
APPENDICES	135

LIST OF FIGURES:

Figure 2.1: Map of location of feral horse and donkey study area.	11
Figure 2.2: Map of land systems within study area (From Stewart et al. 1970).	19
Figure 2.3: Map of land units within study area. (from Brocklehurst et al. in press).	21
Figure 3.1: Size-class distribution of feral horse groups (n = 510) sighted in strip transects over four aerial surveys, Gregory National Park, May 1993 – February 1994.	51
Figure 3.2: Size-class distribution of feral donkey groups (n = 100) sighted in strip transects over four aerial surveys, Gregory National Park, May 1993 – February 1994.	51
Figure 3.3: Size-class distribution of feral horse groups (n=510) sighted in strip transects in each of four aerial surveys, Gregory National Park, May 1993-February 1994.	52
Figure 3.4: Size-class distribution of feral donkey groups (n=100) sighted in strip transects in each of four aerial surveys, Gregory National Park, May 1993-February 1994.	52
Figure 4.1: Distribution of feral horse groups and feral donkey groups sighted in strip transects during aerial survey, Gregory National Park, May 1993.	81
Figure 4.2: Distribution of feral horse groups and feral donkey groups sighted in strip transects during aerial survey, Gregory National Park, August 1993.	82
Figure 4.3: Distribution of feral horse groups and feral donkey groups sighted in strip transects during aerial survey, Gregory National Park, November 1993.	83

- Figure 4.4: Distribution of feral horse groups and feral donkey groups sighted in strip transects during aerial survey, Gregory National Park, February 1994. 84
- Figure 4.5: Proportion of land unit habitat usage by feral horse groups in each of four aerial surveys, Gregory National Park, May 1993-February 1994. 88
- Figure 4.6: Proportion of land unit habitat usage by feral donkeys in each of four aerial surveys, Gregory National Park, May 1993-February 1994. 88
- Figure 4.7: Land unit sample areas as proportion of total area sampled in strip transects in each of four aerial surveys, Gregory National Park, May 1993 – February 1994. 89
- Figure 4.8: Land unit habitat preference indices for feral horse groups sighted in each of four aerial surveys, Gregory National Park, May 1993-February 1994. 93
- Figure 4.9: Land unit habitat preference indices for donkeys (individuals) sighted in each of four aerial surveys, Gregory National Park, May 1993-February 1994. 95
- Figure 4.10: Variation in habitat selectivity (S) for land units by feral horse groups (n=510) and feral donkeys individuals (n=347) sighted in each of four seasonal aerial surveys, Gregory National Park, May 1993-February 1994. 98
- Figure 4.11: Niche overlap (land units) for feral horses and donkeys sighted in each of four aerial surveys, Gregory National Park, May 1993-February 1994. 98

LIST OF TABLES:

Table 2.1: Means and medians for precipitation at Bullita Outstation in the period from 1916 to 1979 using all available data (Bureau of Meteorology).	13
Table 2.2: Mean relative humidity (%) at Timber Creek (Bureau of Meteorology).	15
Table 2.3: Climatic data for Victoria River Downs and Timber Creek (Reproduced from Bowman et. al. 1988).	16
Table 2.4: Descriptions of the land units of Gregory National Park, as defined and mapped by Brocklehurst et al. (in press).	22
Table 3.1: Counts of feral horse groups and feral donkey groups sighted by each of three observers, and perception correction factors derived from starboard double-counts (Petersen estimator) in each of four aerial surveys of feral horses and feral donkeys in Gregory National Park, 1993-1994.	45
Table 3.2: Probabilities of detection (P) of feral horse groups and feral donkey groups, by starboard-front (P_f) and starboard-rear (P_r) observers, in each of four aerial surveys in Gregory National Park, 1993-1994.	47
Table 3.3: Proportion (%) of groups, and individuals within jointly sighted groups, of feral horses and donkeys detected by each starboard-team observer (i.e. detection rates) in each of four aerial surveys in Gregory National Park, 1993-1994.	47
Table 3.4: Comparison of mean group size of horse groups and donkey groups detected by both starboard observers, with mean group size of groups detected by only one starboard observer.	48
Table 3.5: Starboard observer detection probabilities for horse groups and donkey groups sighted in each of several land units during four aerial surveys in Gregory National Park, May 1993 – February 1994.	49

Table 3.6: Proportion (%) of singletons (single animals) among feral horse and feral donkey groups sighted in each of four aerial surveys in Gregory National Park, 1993-1994.	54
Table 3.7: Estimates of density and abundance of feral horses and feral donkeys from each of four aerial surveys in Gregory National Park, 1993-1994. Estimates are presented +/- the standard error of the estimate.	54
Table 3.8: Counts of foals in feral horse and feral donkey groups sighted in each of four aerial surveys in Gregory National Park, 1993-1994.	56
Table 4.1: Area of each land unit habitat type sampled in 400m-wide strip transects in each of four aerial surveys of feral horses and feral donkeys in Gregory National Park, May 1993-February 1994.	77
Table 4.2: Habitat use (U) and preference (H) for land systems, by feral horse groups and feral donkey individuals, in each of four aerial surveys, Gregory National Park, May 1993-February 1994.	80
Table 4.3: Variation in habitat selectivity (S) for land systems by feral horse groups (n = 510) and feral donkeys individuals (n = 347) sighted in each of four seasonal aerial surveys, Gregory National Park, May 1993 - February 1994.	87
Table 4.4: Niche overlap in land systems for feral horses and donkeys sighted in each of four aerial surveys, Gregory National Park, May 1993 - February 1994.	87
Table 4.5: Habitat use (U) and preference (H) for land units by feral horse groups in each of four aerial surveys, Gregory National Park, May 1993-February 1994.	90
Table 4.6: Table 4.5: Habitat use (U) and preference (H) for land units by feral donkeys in each of four aerial surveys, Gregory National Park, May 1993-February 1994.	91

LIST OF APPENDICES:

APPENDIX A: Coordinates of corners of rectangular study area.	135
APPENDIX B: Hybridisation between feral horses and feral donkeys in the wet-dry tropics of northern Australia (draft paper)	136
APPENDIX C: Sample of raw data set and coordinate calculations for sightings.	158
APPENDIX D: Population estimates derived from aerial survey of feral horses and feral donkeys in the Northern Territory 1984-1998.	161