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Population dynamics, diet and aspects of the biology of feral cats and foxes in arid South Australia

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Abstract. Average cat and fox densities at Roxby Downs, in northern South Australia, of 0.8 and 0.6 km^{-2} respectively, determined through spotlight counts over a 10-year period, probably considerably underestimate true densities. Peak rabbit populations coincided with high fox numbers, which probably suppressed cat densities. Cat abundance peaked when fox numbers were low but rabbit numbers were relatively high.

When abundant, rabbits were the principal prey of both cats and foxes. Declines in rabbits numbers coincided with dramatic declines in fox numbers. By contrast, declines in cat populations were less marked, presumably because they could more effectively switch to hunting a wide range of native vertebrates. Sand-dwelling lizards, house mice and common small passerines were the most abundant non-rabbit, vertebrate prey taken by cats. We estimate that annual cat predation accounted for approximately 700 reptiles, 150 birds and 50 native mammals per square kilometre, whereas foxes consumed on average 290 reptiles per square kilometre and few native mammals and birds in the Roxby Downs region each year.

Male cats and foxes were heavier than females. Feral cats typically weighed less than 4.0 kg, and cats weighing less than 2.5 kg typically preyed on more native vertebrates than did larger cats. Male and female cats were both typically tabby coloured, but a higher proportion of males were ginger in colour. Peak cat breeding coincided with rabbit and bird breeding and increased reptile activity during spring.

Introduction

The cat (*Felis catus*) and fox (*Vulpes vulpes*) have had a devastating effect on some Australian native wildlife and are considered, at least partially, responsible for the extinction or massive contraction in the range and abundance of several species (Burbidge and McKenzie 1989; Morton 1990; Gibson *et al.* 1994; Dickman 1996). Ground-nesting birds on islands (Taylor 1979; Brothers 1984) and mammals within the 'critical weight range' of 35–5500 g have been particularly vulnerable to these exotic predators (Burbidge and McKenzie 1989). Several of these medium-sized, native mammal species have subsequently increased in population size and range following effective fox or cat control (Short and Smith 1994; Kinnear *et al.* 1998). Cats, in particular, also prey on a wide range of other vertebrates (Bayly 1978; Martin *et al.* 1996; Paltridge *et al.* 1997; Barratt 1997). Although empirical data are lacking, circumstantial evidence suggests that other wildlife populations, other than 'critical weight range' mammals, are also limited by cat and fox predation (Clapperton *et al.* 1994; Smith and Quin 1996; Read 1997)

Although cats were possibly introduced to Australia prior to European settlement (Burbidge and McKenzie 1989), it is likely that their numbers increased and their range increased considerably following colonisation by the rabbit (*Oryctolagus cuniculus*) throughout southern and central Australia (Morton 1990). Considerable numbers of cats were deliberately released in semi-arid and arid regions in the 1880s as part of a misguided rabbit-control program (Rolls 1969). Foxes penetrated the arid zone later than cats and reached central South Australia in about 1910 (Hogarth 1911).

The population dynamics, diets, mass, coat colour and timing of reproduction of cats and foxes in the Roxby Downs region of arid South Australia are documented here, and the prey of these species, when rabbits were both abundant and scarce, is described.

Methods

Study site

Roxby Downs is located approximately 520 km north of Adelaide in the South Australian arid zone (Fig. 1). The landscape is characterised by linear sand dunes that overlay a rock-strewn clay plain. Dunes are vegetated by sparse woodlands or shrublands of *Callitris glaucophylla*, *Acacia aneura*, *A. ramulosa*, *A. ligulata* and *Dodonaea viscosa*. The chenopods, *Atriplex vesicaria* and *Maireana astrotricha*, are the dominant plant species in swales, along with the occasional grove of *Acacia papyrocarpa* and *A. aneura*.

The long-term average annual rainfall for Roxby Downs is approximately 160 mm, although two periods of high rainfall between 1980 and 1995 increased the recent average to approximately 200 mm. Rainfall is highly erratic and aseasonal, although summer rains are typically less frequent yet more intense than winter rains (Read 1999).

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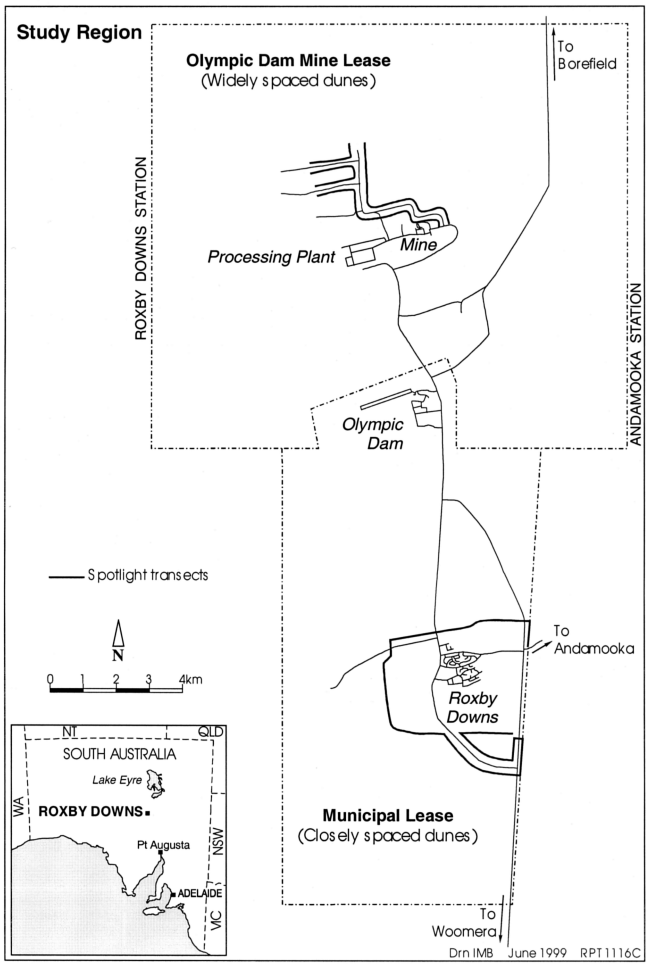

Fig. 1. Location of the study site (Roxby Downs).

Data collection

Cat and fox densities were monitored by two 20-km spotlight transects undertaken every two months from April 1989 to April 1999. One transect was in a dunefield adjacent to Roxby Downs township and the other was in widely-spaced dunes and chenopod shrubland 15 km north of the town. These transects were also used for rabbit counts and the techniques and habitats surveyed are described in Bowen and Read (1998). For density estimates it was presumed that cats and foxes could be spotted within 100 m of the vehicle. Spotlight counts may underestimate fox, and particularly cat, densities but they do provide a useful index to monitor substantial changes in density (Mahon *et al.* 1998). Spotlight counts are also influenced by changes in activity and hence probably also reflect changes in predation pressure on wildlife.

During this same study period, cats and foxes were shot, trapped or collected from roads within 50 km of Roxby Downs. Cage traps were used throughout the survey and were augmented by padded leg-hold traps for the last year, when cats were removed from a 14-km^2 fenced exclosure. Cats and foxes were considered to be strays if they were taken from dumps, residential or industrial areas and feral if they were collected remote from these sources of anthropogenic food scraps and shelter. Cats and foxes were typically weighed, sexed and then dissected to examine stomach contents and to determine whether females were pregnant. Pregnant female cats were used as an indicator of adulthood. The lightest pregnant female cat at Roxby Downs was 2.3 kg, which was adopted as the minimum weight of sexual maturity. This was slightly lower than the defined adult weight of 2.5 kg recorded in other studies (Jones and Coman 1982; Brothers *et. al.* 1985). The coat colour of cats was also recorded. In some cases the weight or breeding condition could not be assessed due to deterioration or damage to the specimens.

Results

Density

Cat and fox densities recorded by spotlight transects at the town and northern transects were similar (mean of 0.7 ± 0.11 and 0.9 ± 0.14 cats and 0.6 ± 0.13 and 0.6 ± 0.11 foxes km^{-2} respectively), hence data from the transects were combined to estimate regional cat and fox densities. Fox counts typically exceeded cat counts during 1989–92, when rabbit numbers were high, but this trend was reversed after 1992, when rabbit numbers were lower (Fig. 2). Both predators reached recorded densities greater than 3 km^{-2} in the first six years of the study (Fig. 2). Peak fox densities were recorded in November 1990, one year after maximum rabbit counts were

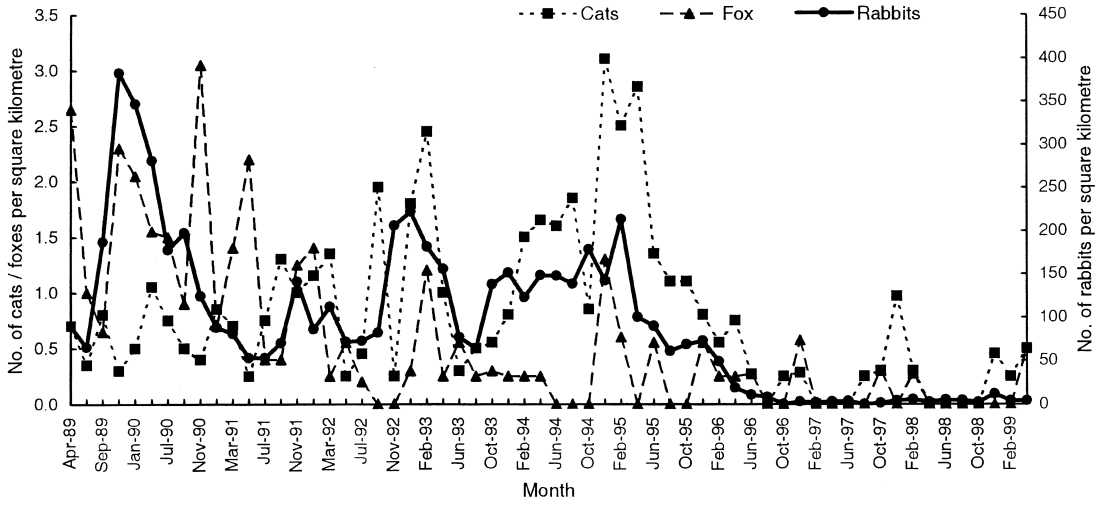

Fig. 2. Cat, fox and rabbit densities at Roxby Downs 1989–99.

Table 1. Sample size of cats and foxes collected and analysed at Roxby Downs
See text for definition of 'feral' and 'stray'. Roadkill animals are included in the feral category

	Cat		Fox	
	Feral	Stray	Feral	'Stray'
No. of stomachs examined	360	156	101	4
No. of empty stomachs	44	31	9	1
No. of stomachs with contents	316	125	92	3
Total no. of animals collected	391	243	107	7

made, and cat populations peaked during subsequent increases in rabbit numbers in February 1993 and December 1994. Cat, and particularly fox, numbers crashed in 1996 following a reduction in rabbit numbers. During the period from February 1997 until February 1999, cats were regularly seen, and nine were counted on spotlight transects, but foxes were rarely seen, and only two were recorded on the transects.

Diet

In total, 391 feral cats, 243 stray cats and 114 foxes were sampled. The stomach contents of 516 cats and 105 foxes were examined, of which 316 cat stomachs and 92 fox stomachs contained food (Table 1). Stomachs of both cats and foxes that were trapped invariably contained only bait.

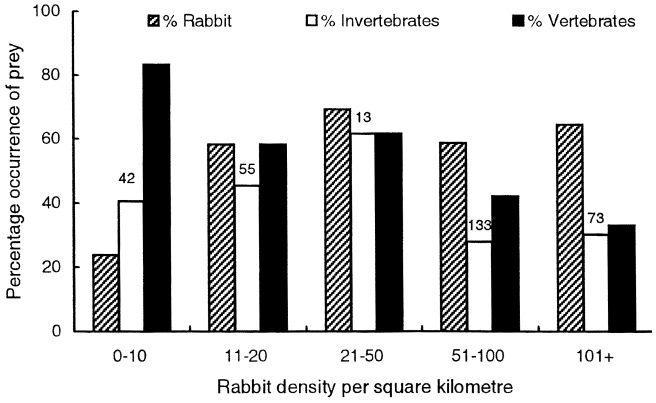

Fig. 3. Percentage occurrence of rabbit, invertebrates and all non-rabbit vertebrates in cat stomachs at different rabbit densities.

In total, 8 mammal, 16 bird, 37 reptile and 1 amphibian species, along with 11 invertebrate taxa, were recorded in the diets of feral cats in the Roxby Down region (Appendix). These figures possibly underestimate dietary breadth since several local reptiles, mammals and birds were not confirmed as cat prey and 12 reptiles, 4 mammals and 28 birds found in cat stomachs could not be identified to species level. Rabbits were the most frequently recorded prey for feral cats in the Roxby Downs region when rabbit counts exceeded 20 km^{-2} (Fig. 3). Due to the larger mass of rabbits compared with other prey, rabbits were also the most important prey for

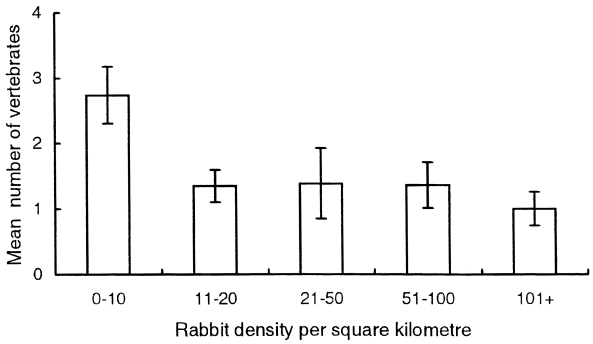

Fig. 4. Mean number (±1 s.e.) of vertebrate prey (excluding rabbits) in 316 feral cats stomachs at Roxby Downs.

cats when rabbit counts exceeded 10 km^{-2} (Fig. 3). However, when rabbit numbers were low, the number of other vertebrates taken increased from approximately 1 to 2.5 per cat stomach (Fig. 4). Frequently recorded reptile prey species included striped skinks (*Ctenotus*), *Eremiascincus richardsonii*, *Ctenophorus pictus* and *Rhynchoedura ornata* (Appendix). We recorded cat predation on *Mus domesticus*, *Pseudomys bolami*, *Leggadina forresti*, *Notomys alexis* and the two locally occurring *Sminthopsis* species (Appendix). Zebra finches and fairy-wrens were the most frequently recorded bird species in the cat stomachs (Appendix). Carrion, food scraps, grass and sticks were also consumed to a lesser degree (Appendix). On some occasions, largely irrespective of rabbit numbers, many vertebrate prey were taken by individual cats (Table 2).

In total, 13 vertebrate species (comprising 2 mammal, 2 bird, 8 reptile and 1 amphibian) along with seven invertebrate taxa, carrion, food scraps, grass and sticks were recorded in fox stomachs (Appendix). Rabbit was recorded in more than 70% of fox stomachs when rabbit counts exceeded 10 km^{-2} (Fig. 5). Slow-moving semi-fossorial genera (*Lerista* and *Ramphotyphlops*) accounted for most of the reptile prey

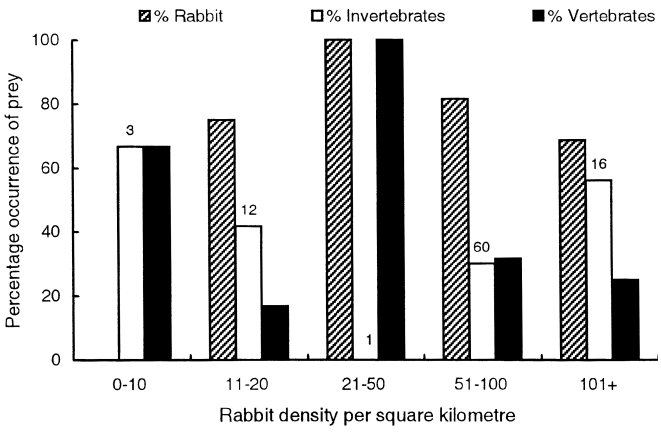

Fig. 5. Percentage occurrence of prey in 92 fox stomachs at different rabbit densities. Sample sizes are given for each rabbit density class.

Table 2. Stomach contents of cats from the Roxby Downs region with particularly large numbers or diversity of vertebrate prey

Date	Weight (kg)	Sex	Stomach contents
14.iv.1991	4.5	M	1 *Varanus gouldii*, 1 *Ctenophorus fordi*, 1 *Ctenotus brooksi*, 1 *Eremiascincus richardsonii*, 2 *Rhynchoedura ornata*,1 *Neobatrachus centralis,* 2 centipedes, 2 crickets
16.vii.1993	3.8	F	1 *Mus domesticus*, 1 *Poephilla gutatta*, 24 *Ctenophorus pictus*, 3 *Pogona vitticeps*, 1 *Tympanocryptis intima*, 1 *T. lineata*, 3 *Ctenotus schomburgkii*
21.viii.1993	2.2	F	1 *Poephilla gutatta*, 3 *Ctenophorus fordi*, 1 *Pogona vitticeps*, 14 *Ctenotus regius*, 1 *Ctenotus leae*
28.iv.1995	2.5	F	1 *Mus domesticus*, 6 *Ctenotus olympicus*, 1 *Ctenotus robustus*, 26 grasshoppers, 2 crickets
23.viii.1995	2.1	F	2 *Ctenophorus pictus*, 5 *Tympanocryptis lineata*, 3 *Ctenophorus fordi*, 1 *Gehyra*, 5 *Ctenotus brooksi*, 4 *C. regius*, 2 *C. schomburgkii*, 1 grasshopper, 2 centipedes, 1 scorpion, 5 crickets
6.iii.1996	2	F	1 *Suta suta*, 1 *Ctenophorus pictus*, 1 *Eremiascincus richardsonii*, 1 *Lerista labialis*, 2 *Rhynchoedura ornata*, 1 *Gehyra*, 2 grasshoppers, 1 centipede
26.iv.1996	3.7	–	3 *Eremiascincus richardsonii*, 4 *Ctenotus brooksi*, 1 *C. regius*, 1 *Nephrurus levis*
6.xi.1997	3.3	F	2 *Mus domesticus*, 1 *Turnix velox*, 2 *Ramphotyphlops endoterus*, 1 *Ctenophorus nuchalis*, 1 *Ctenotus regius*, 2 *C. schomburgkii*, 1 *Rhynchoedura ornata*, 1 *Diplodactylus tessellatus*, 2 crickets, 1 centipede, 1 grasshopper
4.iv.1998	2.2	–	2 *Mus domesticus*, 1 *Sminthopsis crassicaudata*, 2 *S. macroura*, 1 *Leggadina forresti*, 1 *Suta suta*
7.iv.1998	3.5	F	3 *Mus domesticus*, 2 *Pseudomys bolami*, 2 *Varanus gouldii*, 1 *Ctenotus schomburgkii*, 1 *Diplodactylus stenodactylus*, 1 *Rhynchoedura ornata*, 3 crickets

taken by foxes, and *Mus domesticus* was the only non-rabbit mammal recorded in their diet. Fox stomachs contained an average of 0.64 native vertebrate individuals.

Body mass

Male cats (mean = 3.9 kg, s.e. = 0.10, n = 263) were generally heavier than both non-pregnant females (mean = 2.8 kg, s.e. = 0.07, n = 217), and pregnant females (mean = 3.8 kg, s.e. = 0.28, n = 15). The largest cat, a male, weighed 7.3 kg and each of the three female cats weighing more than 5 kg were pregnant. Male foxes (mean = 4.9 kg, s.e. = 0.14, n = 57) were also typically heavier than females (mean = 4.3 kg, s.e. = 0.12, n = 26), with the largest fox weighing 6.8 kg.

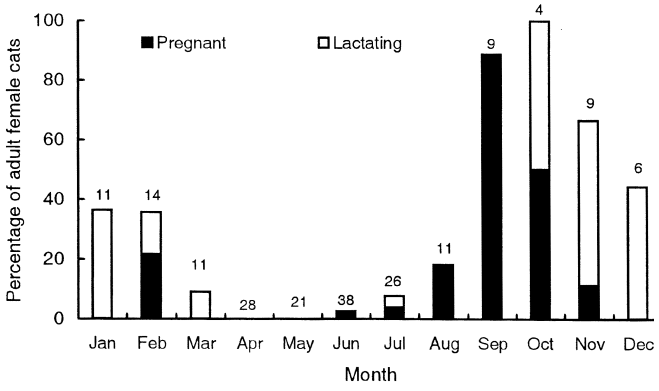

Fig. 6. Seasonal reproductive activity in adult female cats at Roxby Downs.

Reproduction

Nearly 20% of the adult female cats sampled were pregnant. Breeding peaked in late winter and spring (Fig. 6) although some cats were lactating as late as March. Most pregnant female cats had 4 embryos (mean = 4.1, s.e. = 0.3, n = 17). No pregnant foxes were sampled but two young foxes (<2.5 kg) were collected in November and December, suggesting winter/spring breeding.

Colour

Over 70% of both male and female cats sampled were tabbies. Ginger colouration was more prevalent in males (20.6%) than females (8.9%) and a few black, white or piebald cats of each sex were also sampled.

Discussion

Density

Spotlight transects indicate that the population densities of both cats and foxes regularly exceeded 1 km^{-2} and occasion-

ally exceeded 3 km^{-2} in the Roxby Downs region. These spotlight counts are considerably greater than those recorded in the Simpson Desert (Mahon *et al.* 1998) but lower than the 3.7 per km^{-2} estimated from Macquarie Island (Brothers *et al.* 1985). Densities, estimated by spotlight transects underestimate true densities of foxes and, particularly, cats (Mahon *et al.* 1998), and on many occasions we captured cats or found tracks where none had been seen while spotlighting. We estimate that average densities during the study period were at least two cats and one fox per square kilometre.

Peak cat and fox densities at Roxby Downs were recorded during, or immediately after, peak rabbit densities throughout this study, which corroborates the link between high densities of exotic predators and populations of rabbits in arid Australia (Morton 1990). This link was particularly evident in the decline in cat and, particularly, fox numbers that followed the 1996 crash in rabbit numbers caused by rabbit haemorrhagic disease (Bowen and Read 1998). Annual density trends of cats and foxes at Roxby Downs generally followed that of local rabbit populations, by peaking during summer months. High fox densities in the first three years of the study coincided with extremely high rabbit densities. Peak densities of cats coincided with subsequent smaller increases in rabbit numbers when foxes were less prevalent.

The decline in fox numbers since 1992, and especially the very low number of foxes observed since 1996, suggests that they are more reliant than cats on rabbits and, as a result, their numbers have significantly decreased following the decline of rabbits. Our data also indicate that when fox numbers were high cat numbers were low. Confirmation of causality between these two observations is prohibited by the confounding effects of variation in rabbit densities and the small sample sizes for each sample period. However, higher-order predators are believed to be able to suppress populations of some smaller predators (Pettigrew 1993; Palomares *et al.* 1995; Read 1997). Although direct predation of cats by foxes was not recorded at Roxby Downs, we observed a fox chasing a cat up a tree. Cats therefore seem to be most abundant when rabbits are sufficiently abundant to provide a reliable food source but not so abundant that they can support high fox populations.

Diet

When abundant, rabbits were the principal prey of both feral cats and foxes. However, when rabbit numbers were low, the diets and success of foxes and cats diverged considerably. While cats switched to a wide variety of small vertebrates, foxes were forced to eat mainly invertebrates, such as scorpions, grasshoppers, beetles and centipedes. The small component of reptiles, birds and non-rabbit mammals in the fox diet compared with that of the cat is consistent with the findings of other studies (Bayly 1978; Catling 1988) and is attributable to the species' different hunting styles. Foxes are apparently less adept at stalking small vertebrate prey than are cats. As a result, when rabbit density is low, foxes are opportunists and scavengers (Martensz 1971; Bayly 1978) and feed extensively on invertebrates (Catling 1988) and, in our study, slow fossorial reptiles.

Contrary to reports from other Australian regions where small mammals were the most important prey items (Martin *et al.* 1996; Paltridge *et al.* 1997; Barratt 1997), we found that reptiles were typically the most abundant non-rabbit prey items in our arid study area. Bayly (1976, 1978), who studied the diet of 14 cats from within our study area, also found that reptiles were the predominant prey in an autumn survey. Most of the abundant reptiles in the region (Read 1992) and the two most abundant small mammals in the region, *Mus domesticus* and *Pseudomys bolami* (Moseby and Read 1998) were frequently consumed by cats. Although identification of many of the small passerine prey was not possible, it also appears that the most abundant and widespread local species (zebra finches and fairy-wrens) (Read *et al.* 2000*a*) were taken most regularly. Cats adopted a wide range of hunting strategies, including climbing (authors' observations) and even swimming for ducks on local lakes (Read and Ebdon 1998).

Although cats typically fed on prey in proportion to their abundance, there were several noteworthy exceptions. Sand-dwelling lizards, such as *Ctenotus brooksi*, *Ctenophorus fordi* and *C. pictus* were consumed more often than were the open plain-dwelling *Diplodactylus conspicillatus*, *Tympanocryptis intima* and *T. tetraporophora* (Read 1995), i.e. more than their relative regional abundance would suggest. This apparent aversion to species found on open, stony plains is attributed to habitat selectivity by cats, which are more often found in dunes (Mahon 1998; authors' observations), which offer a softer substrate, greater cover of tall vegetation, and enhanced prey and shelter in rabbit warrens than do interdunal swales.

Another interesting anomaly is the different predation rates on *Eremiascincus richardsonii* and *Nephrurus milli*, which are both nocturnal reptiles of similar size that frequently inhabit rabbit warrens (Read and Owens 1999). Cats also used rabbit warrens extensively, which may explain why *Eremiascincus richardsonii* were comparatively over-represented in cats' diets in comparison with their capture rates in local pitfall traps (Read 1992, 1995). However, despite being reasonably abundant, *N. milli* was recorded only once from a cat stomach. A possible explanation for this apparent selectivity is that, unlike *E. richardsonii*, which typically runs for cover when threatened, *N. milli* inflates its body and squeaks, which may bluff many cats into avoiding them as prey. The same explanation may account for more of the inoffensive small snakes of the genera *Simoselaps* and *Ramphotyphlops* in the diet of cats compared with *Suta* and small *Pseudonaja* which are probably more abundant (unpublished data) but more aggressive when threatened.

We conservatively estimate that a cat will kill, on average, approximately 3 non-rabbit vertebrate prey per day in the Roxby Downs region, given that we recorded an average of

1.5 non-rabbit vertebrates per cat stomach and that the average passage rate of food particles in digestive system of cats is 13 h (Warner 1981). This figure does not include subsequent deaths to dependent young of prey nor stress- or disease-related deaths of prey that were not consumed. Furthermore, this figure underestimates predation rates when rabbit numbers are low, given that in some cases when rabbits were not taken, more than 20 vertebrate prey were consumed daily. Assuming an average population density of 2 cats km^{-2}, cats are likely to take approximately 700 reptiles, 150 birds and 50 native mammals per square kilometre in the Roxby Downs region each year. By contrast, foxes capture very few native mammals and birds and only approximately 290 reptiles per year assuming an average density of 1 km^{-2} and a frequency of 0.4 reptiles per fox stomach.

Weight

Cat weights at Roxby Downs were similar to those recorded on Macquarie Island, where males also tended to be heavier than females and the heaviest cat shot was 5.8 kg (Brothers *et al.* 1985). Most feral and stray cats sampled at Roxby Downs weighed less than 4 kg, which indicates that, contrary to popular belief, the menace of feral cats is not attributable to a dramatic increase in their size compared with their domesticated counterparts. Furthermore, half of the cats listed that had consumed an extraordinary number or array of native wildlife prey weighed 2.5 kg or less, which indicates that small cats may be less effective at catching large prey, or more effective at catching small native wildlife species, than large cats.

Reproduction

The spring breeding period of cats in this study is consistent with findings from other regions in Australia (Jones and Coman 1982; Edwards *et al.* 1997). Rabbits (Bowen and Read 1998), and many local birds (Read *et al.* 2000*b*) also breed in spring, and reptile activity increases at this time (J. Read, unpublished). Therefore, food availability for both adult cats and kittens is likely to peak in spring.

Colour

Cat coloration frequencies at Roxby Downs were almost identical to that recorded amongst feral cats on Macquarie Island (Brothers *et al.* 1985). At both localities tabbies were most abundant and ginger males outnumbered ginger females. Such consistency is surprising given the vastly different habitats and temperatures of the two localities. Although we did not collect habitat data, the ginger cats may have been more prevalent on paler sands, since higher proportions of ginger-coloured rabbits are found locally in areas where light-coloured sands prevail (authors' observations). Black, white or piebald cats are conspicuous in open arid habitats, which may account for their lower frequency than tabbies or ginger cats.

Acknowledgments

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Appendix. Summary of diets from 316 feral cats (excluding stray cats) and 92 foxes
Percentage occurrence was calculated from the total number of cats and foxes with food present

Common name	Species	Cats		Foxes	
		No. of prey individuals	Percentage occurrence	No. of prey individuals	Percentage occurrence
Bait	–	–	0.6	–	0.0
Grass/sticks	–	–	4.1	–	3.3
Carrion	–	–	2.8	–	5.4
Food scraps	–	–	11.4	–	1.1
Invertebrates					
Beetle	–	11	2.5	14	10.9
Grasshopper	–	91	12.7	167	10.9
Centipede	–	46	8.9	25	12
Cockroach	–	1	0.3	0	0.0
Cricket	–	95	14.2	20	12
Moth	–	1	0.3	2	2.2
Weevil	–	0	0.0	2	1.1
Scorpion	–	23	4.7	10	8.7
Spider	–	4	1.3	0	0.0
Wasp	–	13	0.6	0	0.0
Total		285	34.5	240	37.0
Frogs					
Trilling frog	*Neobatrachus centralis*	4	0.9	18	2.2
Reptiles					
Tree dtella	*Gehyra variegata*	10	3.2	0	0.0
Beaked gecko	*Rhynchoedura ornata*	19	5.4	1	1.1
Crowned gecko	*Diplodactylus stenodactylus*	13	3.5	0	0.0
Fat-tailed gecko	*Diplodactylus conspicillatus*	2	0.3	1	1.1
Beaded gecko	Diplodactylus damaeus	5	1.6	0	0.0
Tessellated gecko	*Diplodactylus tessellatus*	2	0.6	0	0.6
Smooth knob-tail	*Nephrurus levis*	4	1.2	0	0.0
Thick-tailed gecko	*Nephrurus milli*	1	0.3	0	0.0
Bynoe's gecko	*Heteronotia binoei*	8	2.5	0	0.0
Undetermined gecko	–	2	0.6	0	0.0
Gould's goanna	*Varanus gouldii*	10	2.8	0	0.0
South-eastern morethia	*Morethia boulengeri*	1	0.3	0	0.0
Broad-banded sand-swimmer	*Eremiascincus richardsoni*	27	6.0	0	0.0
Pale-rumped ctenotus	*Ctenous regius*	35	5.1	0	0.0
–	*Ctenotus olympicus*	9	0.6	0	0.0
–	*Ctenotus brooksi*	20	2.8	0	0.0
–	*Ctenotus schomburgkii*	17	3.2	0	0.0
–	*Ctenotus strauchii*	3	0.9	0	0.0
–	*Ctenotus leae*	1	0.3	0	0.0

(Continued)

Appendix *(Continued)*

Common name	Species	Cats		Foxes	
		No. of prey individuals	Percentage occurrence	No. or prey individuals	Percentage occurrence
Robust ctenotus	Ctenotus robustus	1	0.3	0	0.0
–	*Ctenotus* sp.	10	3.2	1	1.1
Southern sandslider	*Lerista labialis*	8	2.3	17	7.6
Sleepy lizard	*Tiliqua rugosa*	6	1.9	1	1.1
Common dwarf skink	*Menetia greyii*	1	0.3	0	0.0
Lined earless dragon	*Tympanocryptis lineata*	7	0.9	0	0.0
Gibber earless dragon	*Tympanocryptis intima*	3	0.9	0	0.0
Central netted dragon	*Ctenophorus nuchalis*	7	2.2	1	1.1
Ford's dragon	*Ctenophorus fordi*	12	2.2	0	0.0
Painted dragon	*Ctenophorus pictus*	34	2.5	0	0.0
Central bearded dragon	*Pogona vitticeps*	12	3.2	2	2.2
Prong-snouted blind snake	*Ramphotyphlops bituberculatis*	1	0.3	1	1.1
Interior blind snake	*Ramphotyphlops endoterus*	6	1.3	10	10.9
Narrow-banded snake	*Simoselaps fasciolatus*	1	0.3	0	0.0
Desert banded snake	*Simoselaps bertholdi*	1	0.3	0	0.0
Curl Snake	*Suta suta*	3	0.9	0	0.0
Hooded scaly-foot	*Pygopus nigriceps*	2	0.6	1	1.1
Total		304	33.5	37	21.7
Birds					
Zebra finch	*Poephila guttata*		9	2.2	0
Fairy-wren	*Malurus* sp.	9	1.3	0	0.0
Galah	*Cacatua roseicapilla*	2	0.6	0	0.0
Australasian grey teal	*Anas gibberifrons*	1	0.3	0	0.0
Crested pigeon	*Ocyphaps lophotes*	3	0.9	0	0.0
Budgerigah	*Melopsittacus undulatus*	1	0.3	0	0.0
Black-faced woodswallow	*Artamus cinereus*	2	0.6	0	0.0
Mulga parrot	*Psephotus varius*	2	0.6	0	0.0
Richard's pipit	*Anthus novaeseelandiae*	3	0.9	0	0.0
Inland dotterel	*Peltohyas australis*	0	0.0	2	1.1
House sparrow	*Passer domesticus*	1	0.3	0	0.0
Crimson chat	*Ephthianura tricolor*	2	0.3	0	0.0
Yellow-throated miner	*Manorina flavigula*	3	0.6	0	0.0
Little button quail	*Turnix velox*	1	0.3	0	0.0
Undetermined bird	–	28	7.9	2	2.2
Total		67	12.8	4	3.3
Mammals					
Rabbit	*Oryctolagus cuniculus*	–	56.6	–	76.1
House mouse	*Mus domesticus*	64	9.2	8	3.3
Bolam's mouse	*Pseudomys bolami*	5	0.9	0	0.0
Forrest's mouse	*Leggadina forresti*	3	0.9	0	0.0
Spinifex hopping mouse	*Notomys alexis*	1	0.3	0	0.0
Fat-tailed dunnart	*Sminthopsis crassicaudata*	5	1.3	0	0.0
Stripe-faced dunnart	*Sminthopsis macroura*	5	0.9	0	0.0
Small undetermined mammal		4	0.6	0	0.0
Total (non rabbit)		8.7	11.7	8	3.3

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