

DINGO (*Canis familiaris dingo* Meyer 1793) PREDATION
AND ITS EFFECT ON THE MAJOR PREY SPECIES,
THE SWAMP WALLABY (*Wallabia bicolor* Desmarest 1804)
IN NORTH-EASTERN NEW SOUTH WALES.

BY

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degree of Master of
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PREFACE

I certify that the substance of this thesis has not already been submitted for any degree and is not being currently submitted for any other degree.

I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

A solid black rectangular box used to redact the author's signature.

JOHN ROBERTSHAW.

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Without the licences granted by the National Parks and Wildlife Service and the Forestry Commission of New South Wales the effect of predation on the reproductive biology of the swamp wallaby would not have been as well documented. Also the permission of various landholders, Mrs V. Morgan, Joe and Bruce Davies and Ron Diamond, to conduct this study on their land and leases was greatly appreciated.

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SUMMARY

The food habits of the dingo were compared between two sites which differed in the relative number of macropods per dingo. The effect of dingo predation on the single major prey species, *Wallabia bicolor*, was studied in both sites.

An overview of the diet of the dingo was obtained by the examination of the occurrence of prey species in 1493 dingo scats. The results of this examination were analysed annually and seasonally for each site. The dingo consumed a wide variety of prey items of which 96% were mammalian. The mammalian component consisted of a minimum of 26 species but only 5 species had a percentage occurrence of $\geq 5\%$. These were, in order of importance, *W. bicolor* (44%), *Rattus fuscipes* (12%), *Macropus rufogriseus* (9%), *Antechinus* spp. (6%) and *Macropus parma* (5%). Between March and October the equitability of prey species in the diet increased, indicating both a greater array and more even distribution of the species in the diet.

Some general aspects of the biology of *W. bicolor* were examined to provide comparative information on the age structure, morphology, proportion of each sex and reproductive biology of the two wallaby populations studied. The age structures of the two populations were similar. There were fewer young animals than older animals indicating that the numbers in both populations were declining. This was supported by a comparison with two previous studies on macropod numbers in the same area. Both suggested that this decline may have started 4 years prior to this study. The comparison of morphometric parameters from males and females indicated a statistically significant sexual dimorphism but one that was not readily noticeable in the field by the author. There tended to be a difference in the morphology of the two male populations with males from one population having a larger upper torso compared to the other males. The sex ratio was similar between sites and favoured males

in both the shot sample and in the pouch young. A similar proportion of sexually mature females were pregnant and/or carrying pouch young in each site and sexually mature males were fertile throughout the year.

The effect of a reduction in the effective macropod availability on prey selection by the dingo was studied by a comparison of the diet, age of macropod species consumed and the utilisation of macropod carcasses between the two sites. In the site with the lower macropod availability, the diet contained a significantly greater proportion of macropod relative to the other site. This indicated an increased preference for the macropods (especially *W. bicolor*) even though the availability of these macropod species was lower. There was a similar proportion of dependent and independent macropods in the scats from both sites. However, between the sites, this proportion was composed of both a different proportion of bone fragments which could be allocated to an age class and scats which contained no bone material and which were thought to have come from the consumption of independent macropods. The number of dependents, in the site with the higher macropod availability, showed a marked seasonal trend in the diet. Macropod carcasses and kills were more fully utilised in the site with the lower macropod availability.

The major effect of predation in the site with the lower macropod availability was the disruption to the spring-summer peak in reproductive activity of *W. bicolor*. It is suggested that the greater predation pressure at this site on *W. bicolor*, for 3 to 4 years prior to and during, the study, had led to a significant number of females having lost their pouch young through harassment by the dingoes. This harassment by the dingoes is believed to have produced the continuous breeding pattern observed. Not only was this disruption observed in the estimated month of birth of the pouch young but also in a greater frequency of active corpora lutea in the ovaries and in the elevated testicular weights throughout the year.

TABLE OF CONTENTS

Preface	
Acknowledgements	
Summary	
Table of Contents	
List of Tables	
List of Figures	

CHAPTER 1. INTRODUCTION

1.1 Preface	1-1
1.2 The dingo	
1.2.1 Distribution and description	1-2
1.2.2 The term dingo	1-2
1.2.3 Taxonomy of the dingo	1-4
1.2.4 Arrival of the dingo	1-6
1.2.5 Biology of the dingo	1-8
1.3 The swamp wallaby	
1.3.1 Distribution and description	1-14
1.3.2 Taxonomy of the swamp wallaby	1-14
1.3.3 Biology of the swamp wallaby	1-15
1.4 Predator-prey interaction	
1.4.1 General	1-19
1.4.2 Modelling	
a) Historical preface	1-20
b) Aims of optimal foraging theory	1-21
c) Assumptions of optimal diet models	1-22
d) Predictions of optimal foraging diets	1-23

1.4.3 Canine predator-prey interaction	
a) General	1-25
b) The coyote (<i>Canis latrans</i> Say 1832)	1-26
Description	
Distribution	
Food habits	
The interaction of group structure and prey selection	
c) The wolf (<i>Canis lupus</i> L. 1758)	1-29
Description	
Distribution	
Food habits	
The interaction of group structure and prey selection	
1.5 Aims of the study	1-31

CHAPTER 2. MATERIALS AND METHODS

2.1 Description of the study area	
2.1.1 Location	2-1
2.1.2 Topography and vegetation	2-1
2.1.3 Climate	2-3
2.2 Dingo scat analysis	
2.2.1 The collection of the dingo scats	2-3
2.2.2 The identification of prey species	
a) Contents of a scat	2-3
b) Hair identification	2-4
c) Procedure	2-5
d) Test of consistency	2-6
2.2.3 Examination of the macropod bone material found in the scats	2-6
2.2.4 Equitability index as a comparison of food habits	2-7
2.2.5 Index of abundance	2-8

2.3	Macropod abundance	2-8
2.4	Some aspects of the biology of the swamp wallaby	
2.4.1	Morphometrics	2-10
2.4.2	Age structure	2-10
2.4.3	Reproductive condition	2-11
 CHAPTER 3. FOOD HABITS OF THE DINGO		
3.1	General	3-1
3.2	An index of the relative numbers of dingoes in each site	3-1
3.3	Prey items found in the scats	
3.3.1	Food items obtained from the scat collection	3-3
3.3.2	A comparison of food items between sites	3-6
3.3.3	Between year differences within sites	3-6
3.3.4	Seasonal change in food habits	3-12
3.4	Age of macropods consumed	3-12
3.5	Macropod bone fragment analysis	
3.5.1	Zones consumed	3-21
	a) Number of zones per scat	3-21
	b) Skeletal zones represented in the scats	3-22
3.5.2	Weight of bone consumed	3-24
3.6	Observations of macropod carcasses	3-24

CHAPTER 4. MACROPOD ABUNDANCE

4.1 General	4-1
4.2 Density estimates	4-1
4.3 Effect of shooting on swamp wallaby densities	4-11
4.4 Index of macropod abundance	4-11
4.5 Observations	
4.5.1 Group size of macropod species	4-14
4.5.2 Ejection of pouch young	4-15

CHAPTER 5. BIOLOGY OF THE SWAMP WALLABY

5.1 Shot sample	5-1
5.2 Morphometrics	5-1
5.3 Age structure	5-6
5.4 Sex ratio	5-7
5.5 Male reproductive biology	5-7
5.6 Female reproductive biology	5-10
5.7 Pouch young biology	5-14

CHAPTER 6. DINGO WALLABY INTERACTION

6.1 Macropod prey selection	6-1
6.2 Multi-specied scats	6-2
6.3 Relative potential predation pressure	6-3
6.4 Dietary shift	6-3

CHAPTER 7. DISCUSSION AND CONCLUSION

7.1 Macropod numbers	
7.1.1 Declining numbers	7-1
7.1.2 Group size	7-2
7.2 Swamp wallaby biology	
7.2.1 Age structure	7-3
7.2.2 Morphology	7-3
7.2.3 Sex ratio	7-4
7.2.4 Reproductive biology	7-5
7.3 Dingo food habits	
7.3.1 General	7-6
7.3.2 Seasonal variation in the diet	7-7
7.3.3 Increased specialisation	7-7
7.3.4 Selection of prey species	7-9
7.3.5 Dietary shift	7-10
7.3.6 Age of macropod prey	7-10
7.3.7 Utilisation of macropod carcasses	7-12
7.3.8 The number of individual macropods consumed	7-13
7.3.9 Disruption of <i>Wallabia bicolor</i> breeding season	7-14
7.4 Conclusion	7-16

REFERENCES	R-1
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LIST OF TABLES

TABLE	TITLE	PAGE
1.1	Summary of diet studies for the dingo.	1-12
1.2	Length of cyclic reproductive processes in the swamp wallaby.	1-16
3.1	Food items in 1493 dingo scats from north-eastern New South Wales.	3-5
3.2	The percentage and frequency occurrence of mammalian species in the diet of the dingo for the three sites.	3-7
3.3	The percentage occurrence of mammalian species in the diet of the dingo for the three sites for each year.	3-8
3.4	Comparisons of species groups, sites and years by three-way chi-square evaluation.	3-9
3.5	Composition of the scats containing macropods.	3-17
3.6	Within year variation in the proportion of each age class consumed.	3-21
3.7	Mean number of zones per scat for each site and an ANOVA table for the mean number of independent zones per scat for each site.	3-22
3.8	The frequency and percentage occurrence of skeletal zones for both age classes, for each site.	3-23
3.9	The mean weight of bone material per scat for each age class and site.	3-24
4.1	Decline in macropod numbers	4-4
4.2	Group composition of macropods observed on transects for each species and site.	4-15

5.1	Morphometric parameters recorded from the shot sample.	5-3
5.2	Discriminant analysis for each sex for each site and independent of the site.	5-4
5.3	Comparison of morphometric parameters between sexes for each site.	5-5
5.4	Discriminant analysis within each sex between sites	5-5
6.1	A comparison of the proportion of the three large macropod species found in the scats with their respective proportion observed on transects.	6-2

LIST OF FIGURES

FIGURE	TITLE	PAGE
2.1	The study area.	2-2
2.2	Morphometric measurements.	2-11
3.1	Distribution of scats collected from each site.	3-2
3.2	The number of scats deposited per kilometre per day for each site per month.	3-4
3.3	Annual equitability indices for each site.	3-11
3.4	Monthly prey equitability indices for the S.R.S.F.	3-13
3.5	Monthly prey equitability indices for Diamond Flat.	3-14
3.6	Monthly prey equitability indices for Petroi.	3-15
3.7	Half yearly prey equitability indices for each site.	3-16
3.8	The proportion of dependent bone material in the diet in the S.R.S.F. site.	3-18
3.9	The proportion of dependent bone material in the diet at Petroi.	3-19
3.10	The proportion of dependent bone material in the diet at Diamond Flat.	3-20
4.1	The combined densities of the three macropod species in each site.	4-2
4.2	The density of macropod species for each site where the sample size was sufficient for comparison.	4-3
4.3	The monthly density estimates for <i>Wallabia bicolor</i> at the S.R.S.F. site.	4-5
4.4	The monthly density estimates for <i>Macropus rufogriseus</i> at the S.R.S.F. site.	4-6
4.5	The monthly density estimates for <i>Macropus giganteus</i> at the S.R.S.F. site.	4-7

4.6	The monthly density estimates for <i>Wallabia bicolor</i> at Diamond Flat.	4-8
4.7	The monthly density estimates for <i>Macropus rufogriseus</i> at Diamond Flat.	4-9
4.8	The monthly density estimates for <i>Macropus giganteus</i> at Diamond Flat.	4-10
4.9	A comparison of the monthly transect density and the cumulative shot density for the S.R.S.F. site.	4-12
4.10	A comparison of the monthly transect density and the cumulative shot density for Diamond Flat.	4-13
5.1	The location and sex of the shot sample.	5-2
5.2	Frequency of molar index classes for Diamond Flat and the S.R.S.F. sites.	5-6
5.3	Cross-sections of male reproductive organs.	5-8
5.4	The mean paired testicular weights for the S.R.S.F. site and Diamond Flat.	5-9
5.5	Cross-section of mature and immature uteri.	5-12
5.6	Cross-section through a uterus containing a blastocyst.	5-13
5.7	Type classes for the ranking of <i>corpora lutea</i> .	5-15
5.8	The estimated months of birth for the pouch young from the S.R.S.F. site and Diamond Flat.	5-17

LIST OF APPENDICES

- | | | |
|-----|--|------|
| A.1 | Morphometric data collected from the shot
sample | A1-1 |
| A.2 | Morphometric data collected from the pouch
young | A2-1 |
| A.3 | Manuscript - Robertshaw, J.D. and Harden, R.H.

Ecology of the dingo in north-eastern New South
Wales. III. Macropod bone fragments consumed. | A3-1 |